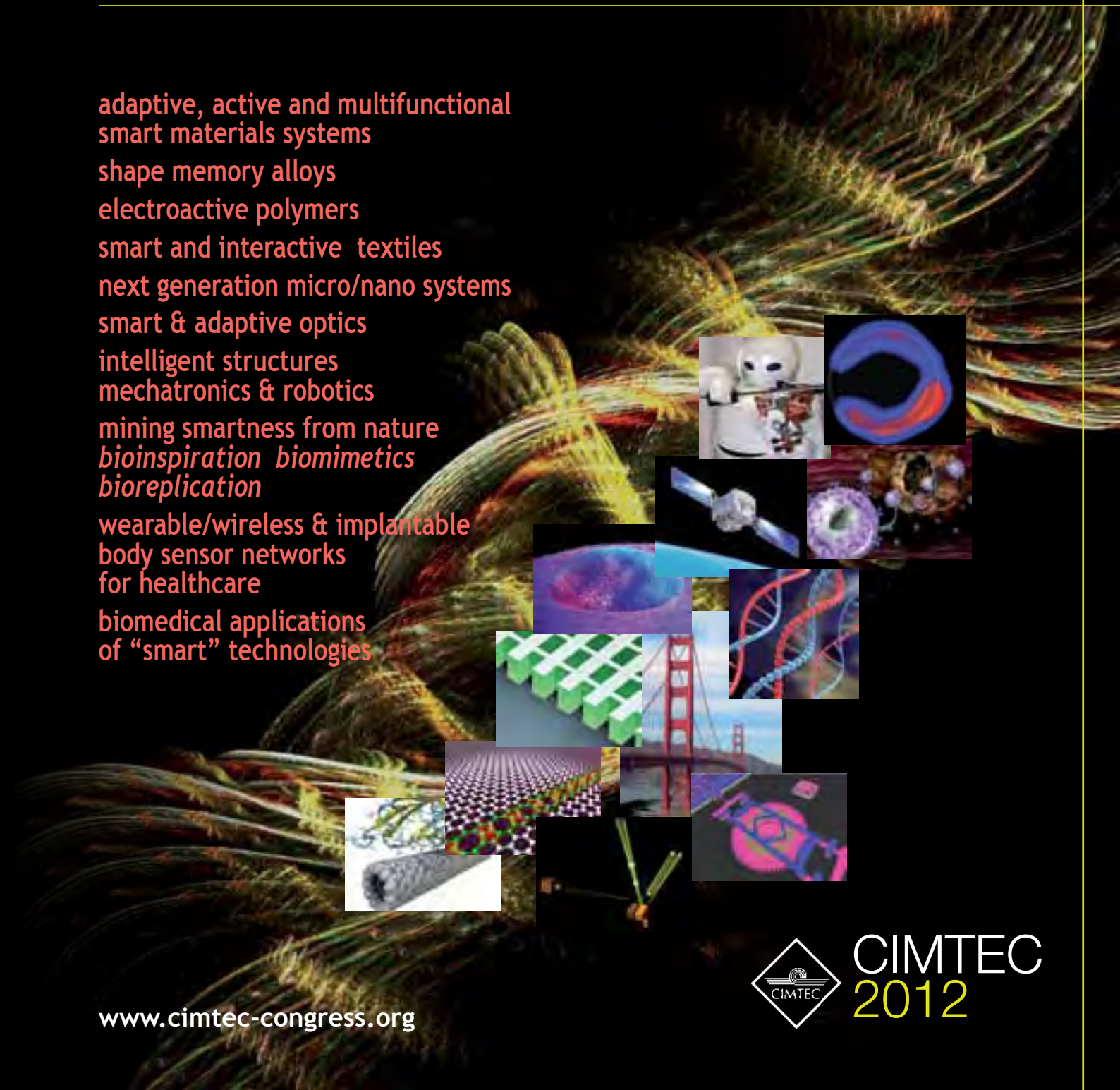
FINAL ANNOUNCEMENT

June 10-14, 2012, Montecatini Terme, Tuscany, Italy

4th International Conference

smart materials structures systems



adaptive, active and multifunctional smart materials systems

shape memory alloys

electroactive polymers

smart and interactive textiles

next generation micro/nano systems

smart & adaptive optics

intelligent structures mechatronics & robotics

mining smartness from nature *bioinspiration biomimetics bioreplication*

wearable/wireless & implantable body sensor networks for healthcare

biomedical applications of "smart" technologies

CIMTEC 2012

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CIMTEC 2012

4th International Conference

SMART MATERIALS STRUCTURES & SYSTEMS

Flowsheet

	JUNE 10		JUNE 11		JUNE 12		JUNE 13		JUNE 14	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
REGISTRATION										
SYMPOSIUM A				A	A	A	A	A	A	A
Special Session A-10					A-10	A-10	A-10			
Focused Session A-11							A-11	A-11	A-11	A-11
Focused Session A-12				A-12	A-12	A-12	A-12	A-12	A-12	A-12
Focused Session A-13				A-13	A-13	A-13	A-13	A-13	A-13	
Special Session A-14				A-14	A-14	A-14				
Focused Session A-15				A-15		A-15	A-15		A-15	A-15
SYMPOSIUM B				B	B	B	B	B	B	B
SYMPOSIUM C				C	C	C		C		C
SYMPOSIUM D				D	D	D	D	D	D	
SYMPOSIUM E				E	E		E	E	E	E
SYMPOSIUM F				F	F	F	F		F	F
SYMPOSIUM G				G	G	G	G	G	G	
Special Session G-6								G-6		G-6
SYMPOSIUM H				H	H	H	H	H	H	H
Special Session H-7					H-7	H-7	H-7			
SYMPOSIUM I				I	I	I	I		I	I
SYMPOSIUM J				J	J	J	J	J	J	J
POSTER MOUNTING		◆	◆	◆						
POSTER DISCUSSION										◆
SOCIALS				●				●		●

PLENARY SESSION

● OPENING CONCERT ● CAFFE CONCERTO STRAUSS ● CONFERENCE DINNER

Invitation to attend

Intensive research carried out worldwide for creating higher forms of materials, structures and systems by providing them with "life" functions, resulted in a relatively high level of technology readiness with several applications now emerging, demonstrating that smart materials technologies have matured well beyond the conceptual stage. Widespread use of nanotechnology concepts and tools, the availability of multiscale computational models coupled with the exponential growth of computing capability and the merging of materials science and engineering with biological information, are fuelling the rate of advancement of the field.
However further substantial research developments are essential for the understanding of convergences of materials, electronics and biological systems, to match relevant needs of present and foreseeable applications.

The several Symposia featured by CIMTEC 2012 - 4th International Conference "Smart Materials, Structures and Systems" will cover outstanding areas of the subject from the molecular nanoscales to large complex integrated systems.

You are cordially invited to foster progress in the field by contributing to what promises to be an exciting meeting, and to enjoy the immense, unique, artistic heritage and wonderful landscape of Tuscany.

Pietro Vincenzini
General Chair CIMTEC Conferences

Welcome to CIMTEC 2012 !

SUMMARY

CONFERENCE COMMITTEES

General Chair Cimtec Conferences

Pietro Vincenzini, Italy
World Academy of Ceramics
National Research Council (Em.)

4th International Conference "SMART MATERIALS, STRUCTURES AND SYSTEMS"

Advisory Boards

SYMPOSIUM A - Adaptive, Active and Multifunctional Smart Materials Systems

Symposium Co-Chairs: Markus ANTONIETTI, *Germany* Zhong Yang CHENG, *USA* Salvatore IANNOTTA, *Italy (Programme Chair)* Ping SHENG, *Hong Kong* *Members:* Munetaka AKITA, *Japan* Michael BENDIKOV, *Israel* Lennart BERGSTROM, *Sweden* Vivek BHARTI, *USA* Claudio BIANCHINI, *Italy* Jerome BIBETTE, *France* Ian BOND, *UK* Enric CANADELL, *Spain* Gregory Paul CARMAN, *USA* Frank CARUSO, *Australia* Xiaobo CHEN, *USA* Seung Bok CHOI, *Korea* Marcelo J. DAPINO, *USA* Luisa DE COLA, *Germany* Kazunari DOMEN, *Japan* Marc DRILLON, *France* Mats FAHLMAN, *Sweden* Albert FIGUERAS, *Spain* Silvija GRADECAK, *USA* Claes GRANQVIST, *Sweden* Anselm GRIFFIN, *USA* Georges HADZIIOANNOU, *France* Yoon-Bong HAHN, *Korea* Kazuhito HASHIMOTO, *Japan* Lei JIANG, *China* En-Tang KANG, *Singapore* Jose M. KENNY, *Italy* Alexei R. KHOKHLOV, *Russia* Susumu KITAGAWA, *Japan* Kenji KITAMURA, *Japan* Kazuyuki KURODA, *Japan* Jan MA, *Singapore* Meyya MEYYAPPAN, *USA* Sergiy MINKO, *USA* Dieter NEHER, *Germany* Dhananjai PANDEY, *India* Shashi PAUL, *UK* Michael POPALL, *Germany* Horst-Günter RUBAHN, *Denmark* Clement SANCHEZ, *France* Andreas SCHOENECKER, *Germany* Ulrich SCHUBERT, *Austria* Vesselin N. SHANOV, *USA* Lu-Ping SHI, *Singapore* Elias SIORES, *UK* Henry A. SODANO, *USA* Richard J. SPONTAK, *USA* Masahide TAKAHASHI, *Japan* Mauricio TERRONES, *USA* Richard A. VAIA, *USA* Olin VELEV, *USA* Marco VITTORI ANTISARI, *Italy* Ben WANG, *USA* Junji WATANABE, *Japan* Masayoshi WATANABE, *Japan* Francois WEISS, *France* Weijia WEN, *Hong Kong* Matthias WUTTIG, *Germany* Tian-Bing XU, *USA* Weiguang ZHU, *Singapore*

SPECIAL SESSION A-10 - Emerging Non-volatile Memory Devices

Programme Chair: Shashi PAUL, *UK*

FOCUSED SESSION A-11 - Multiferroics

Programme Chair: Gopalan SRINIVASAN, *USA* *Members:* Agnes BARTHELEMY, *France* Mark BLAMIRE, *UK* Gustau CATALAN, *Spain* Ying-Hao CHU, *Taiwan* Chun-Gang DUAN, *China* Arunava GUPTA, *USA* Milko ILIEV, *USA* Hyun M. JANG, *Korea* Masashi KAWASAKI, *Japan* Michel KENZELMANN, *Switzerland* Tsuyoshi KIMURA, *Japan* Hermann KOHLSTEDT, *Germany* Jeremy LEVY, *USA* Alois LOIDL, *Germany* B.S. MURTY, *India* Naoto NAGAOSA, *Japan* Thomas T.M. PALSTRA, *Holland* Jordi PASCUAL, *Spain* Vladimir PETROV, *Russia* Silvia PICOZZI, *Italy* Shashank PRIYA, *USA* Vladimir Ya. SHUR, *Russia* Evgeny Y. TSYMBAL, *USA* Thomas TYBELL, *Norway* Dwight VIEHLAND, *USA* John WANG, *Singapore*

FOCUSED SESSION A-12 - Progress in Metamaterials Research

Programme Chair: Concita SIBILIA, *Italy* *Members:* Richard AVERITT, *USA* Filiberto BILOTTI, *Italy* Christophe CALOZ, *Canada* Che Ting CHAN, *Hong Kong* Huanyang CHEN, *P.R.China* Jian-Chun CHENG, *P.R.China* Chiara DARAIO, *USA* Jennifer A. DIONNE, *USA* Nader ENGHETA, *USA* Nicholas X. FANG, *USA* Didier FELBACQ, *France* Harald GIESSEN, *Germany* Satoshi KAWATA, *Japan* Yuri S. KIVSHAR, *Australia* Natalia M. LITCHINITSER, *USA* Stefan MAIER, *UK* Francisco MEDINA-MENA, *Spain* Susumu NODA, *Japan* Mikhail A. NOGINOV, *USA* Ekmel OZBAY, *Turkey* Min QIU, *Sweden* Antti RAISANEN, *Finland* J. Roy SAMBLES, *UK* Alex SCHUCHINSKY, *UK* Gennady SHVETS, *USA* David R. SMITH, *USA* Clivia Marfa SOTOMAYOR TORRES, *Spain* Costas SOUKOULIS, *USA/Greece* Edwin L. THOMAS, *USA* Douglas WERNER, *USA* Anatoly V. ZAYATS, *UK* Xiang ZHANG, *USA* Lei ZHOU, *P.R.China*

FOCUSED SESSION A-13 - Graphene: From Science to Technology

Programme Chair: Vincenzo PALERMO, *Italy* *Members:* Laszlo P. BIRO, *Hungary* Antonio H. CASTRO NETO, *USA* Chun-Wei CHEN, *Taiwan* Kuei-Hsien CHEN, *Taiwan* Yongsheng CHEN, *China* Luigi COLOMBO, *USA* Toshiaki ENOKI, *Japan* Vladimir I. FALKO, *UK* Roman FASEL, *Switzerland* Andrea C. FERRARI, *UK* Albert FERT, *France (Nobel Laureate)* Michael S. FUHRER, *USA* Hongjun GAO, *China* Pertti HAKONEN, *Finland* Byung Hee HONG, *Korea* Karsten HORN, *Germany* Sorin IVANOVICI, *Germany* Jari KINARET, *Sweden* Kostya NOVOSELOV, *UK (Nobel Laureate)* Taiichi OTSUJI, *Japan* Luca OTTAVIANO, *Italy* Alain PENICAUD, *France* Stephan ROCHE, *Spain* Rodney S. RUOFF, *USA* Paolo SAMORI', *France* Thomas SEYLLER, *Germany* Zexiang SHEN, *Singapore* Young-Woo SON, *Korea* Bart J. VAN WEES, *Holland* Andrew WEE, *Singapore* Chao ZHANG, *Australia*

SPECIAL SESSION A-14 - Multifunctional Smart Materials for Energy Harvesting

Programme Chairs: Yoon-Bong HAHN, *Korea* & S.R.P. SILVA, *UK*

FOCUSED SESSION A-15 - Actively Moving Polymers

Programme Chair: Andreas LENDLEIN, *Germany* *Members:* Christopher BOWMANN, *USA* Filip E. DU PREZ, *Belgium* Urs DUERIG, *Switzerland* Yakai FENG, *P.R.China* Shunichi HAYASHI, *Japan* Jozsef KARGER-KOCSIS, *Hungary* Duncan J. MAITLAND, *USA* Patrick MATHER, *USA* Abhay PANDIT, *Ireland* Hans-Joachim RADUSCH, *Germany* U. Gianfranco SPIZZIRRI, *Italy* Christoph WEDER, *Switzerland* Timothy J. WHITE, *USA* Tao XIE, *USA* Ryo YOSHIDA, *Japan*

SYMPOSIUM B - State-of-the-art Research and Application of SMAs Technologies

Co-Chairs: Stefano BESSEGHINI, *Italy (Programme Chair)* Shuichi MIYAZAKI, *Japan* Eckhard QUANDT, *Germany* Minoru TAYA, *USA* *Members:* Franca ALBERTINI, *Italy* Tony ANSON, *UK* Ferdinando AURICCHIO, *Italy* Vladimir BRAILOVSKI, *Canada* Vasiliy D. BUCHELNIKOV, *Russia* Fabio CASCIATI, *Italy* Eduard CESARI, *Spain* Volodymyr A. CHERNENKO, *Spain* Yuri CHUMLYAKOV, *Russia* Jan M. DUTKIEWICZ, *Poland* Simo-Pekka HANNULA, *Finland* Laurent HIRSINGER, *France* Wei Min HUANG, *Singapore* Tomoyuki KAKESHITA, *Japan* Ibrahim KARAMAN, *USA* Cheol KIM, *Korea* Yoichi KISHI, *Japan* Manfred KOHL, *Germany* Yinong LIU, *Australia* Hans-Jürgen MAIER, *Germany* P.K. MUKHOPADHYAY, *India* Yasukazu MURAKAMI, *Japan* Antoni PLANES, *Spain* Bogdan RANIECKI, *Poland* Xiaobing REN, *Japan* Avadh B. SAXENA, *USA* Ludwig SCHULTZ, *Germany* Petr SITTNER, *Czech Republic* Qing-Ping SUN, *Hong Kong* Jan VAN HUMBEECK, *Belgium* Shyi-Kaan WU, *Taiwan* L'Hocine YAHIA, *Canada* Yufeng ZHENG, *China*

SYMPOSIUM C - Electroactive Polymers: Advances in Materials and Devices

Co-Chairs: Toshihiro HIRAI, *Japan* Jinsong LENG, *China* Elisabeth SMELA, *USA* Steen SKAARUP, *Denmark (Programme Chair)* *Members:* Alvo AABLOO, *Estonia* Iain ANDERSON, *New Zealand* Karl-Friedrich ARNDT, *Germany* Kinji ASAKA, *Japan* Vaclav BOUDA, *Czech Republic* Zhongyang CHENG, *USA* Stephen DUCHARME, *USA* Takeo FURUKAWA, *Japan* Jian Ping GONG, *Japan* Salvatore GRAZIANI, *Italy* Edwin JAGER, *Sweden* Keiichi KANETO, *Japan* Kwang Jin KIM, *USA* Seon Jeong KIM, *Korea* Guggi KOFOD, *Germany* Gih Keong LAU, *Singapore* Doug MacFARLANE, *Australia* Tetsu MITSUMATA, *Japan* Hani E. NAGUIB, *Canada* Siavouche NEMAT-NASSER, *USA* Hidenori OKUZAKI, *Japan* Yoshihito OSADA, *Japan* Toribio F. OTERO, *Spain* Mika PAAJANEN, *Finland* Hoon Cheol PARK, *Korea* Qibing PEI, *USA* Ron PELRINE, *USA* Mohsen SHAHINPOOR, *USA* Herbert SHEA, *Switzerland* Anuvat SIRIVAT, *Thailand* Ji SU, *USA* Frédéric VIDAL, *France* Qiming ZHANG, *USA*

SYMPOSIUM D - Smart and Interactive Textiles

Co-Chairs: Juan HINESTROZA, *USA* George K. STYLIOS, *UK* Xiao-ming TAO, *Hong Kong* *Programme Chair:* Cosimo CARFAGNA, *Italy* *Members:* Domenico ACIERNO, *Italy* Luigi AMBROSIO, *Italy* Sima ASVADI, *The Netherlands* Annalisa BONFIGLIO, *Italy* Guy BUYLE, *Belgium* Paul CALVERT, *USA* Gilsoo CHO, *Korea* Marion ELLWANGER-MOHR, *Germany* Tushar K. GHOSH, *USA* Ana Marija GRANCARIC, *Croazia* Elisabeth HEIMDAL, *Denmark* You-Lo HSIEH, *USA* Sundaresan JAYARAMAN, *USA* James JOHNSTON, *New Zealand* Kap-Jin KIM, *Korea* Seong Hun KIM, *Korea* Vladan KONCAR, *France* Katerina KREBBER, *Germany* Tong LIN, *Australia* Torsten LINZ, *Germany* Jean LUPRANO, *Switzerland* Igor LUZINOV, *USA* Andreas LYMBERIS, *Belgium* Elvio MANTOVANI, *Italy* Heikki MATTILA, *Finland* Jane McCANN, *UK* Uwe MOEHRING, *Germany* François NARBONNEAU, *Belgium* Fernando NUNES FERREIRA, *Portugal* Rita PARADISO, *Italy* Heinrich PLANCK, *Germany* Subbiyan RAJENDRAN, *UK* Seeram RAMAKRISHNA, *Singapore* Nicolas RENAUD, *Spain* Stephen J. RUSSELL, *UK* Laurence SCHACHER, *France* Tahir SHAH, *UK* Thomas STEGMAIER, *Germany* Lieva VAN LANGENHOVE, Belgium Liesbeth VAN PIETERSON, The Netherlands Jan VANFLETEREN, Belgium
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SYMPOSIUM E - Next Generation Micro/Nano Systems

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SYMPOSIUM F - Smart & Adaptive Optics

Co-Chairs: Brian CULSHAW, *UK* Bahram JALALI, *USA* Wenhan JIANG, *China* *Programme Chair:* Giancarlo RIGHINI, *Italy* *Members:* Ady ARIE, *Israel* Hiroshi ASANUMA, *Japan* Anand ASUNDI, *Singapore* Hartmut BARTELT, *Germany* Thomas BIFANO, *USA* Gilberto BRAMBILLA, *UK* Mark L. BRONGERSMA, *USA* John CANNING, *Australia* Sang H. CHOI, *USA* Aaron DANNER, *Singapore* Ben EGGLETON, *Australia* Javier GARCIA DE ABAJO, *Spain* Christophe GORECKI, *France* Alan H. GREENAWAY, *Scotland* Trevor J. HALL, *Canada* Hans Peter HERZIG, *Switzerland* Iam-Choon KHOO, *USA* Joachim R. KRENN, *Austria* Joel KUBBY, *USA* Alexis KUDRYASHOV, *Russia* El-Hang LEE, *Korea* Marian MARCINIAK, *Poland* Fernando MENDOZA SANTOYO, *Mexico* Namkyoo PARK, *Korea* Nasser PEYGHAMBARIAN, *USA* Sergio RESTAINO, *USA* Gérard ROUSSET, *France* Victor RYZHII, *Japan* Angela SEDDON, *UK* Vladimir M. SHALAEV, *USA* Hajime SHOJI, *Japan* Andrea SIMONI, *Italy* Thomas J. SULESKI, *USA* Takunori TAIRA, *Japan* Hwa-Yaw TAM, *Hong Kong* Setsuhisa TANABE, *Japan* Hugo THIENPONT, *Belgium* Din Ping TSAI, *Taiwan* Wim C. VAN ETTEN, *Holland* Anbo WANG, *USA* Diederik WIERSMA, *Italy* Tomasz R. WOLINSKI, *Poland* Ming C. WU, *USA* Nikolay I. ZHELUDEV, *UK*
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SPECIAL SESSION F-7 - Adaptive Optics for Biological Applications

Programme Chair: Joel Kubby, *USA*

CONFERENCE COMMITTEES

SYMPOSIUM G - Emboding Intelligence in Structures and Integrated Systems

Co-Chairs: Fabio CASCIATI, *Italy (Programme Chair)* B.L. (Les) LEE, *USA* Hui LI, *P.R.China* André PREUMONT, *Belgium* *Members:* Lenser AGHALOVIAN, *Armenia* A. Emin AKTAN, *USA* Eduard ARZT, *Germany* Alexander BELYAEV, *Russia* Ayech BENJEDDOU, *France* Christian BOLLER, *Germany* Fu-Kuo CHANG, *USA* Gye-chun CHO, *Korea* Fabrizio DAVI', *Italy* Guido DE ROECK, *Belgium* Andrea DEL GROSSO, *Italy* Lucia FARAVELLI, *Italy* Gerard F. FERNANDO, *UK* Dan M. FRANGOPOL, *USA* Michael I. FRISWELL, *UK* Claus-Peter FRITZEN, *Germany* Yozo FUJINO, *Japan* Ulrich GABBERT, *Germany* Ephrahim GARCIA, *USA* Victor GIURGIUTIU, *USA* Alfredo GÜEMES, *Spain* Anxin GUO, *P.R.China* Jan HOLNICKI-SZULC, *Poland* Daniel J. INMAN, *USA* Hans IRSCHIK, *Austria* Camille ISSA, *Lebanon* Hyungjo JUNG, *Korea* A.Bani-Hani KHALDOON, *Qatar* Jeong-tae KIM, *Korea* Anne S. KIREMIDJIAN, *USA* F. LANZA DI SCALEA, *USA* Ying LEI, *P.R.China* Wei-Hsin LIAO, *Hong Kong* Shih Chi LIU, *USA* Chin-Hsiung LOH, *Taiwan* Xilin LU, *P.R.China* C.S. MANOHAR, *India* Sami MASRI, *USA* Annibale Luigi MATERAZZI, *Italy* Akira MITA, *Japan* Satish NAGARAJAIAH, *USA* Aly S. NAZMY, *UAE* Yi Qing NI, *Hong Kong* Wieslaw OSTACHOWICZ, *Poland* Jinping OU, *P.R.China* Costas PAPADIMITRIOU, *Greece* Seunghee PARK, *Korea* Piervincenzo RIZZO, *USA* José RODELLAR BENEDE, *Spain* Yong-rae ROH, *Korea* Bijan SAMALI, *Australia* Rahmat SHOURESHI, *USA* Hoon SOHN, *Korea* Billie F. SPENCER Jr., *USA* Wieslaw J. STASZEWSKI, *UK* Afzal SULEMAN, *Canada* Costas A. SYRMAKEZIS, *Greece* Liqiong TANG, *New Zealand* Moshe TUR, *Israel* Fabrizio VESTRONI, *Italy* Pennung WARNITCHAI, *Thailand* Chung-Bang YUN, *South Korea* Zhi ZHOU, *P.R.China*

SPECIAL SESSION G-6 - Advances and Challenges in the SHM of Civil and Aerospace Structures

Programme Chair: Piervincenzo RIZZO, *USA*

SYMPOSIUM H - Mining Smartness from Nature

Co-Chairs: Takuzo AIDA, *Japan* ZhenDong DAI, *China* George JERONIMIDIS, *UK* Nadrian C. SEEMAN, *USA* *Programme Chairs:* Nadrian C. SEEMAN, *USA* *Friedrich C. SIMMEL, Germany* *Members:* Robert ALLEN, *UK* Martyn AMOS, *UK* Bharat BHUSHAN, *USA* Vincent BULONE, *Sweden* Jerome CASAS, *France* Wei CHEN, *P.R.China* Mihai CHIRITA, *Romania* Paolo DARIO, *Italy* Dennis E. DISCHER, *USA* Manuel ELICES, *Spain* Peter FRATZL, *Germany* Giuseppina GINI, *Italy* Stanislav N. GORB, *Germany* Yuichi HIRATSUKA, *Japan* Shigeyuki HOSOE, *Japan* Eric JAKOBSSON, *USA* Pasi KALLIO, *Finland* Satoshi KOBAYASHI, *Japan* Sunghoon KWON, *Korea* Akhlesh LAKHTAKIA, *USA* Hao LIU, *Japan* Sylvain MARTEL, *Canada* Raul J. MARTIN-PALMA, *Spain* Constantinos MAVROIDIS, *USA* Fiona MELDRUM, *UK* Carlo MENON, *Canada* Phillip B. MESSERSMITH, *USA* Tsafrir MOR, *USA* Christof M. NIEMEYER, *Germany* Gerald POLLACK, *USA* Yasubumi SAKAKIBARA, *Japan* Mehmet SARIKAYA, *USA* Mitsuhiko SHIONOYA, *Japan* Friedrich C. SIMMEL, *Germany* Uwe B. SLEYTR, *Austria* Lloyd SMITH, *USA* Christina D. SMOLKE, *USA* Shigeru SUNADA, *Japan* Andrew J. TURBERFIELD, *UK* Reidun TWAROCK, *UK* Julian VINCENT, *UK* Joseph WANG, *USA* Daniel WEIHS, *Israel* Marc WEISSBURG, *USA* Itamar WILLNER, *Israel* Hao YAN, *USA* Byoung-Tak ZHANG, *Korea* Di ZHANG, *P.R.China*

SPECIAL SESSION H-7 - Biomimetic Flow Control in Aquatic and Aerial Systems and its Application to Bioinspired Autonomous Vehicles

Programme Chair: Luca SCHENATO, *Italy*

SYMPOSIUM I - Progress in Wearable/Wireless and Implantable Body Sensor Networks for Healthcare Applications

Co-Chairs: Dermot DIAMOND, *Ireland (Programme Chair)* Toshiyo TAMURA, *Japan* Vijay V. VARADAN, *USA* Guang-Zhong YANG, *UK* *Members:* Roger ARMITAGE, *UK* M.T. ARREDONDO W., *Spain* I. BALASINGHAM, *Norway* Dinesh BHATIA, *USA* Paolo BONATO, *USA* Dongyi CHEN, *P.R.China* Hui CHEN, *USA* Lorenzo CHIARI, *Italy* Wan-Young CHUNG, *Korea* Giovanni DE MICHELI, *Switzerland* Danilo DE ROSSI, *Italy* Eryk DUTKIEWICZ, *Australia* Thomas FALCK, *The Netherlands* Joerg HABETHA, *The Netherlands* Robert ISTEPANIAN, *UK* Emil JOVANOV, *USA* John LACH, *USA* Insup LEE, *USA* S. LEONHARDT, *Germany* Paul LUKOWICZ, *Germany* M. MARSCHOLLEK, *Germany* Eric McADAMS, *France* Mehran MEHREGANY, *USA* Kwang Suk PARK, *Korea* Niilo SARANUMMI, *Finland* Majid SARRAFZADEH, *USA* Mohamad SAWAN, *Canada* Wee SER, *Singapore* William C. TANG, *USA* Chris VAN HOOF, *Belgium* A. VASILAKOS, *Greece* Peter VELTINK, *The Netherlands* Lei WANG, *China*

SYMPOSIUM J - Biomedical Applications of "Smart" Technologies

Co-Chairs: François A. AUGER, *Canada* Kazunori KATAOKA, *Japan* Robert N. MULLER, *Belgium* Thomas J. WEBSTER, *USA* *Programme Chair:* E. Pasquale SCILINGO, *Italy* *Members:* Silvio AIME, *Italy* Toshihiro AKAIKE, *Japan* Cameron ALEXANDER, *UK* Anthony J. ATALA, *USA* Yoshinobu BABA, *Japan* Rolando BARBUCCI, *Italy* Yilin CAO, *P.R.China* Patrick COUVREUR, *France* Tejal DESAI, *USA* Sandra DOWNES, *UK* Jennifer H. ELISSEEFF, *USA* Antoine FERREIRA, *France* Aaron FLEISCHMAN, *USA* Robert A. FREITAS Jr., *USA* Yasuhisa FUJIBAYASHI, *Japan* Rogerio GASPAR, *Portugal* Juri GELOVANI, *USA* Norbert GRETZ, *Germany* J. Zach HILT, *USA* Jari HYTTINEN, *Finland* Koji IKUTA, *Japan* Esmaiel JABBARI, *USA* Ming JIANG, *China* David S. JONES, *UK* Bengt KASEMO, *Sweden* Ick Chan KWON, *Korea* Vinod LABHASETWAR, *USA* Robert LANGER, *USA* Feng-Huei LIN, *Taiwan* Nigel LOVELL, *Australia* Atsushi MARUYAMA, *Japan* Takeo MATSUMOTO, *Japan* Klaas NICOLAY, *Holland* Konstantina S. NIKITA, *Greece* Vasilis NTZIACHRISTOS, *Germany* Kinam PARK, *USA* Josep A. PLANELL, *Spain* Buddy D. RATNER, *USA* Michael L. REED, *USA* Michael S. SACKS, *USA* David SAMPSON, *Australia* Francesco STELLACCI, *Italy* Samuel I. STUPP, *USA* Maryam TABRIZIAN, *Canada* Vladimir P. TORCHILIN, *USA* Valery TUCHIN, *Russia* Pankaj VADGAMA, *UK* Janos VOROS, *Switzerland* Anthony WEISS, *Australia* Carsten WERNER, *Germany* Jackie YING, *Singapore* Nobuhiko YUI, *Japan* Christiane ZIEGLER, *Germany*

Sessions Timetable

Sunday June 10

11.00-13.00 15.00-19.00
REGISTRATION
Palazzo dei Congressi
Via Amendola, 2
Montecatini Terme, Pistoia, Italy

15.00-19.00
POSTER MOUNTING

Monday June 11

Morning

10.15-13.00
Opening Session
Welcome Address
Plenary Lectures (PL-1 - PL-3)

Afternoon: 15.00-19.30

Symposium A	(A-6.1:IL01-IL05) (A-6.1:IL06-L09)
	(A-12.1:IL01-L05) (A-12.1:IL06-L09)
	(A-13:KL; A-13.5:IL01-L03) (A-13.1:IL01-L04)
	(A-14.1:IL01-L05) (A-14.1:IL06-L10)
	(A-15.1:IL01-IL04) (A-15.1:L05-L09)
Symposium B	(B-1:IL01-IL04) (B-2:IL01-IL04)
Symposium C	(C:KL; C-1:IL01-IL02) (C-1:IL03-L07)
Symposium D	(D-1:IL01-L05) (D-1:IL06-L09)
Symposium E	(E:KL; E-9:IL01-IL02) (E-1:IL01-IL04)
Symposium F	(F-1:IL01-IL04) (F-1:IL05-L08)
Symposium G	(G-1:IL01-IL04) (G-1:IL05-IL07)
Symposium H	(H:KL; H-1:IL01-IL03) (H-1:IL05-IL06) (H-4:IL05)
Symposium I	(I-1:IL01-L04) (I-2:IL01-L04)
Symposium J	(J-1:IL01-IL04) (J-1:IL05-L08)

8.30-13.00
15.00-19.00
POSTER MOUNTING

21.30-23.30
Opening Concert
Teatro Verdi

Tuesday June 12

Morning: 8.30-13.00

Symposium A	(A-1.1:IL01-IL04) (A-1.1:L05-L10) (A-6.1:IL10-IL12) (A-6.2:IL01-L06)
	(A-10:IL01-L04) (A-10:IL05-L07)
	(A-12.2:IL01-IL04) (A-12.2:IL06-L08)
	(A-13.1:IL05-L09) (A-13.2:IL01-IL03)
	(A-14.1:IL11-L15) (A-14.2:IL01-L05)
Symposium B	(B-1:IL05-L08) (B-2:IL05-IL08)
Symposium C	(C-1:IL08-L12) (C-1:IL13:L16)
Symposium D	(D-1:IL10-IL13) (D-2:IL01-L05)
Symposium E	(E-2:IL04-L08) (E-5:IL01-IL03) (E-8:IL03)
Symposium F	(F-1:IL09-L12) (F-2:IL01-L05)
Symposium G	(G-2:IL01-IL04) (G-2:IL05-L09)
Symposium H	(H-1:IL07-L11) (H-2.1:IL01-IL03) (H-2.1:L11-L16)
	(H-7:IL01-L04)
Symposium I	(I-1:IL05-L09)
Symposium J	(J-1:IL09-L13) (J-2:IL01-IL04)

Afternoon: 15.00-19.30

Symposium A	(A-1.1:IL11-L15) (A-1.1:L19-L23) (A-6.1:L13-L18) (A-6.2:IL07-L12)
	(A-10:IL08-IL10)
	(A-12.2:IL09-L12) (A-12.4:IL02-L04)
	(A-13.2:IL04-L07)
	(A-14.2:IL06-L12) (A-14.3:IL01-L02) (A-14.1:L03)
	(A-15.2:IL01-L05) (A-15.5:IL01-L04)
Symposium B	(B-2:IL09-L12) (B-3:IL01-IL05)
Symposium C	(C-2:IL01-L05) (C-2:IL06-L09)
Symposium D	(D-1:L14-L16) (D-2:IL06-L10)
Symposium F	(F-2:IL06-L11) (F-3:IL01-L04)
Symposium G	(G-1:L08-L13) (G-3:L13-L18) (G-4:IL01-IL07)
Symposium H	(H-2.1:IL04-IL07b) (H-2.1:IL08-IL10)
	(H-7:IL09-L12) (H-7:IL13-L16)
Symposium I	(I-2:IL05-IL06) (I-3:KL; I-3:IL01-IL04)
Symposium J	(J-2:IL05-L07) (J-3:IL01-IL04)

Wednesday June 13

Morning: 8.30-13.00

Symposium A	(A-1.1:IL16-IL18) (A-2:IL01-L05) (A-4:IL01-L07) (A-6.1:IL19-L22) (A-10:IL11-L14) (A-10:IL15-L17) (A-11.1:IL01-IL03) (A-11.1:IL07-L09) (A-12.1:L10-L12) (A-12.3:IL01-L06) (A-13.2:IL08-L11) (A-13.3:IL01-L04) (A-15.3:IL01-L06) (A-15.4:IL01-L04)
Symposium B	(B-3:IL06-IL09) (B-4:IL01-IL02) (B-5:IL01-IL02)
Symposium D	(D-3:IL01-L05) (D-3:IL06-L10)
Symposium E	(E-2:IL01-IL03) (E-4:IL01-L05)
Symposium F	(F-4:IL01-IL04) (F-4:IL05-L08)
Symposium G	(G-3:IL01-IL04) (G-3:IL05-IL08)
Symposium H	(H-3:IL01-L04b) (H-4:IL01-L04) (H-7:IL05-L08) (H-7:IL17-L19)
Symposium I	(I-4:IL01-IL03) (I-4:IL04-L07)
Symposium J	(J-3:IL05-L09) (J-4:IL01-L05)

Afternoon: 15.00-19.30

Symposium A	(A-1.2:IL02-L04) (A-1.2:IL05-L07) (A-2:IL06-L09) (A-2:IL10-L13) (A-5.1:IL01-L04) (A-5.2:IL01-IL03) (A-11.1:IL04-L06) (A-11.2:IL01-L05) (A-12.4:IL05-IL07) (A-12.4:IL08-L10) (A-13.3:IL05-L09)
Symposium B	(B-1:L09-L13) (B-2:L13-L18) (B-5:IL03-L06)
Symposium C	(C-3:IL01-L04) (C-3:IL05-L10)
Symposium D	(D-3:IL11-L15) (D-3:IL16-L20)
Symposium E	(E-3:IL01-L03) (E-6:IL01-IL05)
Symposium G	(G-3:IL09-IL12) (G-3:L20-L21) (G-6:IL01-L05)
Symposium H	(H-2.2:IL01-L06) (H-3:L05-L11) (H-5:IL01-IL03)
Symposium J	(J-3:L10-L11) (J-4:IL06-L09) (J-5:IL01-L03)

21.30-23.30 *Concert by "Caffé Concerto Strauss"*
Palazzo dei Congressi - Auditorium

Thursday June 14

Morning: 8.30-13.00

Symposium A	(A-7:IL01-L05) (A-7:IL06-L10) (A-8:IL01-IL03) (A-8:IL04-L08) (A-11.3:IL01-IL03) (A-11.4:IL01-L04) (A-12.5:IL01-IL03) (A-12.6:IL01-L04) (A-13.3:IL10-L13) (A-13.4:IL01-L05) (A-15.6:IL01-IL04) (A-15.6:L05-L07)
Symposium B	(B-6:IL01-IL04) (B-6:IL05-L09)
Symposium D	(D-3:IL21-L25) (D-3:IL26-L29)
Symposium E	(E-7:IL01-L05) (E-7:IL06-L10)
Symposium F	(F-6:IL01-IL03) (F-7:IL01-IL04)
Symposium G	(G-5:IL01-IL04) (G-5:IL05-L09)
Symposium H	(H-4:IL06-IL08) (H-4:IL09-L12)
Symposium I	(I-4:IL08-IL10) (I-5:IL01-L04)
Symposium J	(J-5:IL04-L08) (J-5:IL09-L13)

Afternoon: 15.00-19.45

Symposium A	(A-2:IL14-IL15) (A-3:IL01-L03) (A-5.2:IL05-L08) (A-11.3:IL04-L05) (A-11.5:IL01-L03) (A-12.6:IL05-L08) (A-15.7:IL01-L03) (A-15.7:IL04-L08)
Symposium B	(B-2:L19-L24) (B-3:L10-L14) (B-3:L15-L19)
Symposium C	(C-2:IL10-L13) (C-4:IL01-L03)
Symposium E	(E-8:IL01-IL04)
Symposium F	(F-5:IL01-IL03) (F-7:IL05-IL06)
Symposium G	(G-6:IL06-L10) (G-6:L11-L13)
Symposium H	(H-6:IL01-L05)
Symposium I	(I-5:IL05-IL06)
Symposium J	(J-6:IL01-L06)

18.30-19.45
POSTER DISCUSSION

21.00-23.30
Conference Dinner
Lidò Le Panteraie

Code Number of contributions by Presenting Author
(in alphabetical order)

The Code Number X-Y:W00 includes: X Symposium; Y Session; W Type of presentation (PL, KL, IL, L, P)*; 00 Paper number

* PL Plenary KL Key-Note IL Invited Lecture L Contributed Lecture P Poster presentation

NOTE: Due to the restructuring of some symposia, the session number included in the Code may differ from the one selected by the Presenting Author in the Abstract Submission Form.

SCIENTIFIC PROGRAMME

4th International Conference
SMART MATERIALS, STRUCTURES AND SYSTEMS

OPENING SESSION

Plenary Lectures

PL-1 **Report on the 2011 off the Pacific Coast Tohoku Earthquake: Its Impact and Control/Monitoring Performances**
A. NISHITANI
Waseda University, Tokyo, Japan

PL-2 **MEMS Sensors and Actuators: From Actual Market Explosion to New Frontiers**
B. MURARI
ST Microelectronics, Agrate Brianza, Italy

PL-3 **DNA: Not Merely the Secret of Life**
N.C. SEEMAN
Department of Chemistry, New York University, New York, NY, USA

SYMPOSIUM A
ADAPTIVE, ACTIVE AND MULTIFUNCTIONAL SMART MATERIALS SYSTEMS

Oral Presentations

Session A-1
Smart Inorganic Materials Systems

A-1.1 Electroceramics

A-1.1:IL01 **Multifunctional Thin Films and Heterostructures by MOCVD and Combined Chemical Routes**
F. WEISS, A. BARTASYTE, C. JIMENEZ, J.L. DESCHANVRES, E. SARIGIANNIDOU, M. AUDIER, S. PIGNARD, J. KREISEL, V. CONSONNI, G. REY, E. PUYOO, G. GIUSTI, D. BELLET, LMGP - Grenoble INP - CNRS - Minatec, Grenoble, France

A-1.1:IL02 **Unusual Higher Order Coupling in Piezoelectric and Ferroelectric Materials**
W.S. OATES, Department of Mechanical Engineering Florida A&M/Florida State University Tallahassee, FL, USA

A-1.1:IL03 **High Strain Lead-free Piezoelectric Thick Films**
JIWEI ZHAI[1], FANG FU[1], ZHENGKUI XU[2], XI YAO[1], [1]Functional Materials Research Laboratory, Tongji University, Shanghai, China; [2]Department of Physics and Materials Science, City University of Hong Kong, Hong Kong

A-1.1:IL04 **Charge Density Studies of Piezoelectric Ceramics: Characteristic Chemical Bonding and Thermal Motion**
Y. KUROIWA, Department of Physical Science, Hiroshima University, Kagamiyama, Higashi-Hiroshima, Hiroshima, Japan

A-1.1:L05 **Impact of Sputter Deposition Parameters on the Leakage Current Behaviour of Aluminum Nitride Thin Films**
M. SCHNEIDER, T. STRUNZ, A. BITTNER, U. SCHMID, Vienna University of Technology, Institute of Sensor and Actuator Systems, Vienna, Austria

A-1.1:L06 **Study of Piezoelectric Actuation in Flexible AlN Cantilevers**
S. PETRONI, M. AMATO, Center for Biomolecular Nanotechnologies @UNILE, Istituto Italiano di Tecnologia, Arnesano (LE), Italy; G. MARUCCIO, F. GUIDO, M. DEVITTORIO, Dip. Ingegneria dell'Innovazione of Università del Salento, Lecce, Italy; M.T. TODARO, A. CAMPA, A. PASSASEO, National Nanotechnology Laboratory of CNR-INFM, Lecce, Italy

A-1.1:L07 **Highly Piezoelectric Biocompatible and Soft Composite Fibers**
J. MORVAN[2], E. BUYUKTANIR[1, 3], J.L. WESTAD[1, 2], **A. JÁKLI**[1, 2], [1]Liquid Crystal Institute, Kent State University, Kent, OH, USA; [2]Chemical Physics Interdisciplinary Program, Kent State University, Kent, OH, USA; [3]Department of Chemistry, Stark State College, North Canton, OH, USA; [4]Department of Chemistry, Kent State University, Kent, OH, USA

A-1.1:L08 **Phase Formation, Microstructure and Dielectric Properties of Sol-bonded PZTN-PZT Ceramics**
C. SANGSUBUN[1], A. WATCHARAPASORN[2], S. JIANSIRISOMBOON[2]; [1]Department of Physics, Faculty of Science, Thaksin University, Thailand; [2]Department of Physics, Faculty of Science, Chiang Mai University, Thailand

A-1.1:L09 **Dielectric and Ferroelectric Analysis of Nanoparticle/ Nanocrystalline Barium Titanate and PLZT for use in Smart Inorganic Materials Systems**
C.B. DIANTONIO, T. MONSON, M.R. WINTER, T.P. CHAVEZ, P. YANG, Sandia National Laboratories, Albuquerque, NM, USA

A-1.1:L10 **Controlled Assembly of Two-dimensional Oxide Nanosheets for Tailored Dielectric Materials**
M. OSADA, T. SASAKI, International Center for Materials Nanoarchitectonics, National Institute for Materials Science, Tsukuba, Japan, & CREST, Japan Science and Technology Agency (JST), Japan

A-1.1:IL11 **Flexoelectric Materials, Structures and Sensing Applications**
XIAONING JIANG, North Carolina State University, Raleigh, NC, USA

A-1.1:IL12 **Integrated Piezoelectrics for Adaptive Microsystems - Teamwork of Substrate and Piezo**
S. GEBHARDT, Fraunhofer Institute for Ceramic Technologies and Systems, Dresden, Germany

A-1.1:IL13 **Dielectric Anisotropy as an Additional Tunability of Ferroelectric Based Composites**
M. MAGLIONE, **C. ELISSALDE**, D. BERNARD, U.C. CHUNG, ICMCB-CNRS, Université Bordeaux I, Pessac, France; C. ESTOURNES- CIRIMAT et Plateforme Nationale CNRS de Frittage Flash, PNF2 MHT, Université Paul Sabatier, Toulouse, France

A-1.1:L14 **Heteroepitaxy and Characterization of Perovskite Titanate Thin Films Grown on III-V Semiconductor**
Z.B. YANG, G.Y. GAO, J.H. HAO, Department of Applied Physics, Hong Kong Polytechnic University, Hong Kong, P.R. China

A-1.1:L15 **Development of Semiconductor GaAs Compatible Ferroelectric Devices for Monolithic Integration Technology**
JIANHUA HAO, W. HUANG, X.H. WEI, Z.B. YANG, Department of Applied Physics, The Hong Kong Polytechnic University Hung Hom, Hong Kong, P.R. China

A-1.1:IL16 **Modeling of 3D Magnetostrictive Systems with Application to Galfenol and Terfenol-D Actuators**
M. DAPINO, The Ohio State University, Department of Mechanical and Aerospace Engineering, Columbus, OH, USA; S. CHAKRABARTI, Cummins Inc., Columbus, IN, USA

A-1.1:IL17 **Magnetic and Dielectric Properties of EuTiO3 Thin Film under Strain**
K. TANAKA, Department of Material Chemistry, Graduate School of Engineering, Kyoto University, Kyoto, Japan

A-1.1:IL18 **First-principles Study of New Multiferroic Perovskite Oxides**
O. DIEGUEZ, J. INIGUEZ, ICMAB-CSIC Campus de la UAB, Bellaterra, Spain

A-1.1:L19 **Development of Simple-structured, Magnetostrictive Ring-type Torque Sensor Unit in Automobile Technology**
Y. FURUYA[1], M. SHIMADA[2], T. OKAZAKI[1], C. SAITO[3], M. NAKAMURA[3], K. SUNAGAWA[3], [1]Faculty of Science and Technology, Hirosaki University, Hirosaki, Japan; [2]North Japan Research Institute for Sustainable Energy (NJRISE), Hirosaki University, Aomori, Japan; [3]Namiki Precision Jewel Co., Ltd., Tokyo, Japan

A-1.1:L20 **Metastability Induced by Currents/Fields in Epitaxial Thin Films of Perovskite Manganites**
J. GAO, Department of Physics, The University of Hong Kong, P.R. China

A-1.1:L21 **Dielectric and Ferromagnetic Properties of NaKLiSbNbO3/NiZnFe2O4 Composites**
R. RANI[1], S. SHARMA[1], N.K.P. SINHA[1], R. RAI[2], [1]Ferroelectric Research Laboratory, Dept. of Physics, A N College, Patna, India; [2]Dept. of Ceramics and Glass Engineering and CICECO, University of Aveiro, Aveiro, Portugal

A-1.1:L22 **Rewritable Magnetic Patterning and its Application Based on Hydrogen Mediated Ferromagnetism**
SEUNGHUN LEE, WON-KYUNG KIM, Jl-HUN PARK, YONG CHAN CHO, H. KOINUMA, SE-YOUNG JEONG, Dept. of Cogno-mechatronics Engineering, Pusan National University, South Korea

A-1.1:L23 **Structure and Properties of High-pressure-manufactured MgB_2-based Superconductors for Smart Applications**
T.A. PRIKHNA[a], W. GAWALEK [b], V.E. MOSHCHIL[a], V. SOKOLOVSKY[c], M. EISTERER[d], H.W. WEBER[d], J. NOUDEM[e], X. CHAUD[f], A. KOZYREV[a], M.V. KARPETS[a,g], V.V. KOVYLAEV[g], S.N. DUB[a], V.B. SVERDUN[a], [a]Institute for Superhard Materials of the National Academy of Sciences of Ukraine, Kiev, Ukraine; [b]Institut für Photonische Technologien, Jena, Germany; [c]Ben-Gurion University of the Negev, Beer-Sheva, Israel; [d]Atominstitut, Vienna University of Technology, Vienna, Austria; [e]CNRS/CRISMAT/ISMRA, NRS UMR 6508, Caen, France; [f]CNRS/CRETA, Grenoble Cedex, France; [g]Institute for Problems in Material Science of the National Academy of Sciences of Ukraine, Kiev, Ukraine

A-1.2 Biologically, Chemically and Environmentally Responsive Inorganic Materials

A-1.2:IL02 **Light-switchable Nanoparticles**
R. KLAJN, S. DAS, Department of Organic Chemistry, Weizmann Institute of Science, Rehovot, Israel

A-1.2:L03 **Towards Molecular Recognition by Smart Multifunctional Mesoporous Silica Microdot Arrays through the Combination of Ink-jet Printing, EISA and Click Chemistry**
O. DE LOS COBOS, M. LEJEUNE, F. ROSSIGNOL, SPCTS, Centre Européen de la Céramique, Limoges, France; C. CARRION, Plateforme Cytométrie-Imagerie-Mathématiques, Faculté de Médecine, Limoges Cedex, France; C. BOISSIERE, F. RIBOT, C. SANCHEZ, LCMCP, Universite Pierre et Marie Curie Paris VI, College de France, Paris Cedex, France; X. CATTOEN, M. WONG CHI MAN, J-O. DURAND, ICGM, Montpellier, France

A-1.2:L04 **Metallic Electrolyte Composites in the Framework of the Brick-layer Model**
H. LUSTFELD, PGI-1 Forschungszentrum Juelich, Juelich, Germany; C. PITHAN, PGI-7 Forschungszentrum Juelich, Juelich, Germany; M. REISSEL, Fachhochschule Aachen, Abteilung Juelich, Juelich, Germany

A-1.2:IL05 **Smart Luminescent Microporous Materials**
J. ROCHA, University of Aveiro, CICECO, Department of Chemistry, Aveiro, Portugal

A-1.2:IL06 **Nanostructured Vanadium Oxide Films Made by Liquid Phase Deposition: Morphology, Structure and Optical Property Control**
M. ES-SOUNI, R. MINCH, Institute of Materials & Surface Technology, University of Applied Sciences Kiel, Kiel, Germany

A-1.2:L07 **Active Metallic Nanostructures**
T.J. BASTOW, A.J. HILL, C.R. HUTCHINSON, CSIRO Materials Science and Engineering & Process Science and Engineering, Clayton South MDC, Victoria, Australia

Session A-2
Stimuli Responsive Polymers and Gels

A-2:IL01 **Biologically Stimuli-responsive Hydrogels that Recognize Target Biomolecules**
T. MIYATA, Department of Chemistry and Materials Engineering, Kansai University, Suita, Osaka, Japan

A-2:IL02 **Toward Autonomic Response: Self-oscillating Gels**
O. KUKSENOK, Chemical Engineering Department, University of Pittsburgh, Pittsburgh, PA, USA

A-2:L03 **Monitoring the Swelling/Deswelling of Stimuli-responsive Hydrogels with Magneto-resistive Methods**
K.-F. ARNDT, Physical Chemistry of Polymers, TU Dresden, Dresden, Germany; I. MOENCH, IFW Dresden, Dresden, Germany

A-2:L04 **Non-homogeneous and Anisotropic Swelling of Polymer Gels**
P. NARDINOCCHI, A. LUCANTONIO, University of Rome "La Sapienza", Italy; L. TERESI, University of Roma Tre, Italy

A-2:L05 **Recent Progress in Flexible Screen-printed Ion-selective Sensors for Environmental and Wearable Applications**
G. MATZEU, C. ZULIANI, D. DIAMOND, CLARITY Centre for Sensor Web Technologies, NCSR, Dublin City University, Dublin, Ireland

A-2:IL06 **Nanocomposite Hydrogels (NC gels) with Excellent Optical, Mechanical and Stimuli-responsive Properties**
K. HARAGUCHI, Kawamura Institute of Chemical Research, Sakura, Chiba, Japan

A-2:IL07 **Self-assembled Smart Gels for the Needs of Oil Recovery**
O. PHILIPPOVA, V. MOLCHANOV, A. KHOKHLOV, Physics Department, Moscow State University, Moscow, Russia

A-2:IL08 **Hydrogel Sensors for Process Monitoring**
M. WINDISCH, Dresden University of Technology, Faculty of Electrical Engineering and Information Technology, Germany; T. JUNGHANS, Dresden University of Technology, Dept of Chemistry and Food Chemistry, Germany

A-2:IL09 **Multi-responsive Hydrogels for Sensing Applications from Thiolactone Functionalized Polymers**
S. REINICKE, P. ESPEEL, J. VANNEVEL, R. HOOGENBOOM, F. DU PREZ, University of Ghent, Ghent, Belgium

A-2:IL10 **Synthetic Polymers with Controlled Primary Structures: Design, Folding and Function**
J.-F. LUTZ, Institut Charles Sadron, Strasbourg, France

A-2:L11 **Development of Ultra Sensitive Strain Sensors Based on All-organic Flexible Thin-films**
C. ROVIRA, E. LAUKHINA, R. PFATTNER, L. FERRERAS, M. MAS-TORRENT, V. LAUKHIN, J. VECIANA, Institut de Ciència de Materials de Barcelona (CSIC) and Networking Research Center on Bioengineering, Biomaterials and Nanomedicine, Bellaterra, Spain

A-2:L12 **Electro-responsive Hybrid Nanocomposites and Precision Focused Ion Beam Manufacturing**
B. XU[1, 2], **Y.Q. FU**[1, 3], J.N. SUN[1], L. ZHANG[1], Y.T. PEI[4], J.K. LUO[5], S.W. TAO[2], A. KRAFT[2], R.L. REUBEN[2], J.TH.M. DE HOSSON[4], [1]School of Engineering and Physical Sciences, Heriot-Watt University, Edinburgh, UK; [2]Dept. of Polymer Science and Engineering, University of Massachusetts, Amherst, MA, USA; [3]Thin Film Centre, University of West of Scotland, Paisley, Scotland, UK; [4]Dept. of Applied Physics, The Netherlands Materials Innovation Inst., University of Groningen, Nijenborgh, Groningen, The Netherlands; [5]Center for Materials Research & Innovation, University of Bolton, UK

A-2:L13 **Synthesis of Polyaniline Copolymers on Carbon Electrode for a Biosensor Application**
S. MUTLU, Hacettepe University, Faculty of Engineering, Department of Chemical Engineering, Beytepe, Ankara, Turkey; H. ÇATALKAYA, **D. TAYKOZ**, A. HANCI, U. SAÇAK, Hacettepe University, The Institute for Pure and Applied Sciences, Beytepe, Ankara, Turkey

A-2:IL14 **Noncovalent Self-assembly of Multifunctional Supramolecules in Aqueous Media**
B. RYBTCHINSKI, Dept. Organic Chemistry, Weizmann Institute of Science, Rehovot, Israel

A-2:IL15 **Stimuli-responsive Polymer Brushes for Sensing Applications and Protein Adsorption**
M. STAMM, Leibniz-Institut für Polymerforschung Dresden, Germany

Session A-3
Auxetic Materials

A-3:IL01 **Toward Auxetic Shape Memory Liquid Crystalline Elastomers**
W. REN. P.J. MCMULLAN, W.M. KLINE, **A.C. GRIFFIN**, School of Materials Science & Engineering, Georgia Institute of Technology, Atlanta, GA, USA

A-3:IL02 **The Use of Auxetic Materials in Smart, Gradient and Multifunctional Systems**
A. ALDERSON, Institute for Materials Research and Innovation, University of Bolton, Bolton, UK

A-3:L03 **Auxetic Foam Pads: Experiments and Parameters Identification**
M. GRAVADE, M. OUISSE, **M. COLLET**, FEMTO-ST Applied Mechanics, Besançon, France; F. SCARPA, M. BIANCHI, Advanced Composites Centre for Innovation and Science, Bristol, UK

Session A-4
Electrorheological and Magnetorheological Fluids

A-4:IL01 **ER Fluids for Microfluidic Applications**
WEIJIA WEN, Department of Physics, The Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong

A-4:IL02 **Novel Adaptive Damping Systems Based on Magneto-rheological Fluids**
H. BÖSE, Fraunhofer-Institut für Silicatforschung ISC, Würzburg, Germany

A-4:L04 **Rheology of Alimentary Oil-based Magnetorheological Fluids**
J. BERASATEGUI[1], M. MORAL[2], E. ARREGI[3], M.T. LÓPEZ-LÓPEZ[2], M.J. ELEJABARRIETA[1], J.D.G. DURÁN[2], M.M. BOU-ALI[1], [1]Faculty of Engineering, Mondragon Unibertsitatea, Arrasate-Mondragón, Spain; [2]Dept. of Applied Physics, Faculty of Sciences, University of Granada, Campus de Fuentenueva, Granada, Spain; [3]Fagor Electrodomésticos, Arrasate-Mondragón, Spain

A-4:L06 **A Model Reference Adaptive Control of a Magnetorheological Fluid Brake**
R. RUSSO, **M. TERZO**, Department of Mechanics and Energetics, University of Naples "Federico II", Italy

A-4:L07 **Modeling and Analysis of the Electrorheological Fluids (Suspension Flow) with Aligned-Structure Reformation**
YOUNGWOOK SEO[1], HYOUNG JIN CHOI[2], **YONGSOK SEO**[1], [1]School of Materials Science & Eng., College of Engineering, Seoul National University, Seoul, Korea; [2]Inha University, Incheon, Korea

Session A-5
Luminescent and Chromogenic Materials Systems

A-5.1 Luminescent Materials

A-5.1:IL01 **Plasmonically Controlled Lasing Oscillation with Metallic-dielectric Core-shell Nanoparticles**
K. FUJITA, Department of Material Chemistry, Graduate School of Engineering, Kyoto University, Kyoto, Japan

A-5.1:IL02 **Luminescent Organic Nanofibers**
J. KJELSTRUP-HANSEN, L. TAVARES, P.B.W. JENSEN, H.-G. RUBAHN, NanoSYD, Mads Clausen Institute, University of Southern Denmark, Soenderborg, Denmark

A-5.1:IL03 **Photoresponsive Inorganic Materials**
SHIN-ICHI OHKOSHI, Department of Chemistry, School of Science, The University of Tokyo, Tokyo, Japan; and JST, CREST, Tokyo, Japan

A-5.1:L04 **Preparation of Optoelectronics Glass Using Mesoporous SiO2/PVA**
S. FUJINO, K. NAGANO, H. IKEDA, T. KAJIWARA, Kyushu University, Fukuoka, Japan

A-5.2 Chromogenic Material Systems

A-5.2:IL01 **Electrochromism of Nanocrystal-based Metal Oxide Films**
G. GARCIA, A. LLORDES, R. BUONSANTI, R.J. MENDELSBERG, E.L. RUNNERSTROM, **D.J. MILLIRON**, Lawrence Berkeley National Laboratory and University of California, Berkeley, CA, USA

A-5.2:IL02 **Advanced Photochromic Hybrid Materials**
R. PARDO, M. ZAYAT, **D. LEVY**, ICMM-CSIC, Cantoblanco, Madrid, Spain

A-5.2:IL03 **Chromogenic Windows**
C.G. GRANQVIST, Department of Engineering Sciences, The Ångström Laboratory, Uppsala University, Uppsala, Sweden

A-5.2:IL05 **Nanostructured VO2 Films for Smart Management of Solar Heat**
YANFENG GAO, LITAO KANG, ZONGTAO ZHANG, ZHANG CHEN, LEI DAI, CHUANXIANG CAO, JING DU, HONGJIE LUO, MINORU KANEHIRA, Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, China

A-5.2:IL06 **Dynamic Coloration Enabled by Polymer/Cholesteric Liquid Crystal Composites**
M.E. McCONNEY, M. DUNING, L. NATARAJAN, V.P. TONDIGLIA, T.J. WHITE, T.J. BUNNING, Air Force Research Laboratory, Materials and Manufacturing Directorate, WPAFB, OH, USA

A-5.2:IL07 **Thermotropic Materials for Adaptive Solar Control**
R. RUHMANN, A. SEEBOTH, O. MUEHLING, D. LOETZSCH, Fraunhofer Institute for Applied Polymer Research, Berlin, Germany

A-5.2:L08 **Modeling, Preparation and Characterization of New Fluorophores for Smart Polymer Composite Films**
G. RUGGERI[1], A. PUCCI[1], F. BELLINA[1], M. LESSI[1], L. CARTA[2], C. CAPPELLI[1,2], G. PRAMPOLINI[2], V. BARONE[2], [1]Dept. of Chemistry and Industrial Chemistry, University of Pisa, Pisa, Italy; [2]Scuola Normale Superiore, Pisa, Italy

Session A-6
Multifunctional Materials, Composites and Active Hybrid Materials Systems

A-6.1 Multifunctional Materials, Hybrids and Nanocomposites

A-6.1:IL01 **Bottum up Strategies to Nanostructured and Hierarchically Structured Functional Solids**
C. SANCHEZ, Laboratoire de Chimie de la Matière Condensée de Paris, CNRS, Université Pierre et Marie Curie, Collège de France, Paris, France

A-6.1:IL02 **Nano-enabled Soft Materials for Energy Storage and Energy Conversion**
Z. OUNAIES, Penn State University, University Park, PA, USA

A-6.1:L03 **Sol-gel Derived Multifunctional Layered Hybrid Films for Anti-corrosive Coating**
C. URATA, D.F. CHENG, A. HOZUMI, National Institute of Advanced Industrial Science and Technology (AIST), Nagoya, Japan

A-6.1:L04 **Bio-nanohybrid Materials Based on Clays and Phospholipids as Biomimetic Cell Membranes**
B. WICKLEIN, **P. ARANDA**, M. DARDER, E. RUIZ-HITZKY, Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain

A-6.1:IL05 **Smart Morphology Control of Metal Oxide Nano/Micro-crystals in Aqueous Solution**
Y. MASUDA, National Institute of Advanced Industrial Science and Technology (AIST), Nagoya, Japan

A-6.1:IL06 **Polymer Nanocomposites for Functional Applications**
F. FAUPEL, V. ZAPOROJTCHENKO, T. STRUNSKUS, Christian-Albrechts University at Kiel, Institute for Materials Science - Multicomponent Materials, Kiel, Germany; M. ELBAHRI, Christian-Albrechts University at Kiel, Institute for Materials Science -Nanochemistry and Nanoengineering, Kiel, Germany and Institute of Polymer Research, Helmholtz-Zentrum Geesthacht, Geesthacht, Germany

A-6.1:IL07 **Smart Multifunctional Adhesive Nanomaterials Based on Interpolymer Complexes for Innovative Medical and Industrial Applications**
M.M. FELDSTEIN, A.R. KHOKHLOV, A.N. Nesmeyanov Institute of Organoelement Compounds, Russian Academy of Sciences, Moscow, Russia

A-6.1:L08 **New Silver Chloride - Silver Hybrid Polymers with Nylon and Polyurethane Showing Enhanced Antimicrobial and Photocatalytic Properties**
M. PARRY, J.H. JOHNSTON, School of Chemical and Physical Sciences, Victoria University of Wellington, Wellington, New Zealand

A-6.1:L09 **Fabrication of Carbon Nanotube-alumina Composite and Coating with Graphite Film**
M. OMORI, G. YAMAMOTO, K. SHIRASU, T. HASHIDA, Graduate School of Mechanical Engineering, Tohoku University, Sendai, Japan

A-6.1:IL10 **Nanoclays as Smart Precursors of Advanced Biohybrid Materials**
E. RUIZ-HITZKY, Instituto de Ciencia de Materiales de Madrid, CSIC, Cantoblanco, Madrid, Spain

A-6.1:IL11 **Organic-inorganic Hybrid Materials for Green Photonics**
L.D. CARLOS, Department of Physics and CICECO, University of Aveiro, Aveiro, Portugal

A-6.1:IL12 **Light-weight, Transparent, and Hard Mmultifunctional Materials Based on Nanocellulose-inorganic Nanoparticle Hybrids**
G. SALAZAR-ALVAREZ, Department of Materials and Environmental Chemistry, Stockholm University, Stockholm, Sweden, & Wallenberg Wood Science Center, Royal Institute of Technology, Stockholm, Sweden

A-6.1:L13 **Superhydrophilic and Superhydrophobic Patterned Surfaces**
M.B. HERZOG, J.H. JOHNSTON, School of Chemical and Physical Sciences, Victoria University of Wellington, Wellington, New Zealand

A-6.1:L14 **High Dielectric Nanocomposite Interleaves for Multi-functional Structural Composites**
G.J. EHLERT[1], H. TANG[2], A. HAREL-CANADA[1], H.A. SODANO[1], [1]Mechanical and Aerospace Engineering, University of Florida, Gainesville, FL, USA; [2]Materials Science & Engineering, University of Florida, Gainesville, FL, USA

A-6.1:L15 **Nanogold and Nanosilver Hybrid Materials with Paper Fibres for Anti-microbial Applications**
T.W. NILSSON, J.H. JOHNSTON, School of Chemical and Physical Sciences, MacDiarmid Institute for Advanced Materials and Nanotechnology, Victoria University of Wellington, Wellington, New Zealand

A-6.1:L16 **Heterostructured Bi-magnetic Soft-hard Core-shell Nanoparticles**
M. ESTRADER, A. LÓPEZ-ORTEGA, CIN2(ICN-CSIC) and Univ. Autonoma de Barcelona, Catalan Inst. of Nanotechnology (ICN), Bellaterra (Barcelona), Spain; G. SALAZAR-ALVAREZ, Dept. of Materials and Environ-mental Chemistry, Stockholm University, Stockholm, Sweden; S. ESTRADÉ, LENS-MIND-IN2UB, Dept. d'Electronica, and TEM-MAT, SCT, Univ. de Barcelona, Barcelona, Spain; I. GOLOSOVSKY, Petersburg Nuclear Physics Institute, Gatchina, St. Petersburg, Russia; J. SORT, Dept. de Física, Univ. Autonoma de Barcelona, Bellaterra, Spain and Institució Catalana de Recerca i Estudis Avançats (ICREA), Barcelona, Spain; F. PEIRÓ, LENS- MIND-IN2UB, Dept d'Electronica, Univ. de Barcelona, Barcelona, Spain; S. SURINACH, M.D. BARÓ, Dept de Física, Univ. Autonoma de Barcelona, Bellaterra, Spain; J. NOGUÉS, CIN2(ICN-CSIC) and Univ. Autonoma de Barcelona, Catalan Inst. of Nanotechnology (ICN), Campus UAB, Bellaterra (Barcelona), Spain and Institució Catalana de Recerca i Estudis Avançats (ICREA), Barcelona, Spain

A-6.1:L17 **Effect of Adsorption and Orientation of Surfactant Molecule on Thermal Conductivity of Composite**
K. WATTANAKUL, College of Industrial Technology, King Mongkut's University of Technology North Bangkok, Bangkok, Thailand

A-6.1:L18 **Network Carbon Nanotubes/Polymer Composite**
C. LU[1, 2], D. TAN[1, 2], C. BRUN[1, 3], H. LI[1], E.H.T. TEO[1, 2], D. BAILLARGEAT[1], B.K. TAY[1, 2], [1]CINTRA CNRS/NTU/THALES, UMI 3288, Singapore; [2]School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore; [3]XLIM UMR 6172, Université de Limoges/CNRS, Limoges, France

A-6.1:IL19 **Chemically Grown Nanoparticles, Nanowires and Nanocomposites: Processing, Applications and Devices**
S. MATHUR, Inorganic and Materials Chemistry, University of Cologne, Cologne, Germany

A-6.1:L20 **Multifunctional Biointerfaces for Sensing and Actuation**
B. CHIN[1], V. DAVIS[2], **A. SIMONIAN**[1], [1]Departments of Materials Research and Education Center, Auburn University, Auburn, AL, USA; [2]Department of Chemical Engineering, Auburn University, Auburn, AL, USA

A-6.1:L21 **Functionalization of Carbon Nanotubes for Use of Active Nanostructured Substrates in Integrated Devices**
E. CAVALCANTI RODRIGUES VAZ, R. SCHNEIDER, J.V. DOS ANJOS, M. NAVARRO, P. SANTA-CRUZ, Federal University of Pernambuco - UFPE, DQF, Recife-PE, Brazil

A-6.1:L22 **Interconnects Fundamental Properties and Magnetically Stimulated Nanoprocesses on Fe-Pt Substrates**
S. BELLUCCI[1], YU.F. ZHUKOVSKII[2], V.I. GOPEJENKO[3], N. BURLUTSKAYA[3], YU.N. SHUNIN[2, 3], [1]INFN-Laboratori Nazionali di Frascati, Frascati (Rome), Italy; [2]Institute of Solid State Physics, University of Latvia, Riga, Latvia; [3]Information Systems Management Institute, Riga, Latvia

A-6.2 Functional Porous Materials

A-6.2:IL01 **Deep X-ray Lithography: Hard X-rays Meet Soft Matter. An Integrated Bottom-up and Top-down Writing Tool**
P. INNOCENZI, Laboratorio di Scienza dei Materiali e Nanotecnologie (LMNT) and CR-INSTM, D.A.D.U., Università di Sassari, Alghero (Sassari), Italy

A-6.2:L02 **Long-range Ordered Hierarchical Mesoporous Films for Energy Saving Applications by Rational Selection of the Templating Agent**
R. BUONSANTI, T.E. PICK, N. KRINS, L. ZHU, B.A. HELMS, D.J. MILLIRON, The Molecular Foundry, Inorganic Nanostructures, Lawrence Berkeley National Laboratory Berkeley, California, USA

A-6.2:L03 **Polybenzoxazine-based Porous Carbon: Pore Structure Design and its Application**
U. THUBSUANG, S. WONGKASEMJIT, T. CHAISUWAN, The Petroleum and Petrochemical College Chulalongkorn University, Bangkok, Thailand

A-6.2:L04 **Preparation of Microporous Carbon Fibers Through Carbonization of Al-based Porous Coordination Polymer with Furfuryl Alcohol**
J. REBOUL[1, 2], L. RADHAKRISHNAN[5], S. FURUKAWA[1, 2], S. KITAGAWA[1, 2], P. SRINIVASU[5], Y. YAMAUCHI[3, 4, 5]; [1]ERATO Kitagawa Integrated Pores Project, Japan Science and Technology Agency (JST), Shimogyo, Kyoto, Japan; [2]Institute for Integrated Cell-Material Sciences (iCeMS), Kyoto University, Yoshida, Sakyo, Kyoto, Japan; [3]World Premier International (WPI) Research Center for Materials Nanoarchitectonics (MANA), National Institute for Materials Science (NIMS), Namiki, Tsukuba, Ibaraki, Japan; [4]Faculty of Science and Engineering, Waseda University, Okubo, Shinjuku, Tokyo, Japan; [5]Precursory Research for Embryonic Science and Technology (PRESTO), Japan Science and Technology Agency (JST), Honcho, Kawaguchi, Saitama, Japan

A-6.2:L05 **Combination of Porous Polymer Membrane and Novel Membrane Separation Technique for High Energy Conversion Efficiency**
T. URAGAMI, Department of Chemistry and Materials Engineering, Kansai University, Osaka, Japan

A-6.2:L06 **Development of New Non Oxide Hybrid and Ceramic Membranes for Hydrogen Separation**
L. CHAREYRE, S. CERNEAUX, V. ROUESSAC, A. JULBE, D. CORNU, Institut Européen des Membranes (I.E.M.)-E.N.S.C.M., Montpellier, France

A-6.2:IL07 **Optically and Electrically Responsive Periodic Mesoporous Organosilicas**
S. INAGAKI, Toyota Central R&D Labs., Inc., Nagakute, Aichi, Japan

A-6.2:L08 **Dynamic Cavity Response in Adaptive Porous Materials**
C.M. DOHERTY, P. FALCARO, A.J. HILL, CSIRO Materials Science and Engineering, Melbourne, Victoria, Australia

A-6.2:L09 **Architecturing Nano-scale Porosity for Efficient Mass Transport**
A.J. HILL, A.W. THORNTON, C.M. DOHERTY, CSIRO Materials Science and Engineering & Process Science and Engineering, S. Clayton MDC, Victoria, Australia

A-6.2:L10 **Synergic Photocatalyst of Mesoporous Silica for Environmental Purification**
J. HOJO, M. INADA, Department of Applied Chemistry, Faculty of Engineering, Kyushu University, Fukuoka, Japan

A-6.2:L11 **Magnetoactive Superhydrophobic Foams for Oil-water Separation**
P. CALCAGNILE[1], D. FRAGOULI[1], I.S. BAYER[1], G.C. ANYFANTIS[1], R. CINGOLANI[2], A. ATHANASSIOU[1, 2], [1]Center for Biomolecular Nanotechnologies (CBN) - Istituto Italiano di Tecnologia (IIT)@UniLe, Arnesano (LE), Italy; [2]Istituto Italiano di Tecnologia (IIT), Genova, Italy

A-6.2:L12 **Highly Porous Polymeric Foam of Maleimide-Termiated Poly(arylene ether sulfone) Oligomers via High Internal Phase Emulsions**
K. THANAMONGKOLLIT, P. MALAKUL, M. NITHITANAKUL, The Petroleum and Petrochemical College, Chulalongkorn University, Bangkok, Thailand; **P. PAKEYANGKOON**, Dept. of Mechanical Engineering Technology, College of Industrial Technology, King Mongkut's University of Technology North Bangkok, Bangkok, Thailand

Session A-7

Smart Molecular and Sopramolecular Systems, Metallorganic Frameworks and Coordination Polymers

A-7:IL01 **Combining Metal Organic Frameworks with Functional Micro- and Nano-particles**
P. FALCARO, D. BUSO, A.J. HILL, CSIRO, Division of Materials Science and Engineering, Clayton South MDC, Victoria, Australia

A-7:IL02 **Hydrazone-based Rotary Switches**
I. APRAHAMIAN, Dartmouth College, Hanover, NH, USA

A-7:L03 **Bistability in Neutral Radical Dyads:Towards Multifunctional Molecular Switching Materials**
J. GUASCH[1], L. GRISANTI[2], G. D'AVINO[2], I. RATERA[1], A. PAINELLI[2], C. ROVIRA[1], J. VECIANA[1], [1]Institut de Ciencia de Materials de Barcelona (CSIC)/ CIBER-BBN, Spain; [2]Dipart. Chimica GIAF, Parma University, Parma, Italy

A-7:L04 **Adaptive Porous materials for Gas Storage Application**
K. KONSTAS[1], J.W. TAYLOR[1], C.M. DOHERTY[1], A.W. THORNTON[1], T.J. BASTOW[1], A.J. HILL[2], M. HILL[1], [1]CSIRO Material Science and Engineering, [2]CSIRO Process Science and Engineering, Clayton, Victoria, Australia

A-7:L05 **Light-activated Healing of Metallosupramolecular Polymers**
G.L. FIORE[1], M. BURNWORTH[2], S.J. ROWAN[2], C. WEDER[1], [1]Adolphe Merkle Institute and Fribourg Center for Nanomaterials, University of Fribourg, Fribourg, Switzerland; [2]Department of Macromolecular Science and Engineering, Case Western Reserve University, Cleveland, OH, USA

A-7:IL06 **Self-propagating Molecular Assemblies**
M.E. VAN DER BOOM, Department of Organic Chemistry, Weizmann Institute of Science, Rehovot, Israel

A-7:IL07 **Sequential Functionalization of Porous Coordination Polymers**
S. FURUKAWA, Institute for Integrated Cell-Material Sciences, Kyoto University, Kyoto, Japan

A-7:L08 **Size and Morphology Controlled Formation of Porous Coordination Polymers**
S. DIRING, S. FURUKAWA, S. KITAGAWA, Institute for Integrated Cell-Material Sciences, Kyoto University, Kyoto, Japan

A-7:L09 **Predicting Adsorption and Diffusion in Nano-porous Frameworks**
A. THORNTON, M. HILL, A. HILL, P. FALCARO, CSIRO, Clayton Sth, Victoria, Australia

A-7:L10 **Comparative Study of Automated Adsorption of Commercial Dyes Using Metal-organic Frameworks (MOFs)**
D. LOPEZ MALO, K.A. WANDERLEY, G.F. DE SÁ, S.A. JÚNIOR, Departamento de Química Fundamental, CCEN - UFPE, Cidade Universitária, Recife, PE, Brazil

Session A-8

Adaptive / Responsive Surfaces and Multifunctional Smart Coatings

A-8:IL01 **Growing Integration Layer [GIL] Strategy: Direct Fabrication of Compositionally, Structurally and Functionally Graded Ceramic Films and/or Coatings from Mother Materials in Solution**
M. YOSHIMURA, Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan; Prof. Emeritus, Tokyo Institute of Technology, Japan

A-8:IL02 **Smart Mesoporous Functional Coatings for Sensing and Depollution Applications**
L. NICOLE, LCMCP UMR7574 - UPMC-CNRS, College de France, Paris, France

A-8:IL03 **Bio-inspired, Smart, Multiscale Interfacial Materials**
L. JIANG, Institute of Chemistry, Chinese Academy of Sciences, Beijing, China

A-8:IL04 **Stimuli-responsive Periodic Micro Structures on Oxide-polymer Hybrid Films**
M. TAKAHASHI, Y. TOKUDOME, Graduate School of Engineering, Osaka Prefecture University, Sakai, Osaka, Japan

A-8:IL05 **Responsive Materials Based on Silicone Elastomer Networks**
J. GENZER, North Carolina State University, Raleigh, NC, USA

A-8:L06 **Hydrophilic and UV-shielding Protective Films Containing TiO2@SiO2 Hybrid Nanoparticles**
JUNG WHAN YOO, Korea Institute of Ceramic Engineering and Technology, Korea; HYEONG SEOK LEE, Hanyang University, Korea; SE MI IM, Inha University, Korea

A-8:L07 **Wearable Sensors Based on a pH-responsive Hybrid Layer from Water Borne Carbon Nanotubes, pH-sensitive Polymers and Film-forming Latex**
V. CASTELVETRO, S. BIANCHI, M. GROSSI, N. CALISI, F. DI FRANCESCO, Dipartimento di Chimica e Chimica Industriale, Pisa, Italy

A-8:L08 **Design and Development of Self-stratifying Polymers and Coatings**
J. BAGHDACHI, H. PEREZ, P. TALAPATCHAROENKIT, Coatings Research Institute, Eastern Michigan University, Ypsilanti, MI, USA

Poster Presentations

A-1:P01 **Phase Equilibria in the System ZrO_2-CeO_2-La_2O_3**
E.R. ANDRIEVSKAYA, O.A. KORNIENKO, A.V. SAMELJUK, A. SAYIR, Y. SAKKA, Frantsevich Institute for Problems in Materials Science, Kiev, Ukraine

A-1:P02 **Silver Oxalate Thermal Decomposition Mechanism**
K. KIRYUKHINA[1, 2, 3, 4], H. LE TRONG[2, 5], P. TAILHADES[2, 3], J. LACAZE[2, 3], V. BACO[2, 3], F. COURTADE[1], O. VENDIER[4], [1]Centre National d'Etudes Spatiales, Toulouse Cedex, France; [2]Universite de Toulouse, UPS, INP, Institut Carnot CIRIMAT, Universite Paul Sabatier, Toulouse Cedex, France; [3]CNRS, Institut Carnot Cirimat, Toulouse, France; [4]Thales Alenia Space, Toulouse Cedex, France; [5]Faculty of Chemistry, University of Natural Sciences, Vietnam National University-HoChiMinh City, HoChiMinh, Vietnam

A-1:P03 **Free-standing and Single-crystalline Fe1-xMnxSi Nanowires with Strong Ferromagnetism and Excellent Magneto Response**
MIN-HSIU HUNG[1], CHIU-YEN WANG[1], JIANSHI TANG[2], CHING-CHUN LIN[1], TE-CHIEN HOU[1], KANG L. WANG[2], LIH-JUANN CHEN[1], [1]Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan, ROC; [2]Device Research Laboratory, Department of Electrical Engineering, University of California, Los Angeles, California, USA

A-1:P04 **Dielectric Properties of Ba1-xLaxTi1-x/4O3 Ceramics with different La3+ Content**
B. WODECKA-DUS, University of Silesia, Department of Materials Science, Sosnowiec, Poland

A-1:P05 **Electrical Properties of CaCu3Ti4O12 Films Prepared by RF Magnetron Sputtering**
C.R. FOSCHINI, R. TARARAM, A.Z. SIMOES, E. LONGO, J.A. VARELA, Sao Paulo State University, UNESP - Physical-Chemistry Department, Araraquara, Sao Paulo, Brazil

A-1:P06 **Synthesis of Iron Oxide Nanoparticles by Hydrothermal Route Assisted by Microwave for Use in H2S Adsorption**
A.A. MACEDO SOARES, A.C.V. DE ARAÚJO, W.M. DE AZEVEDO, S.A. JÚNIOR, Universidade Federal de Pernambuco, Recife, PE, Brazil; Universidade Federal Rural de Pernambuco, Garanhuns, PE, Brazil

A-1:P07 **Dielectric Properties of Barium Strontium Titanates/ Polybenzoxazine Composite at Microwave Frequency**
W. SAPMANEENUKUL[1], H. ISHIDA[2], H. MANUSPIYA[3],[1]The Petroleum and Petrochemical College, Chulalongkorn University, Pathumwan, Bangkok, Thailand; [2]Department of Macromolecular Science, Case Western Reserve University, OH, USA; [3]Center of Excellence for Petroleum, Petrochemical, and Advance Materials, Chulalongkorn University, Pathumwan, Bangkok, Thailand

A-1:P08 **The Impact of Titanium Film Properties on the c-axis Orientation of Sputter-deposited AlN Thin Films**
A. ABABNEH[1], H. SEIDEL[2], T. MANZANEQUE[3], J. HERNANDO[3], J.L. SÁNCHEZ-ROJAS[3], A. BITTNER[4], U. SCHMID[4], [1]Yarmouk University, Electronic Engineering Department, Hijjawi Faculty for Engineering Technology, Jordan; [2]Saarland University, Faculty of Natural Sciences and Technology II, Chair of Micromechanics, Microfluidic/Microactuators, Saarbrücken, Germany; [3]E.T.S.I. Industriales, Universidad de Castilla La Mancha, Ciudad Real, Spain; [4]Vienna University of Technology, Institute of Sensor and Actuator Systems, Department for Microsystems Technology, Vienna, Austria

A-1:P09 **Multilayer Ceramic Capacitors Based on the PMN-PT-PFN Solid Solution**
P. WAWRZALA, **D. BOCHENEK**, R. SKULSKI, J. KULAWIK, D. SZWAGIERCZAK, University of Silesia, Department of Materials Science, Sosnowiec, Poland

A-1:P09b **Synthesis and Electrical Analysis of Nano-crystalline Barium Titanate and PLZT Nanocomposites**
T.P. CHAVEZ, C.B. DIANTONIO, T. MONSON, Sandia National Laboratories, Albuquerque, NM, USA

A-1:P10 **A Study on the Correlation Between Carrier and Ferro-magnetism Based on Hydrogen Mediation**
JI-HUN PARK, SEUNGHUN LEE, WON-KYUNG KIM, YONG CHAN CHO, H. KOINUMA, SE-YOUNG JEONG, Department of Cogno-mechatronics Engineering, Pusan National University, Miryang-si, Korea

A-1:P11 **Pt/Ceria Catalysts Preparation for Methanol Electro-oxidation in Alkaline Media for Fuel Cells Applications**
C.L. MENENDEZ, C.R. CABRERA, University of Puerto Rico, Chemistry Graduate Program, San Juan, Puerto Rico

A-1:P12 **Influence of the Medium Composition on Aggregation of Titania Nanocrystals**
O. PAVLOVA-VEREVKINA, Karpov Institute of Physical Chemistry, Moscow, Russia

A-2:P13 **Electrospun PVDF Fibers and its Piezoelectric Properties**
YONGJIN AHN[1], JOON YOUNG IM[1], **SOON MAN HONG**[2], YONGSOK SEO[1], [1]Seoul National University, Seoul, Korea; [2]Korea Institute of Science and Technology, Seoul, Korea

A-2:P14 **Polyvinyl Butyral from Laminated-glass Waste for Encapsulating Photonic Molecular Nanodevices**
D.R. SIQUEIRA, **P. SANTA-CRUZ**, Federal University of Pernambuco - UFPE, DQF, Recife, PE, Brazil

A-2:P15 **Calix[4]arenes Appended with Thioamide and Hydroxamic Acid Moieties: Powerful Tools for Heavy Metals Recognition**
J. KULESZA, S. ALVES JÚNIOR, Depto de Química Fundamental, Universidade Federal de Pernambuco; M. GUZIŃSKI, M. BOCHEŃSKA, Dept. of Chemical Technology, Chemical Faculty, Gdansk University of Technology, Gdansk, Poland; V. HUBSCHER-BRUDER, F. ARNAUD-NEU, Laboratoire de Chimie-Physique, IPHC-DSA, UDS, CNRS, ECPM, Strasbourg Cedex, France

A-4:P17 **Rheology of Magnetoresponsive Oil-based Polymers Gels**
M. MORAL[1], J. BERASATEGUI[2], E. ARREGI[3], M.T. LÓPEZ-LÓPEZ[1], M.J. ELEJABARRIETA[2], M. BOUALI[2], J.D.G. DURÁN[1], [1]Department of Applied Physics, Faculty of Sciences, University of Granada, Campus de Fuentenueva, Granada, Spain; [2]Faculty of Engineering, Mondragon Unibertsitatea, Arrasate-Mondragón, Spain; [3]Fagor Electrodomésticos, Arrasate-Mondragón, Spain

A-5:P18 **Phosphate Glasses for Ag(0) Nanoparticle Growth**
R. SCHNEIDER, P. SANTA-CRUZ, Federal University of Pernambuco - UFPE, DQF, Recife, PE, Brazil

A-5:P19 **Tristriazaolotriazines with pi-conjugated Segments: Solvatochromic Fluorophors and Discotic Liquid Crystals**
S. GLANG, D. BORCHMANN, T. RIETH, **H. DETERT**, Institute for Organic Chemistry, Johannes Gutenberg-University, Mainz, Germany

A-5:P20 **Luminescence of Transition Metal Ions in Oxide Materials**
V. SKVORTSOVA, L. TRINKLER, N. MIRONOVA-ULMANE, D. RIEKSTINA, Institute of Solid State Physics, University of Latvia, Riga, Latvia

A-5:P21 **Light-induced Phase Collapse in a Rubidium Manganese Hexacyanoferrate**
H. TOKORO[1, 2], SHIN-ICHI OHKOSHI[1, 3], [1]Department of Chemistry, School of Science, The University of Tokyo, Tokyo, Japan; [2]NEXT, JSPS, Tokyo, Japan; [3]CREST, JST, Tokyo, Japan

A-5:P22 **An Electrochromic Copolymer Based on Pyrrole and 3,4-ethylenedioxythiophene Electrodeposited in Aqueous Micellar Solution**
YIJIE TAO, ZHAO-YANG ZHANG, HAI-FENG CHENG, WEN-WEI ZHENG, YONG-JIANG ZHOU, Key Laboratory of Advanced Ceramic Fiber and Composites, College of Aerospace and Materials Engineering, National University of Defense Technology, Changsha, China

A-6:P23 **An Ab Initio Study of Thermodynamical Stability of Calcite with Mg Substitutions**
P. ELSTNEROVA[1, 2], M. FRIÁK[1], H.O. FABRITIUS[1], L. LYMPERAKIS[1], T. HICKEL[1], M. PETROV[1], S. NIKOLOV[3], D. RAABE[1], A. ZIEGLER[4], D. HOLEC[5], J. NEUGEBAUER[1], [1]Max-Planck-Institut für Eisenforschung GmbH, Düsseldorf, Germany; [2]Faculty of Science, Masaryk University, Brno, Czech Republic; [3]Bulgarian Academy of Sciences, Sofia, Bulgaria; [4]Central Facility for Electron Microscopy, University of Ulm, Germany; [5]Montanuniversität Leoben, Austria

A-6:P24 **Production and Characterization of Ti-27Nb-13Zr Alloys by Powder Metallurgy**
M.W.D. MENDES, A.H.A. BRESSIANI, J. C. BRESSIANI, Instituto de Pesquisas Energéticas e Nucleares - IPEN/SP, Brazil

A-6:P25 **Tailored Bilayer Nano-shits and their Application**
A. GOROKHOVSKIY, E.V. TRETYACHENKO, V.G. GOFFMAN, E.E. OROZALIEV, Saratov State Technical University, Saratov, Russia

A-6:P26 **Influence of Hydrochloric Acid Concentrations on the Formation of AgCl-doped Iron Oxide-Silica Coreshell Structures**
N. MAHMED, S-P. HANNULA, Aalto University School of Chemical Technology, Dept. of Materials Science and Engineering, Aalto, Finland; O. HECZKO, Institute of Physics, Academy of Sciences, Czech Rep., Praha, Czech Republic

A-6:P27 **Preparation of Conducting Polypyrrole/Polytetramethylene Ether (PTME) Composites**
W. MENDES DE AZEVEDO, L. PAULO, E.H.L. FALCÃO, Departamento de Química Fundamental, Universidade Federal de Pernambuco, Cidade Universitária, Recife, PE, Brazil

A-6:P28 **Multifunctional Carbon-magnetite Nanocomposite Using Polyaniline as a Precursor**
A.C. VAZ DE ARAUJO, E.H.L. FALCAO, S. ALVES JR., W.M. DE AZEVEDO, Universidade Federal Rural de Pernambuco - UAG, Garanhuns, PE, Brazil Universidade Federal de Pernambuco, Recife, PE, Brazil

A-6:P29 **The Oxidation Mechanism of Si1-xGex Nanowires**
JUNGMIN BAE[1], WOO-JUNG LEE[1], JIN WON MA[1], MANN-HO CHO[1], JAE PYUNG AHN[2], HYUNGSUB KIM[3], [1]Dept. of Physics and Applied Physics, Yonsei University, Seoul, Korea; [2]Nano Materials Analysis Center, Korea Institute of Science and Technology, Seoul, Korea; [3]School of Advanced Materials Science and Engineering, Sungkyunkwan University, Suwon, Korea

A-6:P30 **Electrochemical Study of a Nanocomposite Based Electrode**
G.L. TURDEAN, I.C. POPESCU, Babes Bolyai University, Faculty of Chemistry and Chemical Engineering, Physical Chemistry Dept., Cluj-Napoca, Romania

A-6:P31 **Characterization of Novel Materials, Biogenous Iron Oxide, Produced by Iron-Oxidizing Bacteria**
H. HASHIMOTO[1], H. ASAOKA[1], Y. KUSANO[2], H. KUNOH[1], Y. IKEDA[3], M. SENO[1], M. NAKANISHI[1], T. FUJII[1], M. TAKANO[4], J. TAKADA[1], [1]Graduate School of Natural Science and Technology, Okayama University, Okayama, Japan; [2]Department of Applied Arts and Design, Kurashiki University of Science and the Arts, Kurashiki, Okayama, Japan; [3]Institute of Chemical Research, Kyoto University, Uji, Kyoto, Japan; [4]Institute for Integrated Cell-Material Sciences, Kyoto University, Yoshida-Ushinomiyacho, Kyoto, Japan

A-6:P32 **Incorporation of Carbon into Silicon Nanowires Grown with Au Catalyst**
WOO-JUNG LEE[1], JIN WON MA[1], JUNG MIN BAE[1], SAN HAN PARK[1], MANN-HO CHO[1], BONGYOUNG YOO[2], JAE PYUNG AHN[2], [1]Department of Physics and Applied Physics, Yonsei University, Seoul, Korea; [2]Nano Materials Analysis Center, Korea Institute of Science and Technology, Seoul, Korea

A-6:P33 **Spectral Measurement System for the Optical Behaviour of Surfaces at Different Temperatures**
M. SAUERBORN, **M. WAGNER**, Solar-Institut Juelich, FH Aachen - University of Applied Sciences, Juelich, Germany

A-6:P34 **Surface Modification of High Internal Phase Emulsion Foam as a Scaffold for Tissue Engineering Application via Atmospheric Pressure Plasma Treatment**
P. PAKEYANGKOON, Department of Mechanical Engineering Technology, College of Industrial Technology, King Mongkut's University of Technology North Bangkok, Bangkok, Thailand; R. MAGARAPHAN, P.H. MALAKUL, **M. NITHITANAKUL**, Center for Petroleum, Petrochemical, and Advanced Materials, Bangkok, Thailand and The Petroleum and Petrochemical College, Chulalongkorn University, Bangkok, Thailand

A-6:P35 **Development of Porous Carbon Derived from Polybenzoxazine and its Application as an Electrode for Supercapacitors**
T. CHAISUWAN, N. MAHINGSUPAN, S. WONGKASEMJIT, The Petroleum and Petrochemical College and the National Center of Excellence for Petroleum, Petrochemicals, and Advanced Materials, Chulalongkorn University, Bangkok, Thailand

A-6:P36 **Lectinhistochemistry Evaluation of Bone after Implantation with Macroporous Titanium Samples**
K.B. VIOLIN, T.S. GOIA, J.C. BRESSIANI, A.H.A. BRESSIANI, Instituto de Pesquisas Energeticas e Nucleares, Sao Paulo, SP, Brasil

A-6:P37 **Color Indicator Film Based on Chromophores Modified PCH/PP Nanocomposite**
S. BOONRUANG[1], R. MAGARAPHAN[1, 2], H. MANUSPIYA[1, 2], [1]The Petroleum and Petrochemical College, Chulalongkorn University, Pathumwan, Bangkok, Thailand; [2]Center of Excellence for Petroleum, Petrochemical, and Advance Materials, Phayathai road, Pathumwan, Bangkok, Thailand

A-7:P38 **Synthesis, Characterization and Spectroscopic Properties of Calix[4]arenes Derivatives of Lanthanides ions under Solvothermal and Hydrothermal Conditions**
C.A. FERNANDES OLIVEIRA, J. KULESZA, S.A. JÚNIOR, DQF, Universidade Federal de Pernambuco, Recife, Brazil; B.S. BARROS, ECT, Universidade Federal do Rio Grande do Norte, Natal, Brazil; M. BOCHENSKA, DCT, Gdansk University of Technology, Poland

A-7:P39 **Understanding the Doxorubicin Interaction with Zeolite Imidazolate Frameworks (ZIF-8): A Theoretical and Experimental Investigation**
I.B. VASCONCELOS[1], T.A. SOARES[1], R.O. FREIRE[2], N.B.C. JÚNIOR[2], G.F. DE SÁ[1], **S. ALVES JÚNIOR**[1], [1]Universidade Federal de Pernambuco, Recife, PE, Brazil; [2]Universidade Federal de Sergipe, Recife, PE, Brazil

A-7:P39b **Zeolitic Imidazolate Framework (ZIF-8) for Anticancer Drug Delivery: Fluorescence Study**
I. BEZERRA VASCONCELOS, T.G. DA SILVA, R.C.B.Q. FIGUEIREDO, G. F. DE SÁ, S.A. JÚNIOR, Universidade Federal de Pernambuco, Recife, PE, Brazil

A-8:P40 **Infrared Thermochromic Properties of VO2 Thin Films Prepared through Aqueous Sol-gel Process**
D.Q. LIU, H.F. CHENG, W.W. ZHENG, C.Y. ZHANG, Key Laboratory of Advanced Ceramic Fiber and Composites, College of Aerospace and Materials Engineering, National University of Defense Technology, Changsha, China

A-8:P41 **A Study of Thin Layer Coating Technology for Easy-care and Stretchable Materials by Water Based Emulsion Resin**
MYUNGSOO PARK, Deukkum; **SEONGHUN CHO**, Korea High Tech Textile Research Institute, Kyunggi, Korea

A-8:P42 **Development of Superhydrophobic Surface Morphology**
N. KUNDURACI, Anadolu University, Eskisehir, Turkey

A-8:P43 **Zn-Ni-nanoparticles Composite Coatings Obtained By Electrolytic Codeposition**
D. BLEJAN, L.M. MURESAN, Babes-Bolyai University, Department of Physical Chemistry, Cluj-Napoca, Romania

A-8:P44 **Anticorrosive Properties of Electrodeposited Zinc-nanoparticles Coatings on Steel**
P.I. NEMES, L.M. MURESAN, Department of Physical Chemistry, Faculty of Chemistry and Chemical Engineering, "Babes-Bolyai" University, Cluj Napoca, Romania

A-8:P45 **Study on the Fabrication of Visible Light Response Type N-doped TiO2 Photocatalyst by SPS**
N. KIKUCHI, T. ASAOKA, Tokyo Denki University, Ishizaka, Saitama, Japan

Special Session A-10
Emerging Non-Volatile Memory Devices

Oral Presentations

A-10:IL01 **Towards Charge Storage Memory Devices Based on Electroactive Organic Molecules**
J. VECIANA[1], C. SIMÃO[1], M. MAS-TORRENT[1], N. CRIVILLERS[1], V. LLOVERAS[1], J.M. ARTÉS[2], P. GOROSTIZA[2], C. ROVIRA[1], [1]Institut de Ciència de Materials de Barcelona (CSIC)-Networking Research Center on Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN), Bellaterra, Spain; [2]Institute for Bioengineering of Catalonia (IBEC), Institució Catalana de Recerca i Estudis Avançats (ICREA), Barcelona, Spain, Networking Research Center on Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN), Universitat de Barcelona, Barcelona, Barcelona, Spain

A-10:IL02 **Nanosecond Timescale Characterization of FeRAMs with Fast-speed Charge Injection**
A.Q. JIANG, State Key Lab of ASIC & System, Department of Microelectronics, Fudan University, Shanghai, China

A-10:L04 **Organic and Oxide Ferroelectric Transistor and Diode Arrays for Non-volatile Memories**
A. VAN BREEMEN, F. GONZALEZ-RODRIGUEZ, B. VAN DER PUTTEN, G. GELINCK, Holst Centre/TNO, Eindhoven, The Netherlands; A. MARRANI, M. BASSI, Solvay Specialty Polymers s.p.a.,Bollate (MI), Italy

A-10:IL05 **Working Model for Electronic Polymer Memory Devices**
S. PAUL, Emerging Technologies Research Centre, De Montfort University, Leicester, UK

A-10:L07 **Resistive Switching Behavior of Ferroelectric Heterostructures**
A. GRUVERMAN, University of Nebraska-Lincoln, Lincoln, NE, USA

A-10:IL08 **Self-rectifying Unipolar HfOx Based RRAM**
HONGYU YU, South University of Science and Technology of China; X.A. TRAN, Nanyang Technological University, Singapore

A-10:IL09 **Ultrafast MRAM Data Storage**
S. SERRANO-GUISAN, N. LIEBING, H.W. SCHUMACHER, Physikalisch-Technische Bundesanstalt, Braunschweig, Germany

A-10:IL10 **Correlated Electron Memories**
C.A. PAZ DE ARAUJO, J. CELINSKA, C. McWILLIAMS, Symetrix Corporation and University of Colorado, Colorado Springs, CO, USA

A-10:IL11 **Inorganic Nanoparticles for either Charge Storage or Memristance Modulation**
D. TSOUKALAS[1, 2], E. VERRELLI[1], [1]National Technical University of Athens, Zographou, Greece, [2]Institute of Microelectronics, NCSR Demokritos, Agia Paraskevi, Greece

A-10:L12 **Memristive Memory: a Fundamental Shift**
J. NICKEL, J. JOSHUA YANG, M. PICKETT, M. ZHANG, J.P. STRACHAN, G. RIBEIRO, R.S. WILLIAMS, HP Laboratories, Palo Alto, CA, USA

A-10:IL13 **Phase Change Memory Technology**
R. BEZ, Micron, Agrate Brianza (MB), Italy

A-10:L14 **Influence of the Annealing and Doping on the Thermal Properties of Ge-Sb-Te Phase Change Material**
S.A. KOZYUKHIN[1], A.A. SHERCHENKOV[2], A.V. BABICH[2], A.I. VARGUNIN[1], [1]Kurnakov Institute of General and Inorganic Chemistry, RAS, Moscow, Russia; [2]National Research University "MIET", Moscow, Russia

A-10:IL15 **Recent Progress and Applications of PRAM**
HONGSIK JEONG, Memory Division of Samsung Elctronics, Yongin-city, Korea

A-10:IL16 **Phase Transformations in PCMs**
F. HIPPERT, LMGP (CNRS, Grenoble-INP), Minatec, Grenoble, France; G. GHEZZI, S. MAITREJEAN, CEA LETI, Minatec campus, Grenoble, France; **J.Y. RATY**, Physics Department, University of Liege, Sart-Tilman, Belgium

A-10:L17 **Raman Scattering Study of Doped Ge2Sb2Te5 Phase Change Materials**
H.P. NGUYEN[1, 2], S. KOZYUKHIN[1], M. VERES[3], [1]Kurnakov Institute of General and Inorganic Chemistry, RAS, Moscow, Russia; [2]Moscow State Pedagogical University, Moscow, Russia; [3]Research Institute for Solid State Physics and Optics, HAS, Budapest, Hungary

Poster Presentations

A-10:P46 **Memory Effect of a Different Materials as Charge Storage Elements for Memory Applications**
I. SALAORU, S. PAUL, Emerging Technologies Research Centre, De Montfort University, Leicester, UK

A-10:P47 **Multilevel Resistance Switching in TaOx-based RRAM Device**
YING-CHIUAN CHEN, YU-LUNG CHUNG, BO-TAO CHEN, **JEN-SUE CHEN**, Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan

A-10:P48 **Charge Retention in Low Temperature Poly-Si Rewritable Memory on Glass**
T.A. MIH, S. PAUL, Emerging Technologies Research Centre, De Montfort University, Leicester, UK

A-10:P49 **Modulation of Biopolar Resistive Switching for Fuel-assisted NiOx Film via Tailoring of its Interface with Al Electrode**
KUN-KENG CHIANG[1], JEN-SUE CHEN[2], **JIH-JEN WU**[1], [1]Department of Chemical Engineering, National Cheng Kung University, Tainan, Taiwan; [2]Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan

A-10:P50 **Influence of Bi and Sn Doping on the Electrical Properties of Ge-Sb-Te Material for Phase - Change Memory Devices**
S.A. KOZYUKHIN, Kurnakov Institute of General and Inorganic Chemistry, Moscow, Russia; **A.A. SHERCHENKOV**, P.I. LAZARENKO, National Research University "MIET", Moscow, Russia

Focused Session A-11

MULTIFERROICS

Oral Presentations

A-11.1 Theory, Modeling, Processing

A-11.1:IL01 **Electronic Ferroelectricity: Modeling and Understanding**
S. PICOZZI, CNR, Istituto CNR-SPIN L'Aquila, Italy

A-11.1:IL02 **Magnetization Dynamics in Epitaxial Films: Effects of Lattice Strains and Voltage Control via Ferroelectric Substrate**
N.A. PERTSEV, H. KOHLSTEDT, A.F. Ioffe Physico-Technical Institute, Russian Academy of Sciences, St. Petersburg, Russia; Nanoelektronik, Technische Fakultät, Christian-Albrechts-Universität zu Kiel, Kiel, Germany

A-11.1:IL03 **From Magneto-Elasto-Electric Device to Ultra-low Noise Magnetic Sensor**
CH. DOLABDJIAN[1], X. ZHUANG[1], S. SAEZ[1], M. LAM CHOK SING[1], C. CORDIER[1], C. DOLABDJIAN[1], J.F. LI[2], D. VIEHLAND[2], [1]Groupe de Recherche en Informatique, Image, Automatique et Instrumentation de Caen (GREYC), CNRS UMR 6072-ENSICAEN and the University of Caen, Caen Cedex, France; [2]Department of Materials Science and Engineering, Virginia Tech, Blacksburg, VA, USA

A-11.1:IL04 **First-principles Design of Multiferroics with Novel Functional Properties**
J. INIGUEZ, ICMAB-CSIC, Bellaterra, Barcelona, Spain

A-11.1:L05 **Effective Barrier Thickness of Multiferroic Tunnel Junctions under External Fields**
X.Y. LU, H. LI, School of Civil Engineering, Harbin Institute of Technology, Harbin, China; W.W. CAO, Materials Research Lab, The Pennsylvania State University, State College, USA

A-11.1:L06 **Enhancement of Magnetoelectric Coupling due to Inhomogeneous Stress Distribution in Magnetostrictive-piezoelectric Layered Structure**
V.M. PETROV, Novgorod State University, Veliky Novgorod, Russia; G. SRINIVASAN, G. SREENIVASULU, Physics Department, Oakland University, Rochester, MI, USA

A-11.1:IL07 **Textured Ferroelectrics and Magnetoelectrics**
S. PRIYA, YONGKE YAN, Center for Energy Harvesting Materials and Systems (CEHMS), Virginia Tech, Blacksburg, VA, USA

A-11.1:IL08 **Manipulating Charge and Spin Interactions Across multiferroic BiFeO3 and Ferromagnetic La0.7Sr0.3MnO3 Interfaces**
PU YU, Department of Physics, University of California, Berkeley, CA, USA

A-11.1:L09 **Ex-situ Solid-phase Epitaxy of MOCVD-deposited LuFe2O4 Thin Films**
A. PLOKHIKH, A. AKBASHEV, A. KAUL, MSU, Moscow, Russian Federation

A-11.2 Magnetoelectric Characterization

A-11.2:IL01 **New Multiferroic Manganite and Ferrite with Strong Magnetoelectric Coupling**
Y. TAGUCHI, H. SAKAI, D. OKUYAMA, D. HASHIZUME, Y. TOKURA, RIKEN, Wako, Japan; J. FUJIOKA, F. KAGAWA, Univ. of Tokyo, Tokyo, Japan; T. FUKUDA, JAEA/SPring-8, Hyogo, Japan; H. NAKAO, Y. MURAKAMI, CMRC-PF, IMSS, KEK, Tsukuba, Japan; T. ARIMA, Univ. of Tokyo, Kashiwa, Japan; A.Q.R. BARON, RIKEN SPring-8 Center, Hyogo, Japan

A-11.2:IL02 **Magnetoelectric Coupling and Isostructural Phase Transitions in the Solid Solutions of the Multiferroic BiFeO3 with BaTiO3 and PbTiO3**
D. PANDEY, School of Materials Science and Technology, Institute of Technology, Banaras Hindu University, Varanasi, India

A-11.2:IL03 **Isothermal Electric Control of Exchange Bias near Room Temperature**
C. BINEK[1], XI HE[1], YI WANG[1], N. WU[1], A. WYSOCKI[1], T. KOMESU[1], U. LANKE[2], A.N. CARUSO[3], E. VESCOVO[4], K.D. BELASHCHENKO[1], P.A. DOWBEN[1], [1]Department of Physics & Astronomy and Nebraska Center for Materials and Nanoscience, University of Nebraska, Lincoln, NE, USA; [2]Canadian Light Source Inc., University of Saskatchewan, Saskatoon, Saskatchewan, Canada; [3]Department of Physics, University of Missouri, Kansas City, KS, USA; [4]Brookhaven National Laboratory, National Synchrotron Light Source, Upton, NY, USA

A-11.2:L04 **Exchange Biasing of Magnetoelectric Thin Film Composites**
E. LAGE, C. KIRCHHOF, D. MEYNERS, **E. QUANDT**, Christian Albrechts University Kiel, Kiel, Germany

A-11.2:L05 **Magnetoelectric Properties of Layered Thin Film Composites**
HEE YOUNG LEE, Yeungnam University, Gyeongsan, Korea

A-11.3 Dynamics of Multiferroics & Structural Characterization

A-11.3:IL01 **Terahertz Emission from BiFeO3 Thin Films**
M. TONOUCHI, Institute of Laser Engineering, Osaka University, Suita, Japan

A-11.3:IL02 **Ultrafast Dynamics of Multiferroic BiFeO3 Thin Films**
C.W. LUO[1], L.Y. CHEN[1], J.C. YANG[2], C.W. LAING[2], K.H. WU[1], J-Y LIN[3], T.M. UEN[1], J.Y. JUANG[1], Y.H. CHU[2], T. KOBAYASHI[1, 4], [1]Dept. of Electrophysics, National Chiao Tung University, Hsinchu, Taiwan; [2]Dept. of Materials Science and Engineering, National Chiao Tung University, Hsinchu, Taiwan; [3]Institute of Physics, National Chiao Tung University, Hsinchu, Taiwan; [4]Dept. of Applied Physics and Chemistry and Institute for Laser Science, University of Electro-Communications, Tokyo, Japan

A-11.3:IL03 **Ferroelectric and Multiferroic Tunnel Junctions**
A. CRASSOUS[1], V. GARCIA[1, 2], M. BIBES[1], A. CHANTHBOUALA[1], S. FUSIL[1], K. BOUZEHOUANE[1], E. JACQUET[1], L. BOCHER[3], A. GLOTER[3], C. DERANLOT[1], S. XAVIER[4], S. ENOUZ-VEDRENNE[4], N. MATHUR[2], **A. BARTHÉLÉMY**[1], [1]Unité Mixte de Physique CNRS/Thales, Palaiseau, France; [2]University of Cambridge, Cambridge, UK; [3]Laboratoire de Physique des Solides, Université Paris Sud, Orsay, France; [4]Thales Research and Technology, Palaiseau, France

A-11.3:IL04 **Studied of Strain-induced Morphotropic Phase Boundary in Multiferroic BiFeO3 Thin Films**
LANG CHEN, School of Materials Science and Engineering, Nanyang Technological University, Singapore

A-11.3:L05 **The Phase Diagram of Sr1-xEuxTiO3: Crossover from Displacive to Order-disorder Dynamics**
A. BUSSMANN-HOLDER, Max-Planck-Institute for Solid State Research, Stuttgart, Germany

A-11.4 New Effects

A-11.4:IL01 **Electrically-controlled Atomic Spin-valve at a Complex Oxide Interface**
J.D. BURTON, **E.Y. TSYMBAL**, Department of Physics and Astronomy, University of Nebraska, Lincoln, NE, USA

A-11.4:IL02 **Functionally Graded Magnetoelectric Composites**
G. SRINIVASAN, G. SREENIVASULU, V.M. PETROV, Physics Department, Oakland University, Rochester, MI, USA

A-11.4:IL03 **Domain Walls and Photovoltaic Effect in BiFeO3**
M. ALEXE, Max Planck Institute of Microstructure Physics, Halle, Germany

A-11.4:L04 **Free Charge Contribution to Dielectric Behavior of Oxides**
R. ANAND THEERTHAN, M. MAGLIONE, ICMCB, University Bordeaux 1, Pessac, France

A-11.5 Devices

A-11.5:IL01 **Progress in Magnetoelectric Devices Based on Piezoelectric/piezomagnetic Laminated Composites**
SHUXIANG DONG, Peking University, Beijing, China

A-11.5:L02 **Tunable BiFeO3-BaTiO3 Thin Film Bulk Acoustic Wave Resonators for Microwave Applications**
A. VOROBIEV, S. GEVORGIAN, Department of Microtechnology and Nanoscience, Chalmers University of Technology, Gothenburg, Sweden; N. MARTIROSYAN, State Engineering University of Armenia, Teryan, Yerevan, Armenia; M. LÖFFLER, E. OLSSON, Department of Applied Physics, Chalmers University of Technology, Gothenburg, Sweden

A-11.5:L03 **Strain-dependent Magnetoelectric Properties of Epitaxial CoFe2O4/Pb(Zr1-xTix)O3/SrRuO3 Heterostructures on PMN-PT Substrates**
A. PETRARU[1], N. HOEFT[1], S. ROHIT[1], R. DROOPAD[2], N. PERTSEV[3], H. KOHLSTEDT[1], [1]Nanoelektronik, Technische Fakultät, Christian-Albrechts-Universität zu Kiel, Kiel, Germany; [2]Texas State University, Department of Physics, San Marcos, TX, USA; [3]A.F. Ioffe Physico-Technical Institute, Russian Academy of Sciences, St. Petersburg, Russia

Poster Presentations

A-11:P51 **Effect of Cm Phase on the Structural and Magnetic Properties of (x)BiFeO3 - (1-x) BaTiO3 Multiferroics Ceramics**
R.A. MASCARELLO GOTARDO[1], MARKIN[1], I. APARECIDO DOS SANTOS[1], L. FERNANDO CÓTICA[1], D. GARCIA[2], J.A. EIRAS[2], [1]Maringá State University, Brazil; [2]São Carlos Federal University, Brazil

A-11:P52 **Multi-component Oxide Thin Films and Heterostructures for Electronics: Growth Principles**
K. ENDO, Kanazawa Institute of Technology, Hakusan, Japan; P. BADICA, National Institute of Materials Physics, Bucharest-Magurele, Romania

A-11:P53 **Preparation and Multiferroic Properties of Bi0.85Eu0.15FeO3 Thin Films**
LIANMENG ZHANG[1, 2], DONGYUN GUO[1], FEI CHEN[1, 2], LING LI[1], XIAOGUI WANG[1], ZHIXIONG HUANG[2], [1]State Key Lab. of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology, Wuhan, China; [2]Key Lab. of Advanced Technology for Specially Functional Materials, Ministry of Education, Wuhan University of Technology, Wuhan, China

A-11:P54 **Ferroic and Structural Study of High-dense Polycrystalline TbMnO3 Ceramics**
G.S. DIAS, R.A.M. GOTARDO, I.A. SANTOS, L.F. CÓTICA, Universidade Estadual de Maringá - Paraná - Brazil; L. ZABOTTO, D. GARCIA, J.A. EIRAS, Universidade Federal de Sao Carlos - Sao Paulo - Brazil

A-11:P55 **Magnetostrictive and Magnetoelectric Properties in Nickel Ferrite - Niobate Relaxor Structures**
P. GUZDEK, Institute of Electron Technology, Cracow Division, Cracow, Poland

A-11:P56 **Magnetic Properties of the Bi9Fe5Ti3O27 Aurivillius Phase Doped with Samarium**
M.M. BUCKO, C. KAPUSTA, J. POLNAR, J. LIS, AGH - University of Science and Technology, Faculty of Materials Science and Ceramics, Krakow, Poland

A-11:P57 **Reflection of Electromagnetic Waves from Multiferroic TbMnO3**
I.V. BYCHKOV, L.N. BUT'KO, S.Y. LAMEKHOV, V.V. SHADRIN, Chelyabinsk State University, Chelyabinsk, Russia

A-11:P58 **Reflection of Electromagnetic Waves from Magnetic Having the Ferromagnetic Spiral**
I.V. BYCHKOV, **D.A. KUZMIN**, Chelyabinsk State University, Chelyabinsk, Russia; V.V. SHADRIN, Magnitogorsk State University, Magnitogorsk, Russia; V.G. SHAVROV, The Institute of Radioengineering and Electronics of RAS, Moscow, Russia

A-11:P59 **Structural Relashionsip in BiFeO3 - Based Compounds**
L.F. COTICA[1], I.B. CATELLANI[1], G.S. DIAS[1], F. YOKAICHIYA[2], I.A. SANTOS[1], [1]Depto de Física, Universidade Estadual de Maringá, Maringá - Paraná, Brazil; [2]Laboratório Nacional de Luz Síncrotron, Campinas - São Paulo, Brazil

A-11:P60 **Dielectric Behavior and Conductivity Analysis of Li Doped Lead-free Sodium Potassium Niobate Ceramics**
S. SHARMA[1], R. RANI[1], N.K.P SINHA[1], R. RAI[2], [1]Ferroelectric Research Laboratory, Dept. of Physics, A N College, Patna, India; [2]Dept. of Ceramics and Glass Engineering and CICECO, University of Aveiro, Aveiro, Portugal

Focused Session A-12

PROGRESS IN METAMATERIALS RESEARCH

Oral Presentations

A-12.1 Microwave & THz Metamaterials

A-12.1:IL01 **Terahertz Metamaterial Response at High Fields**
R.D. AVERITT, Department of Physics, Boston University, Boston, MA, USA

A-12.1:IL02 **Analytical Modelling of Microwave/Millimeter Wave 1D and 2D Gratings and Fishnets**
F. MEDINA, Dept. of Electronics and Electromagnetism, University of Seville, Seville, Spain; F. MESA, R. RODRIGUEZ-BERRAL, Dept. of Applied Physics 1, University of Seville, Seville, Spain

A-12.1:L03 **On the Lateral Confinement of Surface Waves in the Microwave Regime**
E.M.G. BROCK, E. HENDRY, A.P. HIBBINS, Electromagnetic Materials Group, Physics Building, University of Exeter, Exeter, England

A-12.1:L04 **Design and Optimization of Microwave Triangular Metamaterial Resonators in Coplanar Configuration**
R. MARCELLI[1], E. PROIETTI[1], G BARTOLUCCI[1, 2], A. LUCIBELLO[1, 2], G. DE ANGELIS[1, 2], G. MUZI[3], J. SOLYMOSI[4]; [1]CNR-IMM Roma, Italy; [2]University of Roma "Tor Vergata", Dept. of Electronic Engineering, Italy; [3]VMC Engineering, Rieti, Italy; [4]Bohn Electronic Ltd, Budapest, Hungary

A-12.1:L05 **Electromagnetic Shielding using Nanoparticles Embedded in Polymer Matrix Composites**
N. MORA[1], F. RACHIDI, Swiss Federal Institute of Technology-EPFL, Lausanne Switzerland; M. DADRAS, Centre Suisse d'Électronique et de Microtechnique - CSEM, Neuchâtel, Switzerland

A-12.1:IL06 **Enhanced Microwave Transmission at Microwave Frequencies through Omega Particles**
F. BILOTTI, L. DI PALMA, D. RAMACCIA, A. TOSCANO, "Roma Tre" University, Rome, Italy; D. ATES, E. OZBAY, Bilkent University, Turkey

A-12.1:IL07 **Bulk Millimeter Wave and Terahertz Metamaterial Design**
M. BERUETE, Millimeter and Terahertz Waves Laboratory, Public University of Navarre, Pamplona, Spain

A-12.1:L08 **Surface Wave Resonances Supported on a Square Array of Square Metallic Pillars**
S.J. BERRY[1], A.P. HIBBINS[1], T. CAMPBELL[2], J.R. SAMBLES[1], [1]Electromagnetic Materials Group, Physics Building, University of Exeter, Exeter, England; [2]BAE Systems, Warton Aerodrome, Warton, Preston, England

A-12.1:L09 **Influence of Dielectric Loss and Permittivity Variation on Metamaterial Performance**
P. CLEM[1], M.P. RYE[1], **EUNG SOO KIM**[2], CHANG JUN JEON[2], [1]Sandia National Laboratories, Albuquerque, NM, USA; [2]Kyonggi University, Suwon, Korea

A-12.1:L10 **Reflectionless Ultra-thin Wave-plate Based on Metamaterials**
WUJIONG SUN, **QIONG HE**, JIAMING HAO, LEI ZHOU, State Key Laboratory of Surface Physics and Key Laboratory of Micro and Nano Photonic Structures, Fudan University, Shanghai, China

A-12.1:L11 **Tuning Extraordinary Transmission by Meander-lines in Hole Arrays**
V. TORRES, P. RODRIGUEZ-ULIBARRI, M. BERUETE, F. FALCONE, M. SOROLLA, Millimeter and Terahertz Waves Laboratory, Universidad Pública de Navarra, Pamplona, Spain; M. NAVARRO-CÍA, Experimental Solid State Group, Department of Physics, Imperial College London, London, UK

A-12.1:L12 **Novel Pseudo-plasmonic Surfaces in the Microwave Regime**
H.J. RANCE, A.P. HIBBINS, J.R. SAMBLES, Electromagnetic Materials Group, University of Exeter, School of Physics, Exeter, Devon, UK

A-12.2 Photonic, Nanophotonic, Plasmonic and Infrared Metamaterials

A-12.2:IL01 **Taming the Blackbody with Infrared Metamaterials**
XIANLIANG LIU, **W.J. PADILLA**, Boston College, Newton, MA, USA

A-12.2:IL02 **Enhancement of Light-matter Interactions in Slow-wave Meta-surfaces**
LEI ZHOU, State Key Laboratory of Surface Physics and Physics Department, Fudan University, Shanghai, China

A-12.2:IL03 **Understanding and Reducing Losses in Metamaterials**
C.M. SOUKOULIS, Ames Laboratory and Department of Physics, Iowa State University, Ames, Iowa, USA; Institute of Electronic Structure and Laser-FORTH and University of Crete, Heraklion, Crete, Greece

A-12.2:IL04 **Active Nanodevices: the Next Challenge for Plasmonics**
G. WURTZ, A.V. ZAYATS, Department of Physics, King's College London, London, UK

A-12.2:IL06 **The Concept of Spoof Surface Plasmons**
F.J. GARCIA-VIDAL, Departamento de Fisica Teorica de la Materia Condensada, Universidad Autonoma de Madrid, Madrid, Spain

A-12.2:L07 **Imaging the Local Field Enhancements in Metamaterial Unit Cells with Femtosecond Laser Pulses**
V.K. VALEV, T. VERBIEST, Molecular Electronics and Photonics, INPAC, K.U. Leuven, Leuven, Belgium; A.V. SILHANEK, V.V. MOSHCHALKOV, Superconductivity and Magnetism & Pulsed Fields Group, INPAC, Katholieke Universiteit Leuven, Belgium; B. DE CLERCQ, M. AMELOOT, University Hasselt and Transnational University Limburg, BIOMED, Diepenbeek, Belgium; O.A. AKTSIPETROV, Department of Physics, Moscow State University, Moscow, Russia; A.I. KUZNETSOV, C. REINHARDT, B.N. CHICHKOV, Laser Zentrum Hannover e.V., Hanover, Germany; E.J. OSLEY, P.A. WARBURTON, London Centre for Nanotechnology, University College London, London, UK; Department of Electronic and Electrical Engineering, University College London, London, UK; X. ZHENG, V. VOLSKIJ, G.A.E. VANDENBOSCH, SAT-TELEMIC, Katholieke Universiteit Leuven, Leuven, Belgium

A-12.2:L08 **Rainbow Trapping and Releasing Using Plasmonic Metallic Gratings Filled with Gradient-depth Olive Oil**
XIAOPENG SHEN, PEI ZHAO, HUI FENG MA, WEI XIANG JIANG, TIE JUN CUI, State Key Laboratory of Millimeter Waves, Department of Radio Engineering, Southeast University, Nanjing, China

A-12.2:IL09 **Controlling Radiation Using Dark Plasmon Modes**
N.X. FANG, KIN HUNG FUNG, A. KUMAR, JUN XU, Massachusetts Institute of Technology, Cambridge, MA, USA

A-12.2:IL10 **Subwavelength Microwave Spoof SPP Metamaterials**
TIE JUN CUI, XIAOPENG SHEN, YONG JIN ZHOU, State Key Laboratory of Millimeter Waves, Department of Radio Engineering, Southeast University, Nanjing, China

A-12.2:L11 **Ferromagnetism in Cr Doped Indium Oxide for Homogeneous Negative Index Materials**
A. AKYURTLU, A.-G. KUSSOW, Electrical and Computer Engineering Department, University of Massachusetts Lowell, MA, USA

A-12.2:L12 **Strong Coupling Effects in Fabricated Tunable Layers of Metal Nanoparticles**
S. MÜHLIG, C. ROCKSTUHL, F. LEDERER, Institute of Condensed Matter Theory and Solid State Optics, Abbe Center of Photonics, Friedrich-Schiller-Universität Jena, Jena, Germany; A. CUNNINGHAM, T. BÜRGI, Département de Chimie Physique, Université de Geneve, Geneva, Switzerland; D. CIALLA, K. WEBER, Institute of Physical Chemistry, Friedrich-Schiller-Universität Jena, Jena, Germany

A-12.3 Nonlinear, Tunable & Active Metamaterials

A-12.3:IL01 **Shaping of Light in Metamaterials and Plasmonic Structures**
Y.S. KIVSHAR, Nonlinear Physics Center, Australian National University, Canberra, Australia

A-12.3:IL03 **Making Stable Plasmon Solitons**
D. SKRYABIN, A. MARINI, A. GORBACH, C. MILIAN, University of Bath, Bath, UK; B. MALOMED, University of Tel-Aviv, Israel

A-12.3:IL04 **Magnetically Controllable Metamaterials**
SHIYANG LIU, Institute of Information Optics, Zhejiang Normal University, Jinhua, Zhejiang, China; ZHIFANG LIN, Surface Physics Laboratory and Department of Physics, Fudan Univeristy, Shanghai, China; S.T. CHUI, Bartol Research Institute, University of Delaware, Newark, Delaware, USA

A-12.3:IL05 **Nonlinear Optical Properties of Plasmonics Materials**
M. KAURANEN, G. GENTY, R. CZAPLICKI, H. PIETARINEN, H. HUSU, M. ZDANOWICZ, K.O. KOSKINEN, R. SIIKANEN, Department of Physics, Tampere University of Technology, Tampere, Finland; J. LEHTOLAHTI, J. LAUKKANEN, M. KUITTINEN, University of Eastern Finland, Department of Physics and Mathematics, Joensuu, Finland

A-12.3:L06 **Nonlinear Backward-wave Photonic Metamaterials**
A.K. POPOV[1], M.I. SHALAEV[2]; S.A. MYSLIVETS[3]; V.V. SLABKO[2], I.S. NEFEDOV[4], [1]University of Wisconsin-Stevens Point, Stevens Point, WI, USA; [2]Siberian Federal University, Krasnoyarsk, Russian Federation; [3]Institute of Physics of Russian Academy of Sciences, Krasnoyarsk, Russian Federation; [4]Aalto University, Aalto, Finland

A-12.4 Cloaking, Transformation Optics, Antennas, Superlenses

A-12.4:IL02 **Transformation Electromagnetics**
M. McCALL, Imperial College, London, UK

A-12.4:L03 **Double-negative Negative Index Metamaterial Composed of a Silver Nanowires Structure at Visible Light Spectrum**
YONGXIANG ZHAO[1], **FEI CHEN**[1, 2], QIANG SHEN[1], LING LI[1], XIAOGUI WANG[1], ZHIXIONG HUANG[2], LIANMENG ZHANG[1, 2], [1]State Key Lab of Advanced Technology for Materials Synthesis and Processing, Wuhan University of Technology, Wuhan, China; [2]Key Laboratory of Advanced Technology for Specially Functional Materials, Ministry of Education, Wuhan University of Technology, Wuhan, China

A-12.4:L04 **Trapped Rainbow Techniques for Spectroscopy on a Chip and Fluorescence Enhancement**
V.N. SMOLYANINOVA[1], I.I. SMOLYANINOV[2], A.V. KILDISHEV[3], V.M. SHALAEV[3], [1]Department of Physics Astronomy and Geosciences, Towson University, Towson, MD, USA; [2]Department of Electrical and Computer Engineering, University of Maryland, College Park, MD, USA; [3]Birck Nanotechnology Centre, School of Electrical and Computer Engineering, Purdue University, IN, USA

A-12.4:IL05 **To Invisibility and Beyond**
U. LEONHARDT, University of St. Andrews, St. Andrews, UK

A-12.4:IL06 **Dirac-cone Dispersion at k=0 and its Implications**
X.Q. HUANG, Y. LAI, Z.H. HANG, F.M. LIU, C.T. CHAN, Department of Physics, Hong Kong University of Science and Technology, Clear Water Bay, Hong Kong

A-12.4:IL07 **Metamaterial Inspired Antennas for RF to Optical Applications**
R.W. ZIOLKOWSKI, Department of Electrical and Computer Engineering, Universty of Arizona, Tucson, AZ, USA

A-12.4:IL08 **Superlensing with Arrays of Metallic Nanorods**
P. BELOV, Queen Mary University of London, UK & National Research University ITMO, St. Petersburg, Russia

A-12.4:IL09 **Near-field Mapping of (Slow) Light**
L.(K.) KUIPERS, FOM Institute for Atomic and Molecular Physics (AMOLF), Amsterdam, The Netherlands

A-12.4:L10 **On Conformal Lenses**
HUANYANG CHEN, School of Physical Science and Technology, Soochow University, Suzhou, Jiangsu, China

A-12.5 Acoustic and Seismic Metamaterials

A-12.5:IL01 **Acoustic Magnifying Hyperlens**
JENSEN LI, Department of Physics and Materials Science, City University of Hong Kong, Hong Kong

A-12.5:IL02 **Zero Acoustic Transmittance through Holey Structures**
J.S. BELL, A.R.J. MURRAY, E. HENDRY, **A.P. HIBBINS**, I.R. SUMMERS, J.R. SAMBLES, University of Exeter, Exeter, UK

A-12.5:IL03 **Negative Effective Gravity in Water Waves**
X.H. HU[1], C.T. CHAN[2], K.M. HO[3], J. ZI[4], [1]Department of Materials Science, Laboratory of Advanced Materials, and Key Laboratory of Micro and Nano Photonic Structures (Ministry of Education), Fudan University, Shanghai, China; [2]Department of Physics, Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong, China; [3]Ames Laboratory and Department of Physics and Astronomy, Iowa State University, Ames, Iowa, USA; [4]Department of Physics and Key Laboratory of Surface Physics, Fudan University, Shanghai, China

A-12.6 Novel Concepts in Metamaterials

A-12.6:IL01 **Science and Applications of Fano-resonant Metamaterials**
G. SHVETS, The University of Texas at Austin, Austin, TX, USA

A-12.6:IL02 **Generalized Framework for Designing PhoXonic (x=n,t) Metamaterial Networks: Defects, Edge, Surfaces and More**
CHEONG YANG KOH, DSO National Laboratories, Singapore

A-12.6:IL03 **Metamaterials with Conformational Nonlinearity and Tunability**
M. LAPINE, Nonlinear Physics Centre, Australian National University, Canberra, Australia; Dept. Photonics and Optoinformatics, NRU ITMO, St.Petersburg, Russia

A-12.6:L04 **Patterned Ferrimagnetic Thin Films of Spinel Ferrites Directly Obtained by Laser Irradiation: A Way to Prepare Magnonic Crystals?**
I. PASQUET, L. PRESMANES, C. BONNINGUE, **PH. TAILHADES**, Université de Toulouse, UPS, INP, Institut Carnot CIRIMAT, Toulouse cedex, France and CNRS, Institut Carnot Cirimat, Toulouse, France

A-12.6:IL05 **Quantum Levitation**
S. MASLOVSKI, Instituto de Telecomunicaçoes, Universidade de Coimbra, Polo II, Coimbra, Portugal

A-12.6:IL06 **Modeling of Time with Metamaterials**
I. SMOLYANINOV, University of Maryland, College Park, MD, USA

A-12.6:L07 **Experimental Evidence of Negative Refractive Index in Homogeneous Cr-doped Indium Oxide**
A.-G. KUSSOW[1, 2], A. AKYURTLU[2], [1]Department of Physics, University of Connecticut Storrs, Connecticut, USA; [2]Electrical and Computer Engineering Department, University of Massachusetts Lowell, MA, USA

A-12.6:L08 **Use Light to Levitate**
CHENG-WEI QIU, Department of Electrical and Computer Engineering, National Univeristy of Singapore, Singapore

Poster Presentations

A-12:P61 **High Performance Coplanar Waveguides on Low Resistivity Silicon Substrates for Millimeter Wave Applications**
D. DECLE COLIN, ZHIRUN HU, The University of Manchester, Microwave and Communication Systems Group, Manchester, UK

A-12:P62 **Bandwidth Improvement of Metamaterial Absorbers Using Thick Absorbing Material Array Instead of Frequency Selective Surfaces**
Y.Q. PANG, H.F. CHENG, Y.J. ZHOU, J. WANG, Key Laboratory of Advanced Ceramic Fibers and Composites, College of Aerospace and Materials Engineering, National University of Defense Technology, Changsha, China

A-12:P63 **Method of CRLH Antenna Impedance Measurement by Means of On-wafer Characterization Equipment**
G.I. SAJIN, National Research Institute for Microtechnologies, IMT Bucharest, Microwave Laboratory, Bucharest, Romania; I.A. MOCANU, Politechnica University of Bucharest, Faculty of Electronics, Telecommunications and Informations Engineering, Bucharest, Romania

Focused Session A-13
GRAPHENE: FROM SCIENCE TO TECHNOLOGY

Oral Presentations

A-13:KL **Graphene-based and Graphene-derived Materials**
R. RUOFF, Cockrell Family Regents Chair, The University of Texas at Austin, USA

A-13.1 Graphene Production, Processing and Chemistry

A-13.1:IL01 **2D Crystals for a 3D World**
A.H. CASTRO NETO, Graphene Research Centre, National University of Singapore, Singapore & Department of Physics, Boston University, USA

A-13.1:IL02 **Assembly of Graphene-Based Two-dimensional Nanosheets**
XINLIANG FENG, Max-Planck Institute for Polymer Research, Mainz, Germany & Shanghai Jiao Tong University, Shanghai, China

A-13.1:IL03 **Preparation of Graphene and Its Electronic Properties**
YUNQI LIU, Institute of Chemistry, Chinese Academy of Sciences, Beijing, China

A-13.1:L04 **Epitaxial Graphene Grown by High-temperature Sublimation on 3C-SiC**
V. DARAKCHIEVA[1], A. BOOSALIS[2], T. HOFMANN[2], M. SCHUBERT[2], T. IAKIMOV[1], R. VASILIAUSKAS[1], Y. REZA[1], C. BOUHAFS[1], R. YAKIMOVA[1], [1]Linköping University, Sweden; [2]University of Nebraska-Lincoln, USA

A-13.1:IL05 **Chemistry of Graphene Nanostructures: Growth Dynamics and Catalysis**
KIAN PING LOH, Graphene Research Centre and Department of Chemistry, National University of Singapore, Singapore

A-13.1:IL06 **Exploring the Synthesis and Applications of Graphene**
J. WASSEI, S. DUBIN, J. TORRES, **R.B. KANER**, Department of Chemistry & Biochemistry, Department of Materials Science and Engineering and California NanoSystems Institute, University of California, Los Angeles, California

A-13.1:L07 **Graphene Growth on Non-metallic Substrates: Approaches and Perspectives**
H. SACHDEV, R. RENNER, K. MÜLLEN, Max Planck Institute for Polymer Research, Mainz, Germany

A-13.1:L08 **Systematic Comparative Study of Thermally and Extreme-UV Reduced Graphene Oxide**
F. PERROZZI, S. PREZIOSO, M. DONARELLI, F. BISTI, M. NARDONE, S. SANTUCCI, L. OTTAVIANO, Dipartimento di Fisica, Università dell'Aquila, L'Aquila, Italy; E. TREOSSI, V. PALERMO, CNR-ISOF, Bologna, Italy

A-13.1:L09 **Mild and Facile Preparation of High-quality Graphene from NaCl-graphite Intercalation Compounds**
XIAO-MING TAO, ZIJIAN ZHENG, **MINGJIAN LI**, ZHUANG XIE, The Insitute of Textile and Clothing, The Hong Kong Polytechnical University, Hong Kong

A-13.2 Electronic and Optical Properties

A-13.2:IL01 **Electronic Structure of Nanographene; Edge State and Electron Wave Interference**
T. ENOKI, Tokyo Institute of Technology, Tokyo, Japan

A-13.2:IL02 **Molecular Functionalization for Engineering Transport Properties of Graphene**
REN-JYE SHIUE[1], HUNG-CHIEH CHENG[2], SHAO-YU CHEN[1], PO-HSUN HO[2], CHUN-WEI CHEN[2], YIT-TSONG CHEN[1, 2], **WEI-HUA WANG**[1], [1]Academia Sinica, Taiwan; [2]National Taiwan University, Taiwan

A-13.2:IL03 **Electronic Structure Calculations of Self-assembled Monolayers on Graphene and Graphene Nanoribbons**
D. BELJONNE, S. OSELLA, LIPING CHEN, University of Mons, Mons, Belgium

A-13.2:IL04 **Chemical Potential Jumps, Bistability, and Electron-plasmon Interactions in Bernal-stacked Bilayer Graphene**
M. POLINI, NEST, Istituto Nanoscienze-CNR and Scuola Normale Superiore, Pisa, Italy

A-13.2:IL05 **Band Gap Opening by B and N Co-doping in Graphene**
CHUN-CHIANG KUO[1], JEONG-YUAN HWANG[2], LI-CHYONG CHEN[2], **KUEI-HSIEN CHEN**[1, 2], [1]Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan; [2]Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan

A-13.2:IL06 **Inhomogenous Electronic Structure and Transport Gap in Disordered Bilayer Graphene**
E. ROSSI, Department of Physics, College of William and Mary, Williamsburg, VA, USA

A-13.2:L07 **On the Possibility of Ultra-low Power Switching in Multilayer Graphene Nanostructures**
B. DELLABETTA, Micro and Nanotechnology Laboratory, University of Illinois, Urbana, IL, USA; J. SHUMWAY, Department of Physics, Arizona State University, Tempe, AZ, USA; **M.J. GILBERT**, Department of Electrical and Computer Engineering, University of Illinois, Urbana, IL, USA

A-13.2:IL08 **Raman Spectroscopy of Pristine, Defected and Strained Graphene**
C. CASIRAGHI, School of Chemistry and Photon Science Institute, University of Manchester, UK, & Physics Department, Free University Berlin, Germany

A-13.2:IL09 **Resonance Raman Scattering in Graphene**
M.A. PIMENTA, A. RIGHI, S.D. COSTA, D.L. MAFRA, A.O. COIMBRA, L.M. MALARD, C. FANTINI, L.G. MOURA, E.A. MOUJAES, H. CHACHAM, R.W. NUNES, Departamento de Fisica, Universidade Federal de Minas Gerais , Belo Horizonte, Brazil

A-13.2:IL10 **Tailoring the Electronic Properties of Epitaxial Graphene on Metallic Substrates**
M. PAPAGNO, **C. CARBONE**, Istituto di Struttura della Materia, Consiglio Nazionale delle Ricerche, Trieste, Italy

A-13.2:L11 **Dirac Plasmons by Infrared Nano-spectroscopy and Nano-imaging**
D.N. BASOV, Department of Physics, University of California, San Diego, La Jolla, CA, USA

A-13.3 Electronic, Spintronic, Optical and Sensing Applications

A-13.3:IL01 **Electronic Transport in Graphene Devices - On the Impact of Contacts, Channel and Scaling Properties in Graphene**
J. APPENZELLER, School of Electrical and Computer Engineering and Birck Nanotechnology Center, Purdue University, West Lafayette, IN, USA

A-13.3:IL02 **Graphene-based Transistors with Tunable Band Gap**
D. NEUMAIER, AMO GmbH, Aachen, Germany

A-13.3:IL03 **Graphene Field Effect Transistors for Bioelectronics**
J.A. GARRIDO, Walter Schottky Institut, Technische Universität München, Garching, Germany

A-13.3:L04 **Two Dimensional Graphene/h-BCN Based Devices with Large Ion/Ioff Ratio for Digital Applications**
G. FIORI, S. BRUZZONE, G. IANNACCONE, Dipartimento Ingegneria dell'Informazione, University of Pisa, Pisa, Italy

A-13.3:IL05 **Graphene Applications in Thermal Interface Materials and Heat Spreaders for High-power Density Electronics**
A.A. BALANDIN, Nano-Device Laboratory, Department of Electrical Engineering and Materials Science and Engineering Program, University of California - Riverside, Riverside, CA, USA

A-13.3:IL06 **Graphene Nanostructures for Building Blocks of Quantum-dot Based Nanodevices**
S. MORIYAMA, International Center for Materials Nanoarchitectonics, National Institute for Materials Science (NIMS), Tsukuba, Ibaraki, Japan; Y. MORITA, Faculty of Engineering, Gunma University, Kiryu, Gunma, Japan; K. ISHIBASHI, Advanced Device Laboratory, RIKEN, Saitama, Japan; E. WATANABE, D. TSUYA, Nanotechnology Innovation Center, NIMS, Tsukuba, Ibaraki, Japan

A-13.3:IL07 **Graphene Quantum Systems**
S. DRÖSCHER, A. JACOBSEN, D. BISCHOF, T. IHN, **K. ENSSLIN**, ETH Zurich, Switzerland

A-13.3:L08 **Gas Sensing Properties of Graphene Oxide (GO) Gas Sensors to NO2, CO and H2**
C. CANTALINI, L. GIANCATERINI, Dipartimento di Chimica e Ingegneria Chimica, University of L'Aquila, Italy; E. TREOSSI, V. PALERMO, CNR ISOF, Bologna, Italy; F. PERROZZI, S. SANTUCCI, L. OTTAVIANO, Dipartimento di Fisica, University of L'Aquila, Italy

A-13.3:L09 **In-situ CCVD Grown Graphene Transistors with Ultra-high On/Off-Current Ratio in Silicon CMOS Compatible Processing**
P.J. WESSELY, F. WESSELY, E. BIRINCI, U. SCHWALKE, Technische Universität Darmstadt, Darmstadt, Germany; B. RIEDINGER, Fraunhofer-Institut für Werkstoffmechanik, Freiburg, Germany

A-13.3:IL10 **Graphene-based Molecular Spintronics**
M. AFFRONTE, CANDINI, C. ALVINO, S3, Istituto Nanoscienze - CNR, Modena, Italy; S. KLYATSKAYA, M. RUBEN, Institute of Nanotechnology (INT), Karlsruhe Institute of Technology (KIT), Germany; W. WERNSDORFER, Institut Néel, CNRS, Grenoble Cedex, France

A-13.3:IL11 **Efficient Spintronics with Graphene**
P. SENEOR[1], B. DLUBAK[1], M.-B. MARTIN[1], A. ANANE[1], C. DERANLOT[1], B. SERVET[2], S. XAVIER[2], R. MATTANA[1], M. SPRINKLE[3], C. BERGER[3, 4], W. DE HEER[3], F. PETROFF[1], A. FERT[1], [1]Unité Mixte de Physique CNRS/Thales, Palaiseau and Université Paris-Sud, Orsay, France; [2]Thales Research and Technology, Palaiseau, France; [3]School of Physics, Georgia Institute of Technology, Atlanta, USA; [4]Institut Néel, CNRS, Grenoble, France

A-13.3:IL12 **Novel Graphene Based Materials in Optics, Opto-electronics and Photovoltaics**
CHUN-WEI CHEN, Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan

A-13.3:L13 **Dielectric-tuned Diamondlike Carbon Materials for a Ultrahigh-speed Self-aligned Graphene Channel Field Effect Transistor**
S. TAKABAYASHI, M. YANG, S. OGAWA, Y. TAKAKUWA, T. SUEMITSU, T. OTSUJI, Tohoku University, Sendai, Japan

A-13.4 Energy Applications

A-13.4:IL01 **Graphene Layers for Hydrogen Storage**
V. PELLEGRINI, NEST, Istituto Nanoscienze-CNR and Scuola Normale Superiore, Pisa, Italy

A-13.4:IL02 **Fabrication of Graphene-based Flexible Energy Storage Devices**
FENG LI, WENCAI REN, **HUI-MING CHENG**, Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, Shenyang, China

A-13.4:L03 **Enhanced Infrared Light Harvesting of PbS Quantum Dot Photovoltaic and Photodetector on Graphene Electrode**
CHIA-CHUN CHEN[1, 2], DI-YAN WANG[3], CHIH-CHENG LIN[3], YOU-TING JIANG[1], CHUN-WEI CHEN[3], [1]Department of Chemistry, National Taiwan Normal University, Taipei, Taiwan; [2]Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan; [3]Department of Materials Science and Engineering, National Taiwan University, Taipei, Taiwan

A-13.4:L04 **Growth of Oxide Nanocrystals on the Surfaces of Graphene Nanoribbons and Novel Supercapacitors**
FENG LI, SHAOJUN LIU, YUANHUA XIAO, AIQIN ZHANG, YU QI, Zhengzhou University of Light Industry, State Lab of Surface and Interface Science and Technology, Zhengzhou, China

A-13.4:L05 **Enhanced Li Capacity at High Lithiation Potentials in Graphene Oxide**
M.E. STOURNARA, V.B. SHENOY, Brown University, School of Engineering, Providence, RI, USA

A-13.5 Graphene Composites

A-13.5:IL01 **The Potential of Graphene Composites: Interfacial Stress Transfer in an Ideal System**
I. KINLOCH, L. GONG, A. RAJU, I. RIAZ, R. JALIL, K. NOVOSELOV, R.J. YOUNG, School of Materials and the School of Physics and Astronomy, University of Manchester, UK

A-13.5:L02 **Shape Memory Polyurethane with Graphene-iron Hybrid Nanoparticles for Helical Stents**
JUNG-HWAN JUNG, IL-KWON OH, School of Mechanical, Aerospace and Systems Engineering, KAIST, Daejeon, Republic of Korea

A-13.5:L03 **Multifunctional Spark Plasma Sintered Graphene Nanoplatelets / Ceramic Composites**
C. RAMIREZ, P. MIRANZO, E. GARCIA, M.I. OSENDI, Instituto de Cerámica y Vidrio (ICV-CSIC), Madrid, Spain; F. FIGUEIREDO, Centre for Research in Ceramics and Composite Materials (CICECO), Aveiro, Portugal

Poster Presentations

A-13:P65 **Breakdown of the Quantum Hall Effect in Graphene**
Y. MORITA, Gunma University, Kiryu, Japan

A-13:P66 **Design of Enzymatic Bioanode Based on Graphite/Graphene**
S. MUTLU, Hacettepe University, Faculty of Engineering, Ankara, Turkey; D. TAYKOZ, A. HANCI, U. SAÇAK, Hacettepe University, Institute of Science, Ankara, Turkey

A-13:P67 **Graphene Based Cathode for Dye Sensitized Solar Cells**
L. KAVAN, J. Heyrovský Institute of Physical Chemistry, v.v.i., Academy of Sciences of the Czech Republic, Prague, Czech Republic

A-13:P68 **Shear Induced Gelation of Graphene Containing Resins for Windmill Applications**
T. MAHMOUDI, G.S. SONG, D.S. LEE, **F.J. STADLER**, School of Semiconductor and Chemical Engineering, Chonbuk National University, Jeonju, Republic of Korea

A-13:P69 **Gas Barrier Properties of Graphene Oxide**
E. STAGNINI, NANOCAT srl, Dipartimento di Fisica, University of L'Aquila, Italy; F. PERROZZI, S. SANTUCCI, L. OTTAVIANO, Dipartimento di Fisica, University of L'Aquila, L'Aquila, Italy

A-13:P70 **Graphene-chitosan Nanocomposite Film by Reduction of Graphene Oxide within Chitosan Networks**
CHANG KEE LEE, JIN KIE SHIM, SANG BONG LEE, Korea Packaging Center, Korea Institute of Industrial Technology, Bucheon, Korea

Special Session A-14

Multifunctional Smart Materials for Energy Harvesting

Oral Presentations

A-14.1 Smart Materials for High Efficiency Solar Cells

A-14.1:IL01 **Carbon Nanotube-organic Hybrid Solar Cells for Energy Harvesting**
S.R.P. SILVA, Nanoelectronics Centre, Advanced Technology Institute, University of Surrey, Guildford, UK

A-14.1:IL02 **Light Harvesting Schemes for High-performance Polymer Solar Cells**
FANG-CHUNG CHEN, JYH-LIH WU, CHIA-LING LEE, YI HONG, MING-KAI CHUANG, KIM-SHIH TAN, Department of Photonics and Display Institute, National Chiao Tung University, Hsinchu, Taiwan

A-14.1:L03 **Cobalt Doped ZnO Nanorods Fabricated by Chemical Bath Deposition Technique**
P. HARI[1], J. SEAY[1], K. FARMER[2], K.P. ROBERTS[2], [1]Department of Physics, University of Tulsa, Tulsa, OK, USA; [2]Department of Chemistry, University of Tulsa, Tulsa, OK, USA

A-14.1:L04 **Effective Harvesting of Photons Using Smart Material Systems for Solar Energy Conversion**
I.M. DHARMADASA, Materials & Engineering Research Institute, Sheffield Hallam University, Sheffield, UK

A-14.1:L05 **Bi2S3 Nanoparticles Supported on CNT-TiO2 Matrices for Photovoltaic Applications: a Comparative Study of Preparation Methods**
M.E. RINCON, **J.C. CALVA**, M. SOLÍS, Centro de Investigación en Energía-UNAM, Temixco, Morelos, Mexico

A-14.1:IL06 **Efficient Light Harvesting by Photon Downconversion and Light Trapping in Hybrid ZnS Nanoparticles/Si Nanotips Slar Cells**
YANG-FANG CHEN, CHUN-YING HUANG, Physics Department, National Taiwan University, Taipei, Taiwan

A-14.1:IL07 **Organic Solar Cells: How they Work and How to Improve them**
D. FICHOU, Université Pierre et Marie Curie - Paris 6, Institut Parisien de Chimie Moléculaire, UMR CNRS 7201, Paris, France

A-14.1:L08 **Si/Ge/SiGe Quantum Well Structures on Trigonal c-plane Sapphire via Rhombohedral Epitaxy**
S.T. SEAMAN, Virginia Tech, Blacksburg, VA, USA; YEONJOON PARK, HYUN-JUNG KIM, National Institute of Aerospace (NIA), Hampton, VA, USA; SANG H. CHOI, NASA Langley Research Center, Hampton, VA, USA

A-14.1:L09 **Influence of the Indium Precursors on ITO Properties Grown by Metal-organic Chemical Vapor Deposition**
P.D. SZKUTNIK, M. CARRILLO, F. WEISS, C. JIMÉNEZ, Laboratoire des Matériaux et du Génie Physique, UMR 5628 CNRS - Grenoble INP, Grenoble, France; V. LAHOOTUN, Advanced Materials for Semiconductor and Photovoltaics - AMSP Air Liquide - R&D CRCD; X. MESCOT, Institut de la Micréolectronique, Electromagnétisme, Photonique, Hyperfréquences UMR5130 CNRS - Grenoble INP, Grenoble, France

A-14.1:L10 **Enhanced Efficiency for Dye-sensitized Solar Cells Using a Surface-treated Photo-anode**
WEIN-DUO YANG, Department of Chemical and Materials Engineering, National Kaohsiung University of Applied Sciences, Kaohsiung, Taiwan; RUI LIU, LIANG-SHENG QIANG, Department of Applied Chemistry, Harbin Institute of Technology, Harbin, PR China

A-14.1:IL11 **All-polymer Solar Cells Based on Perylene-diimide Copolymers: From Material Design to Photovoltaic Performances**
S. LUZZATI, E. KOZMA, D. KOTOWSKI, M. CATELLANI, Istituto per lo Studio delle Macromolecole, Consiglio Nazionale delle Ricerche, Milan, Italy

A-14.1:IL12 **Nonvolatile Memory and Photovoltaic Devices Using Hybrid Nano-structures**
EUN KYU KIM, DONG UK LEE, Department of Physics and Research Institute for Natural Sciences, Hanyang University, Seoul, Korea

A-14.1:IL13 **Bi_2WO_6 Inverse Opals: Facile Fabrication and Efficient Visible-light-driven Photocatalytic and Photoelectrochemical Water-splitting Activity**
L. ZHANG, C. BAUMANIS, L. ROBBEN[1], T. KANDIEL, **D. BAHNEMANN**, Institut für Technische Chemie, Leibniz Universität Hannover, Hannover, Germany; [1]Institut für Mineralogie, Leibniz Universität Hannover, Hannover, Germany

A-14.1:IL14 **New Catalysts for Production of Solar Fuels**
IB CHORKENDORFF, Danish National Research Foundation's Center for Individual Nanoparticle Functionality (CINF), Department of Physics, Technical University of Denmark, Kongens Lyngby, Denmark

A-14.1:L15 **Polarizing Field Effect on Charge Transfer in Hybrid Photovoltaic Cells with Ferroelectric Bi-layers**
SOUMEN DAS, DAAN LIU, YOON BONG HAHN, School of Semiconductor and Chemical Engineering, Chonbuk National University, Jeonju, South Korea

A-14.2 Smart Materials for Self-power Generators

A-14.2:IL01 **Energy Harvesting on Vibration: A Performance Comparison Between Ferroelectric and Electrostricive Polymer Material**
D. GUYOMAR, P.-J. COTTINET, M. LALLART, L. LEBRUN, Universite de Lyon, INSA-LYON, Villeurbanne, France

A-14.2:IL02 **Highly Efficient Power Generation Using Piezoelectric and Semiconducting Coupled Properties**
SANG-WOO KIM, Sungkyunkwan University (SKKU), Suwon, South Korea

A-14.2:L03 **Synthesis of PZT Nanofibers by Electrospinning**
Y. SHMUELI, G.E. SHTER, L. FINKELZON, R. MEIR, D. PESELEV, **G.S. GRADER**, Chemical Engineering Department, Technion, Haifa, Israel

A-14.2:L04 **Thermoelectric Generating Properties of Aurivillius Compounds**
H. KOHRI, T. YAGASAKI, Kogakuin University, Hachioji, Tokyo, Japan

A-14.2:L05 **Processing and Piezoelectric Properties of Bismuth-based Ceramics**
E.D. POLITOVA, B.V. EGOROVA, G.M. KALEVA, A.V. MOSUNOV, S.YU. STEFANOVICH, A.G. SEGALLA, J. ZENG, L.Ya. Karpov Institute of Physical Chemistry, Moscow, Russia; Lomonosov Moscow State University, Moscow, Russia; ELPA Company, Zelenograd, Moscow, Russia; Shanghai Institute of Ceramics, Chinese Academy of Sciences, Shanghai, China

A-14.2:IL06 **Epitaxial Pb(Zr,Ti)O3 on Silicon for Energy Harvesting Devices**
A. SAMBRI[1], S. GARIGLIO[2], D. ISARAKORN[3], D. BRIAND[3], A. TORRES PARDO[4], J.W. REINER[5], C.H. AHN[5], J.-M. TRISCONE[2], [1]Dipartimento di Scienze Fisiche & CNR-SPIN, Università degli Studi di Napoli Federico II, Napoli, Italy; [2]Department of Condensed Matter Physics (DPMC), University of Geneva, Geneva, Switzerland; [3]Ecole Polytechnique Fédérale de Lausanne (EPFL), SAMLAB, Switzerland; [4]Laboratoire de Physique des Solides, Université Paris-Sud, CNRS-UMR 8502, Orsay, France; [5]Department of Applied Physics, Yale University, New Haven, Connecticut, USA

A-14.2:IL07 **ZnO Nanowires for Energy Harvesting and Piezotronics**
ZHONG LIN WANG, School of Materials Science and Engineering, Georgia Institute of Technology, Atlanta, GA, USA

A-14.2:IL08 **Highly Efficient, Flexible Thin Film Nanogenerator**
KEON JAE LEE, Department of Materials Science and Engineering, KAIST, Daejeon, Korea

A-14.2:L09 **Performance of Cantilevered Electric Harvesters with Piezoelectric Materials in Optimum Topology**
CHEOL KIM, J.W. LEE, Dept. of Mechanical Engineering, Kyungpook National University, Daegu, Korea

A-14.2:L10 **The Synthesis of In-Se by Vapor Transport Method**
N. TAKANO, Graduate School, Kogakuin University, Hachioji, Tokyo, Japan; H. KOHRI, T. YAGASAKI, Faculty of Engineering, Kogakuin University, Tokyo, Japan

A-14.2:L11 **Piezoelectric Properties of Crystallized PZT Thin Films on Flexible Substrate for Energy Harvesting**
CHONG-YUN KANG, MIN-GYU KANG, YOUNG-HO DO, SEUNG-MIN OH, SAHN NAHM, SEOK-JIN YOON, Electronic Materials Center, Korea Institute of Science and Technology, Seoul, Korea; Department of Materials Science and engineering, Korea University, Seoul, Korea

A-14.2:L12 **Hybrid Photovoltaic-piezoelectric Flexible Device for Energy Harvesting from Nature**
D. VATANSEVER, R.L. HADIMANI, **T. SHAH**, E. SIORES, Institute for Materials Research and Innovation, University of Bolton, Bolton, UK

A-14.3 Interfacial Characterization

A-14.3:IL01 **Interfacial and Electrical Properties of Reliable p-TiO2 for Optoelectronic Devices Application**
S. DAS, D. LIU, **YOON-BONG HAHN**, School of Semiconductor and Chemical Engineering, WCU Department of BIN Fusion Technology, Chonbuk National University, South Korea

A-14.3:L02 **Graphene Composite Materials for Supercapacitor Electrodes**
J. LAKE, Z. TANAKA, **BIN CHEN**, NASA Ames Research Center, Moffett Field, CA, USA; Dept. of Mechanical Engineering, Columbia University, NY, USA; Dept. of Electrical Engineering, University of California, CA, USA

Poster Presentations

A-14:P71 **Design of Multi-anchoring Phenoxazine Dyes for Dye-sensitized Solar Cells**
W. LEE, S.B. YUK, H.J. KIM, J.P. KIM, Department of Material Science and Engineering, Seoul National University, Seoul, Korea

A-14:P72 **Structural and Photovoltaic Properties of CuO/ZnO Nanocomposite Solar Cells**
R. SHARMA, **JIN-HWAN KIM**, YOON-BONG HAHN, School of Semiconductor and Chemical Engineering, WCU Department of BIN Fusion Technology, Chonbuk National University, South Korea

A-14:P73 **Photovoltaic Properties of ZnO Nanoparticles and Nanorods in ZnO/P3HT Hybrid Solar Cells**
SANG HOON KIM, JIN-HWAN KIM, RYUN-TAK KIM, YOON-BONG HAHN, School of Semiconductor and Chemical Engineering, WCU Department of BIN Fusion Technology, Chonbuk National University, South Korea

A-14:P74 **ITO-free Low-cost Organic Solar Cells with Highly Conductive Poly(3,4 ethylenedioxythiophene): p-toluene Sulfonate Anodes**
KIYEUL YANG, M. ARIFUR RAHMAN, A. RAHIM, MD. MANIRUZZAMAN, C. LEE, H. NAM, H. SOH, J. LEE, Kookmin University, Seoul, South Korea

A-14:P75 **Porphyrin Sensitizer for Dye Solar Cells**
M.I. KHAN, A. HOFF, L. JIN, X.P. ZHANG, C. FEREKIDES, University of South Florida, FL, USA

A-14:P76 **The Influence of Anatase Crystal Orientation on its Electrochemical Properties and Performance in Dye-sensitized Solar Cell**
M. ZUKALOVA[1], B. LASKOVA[1,2], L. KAVAN[1,2], A. CHOU[3], P. LISKA[4], ZHANG WEI[5], LIU BIN[5], M. GRÄTZEL[4], [1]J. Heyrovský Inst. of Physical Chemistry, v.v.i., Academy of Sciences of the Czech Rep., Prague, Czech Rep.; [2]Dept. of Inorganic Chemistry, Faculty of Science, Charles University, Hlavova, Prague, Czech Rep.; [3]LIARC Centre of Excellence for Functional Nanomaterials, The University of Queensland, St Lucia, Queensland, Australia; [4]Lab. of Photonics and Interfaces, Inst. of Chemical Sciences and Engineering, Swiss Federal Institute of Technology, Lausanne, Switzerland; [5]Dept. of Chemical and Biomolecular Engineering, National University of Singapore, Singapore

A-14:P77 **Effect of Additional Catalyzer in Growth of Bi2Sr2Can-1CunOy Superconducting Whiskers**
H. TANAKA[1], Y. ARAKI[1], S. TSUNASHIMA[1], K. TODA[1], H. YOSHIKAWA[2], S. KISHIDA[3], [1]Department of Electrical and Computer Engineering, Yonago National College of Technology; [2]Department of Materials Infrastructure, National Institute for Materials Science; [3]Graduate school of Electrical and Electronic Engineering, Tottori University, Japan

Focused Session A-15
ACTIVELY MOVING POLYMERS

Oral Presentations

A-15.1 Shape Memory Polymers

A-15.1:IL01 **Shape Memory Elastomers Based on Ionomer Compounds**
R.A. WEISS, J. DONG, University of Akron, Akron, OH, USA

A-15.1:IL02 **Tunable Shape-Memory Media from Physically Modified Thermoplastic Elastomers**
R.J. SPONTAK, Depts of Chemical & Biomolecular Engineering and Materials Science & Engineering, North Carolina State University, Raleigh, NC, USA

A-15.1:L03 **Multiple Shape-memory Behavior of Polyethylene/ Polycyclooctene Blends Cross-linked by Electron Irradiation**
H.-J. RADUSCH[1], I. KOLESOV[1], U. GOHS[2], G. HEINRICH[2], [1]University of Halle-Wittenberg, Department of Engineering Sciences, Halle (Saale), Germany; [2]Leibniz Institute of Polymer Research Dresden, Dresden, Germany

A-15.1:IL04 **Biocompatible and Degradable Polydepsipeptide based Multiblock Copolymers with Shape-memory Capability**
M. BEHL[1,2], Y. FENG[2,3], A. LENDLEIN[1,2], [1]Center for Biomaterial Development and Berlin Brandenburg Center for Regenerative Therapies, Institute of Polymer Research, Helmholtz-Zentrum Geesthacht, Teltow, Germany; [2]Tianjin University-Helmholtz-Zentrum Geesthacht, Joint Laboratory for Biomaterials and Regenerative Medicine, Tianjin, China; [3]School of Chemical Engineering and Technology, Tianjin University, Tianjin, P. R. China

A-15.1:L05 **Shape Memory Polymer Networks With Tailorable Toughness Under Physiological Conditions**
K. GALL, School of Materials Science and Engineering, Georgia Institute of Technology, Atlanta, GA, USA; K.E. SMITH, MedShape Solutions Inc, Atlanta, GA, USA

A-15.1:L06 **Mechanically-driven Recovery in Amorphous Polymer Networks Programmed for Shape Memory**
C.M. YAKACKI, The University of Colorado at Denver, Denver, CO, USA; K.A. GALL, The Georgia Institute of Technology, Atlanta, GA, USA; T.D. NGUYEN, Johns Hopkins University, Baltimore, MD, USA

A-15.1:L07 **On the Validity of Time-Temperature Equivalence for Wide Frequency Band Analysis of Shape Memory Polymers**
X. GABRION, E. FOLTETE, V. PLACET, M. COLLET, **M. OUISSE**, FEMTO-ST Applied Mechanics, Besançon, France

A-15.1:L08 **Synthesis and Characterization of Monofunctionalized Poly(ω-pentadecalactone) with Isocyanato Ethylmethacrylate and Polymers based thereof**
M. BALK, U. NÖCHEL, M. BEHL, A. LENDLEIN, Centre for Biomaterial Development, Institute of Polymer Research, Helmholtz-Zentrum Geesthacht, Teltow, Germany

A-15.1:L09 **Molecular Dynamics Simulations for Micro-Vascular Shape Memory Composites**
J.D. DAVIDSON, Y. LI, **N.C. GOULBOURNE**, Aerospace Engineering, University of Michigan, Ann Arbor, MI, USA

A-15.2 Shape Changing Polymers

A-15.2:IL01 **A Continous Flow Synthesis of Micrometer Sized Actuators from Liquid Crystalline Elastomers**
E. FLEISCHMANN, C. OHM, **R. ZENTEL**, Chemistry, University of Mainz, Mainz, Germany

A-15.2:IL02 **Thermosensitive Helical Shape of Twist Nematic Elastomer Ribbons**
K. URAYAMA, Department of Materials Chemistry, Kyoto University, Kyoto, Japan

A-15.2:L03 **Electro-actuation of Responsive Polyelectrolyte Hydrogel: Role of pH Propagating Front**
P.J. GLAZER, A. EMBRECHTS, E. MENDES, Chemical Engineering, Delft University of Technology, The Netherlands; S.G. LEMAY, MESA+ Institute for Nanotechnology, University of Twente, The Netherlands

A-15.2:L04 **Plasma Treatment of LCE Affects Thermal Properties of Shape-changing Materials**
C. MELCHERT, M. BEHL, A. LENDLEIN, Center for Biomaterial Development, Institute of Polymer Research, Helmholtz-Zentrum Geesthacht, Teltow, Germany

A-15.2:L05 **Shape Memory Polymer Systems with Independent Control of Material Properties Before and After Deployment**
C.N. BOWMAN, D.P. NAIR, N.B. CRAMER, J.C. GAIPA, R. SHANDAS,University of Colorado, Boulder, CO, USA

A-15.3 Light-sensitive Polymers

A-15.3:IL01 **Photomobile Polymer Materials**
T. IKEDA[1], T. UBE[1], M. YAMADA[2], M. KONDO[2], Y. NAKA[2], A. SHIMAMURA[2], J. MAMIYA[2], M. KINOSHITA[2], A. SHISHIDO[2], [1]Chuo University, Tokyo, Japan; [2]Tokyo Institute of Technology, Yokohama, Japan

A-15.3:IL02 **Photoresponsive Liquid Crystal Polymer Networks: Glassy Adaptive Materials**
T.J. WHITE[1], KYUNG MIN LEE[2], D.H. WANG[3], LOON-SENG TAN[1], M.L. SMITH[4], H. KOERNER[2], R.A. VAIA[1], T.J. BUNNING[1], [1]AFRL/RX; [2]AFRL/RX, Azimuth Corp.; [3]AFRL/RX, UES; [4]AFRL/RX, NRC, USA

A-15.3:L03 **Photo-responsive Polymeric Structures Based on Spiropyran**
L. FLOREA, D. DIAMOND, F. BENITO-LOPEZ, CLARITY: Centre for Sensor Web Technologies, National Centre for Sensor Research, School of Chemical Sciences, Dublin City University, Dublin, Ireland

A-15.3:IL04 **Photoresponsive Liquid Crystalline Polymeric Materials**
D.J. BROER, Eindhoven University of Technology, Eindhoven, The Netherlands

A-15.3:L05 **Azobenzene-containing, High Tg, Crosslinked & Linear Aromatic Polyimides: Photo-mechanically Bendable and Twistable Cantilevers**
LOON-SENG TAN, D.H. WANG[a], KYUNG MIN LEE[b], ZHENNING YU[c], H. KOERNER[a], R.A. VAIA, T.J. WHITE, Materials & Manufacturing Directorate, Air Force Research Laboratory, Wright-Patterson Air Force Base, OH, USA; [a]UES, Inc. Dayton, OH, USA; [b]Azimuth Corp. Dayton, OH, USA; [c]Department of Chemistry, Wright State University, Dayton, OH, USA

A-15.3:L06 **Light Responsive Polyolefins by Post-Reactor Modification**
F. CICOGNA, S. COIAI, S. MONTI, E. PASSAGLIA, Istituto di Chimica dei CompostiOrganometallici (ICCOM-CNR) UOS PISA, Pisa, Italy; G. PRAMPOLINI, V. BARONE, Scuola Normale Superiore, Pisa, Italy

A-15.4 Magneto-sensitive Materials

A-15.4:IL01 **Magnetic Heating of Polymer-SPION Hybrid Materials: From Fundamental Studies to Externally Triggered Drug Delivery**
R. HOOGENBOOM, Supramolecular Chemistry Group, Dept. of Organic Chemistry, Ghent University, Ghent, Belgium; S. ROVERS, J. KEURENTJES, Process Development Group, Dept. of Chemical Engineering and Chemistry, Eindhoven University of Technology, Eindhoven, The Netherlands

A-15.4:IL02 **Electrically- and Magnetically Induced Motility of Polymer Gels and Smart Composites**
M. ZRINYI, Semmelweis University, Laboratory of Nanochemistry, Department of Biophysics and Radiation Biology, Budapest, Hungary

A-15.4:L03 **Magnetic Ionogels for Fluid Handling in Microfluidic Devices**
B. ZIOLKOWSKI, K.J. FRASER, R. BYRNE, D. DIAMOND, CLARITY: The Centre for Sensor Web Technologies, National Centre for Sensor Research, Dublin City University, Dublin, Ireland

A-15.4:L04 **Deformation Mechanisms in Iron-particle Magneto-rheological Elastomers: Experiments and Theory**
K. DANAS, N. TRIANTAFYLLIDIS, LMS, Ecole Polytechnique, Palaiseau, France; S.V. KANKANALA, BD Technologies, Salt Lake City, NC, USA

A-15.5 Degradable, Stimuli-sensitive Polymers

A-15.5:IL01 **Redox-responsive Degradation of Poly(ethylene glycol) (PEG) Based Cryogels**
F. DU PREZ, T. DISPINAR, L. DE COCK, B. DE GEEST, Polymer Chemistry Research Group, Ghent University, Ghent, Belgium; Laboratory of Pharmaceutical Technology, Dept. of Pharmaceutics, Ghent University, Ghent, Belgium

A-15.5:IL02 **Biodegradable Shape Memory Polymeric Composites**
LIN WANG, HONGMEI CHEN, **SHAOBING ZHOU**, School of Materials Science and Engineering, Key Lab. of Advanced Technologies of Materials, Ministry of Education, Southwest Jiaotong University, Chengdu, P.R. China

A-15.5:IL03 **Smart Multifunctional Polymers from Polymerisation of Multi-vinyl Monomers**
WENXIN WANG, Science Foundation Ireland (SFI), Network of Excellence in Functional Biomaterials, National Centre for Biomedical Engineering Science, Department of Mechanical and Biomedical Engineering, National University of Ireland, Galway, Ireland

A-15.5:L04 **Tailoring the Thermo-Mechanical Properties of Biodegradable Poly(beta-amino ester) Shape-Memory Polymers**
D.L. SAFRANSKI, K. GALL, Georgia Institute of Technology, Atlanta, GA, USA and MedShape Solutions, Atlanta, GA, USA; D. WEISS, W.R. TAYLOR, Emory University, Atlanta, GA, USA

A-15.6 Multimaterial Systems

A-15.6:IL01 **Shape Memory Polymer Nanocomposites Research and Applications**
I.S. GUNES[1], G.A. JIMENEZ[2], F. CAO[3], **S.C. JANA**[4], [1]Currently at 3M, Minneapolis, USA; [2]Currently at National University of Costa Rica; [3]Currently at Lubrizol, Brecksville, USA; [4]Department of Polymer Engineering, University of Akron, Akron, OH, USA

A-15.6:IL02 **Laminated Shape Memory Elastomeric Composites**
E.D. RODRIGUEZ[1], D.C. WEED[2], **P.T. MATHER**[2], [1]Mechanical and Aerospace Engineering, Syracuse University; [2]Biomedical and Chemical Engineering, Syracuse University, Syracuse, NY, USA

A-15.6:IL03 **Multifunctional Shape-memory Polymers**
A. LENDLEIN, Center for Biomaterial Development and Berlin-Brandenburg Center for Regenerative Therapies, Institute of Polymer Research, Helmholtz-Zentrum Geesthacht, Teltow, Germany

A-15.6:IL04 **Mechanically Assisted Photolithography**
C. KLOXIN, University of Delaware; Department of Materials Science and Engineering, and Department of Chemical Engineering; Newark, DE, USA

A-15.6:L05 **Magnetic Field Induced Formation of Magnetic Wires into Thin Elastic Membranes with Controlled Properties**
D. LORENZO, D. FRAGOULI, G.C. ANYFANTIS, Center for Biomolecular Nanotechnologies (CBN) - Italian Institute of Technology (IIT)@UniLe, Arnesano (LE), Italy; C. INNOCENTI, INSTM-RU of Florence and Dept. of Chemistry, University of Florence, Sesto F.no (FI), Italy; G. BERTONI, Italian Institute of Technology (IIT), Genova, Italy; R. CINGOLANI, A. ATHANASSIOU, Center for Biomolecular Nanotechnologies (CBN) - Italian Institute of Technology (IIT)@UniLe, Arnesano (LE), Italy, Italian Institute of Technology (IIT), Genova, Italy

A-15.6:IL06 **Mechanically Adaptive Polymer Nanocomposites for Biomedical Implants and other Applications**
C. WEDER, Adolphe Merkle Institute, University of Fribourg, Marly, Switzerland

A-15.6:L07 **Thermally-Induced Shape-Memory Effect of Nanocomposites with Poly(omega-pentadecalactone) Switching Segments Under Constant Stress**
M.Y. RAZZAQ, M. BEHL, A. LENDLEIN, Centre for Biomaterial Development, Institute of Polymer Research, Helmholtz-Zentrum Geesthacht, Teltow, Germany

A-15.7 Applications of Actively Moving Polymers

A-15.7:IL01 **Shape Memory Polymers for Biomedical Applications**
D.J. MAITLAND, Texas A&M University, College Station, TX, USA

A-15.7:IL02 **Synthesis of Shape Memory Polymers for Structural Applications**
I.A. ROUSSEAU, General Motors Company, Warren, MI, USA

A-15.7:L03 **Soft Microorigami: Stimuli-responsive Self-folding Polymer Films**
I. LEONID, Leibniz Institute of Polymer Research, Dresden, Germany

A-15.7:IL04 **Shape-Memory Polymers as Drug Carrier - Points to be considered**
C. WISCHKE, A. LENDLEIN, Center for Biomaterial Development and Berlin-Brandenburg Center for Regenerative Therapies, Helmholtz-Zentrum Geesthacht, Teltow, Germany

A-15.7:L05 **Electrostrictor with Monolithically Integrated CMOS TFT Control**
F. CARTA, YU-JEN HSU, J. SARIK, I. KYMISSIS, Columbia University, New York, NY, USA

A-15.7:L06 **Ethanol Induced Shape Recovery and Swelling in Poly(methyl methacrylate) and Application in Fabrication of Microlens Array**
Y. ZHAO, C.C. WANG, W.M. HUANG, H. PURNAWALI, School of Mechanical and Aerospace Engineering, Nanyang Technological University, Singapore

A-15.7:L07 **Self-softening, Self-positioning 3D Flexible Bioelectronics Enabled by Shape Memory Polymers**
W. VOIT, The University of Texas at Dallas, Materials Science and Engineering, Mechanical Engineering, Richardson, TX, USA

A-15.7:L08 **Multi-functional Shape-memory Polymers and their Composites**
YANJU LIU[1], LIWU LIU[1], HAIBAO LV[2], JINSONG LENG[2], [1]Department of Astronautical Science and Mechanics, Harbin Institute of Technology (HIT), Harbin, China; [2]Centre for Composite Materials, Science Park of Harbin Institute of Technology (HIT), Harbin, China

Poster Presentations

A-15:P78 **The Effect of Partial Constraint on the Recoverable Work & Efficiency of Thermoset (Meth)Acrylate Shape-Memory Polymers**
M. LAKHERA, Dept. of Mechanical Engineering, University of Wyoming, Laramie, WY, USA; C.M. YAKACKI, Dept. of Mechanical Engineering, University of Colorado at Denver, Denver, CO, USA; T.D. NGUYEN, Dept. of Mechanical Engineering, Johns Hopkins University, Baltimore, MD, USA; C.P. FRICK, Dept. of Mechanical Engineering, University of Wyoming, Laramie, WY, USA

A-15:P80 **Epoxy Based Shape Memory Polymer Composites with Different Textile Reinforcements**
M. FEJOS, J. KARGER-KOCSIS, Department of Polymer Engineering, Faculty of Mechanical Engineering, Budapest University of Technology and Economics, Budapest, Hungary

A-15:P83 **Tailored One-way and Two-way Shape Memory Response of Poly(e-caprolactone)-based Systems for Biomedical Applications**
S. PANDINI[1], S. PASSERA[1], T. RICCO[1], A. BORBONI[1], I. BODINI[1], D. VETTURI[1], L. DASSA[1], D. CAMBIAGHI[1], K. PADERNI[2], M. DEGLI ESPOSTI[2], M. MESSORI[2], M. TOSELLI[2], F. PILATI[2], [1]Dipartimento di Ingegneria Meccanica e Industriale, Università degli Studi di Brescia, Italy; [2]Dipartimento di Ingegneria dei Materiali e dell'Ambiente, Università degli Studi di Modena, Reggio Emilia, Italy

A-15:P84 **Evaluation of Phase Structure and Shape Memory Behavior of a Poly (L-lactide-co-glycolide) Statistical Copolymer**
S. PETISCO, J.R. SARASUA, University of the Basque Country (UPV-EHU), School of Engineering Bilbao, Spain

A-15:P85 **Synthesis and Characterization of Cinnamylidene Acetic Acid Functionalized Polyethers**
N. YONGVONGSOONTORN, C. MELCHERT, M. BEHL, A. LENDLEIN, Center for Biomaterial Development, Institute of Polymer Research, Helmholtz-Zentrum Geesthacht, Teltow, Germany

SYMPOSIUM B
STATE-OF-THE-ART RESEARCH AND APPLICATION OF SMAs TECHNOLOGIES

Oral Presentations

Session B-1
Materials

B-1:IL01 **Development of Ni-free Beta-Titanium Shape Memory Alloys**
S. MIYAZAKI, HEE YOUNG KIM, Division of Materials Science, University of Tsukuba, Tsukuba, Japan

B-1:IL02 **Nanostructured Shape Memory Alloys: Processing, Martensitic Phase Transformations, Properties**
T. WAITZ, C. MANGLER, G. STEINER, A. KOMPATSCHER, University of Vienna, Physics of Nanostructured Materials, Vienna, Austria; M. PETERLECHNER, University of Münster, Institute of Materials Physics, Münster, Germany; T. ANTRETTER, F.D. FISCHER, Montanuniversität Leoben, Institute of Mechanics, Leoben, Austria; P. MÜLLNER, Boise State University, Materials Sciende & Engineering, Boise, Idaho, USA

B-1:IL03 **High Temperature Shape Memory Alloys**
J. PONS, R. SANTAMARTA, C. PICORNELL, E. CESARI, Dept. Fisica, Universitat de les Illes Balears, Palma de Mallorca, Spain

B-1:IL04 **Novel Martensite Materials - Strain Glass**
XIAOBING REN, National Institute for Materials Science, Tsukuba, Japan

B-1:IL05 **New Trends in Research and Applications of SMA Technologies**
K. AKATYEVA, V. AFONINA, F. ALBERTINI, S. VON GRATOWSKI, A. IRZHAK, S. FABBRICI, R. GIZATULLIN, V. KHOVAYLO, **V. KOLEDOV**, V. SHAVROV, A. SHELYAKOV, KOTELNIKOV, IRE RAS, Moscow, Russia

B-1:IL06 **Development of Ni- and Fe-based Magnetic Shape Memory Alloys**
R. KAINUMA, Department of Material Science, Graduate School of Engineering, Tohoku University, Sendai, Japan

B-1:IL07 **Magnetostructural Transition Related Multifunctionality in Martensitic Heuslers**
M. ACET, L. MAÑOSA, A. PLANES, Experimentalphysik, Universität Duisburg-Essen, Duisburg, Germany; Dept. Estructura i Constituents de la Matèria, Facultat de Fisica, Universitat de Barcelona, Barcelona, Catalonia, Spain

B-1:L08 **Giant Effects Under High Pressure and High Magnetic Field in Co- and In- Doped NiMnGa Multifunctional Alloys**
F. ALBERTINI, S. FABBRICI, IMEM-CNR, Parma, Italy; J. KAMARAD, Z. ARNOLD, Institute of Physics, AS CR, Prague, Czech Republic; L. RIGHI, University of Parma, Chemistry Dep., Parma, Italy; D. SERRATE, P. ALGARABEL, University of Zaragoza, Inst. de Ciencia de Materiales de Aragon, Zaragoza, Spain, M. DOERR, Tech University of Dresden, Inst. Festkorperphys, Dresden, Germany; E. VAN ELFEREN, Radboud University of Nijmegen, High Field Magnet Lab, Nijmegen, Netherlands

B-1:L09 **Making Smart Materials Smarter**
I. KHAN, Chief Technology Officer (CTO), Innovative Processing Technologies Toronto, Ontario, Canada; N. ZHOU, Canadian Research Chair, University of Waterloo, Waterloo, Ontario, Canada

B-1:L10 **Multilayer Graded Carbon Coating on NiTi Shape Memory Alloy for Biomedical Applications**
NAIYUN XU[1]**,** TEO HANG TONG EDWIN[2], TAY BENG KANG[1], [1]School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore, Singapore; [2]Temasek Laboratories@NTU, Singapore, Singapore

B-1:L11 **Implications of Twinning Kinetics on the Dynamic Magneto-mechanical Response in NiMnGa**
E. FARAN, D. SHILO, Faculty of Mechanical Engineering, Technion, Haifa, Israel

B-1:L12 **From Dual-shape/Temperature Memory Effect to Triple-shape Memory Effect in NiTi Shape Memory Alloys**
W.M. HUANG, C. TANG, C.C. WANG, H. PURNAWALI, Nanyang Technological University, Singapore

B-1:L13 **Alloy Design and Superelasticity in Fe-Mn-Al-Ni Alloy**
T. OMORI, K. ANDO, I. OHNUMA, K. ISHIDA, R. KAINUMA, Tohoku University, Sendai, Japan

Session B-2
Phase Transformation and Microstructure

B-2:IL01 **Microstructure, Mechanism and Mesoscopic Modeling of Shape Memory Alloys**
A. SAXENA, Los Alamos National Lab., Los Alamos, NM, USA

B-2:IL02 **Mechanisms of Twinning and Twin Structures in Ni-Mn-Ga**
P. MÜLLNER, B. MUNTIFERING, Boise State University, Boise, ID, USA; R.C. POND, University of Exeter, UK

B-2:IL03 **Magnetic Shape Memory Materials: Martensitic Structures and Transformation Behaviour**
L. RIGHI, Dipartimento di Chimica GIAF, Università di Parma, Parma, Italy; S. FABBRICI, F. ALBERTINI, IMEM-CNR, Parma, Italy

B-2:IL04 **TEM Analyses of Various Domain Structures in Shape Memory Alloys**
Y. MURAKAMI, D. SHINDO, IMRAM, Tohoku University, Sendai, Japan

B-2:IL05 **Self-accommodation of B19' Martensite in Ti-Ni Shape Memory Alloys**
M. NISHIDA, M. MITSUHARA, M. ITAKURA, Interdisciplinary Graduate School of Science and Engineering, Kyushu University, Japan; T. INAMURA, Precision and Intelligence Laboratory, Tokyo Institute of Technology, Japan; T. HARA, National Institute of Materials Science, Japan

B-2:IL06 **Elasticity and Damping Characteristics of SMA Single Crystals, Polycrystals and Thin Films**
M. LANDA, H. SEINER, P. SEDLÁK, L. BODNÁROVÁ, Laboratory of Ultrasonic Methods, Institute of Thermomechanics, ASCR, Praha, Czech Republic

B-2:IL07 **Isothermal Nature of Martensitic Transformations in Some SMAs**
T. KAKESHITA, **T. FUKUDA**, Department of Materials Science and Engineering, Graduate School of Engineering, Osaka University, Osaka, Japan

B-2:IL08 **Twinning in Ni-Mn-Ga Martensites**
YANLING GE, I. AALTIO, O. SÖDERBERG, S-P. HANNULA, Aalto University School of Chemical Technology, Department of Materials Science and Engineering, Aalto, Finland; N. ZÁRUBOVÁ, Institute of Physics, ASCR v.v.i., Prague, Czech Republic

B-2:IL09 **Optimization of Smart Heusler Alloys from First Principles**
P. ENTEL, Faculty of Physics, University of Duisburg-Essen, Duisburg, Germany

B-2:IL10 **Highly Mobile Twin Boundary in Ni-Mn-Ga Magnetic Shape Memory Single Crystal**
O. HECZKO, Department of Functional Materials, Institute of Physics AS CR, Prague, Czech Republic

B-2:L11 **Theoretical Study of Magnetic Properties and Twin Boundary Motion in Heusler Ni-Mn-X Shape Memory Alloys Using First Principles and Monte Carlo Method**
V.D. BUCHELNIKOV, V.V. SOKOLOVSKIY, M.A. ZAGREBIN, K.I. KOSTROMITIN, S.V. TASKAEV, Chelyabinsk State University, Chelyabinsk, Russia

B-2:L12 **Isothermal Behaviour of the Martensitic Transformation in Ferromagnetic Shape Memory Alloys**
D. SALAS, S. KUSTOV, J. TORRENS-SERRA, **E. CESARI**, Dept. de Física, Universitat de les Illes Balears, Palma de Mallorca, Spain; J.I. PÉREZ-LANDAZÁBAL, V. RECARTE, V. SÁNCHEZ-ALARCOS, Depto. de Física, Universidad Pública de Navarra, Campus de Arrosadía, Pamplona, Spain

B-2:L13 **Superelastic Behavior in Single Crystals of Cu-Al-Mn Shape Memory Alloy**
S. KAWATA, T. OMORI, R. KAINUMA, Department of Materials Science, Graduate School of Engineering, Tohoku University, Sendai, Japan

B-2:L14 **On Isothermal Kinetics of Diffusionless Martensitic Transformations**
S. KUSTOV, E. CESARI, D. SALAS, Dept. de Física, Universitat de les Illes Balears, Palma de Mallorca, Spain

B-2:L15 **Martensitic Transformation and Shape Memory Effect in TiNi Alloy Subjected to Neutrons Irradiation**
S.P. BELYAEV[1, 2], R.F. KONOPLEVA[1], A.V. NAKIN[1], V.A. CHEKANOV[1], [1]Peterburg Nuclear Physics Institute of Russian Academy of Science, Gatchina, Russia; [2]Saint-Petersburg State University, Saint-Petersburg, Russia

B-2:L16 **Reduced Functional Degradation in Single Crystal NiTi Shape Memory Alloys Aged Under Stress**
S.-C. WEIGHARDT, H.J. MAIER, Lehrstuhl für Werkstoffkunde (Materials Science), University of Paderborn, Paderborn, Germany

B-2:L17 **Energetics of Twinning and Slip in NiTi Shape Memory Alloy**
H. SEHITOGLU, T. EZAZ, University of Illinois at Urbana-Champaign, Urbana, IL, USA; H.J. MAIER, University of Paderborn, Germany

B-2:L18 **Inverse Magnetocaloric Effect in Mn3GaC at the Thermally Hysteretic Magnetostructural Transition**
O. CAKIR, M. ACET, Physics Dept., Yildiz Technical University, Istanbul, Turkey; Experimental Physics, Duisburg-Essen University, Duisburg, Germany

B-2:L19 **Small-scale Transformation Behavior of Pseudoelastic NiTi under Uni- and Multi-axial Loading**
I. SEN, Chemnitz University of Technology, Institute of Materials Science and Engineering, Chemnitz, Germany; R. RAGHAVAN, J. MICHLER, EMPA Materials Science and Technology, Thun, Switzerland; M.F.-X. WAGNER, Chemnitz University of Technology, Institute of Materials Science and Engineering, Chemnitz, Germany

B-2:L20 **Athermal and Isothermal Transformations in Ni-Ti and Ni-Ti-X (X=Fe, Cu) Alloys**
S. KUSTOV, E. CESARI, **D. SALAS**, Dept. de Física, Universitat de les Illes Balears, Palma de Mallorca, Spain; J. VAN HUMBEECK, Dep. MTM, KU Leuven, Leuven, Belgium

B-2:L21 **The Effect of Pressure on Martensitic Phase Transformations**
V. PAIDAR, A. OSTAPOVETS, Institute of Physics AS CR, Prague, Czech Republic; O. HARDOUIN DUPARC, LSI, Ecole Polytechnique, Palaiseau, France

B-2:L22 **Superelasticity in Cu-Al-Mn and Ni-Ti Shape Memory Alloys at Cryogenic Temperature**
K. NIITSU, T. OMORI, R. KAINUMA, Department of Materials Science, Graduate School of Engineering, Tohoku University, Sendai, Japan

B-2:L23 **Deformation Twinning in Ni2MnGa**
R.C. POND, University of Exeter, Exeter, UK; B. MUNTIFERING, P. MULLNER, Boise State University, Boise, ID, USA

B-2:L24 **Magnetic Phase Diagram of NiCoMnGa Metamagnetic Shape Memory Alloy**
X. XU, R. KAINUMA, Department of Materials Science, Graduate School of Engineering, Tohoku University, Sendai, Japan; W. ITO, Institute for Materials Research, Tohoku University, Natori, Japan; R.Y. UMETSU, Institute for Materials Research, Tohoku University, Sendai, Japan

Session B-3
Engineering

B-3:IL01 **Thermodynamics of One-way Shape Memory Effect in Alloys under Complex Stress State**
B. RANIECKI, **A. ZIOLKOWSKI**, Institute of Fundamental Technological Research, Polish Academy of Sciences (IPPT, PAN), Warsaw, Poland

B-3:IL02 **Shape Memory Alloys Foams**
A. TUISSI, P. BASSANI, C. BIFFI, CNR-IENI Lecco Consiglio Nazionale delle Ricerche, Istituto per l'Energetica e le Interfasi, Lecco, Italy

B-3:IL03 **Fabrication of Nano-grained Shape Memory Alloys by Severe Plastic Deformation**
K. TSUCHIYA, Q. MEI, D. NOORFAZIDAH BINTI AWAN SHRI, A. YAMAMOTO, National Institute for Materials Science, Tsukuba, Japan

B-3:IL04 **Effect of Loading Frequency on Temperature and Stress Oscillations in Cyclic Phase Transition of NiTi Shape Memory Alloy**
QINGPING SUN, HAO YIN, Department of Mechanical Engineering, The Hong Kong University of Science and Technology, Hong Kong, China

B-3:IL05 **Deformation Processes Responsible for Heat Treatment, Shape Setting or Actuation Instability of NiTi**
P. SITTNER, J. PILCH, L. HELLER, Institute of Physics, Praha, Czech Republic; C. CURFS, ESRF, Grenoble, France

B-3:IL06 **Some Factors Affecting the Shape Recovery Characteristics of NiTi Alloys**
YONG LIU, School of Mechanical and Aerospace Engineering, Nanyang Technological University, Singapore

B-3:IL07 **Mechanical Behaviour of Architectured NiTi Materials in Complex Loading**
D. FAVIER, T. ALONSO, G. CHAGNON, V. DELOBELLE, University of Grenoble, France; H. LOUCHE, G. MACHADO, L.WALTZ, University of Montpellier, France; G. RIO, University of Bretagne Sud, France; Y. LIU University of Western Australia, Australia

B-3:IL08 **Modelling of the Coupling Effect Between Phase Transformation and Plastic Gliding on the Thermomechanical Behavior of Iron Based SMA**
W. KHALI[1], C. BOUBY[1], A. MIKOLAJCZAK[2], **T. BEN ZINEB**[1], [1]LEMTA - Nancy University - CNRS, Nancy, France; [2]ESSTIN - Nancy University, Nancy, France

B-3:IL09 **Nanostructured Ti-Ni SMA: Manufacturing, Microstructure, Static and Fatigue Functional Properties**
V. BRAILOVSKI, S. PROKOSHKIN, Department of Mechanical Engineering, Ecole de Technologie Superieure, Montreal, Canada; Department of Plastic Deformation of Special Alloys, National University of Science and Technology "MISIS", Moscow, Russian Federation

B-3:L10 **Functional Fatigue of NiTi Shape Memory Wires under Assorted Loading Conditions**
G. SCIRE' MAMMANO, **E. DRAGONI**, DISMI - University of Modena and Reggio Emilia, Reggio Emilia, Italy

B-3:L12 **Influence of Inclusions on Nitinol Fatigue**
A. CODA, M. URBANO, SAES Getters S.p.A., Lainate, MI, Italy; D. NORWICH, Memry Corp., Bethel, CT, USA; M. MERTMANN, Memry GmbH, Weil am Rhein, Germany; F. SCZERZENIE, SAES Smart Materials, New Hartford, NY, USA

B-3:L13 **Transformation Behavior of Shape Memory Alloys in Multiaxial Stress State**
T. YAMAMOTO, A. SUZUKI, H. CHO, T. SAKUMA, Faculty of Engineering, Oita University, Oita, Japan

B-3:L14 **Structure and Properties Modification in NiMnGa Single Crystals**
E. PAGOUNIS, M. HELMER, M. MAIER, M. LAUFENBERG, ETO MAGNETIC GmbH, Stockach, Germany

B-3:L15 **Modelling of Shape Memory Alloy Negator Springs for Long-Stroke Constant-Force Actuators**
A. SPAGGIARI, E. DRAGONI, DISMI - University of Modena and Reggio Emilia, Reggio Emilia, Italy

B-3:L16 **Design and Simulation of a Magnetic Shape Memory (MSM) Alloy Energy Harvester**
A.J. NISKANEN, Adaptamat Oy, Helsinki, Finland; I. LAITINEN, Prizztech Oy, Pori, Finland

B-3:L17 **Probing Magneto Elastic Coupling in a NiFeAl Ferromagnetic Shape Memory Alloy using Vibrating Reed Technique**
B. RAJINI KANTH[1], L. ARUNA[1], **P.K. MUKHOPADHYAY**[1], S.N. KAUL[2], [1]LCMP, S.N.Bose National Centre for Basic Sciences, Salt Lake, Kolkata, India; [2]School of Physics, University of Hyderabad, Central University, Hyderabad, Andhra Pradesh, India

B-3:L18 **Influence of Stress on the Work Performance and Plastic Strain Accumulation during Thermal Cycling of TiNi Alloy Under the Stress - symmetrical Scheme**
S. BELYAEV, **N. RESNINA**, R. ZHURAVLEV, Saint-Petersburg State University, Saint-Petersburg, Russia

B-3:L19 **Phase Field Dynamic Modelling of Shape Memory Alloy Nanowires**
R. MELNIK[1, 2, 3], R. DHOTE[1, 4], J. ZU[2], L.X. WANG[5], [1]M2NeT Laboratory, Wilfrid Laurier University, Waterloo, ON, Canada; [2]Basque Excellence Research Centre BCAM, Bilbao, Spain; [3]Ikerbasque, Basque Foundation for Science, Bilbao, Spain; [4]Dept. of Mechanical and Industrial Engineering, University of Toronto, ON, Canada; [5]FPTC State Key Laboratory, Zhejiang University, P.R. China

Session B-4
Composites

B-4:IL01 **From Simple Nitinol Micro-wires Towards Complex Functional NiTi Textiles and Elastomer Composites**
L. HELLER, P. SITTNER, J. PILCH, D. VOKOUN, Institute of Physics ASCR, v.v.i., Czech Republic; K. JANOUCHOVA, M. VYSANSKA, K. JEZIK, M. SYROVATKOVA, Faculty of Textile Engineering, Technical University of Liberec, Czech Republic; B. MARVALOVA, J. VLACH, Faculty of Mechanical Engineering, Technical University of Liberec, Czech Republic

B-4:IL02 **Recent Achievements of NiMnGa/Polymer Smart Composites**
H. HOSODA, T. INAMURA, Precision and Intelligence Laboratory, Tokyo Institute of Technology, Yokohama, Japan

Session B-5
Low Dimensionality

B-5:IL01 **FSMA Thin Films: Recent Developments**
V.A. CHERNENKO, Universidad del País Vasco, Dpto. Electricidad y Electronica, Bilbao, Spain and Ikerbasque, Basque Foundation for Science, Bilbao, Spain

B-5:IL02 **Shape Memory and Superelastic cycling at Nano-scale**
J. SAN JUAN[1], M.L. NÓ[2], [1]Dpt. Física Materia Condensada, Facultad de Ciencia y Tecnología, Universidad del Pais Vasco, Bilbao, Spain; [2]Dpt. Física Aplicada II, Facultad de Ciencia y Tecnología, Universidad del Pais Vasco, Bilbao, Spain

B-5:IL03 **Low Temperature Crystallization of Sputter-Deposited TiNi Films**
Y. KISHI[1], N. IKENAGA[2], N. SAKUDO[1], Z. YAJIMA[1], [1]Advanced Materials Science Research and Development Center, Kanazawa Institute of Technology, Ishikawa, Japan; [2]Research Laboratory for Integrated Technological Systems, Kanazawa Institute of Technology, Ishikawa, Japan

B-5:IL04 **Atomic-scale Nanomechanics of Metallic Materials**
XIAODONG HAN, Beijing University of Technology, Beijing, China

B-5:IL05 **Magnetic Shape Memory Alloys Going Nano**
S. FÄHLER, IFW Dresden, Dresden, Germany

B-5:L06 **Elastocaloric Properties of Sputtered NiTi Thin Films**
C. BECHTOLD, R. LIMA DE MIRANDA, M. WUTTIG, Department of Materials Science and Engineering, University of Maryland, College Park, MD, USA; E. QUANDT, Inorganic Functional Materials, Institute for Material Science, Christian Albrechts University Kiel, Kiel, Germany

Session B-6
Applications

B-6:IL01 **SMA Dampers for Cable Vibration: An Available Solution for Oscillation Mitigation of Stayed Cables in Bridges**
V. TORRA, A. ISALGUE, CIRG-DFA-UPC, Barcelona, Catalonia, Spain; F. CASCIATI, Structural Mechanics Dept., Pavia University, Italy; S. CASCIATI, University of Catania, Siracusa, Italy; P. TERRIAULT, Dep. Genie Mecanique, ETS, Montreal, Quebec, Canada

B-6:IL02 **Thermoelastic Cooling**
I. TAKEUCHI, Y. WU, Univ. of Maryland, College Park, MD, USA; J. CUI, Univ. of Maryland, College Park, MD, USA and Pacific Northwest National Lab, Richland, WA, USA

B-6:IL03 **Devices for Rehabilitation Applications**
S. PITTACCIO, S. VISCUSO, L. GARAVAGLIA, National Research Council of Italy, Institute for Energetics and Interphases, Lecco, Italy

B-6:IL04 **Smart Microactuation Devices Based on Shape Memory and Magnetic Effects**
M. KOHL, B. KREVET, C. MEGNIN, V. PINNEKER, S.R. YEDURU, Karlsruhe Institute of Technology, Institute of Microstructure Technology, Karlsruhe, Germany

B-6:IL05 **Recent Development of Shape Memory Alloys on Industrial Applications Field**
F. BUTERA, Saes Getters Spa, Lainate (MI), Italy

B-6:L06 **SMA Applications in Space Engineering: State-of-the-Art**
A. RAZOV, Saint-Petersburg University, Saint-Petersburg, Russia

B-6:L07 **Design of a Solid State Shape-Memory-Actuator with Guidance Functionality**
K. PAGEL, A. BUCHT, W.-G. DROSSEL, R. NEUGEBAUER, Fraunhofer Institute for Machine Tools and Forming Technology, Dresden, Saxony, Germany

B-6:L08 **An Open-loop Control Approach for Magnetic Shape Memory Actuators Considering Temperature Variations**
K. SCHLÜTER, A. RAATZ, Technische Universität Braunschweig, Braunschweig, Germany; L. RICCARDI, Politecnico di Bari, Bari, Italy

B-6:L09 **Studies on Internal Friction of a High Temperature Cu-Al-Mn-Zn Shape Memory Alloy**
V. SAMPATH, P. CHANDRAN, Department of Metallurgical and Materials Engineering, Indian Institute of Technology, Madras, Chennai, India

Poster Presentations

B:P01 **Mechanical, Thermodynamical and Magnetic Properties of Magnetocaloric and Shape Memory Materials Treated by Intensive Plastic Deformation by Cold Rolling**
S.V. TASKAEV[1], V.D. BUCHELNIKOV[1], V.V. SOKOLOVSKY[1], R.R. FAIZULLIN[1], M.O. DROBOSYUK[1], A. PELLENEN[2], V.B. FEDOROV[2], V.V. DYACHUK[2], D.A. ZHERBTSOV[2], V.V. KOLEDOV[3], V.G. SHAVROV[3], I.S. TERESHINA[4], [1]Chelyabinsk State University, Chelyabinsk, Russia; [2]South-Ural State University, Chelyabinsk, Russia; [3]IRE RAS, Moscow, Russia; [4]IMM RAS, Moscow, Russia

B:P02 **Shock Compression of NiTi Powders by One-Stage Gasdynamic Gun**
C. ZANOTTI, P. GIULIANI, G. DAMINELLI, Istituto per l'Energetica e le Interfasi, Milano, Italy; A. TUISSI, P. BASSANI, Istituto per l'Energetica e le Interfasi, Lecco, Italy

B:P03 **Kinetics of Martensitic Transformations in Heusler SMA Alloys**
S.V. TASKAEV[1], V.D. BUCHELNIKOV[1], V.V. SOKOLOVSKY[1], **D.S. BATAEV**[1], V.V. KOLEDOV[2], V.G. SHAVROV[2], [1]Chelyabinsk State University, Chelyabinsk, Russia; [2]IRE RAS, Moscow, Russia

B:P04 **Tunning of the Magnetostructural Transformations Sequence in Ni-Mn-Ga-Co Alloys through Selective Thermal Treatments: from Ferromagnetic to Metamagnetic Behaviour**
V. SANCHEZ-ALARCOS, V. RECARTE, J.I. PÉREZ-LANDAZÁBAL, Departamento de Física, Universidad Pública de Navarra, Campus de Arrosadía, Pamplona, Spain

B:P05 **Heat-treatment Processing for MnBi in High Magnetic Fields**
K. WATANABE[1], Y. MITSUI[1], K. KOYAMA[2], [1]Institute for Materials Research, Tohoku University, Sendai, Japan; [2]Graduate School of Science and Engineering, Kagoshima University, Kagoshima, Japan

B:P06 **Influence of Atomic Order on the Structural and Magnetic Transitions in Ni-Mn-In Metamagnetic Shape Memory Alloys**
V. RECARTE[1], J.I. PÉREZ-LANDAZÁBAL[1], V. SÁNCHEZ-ALARCOS[1], J.A. RODRÍGUEZ-VELAMAZÁN[2,3], [1]Departamento de Física, Universidad Pública de Navarra, Campus de Arrosadía, Pamplona, Spain; [2]Instituto de Ciencia de Materiales de Aragón, CSIC - Universidad de Zaragoza, Zaragoza, Spain; [3]Institut Laue-Langevin, CRG's D1B D15, Grenoble, France

B:P07 **Composition Dependence of Compatibility in Self-accommodation Microstructure of Beta-titanium Shape Memory Alloy**
T. TERAMOTO, Y. ONO, Department of Innovative and Engineered Materials, Tokyo Institute of Technology, Yokohama, Japan; M. TAHARA, T. INAMURA, H. HOSODA, Precision and Intelligence Laboratory, Tokyo Institute of Technology, Yokohama, Japan; S. MIYAZAKI, Division of Materials Science, University of Tsukuba, Tsukuba, Ibaraki, Japan

B:P08 **Ab initio and Monte Carlo Studies of the Phase Transformations and Magnetocaloric Properties in Heusler Ni2.19-xFexMn0.81Ga Alloys (x = 0.01 - 0.04)**
V.V. SOKOLOVSKIY, V.D. BUCHELNIKOV, M.A. ZAGREBIN, S.V. TASKAEV, Chelyabinsk State University, Chelyabinsk, Russia

B:P09 **Ab initio Investigation of Microscopic Magnetic Properties in Ni-Y-Mn-X (X = Ga, Sn, Y = Co) Heusler Alloys**
M.A. ZAGREBIN, V.D. BUCHELNIKOV, V.V. SOKOLOVSKIY, S.V. TASKSEV, Chelyabinsk State University, Chelyabinsk, Russia

B:P10 **Constitutive Model for Stress on Nickel - titanium Shape Memory Alloy by Considering a Twinned Martensite-detwinned Martensite-Austenite Phase Transformation Induced by Strain and/or Temperature**
I. VARELA-JIMENEZ, J.A. CORTES, Tecnológico de Monterrey, Campus Monterrey, Monterrey, Mexico

B:P11 **Application and Research of NiTi Shape Memory Alloy Welded Joint for Aseismic Space Grid Structures**
YOU-HAI ZHI, Civil Engineering Department, Xuzhou Institute of Technology, Xuzhou, China

B:P12 **Effect of Repeated Heat-treatment under Constrained Strain on Mechanical Properties of Ti-Ni Shape Memory Alloy**
HIROKI CHO[1], T. YAMAMOTO[1], A. SUZUKI[1], K. YAMAUCHI[2], T. SAKUMA[1], [1]Oita-University, Japan; [2]Tohoku-University, Japan

B:P13 **Synthesis of Crystallized TiNi Thin Films by Ion Irradiation**
N. IKENAGA, Research Laboratory for Integrated Systems, Kanazawa Institute of Technology, Ishikawa, Japan; Y. KISHI, Z. YAJIMA, N. SAKUDO, Advanced Materials Science Research and Development Center, Kanazawa Institute of Technology, Ishikawa, Japan

B:P14 **Implementation of a Shape Memory Actuation Device in a Precision Ball Screw Drive**
I. NAVARRO Y DE SOSA, Chemnitz University of Technology, Chemnitz, Germany; A. BUCHT, K. PAGEL, T. JUNKER, W.-G. DROSSEL, Fraunhofer Institute for Machine Tools and Forming Technology, Dresden, Germany

B:P15 **Digital Image-based Method for Quality Control of Residual Bending Deformation in Slender Pseudoelastic NiTi Devices**
S. VISCUSO, S. PITTACCIO, National Research Council of Italy, Institute for Energetics and Interphases, Lecco, Italy

SYMPOSIUM C
ELECTROACTIVE POLYMERS: ADVANCES IN MATERIALS AND DEVICES

Oral Presentations

C:KL **Soft Active Polymer and Applications**
JINSONG LENG, Centre for Composite Materials, Science Park of Harbin Institute of Technology (HIT), Harbin, P.R. China

Session C-1
Advances in EAP Materials

C-1:IL01 **Characteristic Electrical Actuation of Plasticized Poly(vinyl chloride) - Various Electrical Functions in Relation with the Dielectric Plasticizers -**
T. HIRAI, M. ALI, T. OGIWARA, D. TSURUMI, K. YAMAMOTO, T. UEKI, H. XIA, M. HASHIMOTO, Faculty of Textile Science and Technology, Shinshu University, Ueda-shi, Japan

C-1:IL02 **Ferrorelaxor Polymers for Compact and Efficient Electro-mechanical Transducers**
Q.M. ZHANG, The Pennsylvania State University, University Park, PA, USA

C-1:IL03 **Microstructured Dielectric Elastomer Stack Actuator Arrays: Technology and Applications**
H.F. SCHLAAK, P. LOTZ, H. MOESSINGER, K. FLITTNER, H. HAUS, Technische Universität Darmstadt, Darmstadt, Germany

C-1:IL04 **Smart Soft Actuators and Energy Harvesters**
S. BAUER, S. BAUER-GOGONEA, C. KEPLINGER, I. GRAZ, R. SCHWÖDIAUER, Soft Matter Physics, Johannes Kepler University, Linz, Austria

C-1:L05 **Flexible and Stretchable Electrodes Based on Wrinkles for Dielectric Elastomer Actuators**
CHANGWOON NAH[1], IL-SOU YOO[1], GI-BBEUM LEE[2], A.N. GENT[1], CHANG YOON[3], [1]Energy Harvesting WCU Research Team, [2]BK-21 Polymer BIN Fusion Research Team, Department of Polymer-Nano Science and Technology, College of Engineering, Chonbuk National University, Jeonju, Republic of Korea; [3]Department of Animal Biotechnology, College of Agriculture and Life Sciences, Chonbuk National University, Jeonju, Republic of Korea

C-1:L06 **Synthesis of Stable Polyaniline and Polypyrrole Nanospheres**
J.R. LAMB, A.J. SURYAWANSHI, **V.J. GELLING,** Department of Coatings and Polymeric Materials, North Dakota State University, Fargo, ND, USA

C-1:L07 **Aligned Alpha-Helical Polypeptide Brushes with Tunable Electrical Conductivity**
YING-CHIH CHANG[1], JEN-CHIA WU[1], CHIA-CHUN CHEN[2], KUEI-HSIEN CHEN[2], [1]Genomics Research Center, Academia Sinica, Taipei, Taiwan; [2]Institute of Atomic and Molecular Science, Academia Sinica, Taipei, Taiwan

C-1:IL08 **One Actuator and Several Sensors in One Device with Only Two Connecting Wires. Mimicking Muscle/brain Feedback**
T.F. OTERO[1], J.G. MARTINEZ[1], L. VALERO[1], K. ASAKA[2], I. YAHYA[3], [1]Univ. Politénica de Cartagena. Lab. of Electrochemistry Intelligent Materials and Devices, Cartagena. Spain; [2]Health Research Institute, National Institute of Advanced Industrial Science and Technology (AIST), Ikeda, Osaka, Japan; [3]Dept. of Biological Sciences and Chemistry, Univ. of Nizwa, Nizwa, Oman

C-1:IL09 **Fast-moving Low-voltage Electromechanical Actuators Based on Single-walled Carbon Nanotubes and Ionic Liquids**
K. MUKAI, **K. ASAKA**, AIST, Ikeda, Japan

C-1:L10 **Multi-modal Stimuli Responsive Molecular Switches**
M. ZANONI[1], K.J. FRASER[1], K. WAGNER[2], R. BYRNE[1], S. GAMBHIR[2], A. GELMI[2], P. MOLINO[2], M. HIGGINS[2], P. WAGNER[2], G.G. WALLACE[2], D.L. OFFICER[2], D. DIAMOND[1]; [1]CLARITY Centre for Sensor Web Technologies, National Centre for Sensor Research, Dublin City University, Dublin, Ireland; [2]Intelligent Polymer Research Institute, University of Wollongong, Wollongong NSW, Australia

C-1:L11 **Ultra-soft Foam-based Capacitive Sensors**
H. VANDEPARRE, T. OPPENHEIM, S.P. LACOUR, Laboratory for soft bioelectronic interfaces, EPFL, Lausanne, Switzerland

C-1:L12 **Effect of Crack Formation on Stretchable Silver Electrode for Dielectric Elastomer Actuators**
S.H. LOW, **G.K. LAU**, School of Mechanical and Aerospace Engineering, Nanyang Technological University, Singapore

C-1:IL13 **Chitosan/IPMCs Artificial Muscles**
M. SHAHINPOOR, Biomedical Engineering Laboratory Mechanical Engineering Department, University of Maine, Orono, ME, USA

C-1:L14 **Full Polymer Dielectric Elastomer Actuators (DEA) Functionalized with Carbon Nanotubes and High-k Ceramics**
R. LUTHER, G. PASCHEW, A. RICHTER, Chair of Polymeric Microsystems, Dresden Univ. of Technology, Germany; T. KÖCKRITZ, I. JANSEN, Chair of Laser and Surface Technology, Dresden Univ. of Technology, Germany; E.R. TALENS, O. JOST, Fraunhofer Inst. for Material and Beam Technology, Dresden, Germany; F. SCHLENKRICH, L. SEFFNER, U. KEITEL, A. SCHÖNECKER, Fraunhofer Inst. for Ceramic Technologies and Systems, Dresden, Germany

C-1:L15 **Properties of a Dielectric Elastomer Actuator Modified by Dispersion of Functionalised Carbon Nanotubes**
F. GALANTINI[1], S. BIANCHI[2], V. CASTELVETRO[1], G. GALLONE[1, 3], [1]Interdepartmental Research Centre "E. Piaggio", University of Pisa, Italy; [2]Dept. of Chemistry and Industrial Chemistry, University of Pisa, Italy; [3]Dept. of Chemical Engineering, Industrial Chemistry and Material Science, University of Pisa, Italy

C-1:L16 **Bimodal Networks as Candidates for Electroactive Polymers**
F. BAHRT, A.E. DAUGAARD, A.G. BEJENARIU, J.M. MARIN, S. HVILSTED, **A. LADEGAARD SKOV**, Department of Chemical and Biochemical Engineering, DTU, Kgs Lyngby, Denmark

Session C-2
Analysis and Physical Mechanisms

C-2:IL01 **Visualizing Actuation Mechanisms in Conducting Polymers**
E. SMELA, University of Maryland, College Park, MD, USA

C-2:IL02 **Modeling of Ionic Electroactive Polymers**
T. WALLMERSPERGER, Institut für Festkörpermechanik, TU Dresden, Germany

C-2:IL03 **Recent Advances on IPMC Modelling and Characterization**
KWANG J. KIM, Active Materials and Processing Laboratory, Mechanical Engineering Department, University of Nevada, Reno, Nevada, USA

C-2:L04 **Constitutive Equations for Ionic Electro-active Polymers**
M. TIXIER, Laboratoire d'Ingénierie des Systèmes de Versailles (LISV), Université de Versailles Saint Quentin, Versailles, France; **J. POUGET**, Institut Jean le Rond d'Alembert (CNRS-UMR 7190), Université Pierre et Marie Curie, Paris Cedex, France

C-2:L05 **Imaging and Nanoscale Polarization of Ferroelectric Polymer Films**
V. KOCHERVINSKII, Karpov Institute of Physical Chemistry, Moscow, Russia; D.A. KISELEV, O.A. MERETSKAYA, M.D. MALINKOVICH, Y.N. PARKHOMENKO, National University of Science and Technology "MISiS", Moscow, Russia

C-2:IL06 **Controlling Polymer Crystallization in Functional Nanostructures**
L. NOUGARET, H. KASSA, R, CAI, **A.M. JONAS**, Institute of Condensed Matter and Nanosciences, University of Louvain, Louvain-la-Neuve, Belgium

C-2:IL07 **Interfacial Layer and its Role in Newly Developed High-performance Electroactive Polymers and Composites**
Z.-Y. CHENG, Materials Research and Education Center, Auburn University, Auburn, AL, USA

C-2:L08 **Electrical Breakdown of Epoxy Based Nano-Composites In Cold Gaseous Helium**
H. RODRIGO, D.S. KWAG, B. TROCIEWITZ, Center for Advanced Power Systems, Florida State University, Tallahassee, FL, USA

C-2:L09 **Modeling the Displacement in Three-layer Electroactive Polymers Using Different Counter-ions by a Phase Transformation Approach**
J. GUZMAN, I. VARELA-JIMENEZ, **J.A CORTES**, Tecnológico de Monterrey, Campus Monterrey, Mexico

C-2:IL10 **Conducting IPN Actuators, from Actuation Mechanism to Applications**
C. PLESSE[1], N. FESTIN[1, 2], A. KHALDI[3], P. PIRIM[2], E. CATTAN[3], C. CHEVROT[1], D. TEYSSIE[1], **F. VIDAL**[1], [1]Laboratoire de Physicochimie des Polymeres et des Interfaces, Université de Cergy-Pontoise, Cergy-Pontoise, France; [2]Brain Vision Systems (BVS), France; [3]IEMN CNRS UMR-8520, NAM6 group, Villeneuve d'Ascq, France

C-2:IL11 **Survival Test Experiments for Ionic EAP-s**
A. PUNNING, I. MUST, K. KRUUSAMÄE, **A. AABLOO**, Intelligent Materials and Systems Lab, Institute of Technology, University of Tartu, Tartu, Estonia

C-2:L12 **Electrochemical Control of the Memory Properties of Poly(3,4-ethylenedioxythiophene)**
H. RANDRIAMAHAZAKA, S. CLOTEAU, J. GHILANE, J-C. LACROIX, University Paris Diderot, Sorbonne Paris Cité, UMR 7086 CNRS, Paris, France

C-2:L13 **Theoretical Modeling and Numerical Simulation of IPMC Multiphysics**
S. GALANTE, **A. LUCANTONIO**, P. NARDINOCCHI, University of Rome "La Sapienza", Italy

Session C-3
Device Development and Integration Technologies

C-3:IL01 **Lab-on-a-chip Applications of Dielectric Elastomer Actuators**
H.R. SHEA, Ecole Polytechnique Fédérale de Lausanne (EPFL), EPFL-LMTS, Neuchatel, Switzerland

C-3:IL02 **Actuation of Model Phalanges by Ion Polymer Metal Compound**
T. IHARA, T. NAKAMURA, Suzuka University of Medical Science, Suzuka, Japan; K. ASAKA, National Institute of Advanced Industrial Science and Technology, Japan

C-3:IL03 **Haptic Devices**
P. LOTZ, Continental Automotive GmbH, Babenhausen, Germany

C-3:L04 **Dynamic Daylight Redirection for Smart Windows**
B.A. HELMS, G. MASSON, R. MENDELSBERG, S. CABRINI, D.J. MILLIRON, A. ANDERS, S. SELKOWITZ, Lawrence Berkeley National Laboratory, Berkeley, CA, USA

C-3:IL05 **New Dielectric Elastomer Actuators for Biomedical and Bioinspired Systems**
F. CARPI[1], G. FREDIANI[1], D. DE ROSSI[1, 2]; [1]University of Pisa, Interdepartmental Research Centre "E. Piaggio", Pisa, Italy; [2]Technology & Life Institute, Pisa, Italy

C-3:IL06 **Integrating Soft Control into Soft Machines**
I.A. ANDERSON, B.M. O'BRIEN, T. CHUN HIN TSE, T.A. GISBY, Biomimetics Lab, Auckland Bioengineering Institute, The University of Auckland, New Zealand

C-3:L07 **Transparent Ionic Polymer Actuators Based on SPI Membranes and Graphene Electrodes**
JIN-HAN JEON, IL-KWON OH, Division of Ocean Systems Engineering, School of Mechanical Aerospace and Systems Engineering, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea

C-3:L08 **EAP-Actuators with Improved Actuation Capabilities for Construction Elements with Controllable Stiffness**
M. HENKE, J. SORBER, G. GERLACH, TU Dresden, Solid State Electronics Lab, Dresden, Germany

C-3:L09 **High Performance Flexible Organic Thin Film Transistors with Conducting Polymer Electrodes and Al2O3/PVP/Al2O3 Multilayer Insulator**
YOUNGKYU LEE, R. ABDUR, H. SOH, J. LEE, Kookmin university, Seoul, South Korea

C-3:L10 **Artificial Hydrogel Muscular Fibers**
M. BASSIL[1,2], M. EL TAHCHI[1], E. SMELA[2], [1]LPA- GBMI, Department of Physics, Lebanese University, Faculty of Sciences II, Jdeidet, Lebanon; [2]Department of Mechanical Engineering, University of Maryland, College Park, MD, USA

Session C-4
Applications

C-4:IL01 **New Materials Advances for Smart Electro-active Polymers**
H.E. NAGUIB, University of Toronto, Toronto, Ontario, CANADA

C-4:IL02 **Organic Robotics Based on Conducting Polymers**
H. OKUZAKI, University of Yamanashi, Kofu, Japan

C-4:L03 **Dynamic Non-Linear Energy Absorbers based on Dielectric Elastomers**
F.G. PAPASPYRIDIS, D.T. VENETSANOS, I.A. ANTONIADIS, National Technical University of Athens, School of Engineering, Laboratory of Dynamics and Structures, Athens, Greece

Poster Presentations

C:P01 **Adhesion Between Poly(dimethylsiloxane) Layers**
LIYUN YU, A.E. DAUGAARD, A. LADEGAARD SKOV, Department of Chemical and Biochemical Engineering, Technical University of Denmark, Lyngby, Denmark

C:P02 **An Organic Polymeric Material for Electronics**
A. MARRANI, M. BASSI, Solvay Specialty Polymers, Bollate, Italy

C:P03 **Composites of Multiwalled Carbon Nanotubes and Polyaniline and with Different Compositions**
F. PALAZZO, **F.R. SIMOES**, Institute of Environmental, Chemical and Pharmaceutical Sciences Federal University of São Paulo Diadema - SP, Brazil

C:P04 **Development of Polyaniline Nano-particles and Chloroprene Rubbers Blends as Electroactive Materials**
R. KUNANURUKSAPONG, **A. SIRIVAT**, The Petroleum and Petrochemical College, Chulalongkorn University, Bangkok, Thailand

C:P05 **Electroactive 1-butyl-3-methylimidazolium Chloride Ionic Liquid-microcrystalline Cellulose Gel for Actuator Application**
W. KUNCHORNSUP, A. SIRIVAT, The Petroleum and Petrochemical College, Chulalongkorn University, Bangkok, Thailand

C:P06 **Crystal Properties Dependence of Dielectric and Piezoelectric Properties of Poly (vinylidene fluoride-co-trifluoroethylene)**
W.M. XIA, **Z. XU**, Z.C. ZHANG, F. WEN, International Center for Dielectric Research, Xi'an Jiaotong University, Xi'an, Shaanxi, China

C:P07 **A Parametric Fractional Model in the Frequency Domain of IPMC Actuators as a Function of Length**
R. CAPONETTO, S. GRAZIANI, **F. PAPPALARDO**, M.G. XIBILIA, DIEEI, University of Catania, Catania, Italy; DiSIA, University of Messina, Messina, Italy

C:P08 **Improvement of IPMC Performance by PVD Layering**
M. AMIRKHANI, K. KELLER, O. MARTI, Institut für Experimentelle Physik, Universität Ulm, Ulm, Germany

C:P09 **Functional Chararacterisations of Hybrid Nanocomposite Films Based on Polyaniline and Carbon Nanotubes**
M.F. DE RICCARDIS, V. MARTINA, D. CARBONE, P. ROTOLO, UTTMATB ENEA-CR Brindisi, Brindisi, Italy

C:P10 **PVDF Sensors - Research on Foot Pressure Distribution in Dynamic Conditions**
E. KLIMIEC, W. ZARASKA, J. PIEKARSKI, Institute of Electron Technology, Cracow Division, Cracow, Poland

C:P11 **Functionalization Effect on Properties of Polypyrrole/Graphene Composites towards Supercapacitor Applications**
A. PRUNA, D. BUSQUETS, University Politecnica of Valencia, Valencia,Spain; D. PULLINI, Fiat Research Centre, Orbassano, Italy

SYMPOSIUM D
SMART AND INTERACTIVE TEXTILES

Oral Presentations

Session D-1
Adaptive/Active Textiles

D-1:IL01 **Biomimicry in Textiles: Past, Present and Potential**
T.K. GHOSH, L. EADIE, College of Textiles, North Carolina State University, Raleigh, NC, USA

D-1:IL02 **Photovoltaics go Textile: Fundamental Considerations and Materials Aspects to Realize Dye-sensitized Solar Cells on Textile Electrodes**
D. SCHLETTWEIN, Justus-Liebig-University Gießen, Institute of Applied Physics, Gießen, Germany

D-1:L03 **Dynamic Response of Textile Strap with Embedded Piezoelectric Material at Low Frequencies**
N. IKENNA-AGBEZE[1], S.O. OYADIJI[2], E. SIORES[1], [1]University of Bolton, Bolton, UK; [2]University of Manchester, Manchester, UK

D-1:L04 **Development of Piezoresistive Fibre Sensors, Based on Carbon-thermoplastic Elastomer Compounds, for Textile Application**
F. CLEMENS[1], B. KOLL[1], T. GRAULE[1], T. WATRAS[1, 2], M. BINKOWSKI[2], [1]Empa, Swiss Federal Laboratories for Materials Science and Technology, Dübendorf, Switzerland; [2]University of Silesia, Faculty of Computer and Materials Science, Poland

D-1:L05 **Characterization of Textile for Damage Sensing**
M. PACELLI, Smartex srl, Navacchio, Italy; C. KAESER, Centre Suisse d'Electronique et de Microtechnique SA., Switzerland; R. PARADISO, Smartex srl, Italy

D-1:IL06 **Integration of OLEDs in Textiles**
S. JANIETZ, Fraunhofer Institute for Applied Polymer Research, Potsdam, Germany

D-1:IL07 **Application of Melt-blown Technology for Manufacturing the Sensor Non-woven Fabrics Composed of Polymers Loaded with Multi-wall Carbon Nanotubes**
I. KRUCINSKA, B. SURMA, M. CHRZANOWSKI, E. SKRZETUSKA, M. PUCHALSKI, Department of Material and Commodity Sciences and Textile Metrology, Faculty of Material Technologies and Textile Design, Technical University of Lodz, Lodz, Poland

D-1:L08 **The Concept of Mood Changing Garments Made from Luminescent Woven Fabrics and Flexible Photovoltaics**
G. STYLIOS, DANYING, Research Institute for Flexible materials (RIFleX), Heriot Watt University, Edinburgh, Scotland, UK

D-1:L09 **Production of PEDOT Coated Conductive Fibers for Smart & Interactive Textile Applications**
T. BASHIR, M. SKRIFVARS, School of Engineering, University of Boras, Boras, Sweden; N.-K. PERSSON, The Swedish School of Textiles, University of Boras, Boras, Sweden

D-1:IL10 **Shape Memory Polymers in Textiles**
JINLIAN HU, The Hong Kong Polytechnic University, Hong Kong

D-1:IL11 **Interactive Electronic Yarns by Novel Electrochemical and Plasma Treatment**
A. NEUDECK, Y. ZIMMERMANN, U. MÖHRING, TITV Greiz, Textile Research Institute Thuringia-Vogtland e.V., Greiz, Germany

D-1:IL12 **Cosmeto-textiles: State of the Art and Future Perspectives**
P. PERSICO, C. CARFAGNA, Institute of Chemistry and Technology of Polymers - National Research Council of Italy, Pozzuoli (NA), Italy

D-1:IL13 **Additive Colour Mixing on Textiles with Liquid Crystal Dye Systems**
S. ROBERTSON, R. CHRISTIE, W. IBRAHIM, Heriot-Watt University, Galashiels, Scotland

D-1:L14 **Halochromic Textile Materials as Innovative pH-sensors**
L. VAN DER SCHUEREN, K. DE CLERCK, Ghent University, Department of Textiles, Zwijnaarde (Ghent), Belgium

D-1:L15 **Development of Auto-refreshing Fabric by Using Hydric Phase Change Material (HPCM) Microcapsules**
G. BEDEK, D. DUPONT, HEI, UCLille, Lille, France; F. SALAÜN, E. DEVAUX, ENSAIT, GEMTEX, Roubaix, France; C. CHAIGNEAU, DAMARTEX, Roubaix, France

D-1:L16 **Integration of Small Diameter Wire form SMA for the Creation of Dynamic Shape Memory Textiles**
P. DYER, University of Brighton, Brighton, UK

Session D-2
e-textiles

D-2:IL01 **An Elastomeric Ionic Hydrogel Sensor for Large Strains**
P. MANANDHAR, **P. CALVERT**, J.R. BUCK, University of Massachusetts Dartmouth, North Dartmouth, MA, USA

D-2:L03 **The Power Conversion Characteristics of Woven Organic Photovoltaic Wire Fabrics**
A. AGRAWAL, **YONG K. KIM**, P. CALVERT, Bioengineering Department, University of Massachusetts-Dartmouth, North Dartmouth, MA, USA; M. LEE, Konarka Technology Inc., Lowell, MA, USA

D-2:L04 **Textile Sensor Applications with Composite Monofilaments of Polymer / Carbon Nanotubes**
A. FERREIRA, F. FERREIRA, Department of Textile Engineering, M.C. PAIVA, Department of Polymer Engineering, University of Minho, Portugal

D-2:L05 **Feasibility of Printing Woven Humidity and Temperature Sensors for Integration into Electronic Textiles**
T. KINKELDEI, G. TRÖSTER, Eidgenössische Technische Hochschule Zürich (ETHZ), Electronics Laboratory, Zurich, Switzerland; C. ATAMAN, G. MATTANA, F. MOLINA LOPEZ, D. BRIAND, N.F. DE ROOIJ, Ecole Polytechnique Fédérale de Lausanne (EPFL), Institute of Microengineering (IMT), Sensors, Actuators and Microsystems Laboratory (SAMLAB), Neuchâtel, Switzerland; D. LEUENBERGER, G. NISATO, Centre Suisse d'Electronique et de Microtechnique SA (CSEM SA), Muttenz, Switzerland

D-2:IL06 **Novel Fibers as Base Technology for Smart Textile Integration**
R. HUFENUS, S. GAAN, D. HEGEMANN, **M. HEUBERGER**, Empa, Advanced Fibers, Switzerland

D-2:IL07 **Innovative Smart Materials for Wearable Electronics**
R. PERERA, EY Technologies, Division of Pascale Industries, Inc., Fall River, MA, USA

D-2:L08 **Novel Flexible Sensors for Smart Clothing to Monitor Vital Signals and Energy Expenditure**
KAP JIN KIM, YU JIN AHN, SUN YOON, Kyung Hee University, College of Engineering, Yongin-si, Gyeonggi-do, South Korea

D-2:L09 **Conformable Textile Electronics Comprising Foil Based, Organic Components**
K. PACHECO, **M. DE KOK**, J. VAN DEN BRAND, G. VAN HECK, Holst Centre /TNO, Eindhoven, The Netherlands

D-2:L10 **Essential Building Blocks of Fibrous Transistors, Part I: Gate Layer**
L. RAMBAUSEK[1], A. SCHWARZ[1], B. VAN GENABET[1], E. BRUNEEL[2], I. VAN DRIESSCHE[2], L. VAN LANGENHOVE[1], [1]Ghent University, Department of Textiles, Ghent/Zwijnaarde, Belgium; [2]Ghent University, Department of Inorganic and Physical Chemistry, Ghent, Belgium

Session D-3
Functionality, Manufacturing, Application

D-3:IL01 **Adaptive Textiles for the Home**
A. MOSSE', Centre for IT & Architecture, Royal Danish Academy of Fine Arts, School of Architecture, Design and Conservation, Copenhagen, Denmark

D-3:IL02 **Continuous Multifunctional Carbon Nanotube Yarns**
YA-LI LI, Key Lab of Advanced Ceramics and Machining Technology Ministry of Education, School of Materials Science and Engineering, Tianjin University, Tianjin, China

D-3:L03 **Design and Optimization of an Injection-moldable Force-fit Interconnection Module for Smart Textile Applications**
E.P. SIMON, M. FRÖHLICH, K.-D. LANG, Technische Universität Berlin, Berlin, Germany

D-3:L04 **Challenges for Combining Semiconductor (Thin Film) Technology with Textile Substrates towards Textiles for Energy Production**
K. EUFINGER, F. GOVAERT, M. VANNESTE, Centexbel Gent, Zwijnaarde, Belgium; B. PAQUET, C. REVERCEZ, Centexbel Verviers, Herve (Chaineux), Belgium

D-3:L05 **Nanoscience goes Pret-a-Porter: Novel Nanogold-Wool-Composite Fibres**
A. KOLB, School of Chemical and Physical Sciences and MacDiarmid Institute for Advanced Materials and Nanotechnology, Victoria University of Wellington, Wellington, New Zealand

D-3:IL06 **Prosys-Laser: Smart Laser Protective Textile Systems**
G. DAMMACCO, Grado Zero Espace srl, Italy; M. HUSTEDT, C. HENNIGS, Laser Zentrum Hannover e.V., Germany; M. PACELLI, Smartex srl, Italy; C. KAESER, Centre Suisse d'Electronique et de Microtechnique SA, Switzerland; D. WENZEL, Sächsisches Textilforschungsinstitut e. V., Germany

D-3:IL07 **The PASTA project: "Integrating Platform for Advanced Smart Textile Applications"**
J. DE BAETS, imec-CMST, Gent, Belgium

D-3:L08 **Application of Flexible Polymer Dlectrode to Smart Textiles**
SEONG HUN KIM, TAE HWAN LIM, Department of Organic and Nano Engineering, Hanyang University, Seoul, Korea; KYUNG WHA OH, Department of Home Economics Education, Chung-Ang University, Seoul, Korea

D-3:L09 **Two Novel Techniques of Fabric Sensing using Carbon Nanofibres**
A. SANTOS, P. ARQUER, B. RUIZ, ITMA Materials Technology, Aviles, Spain

D-3:L10 **Improvements of Electronic Contact System in a Smart Garment**
I. PARKOVA, A. VALIŠEVSKIS, A. VILUMSONE, Riga Technical University, Institute of Textile Materials Technology and Design, Riga, Latvia

D-3:IL11 **Bio-inspired Fiber-based Probes**
K. KORNEV, Clemson University, Clemson, SC, USA

D-3:IL12 **MerinoGold - Nanogold as a Novel Colourant and Functional Entity in Wool for High Value Textiles and Fashion Apparel**
J.H. JOHNSTON, K.A. Lucas, School of Chemical and Physical Sciences, MacDiarmid Institute for Advanced Materials and Nanotechnology, Victoria University of Wellington, Wellington, New Zealand

D-3:L13 **Durable Self-healing Super-liquid-repellent Fabrics**
TONG LIN, Centre for Material and Fibre Innovation, Deakin University, Geelong, VIC, Australia

D-3:L14 **Improving Colourfastness and Mitigating Photodegradation in Wool**
K. LUCAS, J. JOHNSTON, School of Chemical and Physical Sciences, Victoria University of Wellington, Wellington, New Zealand

D-3:L15 **A Classified Catalogue for Textile-based Sensors**
P. BOSOWSKI, C. BRECKENFELDER, S. JOCKENHÖVEL, Institut für Textiltechnik der RWTH Aachen, Aachen, Germany

D-3:IL16 **Thigmo-morphogenetic Fiber Composites Embedded with Shape Memory Alloys**
M. MINGALLON, Arup & The Architectural Association, London, UK; S. RAMASWAMY, KRR & The Architectural Association, London, UK

D-3:IL17 **Superhydrophobic Textiles - 75 Years of Smart Textiles**
S. MICHIELSEN, Department of Textile Engineering, Chemistry, and Sience College of Textiles, North Carolina State University, Raleigh, NC, USA

D-3:L18 **High-level Integrated Wearable TENS Electrode Arrays for Braille and Security Applications**
P. FOERSTER, T. LINZ, R. VIEROTH, C. KALLMAYER, Fraunhofer Institute for Reliability and Microintegration (IZM), Berlin, Germany

D-3:L19 **Single Walled Carbon Nanotube - Alginate Fibers as a New Sensor Platform**
V. SA[1], V. GOPISHETTY[2], I. TOKAREV[2], S. MINKO[2], K.G. KORNEV[1], [1]School of Materials Science and Engineering, Clemson University, Clemson, SC, USA; [2]Department of Chemistry and Biomolecular Science, Clarkson University, Potsdam, NY, USA

D-3:L20 **Stimuli-responsive Inkjet Printed Textiles for Self Indicating Alert Systems Integrated with Multiple Application Purposes**
S.M.R. BILLAH, Department of Chemistry, Durham University, Durham, UK

D-3:IL21 **Fabric Optoelectronics Enabling Healthcare Applications**
F. VAN ABEELEN, K. CHERENACK, S. LUITJENS, G. ZHOU, **K. VAN OS**, Philips Research, Eindhoven, The Netherlands

D-3:IL22 **Advances in Physiological and Psychological Monitoring with e-textiles**
R. PARADISO, Smartex srl, Prato, Italy

D-3:L23 **Respiratory Volume Estimation by a Stretchable Textile Sensor**
Y. ENOKIBORI, Y. ITO, Graduate School of Information Science, Nagoya University, Nagoya, Aichi, Japan; K. IKEDA, A. SUZUKI, Tsuchiya Co., Ltd., Chiryu, Aichi, Japan; Y. SHIMAKAMI, Owari Textile Research Center, AITEC, Ichinomiya, Aichi, Japan; T. KAWABE, Department of Medical Teachnology, Nagoya University School of Health Sciences, Nagoya, Aichi, Japan; K. MASE, Graduate School of Information Science, Nagoya University, Nagoya, Aichi, Japan

D-3:L24 **Structural Conformability and Fluid Uptake Properties of Smart Wound Dressings**
M. UZUN, S.C. ANAND, T. SHAH, Institute for Materials Research and Innovation, The University of Bolton, Bolton, UK

D-3:L25 **Washable Screen Printed Textile Antennas**
I. KAZANI[1], M.L. SCARPELLO[2], C. HERTLEER[1], H. ROGIERI[2], G. DE MEY[3], G. GUXHO[4], L. VAN LANGENHOVE[1], [1]Ghent University, Department of Textiles, Zwijnaarde, Belgium; [2]Ghent University, Department of Information Technology, Gent, Belgium; [3]Ghent University, Department of Electronics and Information Systems, Gent, Belgium; [4]Polytechnic University of Tirana, Department of Textile and Fashion, Tirana, Albania

D-3:IL26 **Smart Textiles with Biosensing Capabilities**
S. PASCHE, B. SCHYRR, B. WENGER, E. SCOLAN, R. ISCHER, **G. VOIRIN**, CSEM Centre Suisse d'Electronique et de Microtechnique SA, Neuchâtel, Switzerland

D-3:IL27 **Smart Technical Textiles Based on Fibre Optic Sensors: Technologies and Applications**
K. KREBBER, BAM Federal Institute for Materials Research and Testing, Berlin, Germany

D-3:L28 **Smart Textiles and Information Systems**
R. HELMER, M. Mestrovic, K. Taylor, I. Blanchonette, D. Wilde, CSIRO, Belmont, VIC, Australia

D-3:L29 **POF Fabric Device for Low-energy Phototherapy**
JING SHEN, XIAOMING TAO, CHUNG CHI CHUI, Institute of Textiles and Clothing, Hong Kong

Poster Presentations

D:P01 **Development of "Paper Transistor" using Carbon-nanotube-composite Paper**
Y. KAWAMURA, S. HAYASHI, Y. SHINDE, T. OYA, Yokohama National University, Yokohama, Japan

D:P02 **Electrical Properties of Metal Coated Glass and Natural Fiber Fabrics**
A. LUSIS, E. PENTJUSS, G. BAJARS, J. GABRUSENOKS, R. JANELIUKSTIS, J. ZANDERSONS, Institute of Solid State Physics, University of Latvia, Riga, Latvia

D:P03 **Preparation of Highly Piezoelectric Poly(vinylidene fluoride) Nanofiber Web as a Nanogenerator for Energy Harvesting and Its Power Generating Properties**
YU JIN AHN, S. YOON, D. MANDAL, K.J. KIM, Kyung Hee University, College of Engineering, Yongin-si, Gyeonggi-do, South Korea

D:P04 **Electrically Conductive Polyacrylonitrile Films with High Temperature Performance**
H.J. PARK, **YOUNG HO KIM**, H.T. CHO, Department of Organic Materials and Fiber Engineering, Soongsil University, Seoul, Korea

D:P05 **Antibacterial Metal-cotton Nanohybrids via Covalent Assembly of Metal Nanoparticles on Cotton Fabric and its Release Behavior During Washing**
SUNG YONG PARK, SU-YEOL RYU, JIHWAN LEE, SEUNG-YEOP KWAK, Department of Materials Science and Engineering, Seoul National University, Seoul, Korea

D:P06 **Preparation of Transition Metal Loaded TiO2 with Visible-light Photocatalytic Activity and its Application to Protective Textiles Against Chemical and Biological Warfare Agents**
SU-YEOL RYU, SUNG YONG PARK, TAE-SEON YUN, SEUNG-YEOP KWAK, Department of Materials Science and Engineering, Seoul National University, Seoul, Korea

D:P07 **An Eco-friendly Regenerated Cellulose Fiber Spun from Cotton Linter Pulp in NMMO Monohydrate by Lyocell Process**
MI KYONG YOO, IK MO KIM, YU JIN AHN, SHAMIM-ARA PERVIN, KAP JIN KIM, Kyung Hee University, College and of Engineering, Yongin-si, Gyeonggi-do, South Korea; SANG WOO JIN, JONG CHEO JEONG, WOO CHUL KIM, Industrial Materials Research Institute, Kolon Industrials, Inc, Gumi-si, Gyeongsangbuk-do, South Korea

SYMPOSIUM E
NEXT GENERATION MICRO/ NANO SYSTEMS

Oral Presentations

E:KL **Advances in Vitro Diagnostics (IVD) Devices Based on CDs**
M. MADOU, Mechanical & Aerospace Engineering and Biomedical Engineering, University of California, Irvine, CA, USA

Session E-1
Physical MEMS/NEMS

E-1:IL01 **Wet Process Innovation in MEMS 3-D Structuring on a Silicon Wafer**
K. SATO, Nagoya University, Nagoya, Japan

E-1:IL02 **GaN Resonant MEMS**
M. FAUCHER, V. BRANDLI, B. GRIMBERT, M. FRANCOIS, P. TILMANT, A. BEN-AMAR, L. BUCHAILLOT, C. GAQUIERE, D. THÉRON, CNRS, IEMN, Lille, France; Y. CORDIER, F. SEMOND, CNRS CRHEA, Valbonne, France

E-1:IL03 **History and Recent Progress of MEMS Physical Sensors**
H. MURO, Chiba Institute of Technology, Narashino, Japan

E-1:IL04 **Towards Flexible Integrated Systems over Large Areas**
R.S. DAHIYA, Centre for Materials and Microsystems, Fondazione Bruno Kesseler, Trento, Italy

Session E-2
Chemical Micro/Nano-sensors and Systems

E-2:IL01 **Gas Sensors: Status and Future Trends**
M. FLEISCHER, Siemens AG - Corporate Research & Technology, München, Germany

E-2:IL02 **Semiconductor Nanowire Battery-less Chemical Sensors**
Y.(M.) WANG, Physical and Life Sciences Directorate, Lawrence Livermore National Laboratory, Livermore, CA, USA

E-2:IL03 **Smart Electrochemical Microdevices**
H. SUZUKI, University of Tsukuba, Tsukuba, Japan

E-2:IL04 **Stimuli Responsive Materials and Next Generation Chemical Sensors**
D. DIAMOND, CLARITY Centre for Sensor Web Technologies, National Centre for Sensor research, Dublin City University, Dublin, Ireland

E-2:IL05 **Micro and Nanocantilevers: Technology and Application**
P. DATSKOS, Oak Ridge National Laboratory, Oak Ridge, TN, USA

E-2:L06 **Novel Plasmonic Bio-sensing System Based on Two-dimensional Gold Patch Arrays for Linear and Nonlinear Regimes**
M. GRANDE[1], M.A. VINCENTI[2], T. STOMEO[3], G. MOREA[1], R. MARANI[1], V. MARROCCO[1,5], V. PETRUZZELLI[1], A. D'ORAZIO[1], M. DE VITTORIO[3,4], D. DE CEGLIA[2], M. SCALORA[6]; [1]Dipartimento di Elettrotecnica ed Elettronica, Politecnico di Bari, Bari, Italy; [2]AEgis Technologies Inc., Huntsville, AL, USA; [3]Italian Institute of Technology (IIT), Center for Bio-Molecular Nanotechnology, Arnesano (Lecce), Italy; [4]National Nanotechnology Laboratory (NNL), CNR-Istituto di Nanoscienze, Dip. Ingegneria dell'Innovazione, Università Del Salento, Lecce, Italy; [5]Istituto di Tecnologie Industriali ed Automazione ITIA-CNR, Bari, taly; [6]Charles M. Bowden Research Center, RDECOM, Redstone Arsenal, AL, USA

E-2:L07 **Fabrication of Gas Sensing Devices from Nanowires: Techniques and Integration**
R. JIMÉNEZ-DÍAZ[1], J.D. PRADES[1], F. HERNÁNDEZ-RAMÍREZ[2], J. SANTANDER[3], C. CALAZA[3], L. FONSECA[3], C. CANÉ[3], **A. ROMANO-RODRÍGUEZ**[1], [1]MIND-IN2UB, Departament d'Electrònica, Universitat de Barcelona (UB), Barcelona, Spain; [2]IREC, Catalonia Institute for Energy Research, Barcelona, and Departament d'Electrònica, Universitat de Barcelona (UB), Barcelona, Spain; [3]Institut de Microelectrònica de Barcelona, IMB-CNM-CSIC, Bellaterra, Spain

E-2:L08 **Wafer-level Fabrication and Gas Sensing Properties of Miniaturized Gas Sensors Based on Inductively Coupled Plasma Deposited Tin Oxide Nanorods**
A. FORLEO, L. FRANCIOSO, S. CAPONE, F. CASINO, P. SICILIANO, CNR-Istituto per la Microelettronica ed i Microsistemi,via Monteroni, Lecce, Italy; H. HUANG, O.K. TAN, Sensors and Actuators Lab, School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore

Session E-3
MOEMS / NOEMS

E-3:IL01 **Micromachined Devices for Use in Terahertz Applications**
D. WOOD, J.M. CHAMBERLAIN, A.J. GALLANT, A.J. BARAGWANATH, L.E. DODD, C.K.A. HILL, School of Engineering and Computing Sciences, Durham University, Durham, UK

E-3:IL02 **Micro and Nanophotonics in Silicon**
I. RENDINA, G. COPPOLA, M. GIOFFRE', M. IODICE, L. DE STEFANO, V. MOCELLA, L. SIRLETO, M. CASALINO, P. DARDANO, E. DE TOMMASI, A. FERRARA, I. REA, National Council of Research, Institute for Microelectronics and Microsystems, Napoli, Italy

E-3:L03 **Powerful Polymer/Silicon Composite Thermal Microactuator for MOEMS Applications**
B. THUBTHIMTHONG, G.K. LAU, V.M. MURUKESHAN, School of Mechanical and Aerospace Engineering, Nanyang Technological University, Singapore

Session E-4
Smart Micro-nano Systems and Components Integration

E-4:IL01 **Integration of Carbon Nanotubes into MEMS for Ultra-low Power Sensors**
C. HIEROLD, C. ROMAN, M. MUOTH, K. CHIKKADI, S.-W. LEE, E. CAGIN, M. HALUSKA, ETH Zurich, Department of Mechanical and Process Engineering, Micro and Nanosystems, Zurich, Switzerland

E-4:IL02 **Combined Top-down and Bottom-up Approach for Next-generation 3D MEMS**
M. SUGIYAMA, School of Engineering, The University of Tokyo 3D BEANS Center, BEANS Project, Japan

E-4:IL03 **Spatial Deep Reactive Ion Etching (DRIE): A Concept for Ultrafast Si-etching with ALD-passivation**
F. ROOZEBOOM[1,2], B. KNIKNIE[1], P. POODT[1], A. ILLIBERI[1], A. VAN ASTEN[1], W. KEUNING[2], G. DINGEMANS[2], W.M.M. KESSELS[2]; [1]TNO, Eindhoven, The Netherlands; [2]Eindhoven University of Technology, Eindhoven, The Netherlands

E-4:L05 **Modeling of Piezo-actuated Stick-slip Micro-drives: An Overview**
H.X. NGUYEN, C. EDELER, S. FATIKOW, Division of Microrobotics and Control Engineering, University of Oldenburg, Oldenburg, Germany

Session E-5
Radio Frequency MEMS

E-5:IL01 **Reliability of RF MEMS**
W.M. VAN SPENGEN, TU Delft / Falco Systems, Delft, The Netherlands

E-5:IL02 **RF-MEMS Components and Networks for High-performance Reconfigurable Telecommunication and Wireless Systems**
J. IANNACCI, Fondazione Bruno Kessler - FBK, Center for Materials and Microsystems - CMM, MEMS Research Unit, Povo, Trento, Italy

E-5:IL03 **Integrated Microsystems**
M. ESASHI, S. TANAKA, Tohoku University, Sendai, Japan

Session E-6
Energy Harvesting and Power Supply MEMS

E-6:IL01 **Nanogenerators for Self Powered Sensors and Systems**
Z.L. WANG, Wang School of Materials Science and Engineering, Georgia Institute of Technology, Atlanta, GA, USA

E-6:IL02 **Development of Microscale Thermoelectric Modules for Energy Conversion**
JING-FENG LI, DA-WEI LIU, State Key Laboratory of New Ceramics and Fine Processing, Department of Materials Science and Engineering, Tsinghua University, Beijing, China

E-6:IL03 **Advances in Micromachined Vibration Energy Harvesting Using Piezoelectric Materials**
D.-J. KIM, S.-B. KIM, H.C. WIKLE, Auburn University, AL, USA; J.-H. PARK, Argonne National Lab, IL, USA; S.-H. KIM, Brown University, RI, USA

E-6:IL04 **Energy Harvesting from Air Flow**
A.S. HOLMES, Imperial College London, London, UK

E-6:IL05 **Novel Energy Harvesting Systems with Dual Micro-nano Strctures**
HAIXIA ZHANG, Institute of Microelectronics, Peking University, Beijing, China

Session E-7
Micro(nano)fluidics / Lab on Chip / Bio-MEMS

E-7:IL01 **Integrated Photonics for Bioanalytical Microsystems**
J.S. WILKINSON, Optoelectronics Research Centre, University of Southampton, Southampton, Hampshire, UK

E-7:IL02 **Labs-on-a-Chip for Medical Applications**
A. VAN DEN BERG, University of Twente, The Netherlands

E-7:L03 **Enhanced Hydronium Ion Formation and Proton Transport in Nanoconfined Water**
S. GAROFALINI, G. LOCKWOOD, Interfacial Molecular Science Laboratory, Dept of Materials Science and Engineering, Rutgers University, Piscataway, NJ, USA

E-7:L04 **Microfluidic Microchemomechanical Systems**
R. GREINER, M. ALLERDISSEN, A. RICHTER, TU Dresden/Heisenberg, Polymere Mikrosysteme, Dresden, Germany

E-7:L05 **Micro Electrode Arrays for Single Site Electroporation**
C. COLLINI, **E. MORGANTI**, L. LORENZELLI, FBK-CMM, Trento, Italy; L. VIDALINO, P. MACCHI, CIBIO - University of Trento, Italy

E-7:IL06 **Nanomechanical Systems for Biological Detection**
J. TAMAYO, IMM-CSIC, Tres Cantos, Madrid, Spain

E-7:IL07 **Length-dependent Mobility of DNA in Nanofluidic Channel Fabricated by Novel Process**
K.D. PARK, **B.J. KIM**, CIRMM, Institute of Industrial Science, The University of Tokyo, Tokyo, Japan

E-7:L08 **Hydrogel-based Microfluidic Systems**
M. ALLERDISSEN, S. KLATT, R. KÖRBITZ, A. RICHTER, Chair of Polymeric Microsystems, Dresden University of Technology, Germany

E-7:L09 **Superhydrophilic PDMS and PET for Microfluidic Devices**
R. BARTALI, L. LORENZELLI, N. LAIDANI, M. SCARPA, V. MICHELI, A. PEDRANA, A. GAMBETTI, G. GAMBETTI, R. PANDIYAN, S. ROWLEY, I. LUCIU, Fondazione Bruno Kessler, Trento, Italy

E-7:L10 **Bioinspired Microfluidic Technology for Biomimetic Microsystem**
JIANHUA QIN, Dalian Institue of Chemical Physics, Chinese Academy of Sciences, Dalian, China

Session E-8
Flexible MEMS Technology

E-8:IL01 **Flexible Acoustic Devices**
TIAN-LING REN, HE TIAN, YI YANG, DAN XIE, LI-TIAN LIU, Institute of Microelectronics, Tsinghua University, Beijing, China

E-8:IL02 **Continuous Process for Large-area Flexible MEMS**
T. ITOH, AIST, Tsukuba, Japan

E-8:IL03 **The Potential and Challenges of Printing Sensors and MEMS on Flexible Foil**
D. BRIAND, F. MOLINA LOPEZ, A. VASQUEZ QUINTERO, G. MATTANA, N.F. DE ROOIJ, Ecole Polytechnique Fédérale de Lausanne (EPFL), Institute of Microengineering (IMT), Sensors, Actuators and Microsystems Laboratory (SAMLAB), Neuchâtel, Switzerland

E-8:IL04 **Smart Tubes for Smart Systems**
O.G. SCHMIDT, Institute for Integrative Nanosciences, IFW Dresden, Dresden, Germany

Session E-9
Emerging MEMS / NEMS Technologies

E-9:IL01 **Atomic Layer Deposition for MEMS & NEMS**
P.M. SARRO, G. FIORENTINO, G. PANDRAUD, Y. HUANG, Delft University of Technology, DIMES, The Netherlands

E-9:IL02 **Functional RF Devices Powered by MEMS Technologies**
K. HASHIMOTO, Chiba University, Chiba, Japan; S. TANAKA, M. ESASHI, Tohoku University, Sendai, Japan

Poster Presentations

E:P01 **Electrical and Geometrical Analysis of Molybdenum Microcoils as Magnetic Microgenerators**
M. AMATO, S.PETRONI, Center for Biomolecular Nanotechnologies @UNILE, Istituto Italiano di Tecnologia, Arnesano (LE), Italy; G. EPIFANI, National Nanotechnology Laboratory of CNR-INFM, Lecce, Italy; M. De VITTORIO, Center for Biomolecular Nanotechnologies @UNILE, Istituto Italiano di Tecnologia, Arnesano (LE), Italy - National Nanotechnology Laboratory of CNR-INFM, Lecce, Italy - Dip. Ingegneria dell'Innovazione, Università del Salento, Lecce, Italy

E:P02 **Properties of Nano-gold and Nano-silver Particles Grown on Synthetic Humic and Fulvic Acids. Investigation of Kinetics and Formation Mechanism with Account of DFT Calculations**
R.L. GALAGAN, V.A. LITVIN, **B.F. MINAEV**, Bohdan Khmelnitsky National University, Cherkasy, Ukraine

E:P03 **Integration of Magnetoelastic Sensing System with Microfluidics for Biological Detection**
CAI LIANG, D. CASTRO, LONGQING CHEN, C. GOONERATNE, J. KOSEL, KAUST, Jeddah, Saudi Arabia

E:P04 **Micro Thermoelectric Energy Harvester Using Bi-Te and Sb-Te Thin Films**
SEUNGWOO HAN[1, 2], MIN-SU KIM[2], KWANG EUN LEE[1]; [1]Korea Institute of Machinery & Materials, Department of Nano Mechanics, Daejeon, South Korea; [2]Nano Mechatronics, University of Science and Technology, South Korea

E:P05 **Flexible Thermoelectric Generator with High Thermal Efficiency Kapton/PDMS Package**
L. FRANCIOSO, C. DE PASCALI, P. SICILIANO, CNR-IMM, Institute for Microelectronics and Microsystems, Lecce, Italy

E:P06 **3D SOI-structures for SoC and LoC Sensitive Elements**
I. KOGUT[1], A.A. DRUSHININ[2], V.I. HOLOTA[1], V.V. DOVHIJ[1], [1]Precarpathian National University, Ivano-Frankivsk, Ukraine; [2]National University "Lvivska Politechnika", Lviv, Ukraine

E:P07 **New Viscosity Data for CuO-water Nanofluid - The Hysteresis Phenomenon Revisited**
CONG TAM NGUYEN[1], N. GALANIS[2], E. EVEILLARD[3]*, [1]Faculty of Engineering, Université de Moncton, Moncton (NB), Canada; [2]Faculty of Engineering, Université de Sherbrooke (Québec), Canada; [3]IUT Saint Malo, Université de Rennes 1, France

E:P08 **Wet-etching Characteristic of SiCN Film Deposited by the HWCVD Method**
H. NAKANISHI, T. OGATA, **A. IZUMI**, Kyushu Institute of Technology, Fukuoka, Japan

SYMPOSIUM F
SMART & ADAPTIVE OPTICS

Oral Presentations

Session F-1
Nanophotonics and Smart Optical Nanostructures

F-1:IL01 **Nonlinear and Switchable Plasmonic Metamaterials**
N.I. ZHELUDEV, Optoelectronics Research Centre & Centre for Photonic Metamaterials, University of Southampton, Southampton, UK

F-1:IL02 **Graphene Structures: Device Applications, Immediate and Prospective**
V. RYZHII[1, 2], M. RYZHII[1], N. RYABOVA[1], V. MITIN[3], T. OTSUJI[2], [1]University of Aizu, Japan; [2]Tohoku University, Japan; [3]University at Buffalo, USA

F-1:IL03 **Realization of Optical Components and Planar-light-wave-circuits with CMOS Technology**
G. PUCKER, Y. JESTIN, M. GHULINYAN, Advanced Photonics and Photovoltaics Unit, Bruno Kessler Foundation, Trento, Italy

F-1:IL04 **Gas Cluster Ion Beam Technology for Nanofabrication**
N. TOYODA, I. YAMADA, Graduate School of Engineering, University of Hyogo, Himeji, Japan

F-1:IL05 **Enhanced Broadband Light-matter Interaction with Quantum Dots**
B.D. GERARDOT, Department of Physics, Heriot-Watt University, Edinburgh, UK

F-1:IL06 **Diffractive Control of Femtosecond Pulses with Programmable Spatial Light Modulators**
P. ANDRES, Departamento de Óptica, Universitat de Valencia, Burjassot, Spain; J. LANCIS, Instituto de Nuevas Tecnologías de la Imagen, Universitat Jaume I de Castellón, Castelón, Spain

F-1:IL07 **Passive and Active Nanophotonics**
Y. FAINMAN, D. TAN, S. ZAMEK, O. BONDARENKO, A. SIMIC, A. MIZRAHI, M. NEZHAD, V. LOMAKIN, Q. GU, J. LEE, M. KHAJAVIKHAN, B. SLUTSKY, Dept. of Electrical and Computer Engineering, University of California, San Diego, La Jolla, CA, USA

F-1:IL08 **Magneto-optical and Plasmonic Properties of Thin Film Ternary Alloy Sensors**
J.R. SKUZA, National Institute of Aerospace, Hampton, VA, USA; S.H. CHOI, NASA Langley Research Center, Hampton, VA, USA

F-1:IL09 **Towards Three-dimensional Isotropic Metamaterials**
T. TANAKA, RIKEN Metamaterials Laboratory, Wako, Saitama, Japan

F-1:IL10 **The Switchable Metamaterials**
H.-T. CHEN, A.K. AZAD, J.F. O'HARA, R. SINGH, J. ZHOU, M.T. REITEN, D.R. CHOWDHURY, L. HUANG, S. RAMANI, Q. JIA, S.A. TRUGMAN, **A.J. TAYLOR**, Materials Physics and Applications Division, Los Alamos National Laboratory, Los Alamos, NM, USA

F-1:IL11 **Controlling Plasmonic Coupling: Highly Organized Structures for Biodiagnosis**
N. PAZOS-PEREZ, A. FERY, Department of Physical Chemistry II, University of Bayreuth, Bayreuth, Germany; R. ÁLVAREZ-PUEBLA, Department of Physical Chemistry, University of Vigo, Vigo, Spain

F-1:L12 **Surface Topography Effect on Plasmonic Characteristics**
G.C. KING[1], H.-J. KIM[2], Y. PARK[2], K.D. SONG[3], S.H. CHOI[1], [1]NASA Langley Research Center, Hampton, VA, USA; [2]National Institute of Aerospace, Hampton, VA, USA; [3]Norfolk State University, Norfolk, VA, USA

Session F-2
Active and Responsive Optical Materials and Devices

F-2:IL01 **Magnetic Properties of All-organic Nitroxide Radical Ferroelectric Liquid Crystals**
R. TAMURA, Kyoto University, Kyoto, Japan

F-2:IL02 **Raman Gain in Nanostructured and Nanocomposites Materials**
L. SIRLETO[1], M.A. FERRARA[1], I. RENDINA[1], G.C. RIGHINI[2], [1]National Research Council (CNR) Istituto per la Microelettronica e Microsistemi, Napoli, Italy; [2]National Research Council (CNR) Istituto di Fisica Applicata Nello Carrara, Sesto Fiorentino, Italy

F-2:IL03 **Flying with Optical Lift**
G.A. SWARTZLANDER, Center for Imaging Science & Dept. of Physics Rochester Institute of Technology, Rochester, NY, USA

F-2:IL04 **High Power Fibre Lasers: From Lab Curiocity to Materials Processing Champions**
M.N. ZERVAS, SPI Lasers, Southampton, UK also with Optoelectronics Research Centre, University of Southampton, UK

F-2:L05 **Spodumene Used as Thermoluminescent Dosimeter for High Doses**
R.A.P.O. D'AMORIM, S.O. SOUZA, Physics Department, Federal University of Sergipe, São Cristóvão, SE, Brazil

F-2:IL06 **Liquid-crystals-plasmonic (LCP) Nanostructures for Advanced Electro- and Nonlinear Optics**
I.C. KHOO, Electrical Engineering Department, Pennsylvania State University, University Park, PA, USA

F-2:IL07 **White Light Generation in Rare-earth-doped Amorphous Films Produced by Ultrasonic Spray Pyrolysis**
R. MARTÍNEZ-MARTÍNEZ, Instituto de Física y Matemáticas, Universidad Tecnológica de la Mixteca, Huajuapan de León, Oaxaca, México; E. ÁLVAREZ, Departamento de Física, UNISON, Hermosillo, Sonora, México; A. SPEGHINI, DiSTeMeV, Università di Verona, and INSTM, UdR Verona, San Floriano, Verona, Italy; C. FALCONY, Departamento de Física, CINVESTAV-IPN, México, D.F., México; **U. CALDINO**, Departamento de Física, Universidad Autónoma Metropolitana-Iztapalapa, México, D.F., México

F-2:IL08 **Linear and Nonlinear Optical Properties of Sol-gel-derived Microstructured Fibers Doped with Active Optical Ions and Metallic Nanoparticles**
L. BIGOT, H. EL HAMZAOUI, A. LE ROUGE, G. BOUWMANS, I. RAZDOBREEV, R. BERNARD, B. CAPOEN, **M. BOUAZAOUI**, Laboratory for Physics of Lasers, Atoms and Molecules (PHLAM/IRCICA - UMR8523/ USR3380), CNRS - Lille 1 University, Villeneuve d'Ascq cedex, France

F-2:L09 **Hybrid Organic-inorganic Photo-driven Nanoimpellers for Drug Release**
A. FRANCO, J. GARCÍA-MACEDO, J.I. ZINK, Departamento de Estado Sólido, Instituto de Física, Universidad Nacional Autónoma de México, México; Department of Chemistry and Biochemistry, University of California, Los Angeles, CA, USA

F-2:L10 **ZnO-based Thin Film Double Heterostructured-ultraviolet Light-emitting Diodes Grown by Vapor Cooling Condensation Technique**
P.C. WU, C.T. LEE, Institute of Microelectronics, Department of Electrical Engineering, National Cheng Kung University, Tainan, Taiwan, R.O.C.

F-2:L11 **Morphology Control in Luminescent Cadmium Silicate-based Nanostructures**
L.P. SANTANA, E.S. ALMEIDA, J.L. SOARES, **F.M. VICHI**, Instituto de Quimica, Universidade de Sao Paulo, Sao Paulo, Brazil

Session F-3
Smart Optical Systems and Devices

F-3:IL01 **Shaping Light with Optical MEMS**
W. NOELL, J. MASSON, R. BITTERLI, T. SCHARF, H.P. HERZIG, N.F. DE ROOIJ, Ecole Polytechnique Fédérale de Lausanne (EPFL), SAMLAB & OPT, Neuchâtel, Switzerland; J. EXTERMANN, L. BONACINA, D. KISELEV, J.-P. WOLF, GAP Biophotonics, Université de Genève, Genève, Switzerland; A. BICH, R. VOELKEL, K.J. WEIBLE, SUSS MicroOptics SA, Neuchâtel, Switzerland

F-3:IL02 **Purely Nonlinear Photonic Crystals**
K. GALLO, KTH - Royal Institute of Technology, Department of Applied Physics, Stockholm, Sweden

F-3:L03 **Development of Field-controlled Smart Optic Materials (ScN, AlN) with Rare Earth Dopants**
H.J. KIM[1], Y. PARK[1], G.C. KING[2], S.H. CHOI[2], [1]National Institute of Aerospace, Hampton, VA, USA; [2]NASA Langley Research Center, Hampton, VA, USA

F-3:L04 **Multimodal, High-resolution Imaging Systems Based on Stimuli-responsive Polymers**
G. PASCHEW, R. KÖRBITZ, A. RICHTER, Chair of Polymeric Microsystems, Dresden University of Technology, Dresden, Germany

Session F-4
Adaptive Optics

F-4:IL01 **Intelligent Optical Systems using Adaptive Optics**
N. CLARK, NASA Langley Research Center, Hampton, VA, USA

F-4:IL02 **Adaptive Optics for Extremely High Power Lasers**
A. KUDRYASHOV, Moscow State Open University and Active Optics NightN (Ltd), Russia

F-4:IL03 **Testbed for Adaptive Optics Testing**
S.R. RESTAINO, C.C. WILCOX, J.R. ANDREWS, F. SANTIAGO, T. MARTINEZ, Wavefront Sensing and Control Section Code 7216, Remote Sensing Div., Naval Research Laboratory, Albuquerque, NM, USA

F-4:IL04 **Adaptive Optics at the Large Binocular Telescope**
S. ESPOSITO, Osservatorio di Arcetri, Firenze, Italy

F-4:IL05 **Adaptive Optical Systems in Russian Federal Nuclear Center - VNIIEF with Different Control Principles**
S.G. GARANIN, S.V. KHOKHLOV, A.N. MANACHINSKY, **F.A. STARIKOV**, Russian Federal Nuclear Center - VNIIEF,Institute of Laser Physics Research, Sarov, Russia

F-4:IL06 **An Optical Vortex Coronagraph for the 3.5 m Galileo National Telescope (TNG)**
T. OCCHIPINTI, Adaptica Srl, Italy; C. BARBIERI, E. MARI, G. NALETTO, F. ROMANATO, A. SPONSELLI, F. TAMBURINI, University of Padova, Italy; E. DIOLAITI, INAF Astronomical Observatory Bologna, Italy; A. GHEDINA, INAF Telescopio Nazionale Galileo, Spain; G. SWARTZLANDER, Rochester Institute of Technology, USA; B. THIDÉ, Swedish Institute of Space Physics, Sweden

F-4:L07 **High Resolution Wavefront Control Using a Photocontrolled Deformable Mirror in Closed Loop**
S. BONORA, CNR-IFN, Laboratory for Ultraviolet and X-ray Optical Research, LUXOR, Padova, Italy; **U. BORTOLOZZO**, S. RESIDORI, INLN, Université de Nice-Sophia Antipolis, CNRS,Valbonne, France; D. COBURN, C. DAINTY, National University of Ireland, Applied Optics Group, Galway, Ireland

F-4:L08 **Novel/Smart Multilayer Actuator Array Development for Adaptive Optics**
E. UZGUR, D. HUTSON, E. BRYCE, K.J. KIRK, School of Engineering, University of the West of Scotland, Paisley, UK; J. MEL D. STRACHAN, P. PARR-BURRMAN, UK Astronomy Technology Centre, Royal Observatory, Blackford Hill, Edinburgh, UK

Session F-5
Advances in Diagnostic Techniques

F-5:IL01 **Neutron Scattering in Optical Materials**
C. PETRILLO, Dipartimento di Fisica, Unviersità di Perugia, Perugia, Italy

F-5:IL02 **Versatile Smart Optical Materials Characterizer**
YEONJOON PARK, HYUNJUNG KIM, National Institute of Aerospace, Hampton, VA, USA; GLEN KING, SANG CHOI, NASA Langley Research Center, USA

F-5:IL03 **Ultrasensitive SERS Analysis**
R. ALVAREZ-PUEBLA, Departamento de Química Física and Unidad Asociada CSIC, Universidade de Vigo, Vigo, Spain

Session F-6
Smart Optics Applications

F-6:IL01 **In-vivo Electrical Sensing of Neural Activity and Smart Optics Application in the Brain**
HARGSOON YOON, Norfolk State University, Norfolk, VA, USA

F-6:IL02 **WGM Microresonators for Biosensing**
S. SORIA, CNR-IFAC Instituto di Fisica Applicata "N. Carrara", Sesto Fiorentino (FI), Italy

F-6:IL03 **Development of a Micro-spectrometer for Neural Probe-pin Devices**
SANG H. CHOI, NASA Langley Research Center Hampton, VA, USA; KYO D. SONG, HARGSOON YOON, Department of Engineering, Norfolk State University, Norfolk, VA, USA; YEONJOON PARK, National Institute of Aerospace Hampton, VA, USA; UHN LEE, Gacheon University of Medicine and Science, Incheon, Korea

Special Session F-7
Adaptive Optics for Biological Applications

F-7:IL01 **Adaptive Optics for Microscopic Imaging of the Eye**
A. ROORDA, University of California, Berkeley, CA, USA

F-7:IL02 **Implementation of Adaptive Optics of Non-linear Microscopy to Biological Samples Using Optimisation Algorithms**
J.M. GIRKIN, Biophysical Sciences Institute, Department of Physics, Durham University, Durham, UK

F-7:IL03 **Adaptive Optics for High Resolution Scanning Optical Microscopy**
M.J. BOOTH, Department of Engineering Science, University of Oxford, Oxford, UK

F-7:IL04 **Use Sensor-less Adaptive Optics to Extend Imaging Depth**
YAOPENG ZHOU, Abbott Laboratories, Princeton, NJ, USA

F-7:IL05 **Measuring and Correcting Aberrations in the Rat Brain**
J. WANG[1, 2], J.-F. LEGER[1], J. BINDING[1, 2], C. BOCCARA[2], **S. GIGAN**[2], L. BOURDIEU[1], [1]Ecole Normale Supérieure, Institut de Biologie de l'ENS, IBENS, Paris, France. Inserm, U1024, Paris, France. CNRS, UMR 8197, Paris, France; [2]Institut Langevin, ESPCI ParisTech, CNRS UMR 7587, ESPCI, Paris, France

F-7:IL06 **How a Microscope in a Needle can Image Cancer in Humans at High Resolution**
D.A. SAMPSON, R.A. MCLAUGHLIN, R.W. KIRK, B.C. QUIRK, A. CURATOLO, X. YANG, K.M. KENNEDY, B.Y. YEO, D. LORENSER, Optical + Biomedical Engineering Laboratory, School of Electrical, Electronic and Computer Engineering, and Centre for Microscopy, Characterisation and Analysis, University of Western Australia, Perth, Western Australia, Australia

Poster Presentations

F:P01 **Controlling Pretilt Angle of Liquid Crystals by Surface Relief Grating on Azo-dye Doped Polymer Film**
KAI-YU YU, CHIA-RONG LEE, Institute of Electro-Optical Science and Engineering and Advanced Optoelectronic Technology Center, National Cheng Kung University, Tainan, Taiwan, Taiwan; **CHIE-TONG KUO**, Department of Physics and Center for Nanoscience and Nanotechnology, National Sun Yat-sen University, Kaohsiung, Taiwan

F:P02 **Observation of Electric Field Dependence of Molecular Orientation and Anisotropic Magnetic Interactions of All-organic Radical Liquid Crystals by EPR Spectroscopy**
K. SUZUKI, Y. UCHIDA, R. TAMURA, Kyoto University, Kyoto, Japan

F:P03 **PLZT:Nd3+ Ceramics for Photonic Applications**
M. PLONSKA[1], W.A. PISARSKI[2], [1]University of Silesia, Faculty of Computer and Materials Science, Department of Materials Science, Sosnowiec, Poland; [2]University of Silesia, Faculty of Mathematics, Physics and Chemistry, Institute of Chemistry, Katowice, Poland

F:P04 **Template Guided Nanostructure Synthesis**
D.A. GRYNKO, Institute of Semiconductor Physics NAS of Ukraine, Kyiv; M.A. ZABOLOTNY, Kyiv National Taras Shevchenko University; M.Yu. BARABASH, Technical Center of NAS of Ukraine, Kyiv; Yu.M. BARABASH, Institute of Physics NAS of Ukraine, Kyiv, Ukraine

F:P05 **LED Adjustable Spotlight by Using Photo Controllable PVDF-TrFE Copolymer Deformable Mirror**
S. BONORA, CNR-IFN, Laboratory for Ultraviolet and X-ray Optical Research, Padova, Italy; A. MARRANI, M. BASSI, I. FALCO, Solvay-Solexis R&D Center, Bollate, (MI), Italy; M. MENEGHINI, E. ZANONI, Dipartmento of Information Engineering, University of Padova, Padova, Italy

F:P06 **Hartmann Measurements of Aberrations of Human Eye with Multilevel Lenslet Arrays**
T.YU. CHEREZOVA, S.O. GALETSKY, Lomonosov Moscow State University, Moscow, Russia; **YU.I. MALAKHOV**, International Science and Technology Center, Moscow, Russia; A.N. MANACHINSKY, N.V. PILIPENKO, F.A. STARIKOV, Russian Federal Nuclear Center -VNIIEF, Institute of Laser Physics Research, Sarov, Russia

F:P07 **Maximum Local Energy Method for Remote Sensing Image Fusion Using the Beyond Wavelet Transform in Multi-spectral Optical System**
HUIMIN LU, Dept. of Electrical Engineering and Electronics, Kyushu Institute of Technology; YUJIE LI, School of Information Engineering, Yangzhou University; XUELONG HU, Jiangsu Image Processing and Image Communication Key Labs; S. SERIKAWA, Dept. of Electrical Engineering and Electronics, Kyushu Institute of Technology, Kitakyushu, Japan

F:P08 **Peculiarities of Adaptive Laser Location of Debris with Rough Surface**
V.A. BOGACHEV, S.G. GARANIN, N.V. MASLOV, F.A. STARIKOV, V.A. VOLKOV, Russian Federal Nuclear Center - VNIIEF, Institute of Laser Physics Research, Sarov, Russia

SYMPOSIUM G
EMBODING INTELLIGENCE IN STRUCTURES AND INTEGRATED SYSTEMS

Oral Presentations

Session G-1
Smart Materials, Sensors, Actuators

G-1:IL01 **Development of Some Smart Sensors for Monitoring Civil Infrastructures**
XINCHUN GUAN, HUI LI, JINPING OU, Harbin Institute of Technology, Harbin, China

G-1:IL02 **New Perspectives in Fibre Optic Sensor Networks for Shape Sensing and Structural Health Monitoring**
A. GUEMES, Dept. Aeronautics, Universidad Politecnica de Madrid, Madrid, Spain

G-1:IL03 **Optimal Sensor Placement for Parameter Estimation in Dynamic Systems**
C. PAPADIMITRIOU, D.-C. PAPADIOTI, University of Thessaly, Volos, Greece

G-1:IL04 **Wavefront Control of Future Large Thin Shell Space Telescopes**
A. PREUMONT, R. BASTAITS, E. ROMNEE, I. SURDEJ, ULB, Active Structures Laboratory, Brussels, Belgium; G. RODRIGUES, ESA-ESTEC, Structures Section, Noordwijk, The Netherlands

G-1:IL05 **Fatigue of NiTi for Dampers and Actuators**
A. ISALGUE, V. TORRA, Dep. Fisica Aplicada, Universitat Politecnica Catalunya, Barcelona, Spain; F. CASCIATI, Dip. Mec. Str., Università Pavia, Italy; S. CASCIATI, DARC, Università Catania, Italy

G-1:IL06 **Smart, Active Fiber Devices and Approaches to Realizing Textile Composites for Sensing and Energy Harvesting**
M. SHTEIN, K. PIPE, S. MORRIS, S. BISWAS, B. O'CONNOR[1], A. YADAV[1], University of Michigan, Ann Arbor, MI, USA; [1]Currently at North Carolina State University, USA

G-1:IL07 **Modeling of Multifunctional Hybrid SMA-ceramic Composites**
D.C. LAGOUDAS, B.T. LESTER, Y. CHEMISKY, Texas A&M University, Dept. of Aerospace Engineering, College Station, TX, USA

G-1:L08 **Anisotropic Mechanical, Conductive and Piezoresistivity Properties of Aligned Magnetic Carbon Nanotube/Polymer Composites**
HUIGANG XIAO, J.B. JIANG, H. LI, J.P. OU, School of Civil Engineering, Harbin Institute of Technology, Harbin, China

G-1:L09 **Characterisation of the Dynamic Properties of a Magneto-rheological Elastomer**
YI ZHANG, S. OLUTUNDE OYADIJI, Dynamic and Aeroelasticity Group, School of Mechanical, Aerospace and Civil Engineering, The University of Manchester, Manchester, UK

G-1:L10 **On Characteristic Properties of a Layered Packet Base-foundation on the Base of the Analysis of the Solutions of the Corresponding Three-dimensional Dynamic Problems of Elasticity Theory**
L.A. AGHALOVYAN, M.L. AGHALOVYAN, Institute of Mechanics of NAS of Armenia, Yerevan, Armenia

G-1:L11 **Advanced Smart Materials to Enable Adaptive Structural Composites**
M.R. MASCHMANN, G. EHLERT, A. McCLUNG, G.P. TANDON, D. PHILLIPS, R. JUSTICE, **J.W. BAUR**, Air Force Research Laboratory, Materials and Manufacturing Directorate, AFRL/RX, WPAFB, OH, USA

G-1:L12 **Nonlinear Viscoelastic Model of Isotropic and Anisotropic Magnetorheological Elastomers**
K. SAPOUNA, Y.P. XIONG, R.A. SHENOI, Faculty of Engineering and the Environment, University of Southampton, Southampton, UK

G-1:L13 **Simultaneous Precision Measurement of Shear Stress and Pressure Using Polymer Fiber Bragg Gratings Embedded in Silicone Elastomer**
XIAO-MING TAO, **ZHI-FENG ZHANG**, HUA-PENG ZHANG, The Institute of Textile and Clothing, The Hong Kong Polytechnic University, Hong Kong

Session G-2
Integration Technologies

G-2:IL01 **Actuator & Sensor Integration for Adaptronic Applications**
THILO BEIN, Fraunhofer LBF, Darmstadt, Germany

G-2:IL02 **Digital Implementation for Active Control**
L. FARAVELLI, ZHICONG CHEN, Dept. Structural Mechanics, University of Pavia, Pavia, Italy

G-2:IL03 **A Mathematical Framework for Structural Control Integration**
F. PALACIOS-QUINONERO, **J. RODELLAR**, J.M. ROSSELL, J. RUBIÓ-MASSEGÚ, Department of Applied Mathematics III, Universitat Politecnica de Catalunya, Barcelona, Spain

G-2:IL04 **Dynamic Sensor Data Fusion: Developments for Structural and Mechanical Systems using Dual State Parameter Estimation Techniques**
A. SMYTH, Dept. of Civil Engineering & Engineering Mechanics, Columbia University, New York, NY, USA; E. CHATZI, ETH, Zurich, Switzerland

G-2:IL05 **Insight and Applications in Energy Harvesting from Bullets to Birds**
E. GARCIA, Laboratory of Intelligent Machine Systems, Cornell University, Ithaca, NY, USA

G-2:IL06 **Design of Energy-harvesting and Storage Systems (EHSS) for Future Aero-vehicles**
M. TAYA, Center for Intelligent Materials and Systems, Boeing-Pennell Professor, Department of Mechanical Engineering, University of Washington, Seattle, WA, USA

G-2:L07 **A Fractal-inspired Multi-frequency Piezoelectric Energy Converter: Computational and Experimental Characterization**
D. CASTAGNETTI, Dept. of Engineering Sciences and Methods, University of Modena and Reggio Emilia, Reggio Emilia, Italy

G-2:L08 **On Three-dimensional Electromechanical Behaviour of Piezoelectric Scavengers under Optimal Bending Deflection**
L. MORO, D. BENASCIUTTI, M. GALLINA, DIEGM, University of Udine, Udine, Italy

G-2:L09 **Vibroacoustic Optimization and Implementation of Adaptive Metacomposite Based on Periodically Distributed Shunted Piezoelectric Patches**
F. TATEO, M. COLLET, M. OUISSE, FEMTO-ST Applied Mechanics, Besançon, France; M. ICHCHOU, LTDS Ecole Centrale de Lyon, Ecully, France

Session G-3
Smart Structures and Integrated Systems

G-3:IL01 **Seismic Protection of Structures with Resettable Tuned Mass Dampers**
C.C. LIN, National Chung Hsing University, Taichung, Taiwan; **T.T. SOONG**, State University of New York at Buffalo, Buffalo, NY, USA

G-3:IL02 **Integral Control of Inelastic Structures - Implementation and Experimentation Aspects**
A.M. REINHORN, University at Buffalo, Buffalo, NY, USA

G-3:IL03 **Adaptive Negative Stiffness: A New Structural Modification Approach for Seismic Protection**
D.T.R. PASALA[1], A.A.S. SARLIS[2], **S. NAGARAJAIAH**[1], A.M. REINHORN[2], M.C. CONSTANTINOU[2], D. TAYLOR[3], [1]Rice University, Houston, TX, USA; [2]University at Buffalo, Buffalo, NY, USA; [3]Taylor Devices, Buffalo, NY, USA

G-3:IL04 **Mechanics and Model-based Control of Structures**
H. IRSCHIK, M. KROMMER, K. SCHLACHER, Johannes Kepler University of Linz, Linz, Austria

G-3:IL05 **Structural Damage Identification by Finite Element Model Updating**
G. DE ROECK, Department Civil Engineering, K.U. Leuven, Leuven, Belgium

G-3:IL06 **Vibration-based Damage Detection under Changing Environmental and Operational Conditions**
C.-P. FRITZEN, P. KRAEMER, I. BUETHE, University of Siegen, Siegen, Germany

G-3:IL07 **Monitoring, Evaluation and Control for Life-cycle Performance of Intelligent Civil Structures**
HUI LI[1], J.P. OU[1, 2], [1]Research Center of Structural Monitoring and Control, Harbin Institute of Technology, Harbin, China; [2]Faculty of Infrastructure Engineering, Dalian University of Technology, Dalian, China

G-3:IL08 **Integrated Framework for Structural Health Monitoring of Civil Infrastructure**
B.F. SPENCER, Jr., Department of Civil and Environmental Engineering, University of Illinois at Urbana-Champaign, Urbana, Illinois, USA

G-3:IL09 **High Precision Adaptive and Morphing Structures**
H. BAIER, Institute of Lightweight Structures, TU München, Garching, Germany

G-3:IL10 **Bistable Structures for Use in Morphing Applications**
D.J. WAGG, Department of Mechanical Engineering, University of Bristol, Bristol, UK

G-3:IL11 **Deployable Structures**
A.E. DEL GROSSO, University of Genoa, Genoa, Italy; P. BASSO, University of Pavia, Pavia, Italy

G-3:IL12 **Integration of Piezoelectric Components in Composite Structures**
A. BENJEDDOU, Supméca, Saint Ouen Cedex, France

G-3:L13 **SHM System for Monitoring and Prediction of Cracks Development in Concrete Structures**
G. KNOR, J. HOLNICKI-SZULC, Institute of Fundamental Technological Research, Polish Academy of Sciences, Department of Intelligent Technologies, Warsaw, Poland

G-3:L14 **The ELGRID System for Monitoring of Cracks in Massive Concrete Structures**
M. KOKOT, ADAPTRONICA, Lomianki, Poland; J. HOLNICKI-SZULC, IPPT PAN, Warsaw, Poland

G-3:L16 **Smart Composite Device for Structural Health Monitoring**
A. CORICCIATI, P.A. CORVAGLIA, A. LARGO, Consorzio CETMA, Brindisi, Italy; M.A. CAPONERO, ENEA Frascati Research Centre, Frascati, Roma, Italy

G-3:L17 **Structural Health Monitoring using PZT Sensors**
N. GUPTA, N. JAIN, S. BHALLA, Civil Engineering Department, Indian Institute of Technology (IIT) Delhi, New Delhi, India

G-3:L18 **Real-time Smart Abstract Shape Identifiers**
M.H.M. HASSAN, Civil Engineering, British University in Egypt (BUE), Cairo, Egypt

G-3:L20 **Optimal Design of Truss-like Robots**
C.-J. THORE, Division of Mechanics, Linköping Institute of Technology, Linköping, Sweden

G-3:L21 **A Coupled Electro-mechanical System for Damage Detection and Energy Harvesting**
J. CIAMBELLA, **F. VESTRONI**, Dipartimento di Ingegneria Strutturale e Geotecnica, SAPIENZA Università di Roma, Roma, Italy

Session G-4
Bio-inspired Materials and Structures

G-4:IL01 **What We Can Learn from Nature's Flyers for Better Flapping Air Vehicle?**
JAE-HUNG HAN, Dept. of Aerospace Eng., KAIST, Daejeon, South Korea

G-4:IL02 **Mussel-inspired Technology for Microfluidics and Stem Cell Culture**
HAESHIN LEE, Graduate School of Nanoscience & Technology (WCU), KAIST, Daejeon, Korea

G-4:IL03 **Multifunctional Design Perspective for Bio-inspired Systems Allowing Autonomic Response**
B.-L. LEE, ScD Program Manager for Mechanics of Multifunctional Materials & Microsystems U.S., Air Force Office of Scientific Research, Arlington, VA, USA

G-4:IL04 **Mechanical Model of Bio-inspired Ultra-sensitive Infrasound Sensor for Landslide**
YING LEI[1], L.J. LIU[2], Y.F. ZHANG[3], Q. GU[1], [1]Department of Civil Engineering, Xiamen University, Xiamen, China; [2]Department of Mechanical and Electronic Engineering, Xiamen University, Xiamen, China; [3]Department of Civil and Environmental Engineering, Maryland University, Maryland, MD, USA

G-4:IL05 **Research and Innovation in Bio-inspired Technologies**
SHIH-CHI LIU, Program Director Sensors & Sensing Systems (SSS), National Science Foundation, Arlington, VA, USA

G-4:IL07 **Learning from Plants – Biologically-inspired Adaptive Structural Systems**
K.W. WANG, Department of Mechanical Engineering, University of Michigan, Ann Arbor, MI, USA

Session G-5
Ongoing and Perspective Applications

G-5:IL01 **Recent Advances in Active Structural Control Strategies for Civil Engineering Applications**
S. CASCIATI[1], Z.-C. CHEN[2], U. YILDIRIM[2], [1]Department DARC, University of Catania, Siracusa, Italy; [2]Department of Structural Mechanics, University of Pavia, Pavia, Italy

G-5:IL02 **On the Use of Statistical Pattern Recognition Methods for Structural Health Monitoring**
A. KIREMIDJIAN, H.Y. NOH, D. JAISWAL, R. RAJAGOPAL, Department of Civil and Environmental Engineering, Stanford University, Stanford, CA, USA

G-5:IL03 **Structural Control Issues in New Generation Offshore Wind Energy Plants**
NINGSU LUO, Institute of Informatics and Applications, University of Girona, Girona, Spain

G-5:IL04 **Seismic Performance of Retrofitted Historical Structures Using Structural Control Systems**
C.A. SYRMAKEZIS, National Technical University of Athens, Zografou, Athens, Greece

G-5:IL05 **Assistive Knee Braces with Multifunctional Actuators**
WEI-HSIN LIAO, Department of Mechanical and Automation Engineering, The Chinese University of Hong Kong, Shatin, NT, Hong Kong

G-5:IL06 **Monitoring of Bridge and Transportation Infrastructure in Japan**
Y. FUJINO, Department of Civil Engineering, The University of Tokyo, Tokyo, Japan

G-5:IL07 **Structural Health Monitoring of a Tall Building with Huge Floating Platform**
YI-QING NI, Y.X. XIA, H.F. ZHOU, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong

G-5:L08 **Development of a Visualized Data Management System for Life-cycle Health Monitoring of Civil Structures**
K.C. LIN[1], Y.Q. NI[1], X.W. YE[1], K.Y. WONG[2], [1]Department of Civil and Structural Engineering, The Hong Kong Polytechnic University, Hong Kong; [2]Bridge & Structures Division, Highways Department, The Government of The Hong Kong Special Administrative Region, Hong Kong

G-5:L09 **Magnetic Shape Memory Actuators and their Applications for Rotor Systems**
K. MAJEWSKA[1], M. KRAWCZUK[1, 2], W. OSTACHOWICZ[1, 3], A. ZAK[1], [1]Institute of Fluid Flow Machinery of PASci, Gdansk, Poland; [2]Technical University of Gdansk, Gdansk, Poland; [3]Gdynia Maritime University, Gdynia, Poland

Special Session G-6
Advances and Challenges in the SHM of Civil and Aerospace Structures

G-6:IL01 **Ultrasonic Guided Wave Monitoring of Railroad Tracks**
F. LANZA DI SCALEA, C. NUCERA, R. PHILLIPS, University of California, San Diego, La Jolla, VA, USA

G-6:IL02 **NDE/SHM of Underwater Structures: A Review**
P. RIZZO, Department of Civil and Environmental Engineering, University of Pittsburgh, Pittsburgh, PA, USA

G-6:L03 **Autonomous Hybrid SHM System for Cable-stayed Bridges by Solar Powered Multiscale Sensor Nodes**
JEONG-TAE KIM, DUC-DUY HO, KHAC-DUY NGUYEN, PO-YOUNG LEE, Pukyong National University, Busan, Korea

G-6:L04 **Electro-magnetic Sensors Based Cable NDE Technique Incorporated on a Cable Climbing Robot**
JU-WON KIM[1], MIN-JUN NAM[1], **SEUNGHEE PARK**[2], JONG-JAE LEE[3], [1]Department of u-City Design and Engineering, Sungkyunkwan University, Suwon, Korea; [2]Department of Civil and Environmental Engineering, Sungkyunkwan University, Korea; [3]Department of Civil and Environmental Engineering, Sejong University, Korea

G-6:L05 **Structural Element with Non-homogene Fiberconcrete Distribution in the Volume Building Technology Process and Strength**
A. KRASNIKOVS, O. KONONOVA, V. LAPSA, A. PUPURS, Riga Technical University, Riga, Latvia

G-6:IL06 **Laser Ultrasonic Techniques for Structural Health Monitoring Applications**
HOON SOHN, YUN KYU AN, BYEONGJIN PARK, TROUNG THANH CHUNG, CHUL MIN YEUM, JIN YEOL YANG, HYEON SEOK LEE, KAIST, Yuseong-gu, Republic of Korea

G-6:IL07 **Sensor Location in Nonlinear Acoustics Used for Damage Detection in Composite Chiral Sandwich Panels**
A. KLEPKA[1], **W.J. STASZEWSKI**[1], D. DI MAIO[2], F. SCARPA[2], K.F. TEE[3], T. UHL[1], [1]Department of Robotics and Mechatronics, AGH University of Science and Technology, Krakow, Poland; [2]Department of Aerospace Engineering, Bristol University, UK; [3]School of Engineering, Greenwich University, UK

G-6:L08 **A Probabistic Framework for AE Source Localization**
S. SALAMONE, E. DEHGHAN NIRI, Smart Structures Research Laboratory, Department of Civil, Structural, and Environmental Engineering, SUNY at Buffalo, Buffalo, NY, USA

G-6:L09 **Vibration Control of Chimney Using Tuned Mass Damper**
S.N. TANDE, B.N. NAIK, Walchand College of Engineering, Sangli, India

G-6:L10 **On Line Material Parameters Assessment for SHM Application**
T. UHL, P. PACKO, L. AMBROZINSKI, W. STASZEWSKI, AGH University of Science and Technology, Krakow, Poland

G-6:L11 **Experimental Dynamic System Identification of Damaged Reinforced Beam**
V. VOLKOVA, Dnepropetrovsk National University of the Railway Transport, Dnepropetrovsk, Ukraine

G-6:L12 **A Comparative Assessment of Two SHM Damage Detection Methods in a Laboratory Tower**
E. ZUGASTI[1], A. GÓMEZ GONZÁLEZ[2], J. ANDUAGA[1], M.A. ARREGUI[1], F. MARTÍNEZ[1], [1]Ikerlan IK4, Arrasate, Spain; [2]Universidade de Santiago de Compostela, Spain

G-6:L13 **Characterization of CFRP Composites Using Electro-mechanical Impedance Technique**
T. WANDOWSKI, P. MALINOWSKI, L. SKARBEK, S. OPOKA, W. OSTACHOWICZ, Institute of Fluid-Flow Machinery, Polish Academy of Sciences, Gdansk, Poland; W. OSTACHOWICZ, Gdynia Maritime University, Faculty of Navigation, Gdynia, Poland

Poster Presentations

G:P01 **Reliability of Stretchable Mould Interconnect in a Conformable Matrix Application**
M. JABLONSKI, J. VANFLETEREN, F. BOSSUYT, T. VERVUST, CMST, Ghent University/IMEC, Ghent, Belgium; M. GONZALES, YUNG-YU HSU, IMEC Leuven, Leuven, Belgium

G:P02 **Optical Fiber Based Structural Health Monitoring Systems in Electric Power Plants**
P. GASIOR, J. KALETAA, A. PRZYGODA, Wroclaw University of Technology, Wroclaw, Poland; RAFAKO SA Boiler Engineering Company, Raciborz, Poland

G:P03 **Polydopamine Microfluidics**
INSEONG YOU, HAESHIN LEE, Graduate School of Nanoscience & Technology (WCU), KAIST, Daejeon, Korea

SYMPOSIUM H
MINING SMARTNESS FROM NATURE

Oral Presentations

H:KL **Biomimetics: Lessons from Nature**
B. BHUSHAN, Ohio Eminent Scholar and The Howard D. Winbigler Professor Director, Nanoprobe Laboratory for Bio- & Nanotechnology and Biomimetics The Ohio State University, OH, USA

Session H-1
Algorithms, Mechanisms and Structures in Nature as an Inspiration for Mimicking

H-1:IL01 **Biologically-inspired Reversible Adhesives: Where are we now?**
S.N. GORB, Department of Functional Morphology and Biomechanics, Zoological Institute at the University of Kiel, Kiel, Germany

H-1:IL03 **Induction of Cellular Responses by Nanoscopic Environments**
J.P. SPATZ, Max Planck Institute for Intelligent Systems & University of Heidelberg, Stuttgart, Germany

H-1:IL05 **How to Control Bacteria to Act like Microrobots**
S. MARTEL, Nanorobotics Laboratory, Department of Computer and Software Engineering, Ecole Polytechnique de Montreal (EPM), Montreal, Canada

H-1:IL06 **Cellulose Nanowhiskers: Orienting, Assembling and Interfacial Control**
S.J. EICHHORN, School of Physics College of Engineeering, Mathematics and Physical Sciences, University of Exeter, Exeter, UK

H-1:IL07 **Hydro-actuated Plant Organs as Prototypes for Convertible Devices**
I. BURGERT, ETH Zurich, Institute for Building Materials & Empa, Zurich, Switzerland; M.J. HARRINGTON, K. RAZGHANDI, M. EDER, J. W.C DUNLOP, P. FRATZL, Max Planck Institute of Colloids and Interfaces, Department of Biomaterials, Potsdam, Germany; C. NEINHUIS, Institute for Botany, TU Dresden, Dresden, Germany

H-1:IL08 **Rational Peptide Design and Synthetic Biology Approaches to New Biomaterials**
D.N. WOOLFSON, School of Chemistry & School of Biochemistry, University of Bristol, Bristol, UK

H-1:IL09 **Innovative Biomimetic Materials Inspired by Plants**
R. SEIDEL, T. MASSELTER, O. SPECK, T. SPECK, Plant Biomechanics Group Freiburg, Botanic Garden, Faculty of Biology, University of Freiburg, Freiburg, Germany; Bionics Competence Network BIOKON e.V.; Competence Network Biomimetics

H-1:L10 **Beetle's Elytra Inspired Structure Design and its Mechanical Properties Investigation**
CE GUO, W.W.SONG, Z.D.DAI, Institute of Bio-inspired Structure and Surface Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, China

H-1:L11 **Elementary Morphing Shells: Their Complete Behaviour**
E.G. LOUKAIDES, C. MAURINI, K.A. SEFFEN, Department of Engineering, University of Cambridge, Cambridge, UK; UPMC Univ Paris 6, UMR 7190, Institut Jean Le Rond d'Alembert, Paris, France; and CNRS, UMR 7190, Institut Jean Le Rond d'Alembert, Paris, France

Session H-2
Biomimetic Materials

H-2.1 Bioinspired and Bioenabled Materials and Manufacturing

H-2.1:IL01 **Shape-preserving Chemical Transformation of 3-D Biogenic and Synthetic Templates**
K.H. SANDHAGE, J.P. VERNON, J.D. BERRIGAN, S.C. DAVIS, M.-K. SONG, Y. FANG, Y. CAI, M. LIU, S.R. MARDER, N. KROGER, Georgia Institute of Technology, Atlanta, GA, USA

H-2.1:IL02 **Materials Inspired by Nature: Design and Fabrication of Biocomposites from Cellulose Nanofibers**
QI ZHOU, V. BULONE, School of Biotechnology, Royal Institute of Technology, AlbaNova University Centre, Stockholm, Sweden; H. SEHAQUI, L.A. BERGLUND, Wallenberg Wood Science Center, Royal Institute of Technology, Stockholm, Sweden

H-2.1:IL03 **Programmable Adhesive: Multiscale Mechanical Interlocking for Sensor Applications**
CHANGHYUN PANG, DAESHIK KANG, SANG MOON KIM, **KAHP-YANG SUH**, Division of Multiscale Mechanical Design, School of Mechanical and Aerospace Engineering, Seoul National University, Seoul, South Korea

H-2.1:IL04 **Bio-inspired Silk-based Materials**
T. SCHEIBEL, Lst. Biomaterialien (FAN) Universität Bayreuth, Bayreuth, Germany

H-2.1:IL05 **Non-canonical Base Pairs in DNA Crystal Design**
P.J. PAUKSTELIS, University of Maryland, Department of Chemistry and Biochemistry Center for Biological Structure and Organization, College Park, MD, USA

H-2.1:IL07 **Self-assembled Polymeric Supramolecular Frameworks**
O. IKKALA, N HOUBENOV, Helsinki Univ Tech/Aalto Univ, Espoo, Finland; H. IATROU, N. HADJICHSTIDIS, Univ. Athens, Athens, Greece; C. FAUL, Univ. Bristol, Bristol, UK

H-2.1:IL07b **Biomimetic ceramic and hybrid nanofibers**
YOU-LO HSIEH, University of California, Davis, CA, USA

H-2.1:IL08 **Bio-inspired Chiral Nanostructures with Plasmon and Exciton Resonances**
A. GOVOROV, Department of Physics and Astronomy, Ohio University, Athens, OH, USA

H-2.1:IL09 **Nanoscale Systems Assembled with DNA: from Structures to Functionalities**
O. GANG, Center for Functional Nanomaterials, Brookhaven National Laboratory, Upton, NY, USA

H-2.1:IL10 **Study Concerning 3D Collagen Grafts for Wound Dressing and Controlled Release**
M. CHIRITA, Faculty of Medical Bioengineering, University of Medicine and Pharmacy "Gr.T. Popa", Iasi, Romania

H-2.1:L11 **Mimicking the Anisotropic Behavior of Natural Porous Structures by Controlling the Reinforcing Particles Distribution in Polymeric Foams**
L. SORRENTINO, M. AURILIA, M. D'AURIA, S. IANNACE, CNR - Institute for Composite and Biomedical Materials, Portici (NA), Italy; D. DAVINO, P. MEI, C. VISONE, University of Sannio, Department of Engineering, Benevento (BN), Italy

H-2.1:L12 **Templated Mineral Growth - A Pathway to Synthetic Nacre Biomineralisation**
N.H. MUNRO, **K.M. McGRATH**, The MacDiarmid Institute for Advanced Materials and Nanotechnology, School of Chemical and Physical Sciences, Victoria University of Wellington, Wellington, New Zealand

H-2.1:L13 **Super-hydrophobic Surfaces by Direct Replication of Natural Leaves**
E. LEPORE, N. PUGNO, Laboratory of Bio-Inspired Nanomechanics "Giuseppe Maria Pugno", Dept. of Structural Engineering and Geotechnics, Politecnico di Torino, Torino, Italy

H-2.1:L14 **Affinity-controlled Bbehaviour of Peptide Molecules at Interfaces to Inorganic Semiconductors**
K. GOEDE, CINaM Nanoscience Centre, Université de la Méditerranée, Campus de Luminy, Marseille Cedex, France; M. BACHMANN, Soft Matter Systems Research Group, Center for Simulational Physics, The University of Georgia, Athens, GA, USA

H-2.1:L15 **Virus-based Biomimetic Colorimetric Sensor**
JIN-WOO OH, WOO-JAE CHUNG, BYUNG YANG LEE, J. MEYER, C. ZUEGER, **SEUNG-WUK LEE**, Department of Bioengineering, University of California, Berkeley, Physical Biosciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA, USA

H-2.1:L16 **Novel Interpenetrating Nylon-acrylic Polymer Composite Thin Films: Towards Improving Nylon's Resistance to Water**
A. ATTANASIO[1], I.S. BAYER[1], A. ATHANASSIOU[1, 2], R. CINGOLANI[2], [1]Center for Bio-Molecular Nanotechnology@Unile, Istituto Italiano di Tecnologia (IIT), Arnesano (Lecce), Italy; [2]Istituto Italiano di Tecnologia (IIT), Central Research Laboratories, Genova, Italy

H-2.2 Functional Bio-inspired Surfaces

H-2.2:IL01 **Reconstructing Synthetic Cellular Compartments on a Surface**
R. BAR-ZIV, Department of Materials and Interfaces, The Weizmann Institute of Science, Rehovot, Israel

H-2.2:IL02 **Biomimetic Surfaces-inspirations from Plants and Animals**
C. NEINHUIS, TU Dresden, Institut für Botanik, Dresden, Germany; R. HELBIG, J. NICKERL, C. WERNER, Leibnitz Institut für Polmerforschung, Dresden, Germany

H-2.2:IL03 **Bioinspired Assembly of Superparamagnetic Nanoparticle Membranes**
E. REIMHULT, Laboratory for Biologically Inspired Materials, Department of Nanobiotechnology, University of Natural Resources and Life Sciences (BOKU) Vienna, Austria

H-2.2:IL04 **Biomimetic Self-organized Functional Surface Materials**
M. SHIMOMURA, Tohoku University, Katahira, Sendai, Japan

H-2.2:L05 **Smart Skin Pattern of Springtails - Robust Omniphobic Surfaces in Nature**
R. HENSEL[1], R. HELBIG[1], S. ALAND[2], C. WERNER[1, 3], [1]Max Bergmann Centre of Biomaterials, Leibniz Institute of Polymer Research Dresden, Dresden, Germany; [2]Department of Mathematics, Technische Universität Dresden, Dresden, Germany; [3]B CUBE Innovation Centre for Molecular Bioengineering, Technische Universität Dresden, Dresden, Germany

H-2.2:L06 **Bio-inspired Surface Structures to Control Wettability and Ice Accumulation**
B. HATTON, School of Engineering and Applied Sciences, Harvard University, Cambridge, MA, USA

Session H-3
Bio-inspired Sensors and Actuators

H-3:IL01 **Fly-ear Inspired Sensors for Sound Source Localization**
MIAO YU, Department of Mechanical Engineering, University of Maryland, College Park, MD, USA

H-3:IL02 **Development of an Odorant Sensor Using Living Cells Expressing Insect Odorant Receptors**
H. MITSUNO, T. SAKURAI, H. MITSUHASHI, R. KANZAKI, Research Center for Advanced Science and Technology, The University of Tokyo, Meguro-ku, Tokyo, Japan; Graduate School of Information Science and Technology, The University of Tokyo, Bunkyo-ku, Tokyo, Japan

H-3:IL03 **Imitating the Cricket Cercal System: the Beauty of the Beast with a Twist of the Engineer**
G. KRIJNEN, MESA + Research Institute, University of Twente, Enschede, The Netherlands

H-3:IL04 **Mimicking Insect Ultrastructures for Vision**
KI-HUN JEONG, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea

H-3:L04b **Learning How Animals use Sound for Object Identification and Material Characterization**
R. ALLEN[1], J.G. REES[2], [1]Institute of Sound and Vibration Research, University of Southampton, Southampton, UK; [2]British Geological Survey, Keyworth, Nottingham, UK

H-3:L05 **Tactile Sensing with 3D Carbon Nanotubes Arrays**
J.J. SCHNEIDER, R. JOSHI, O. YILAMZOGLU, D. PAVLIDIS, Technische Universität Darmstadt, Darmstadt, Germany, and Battenberg Robotics GmbH und Co KG, Germany

H-3:L06 **Material Properties and Evaluation of Sensitivity of Photomechanic Infrared Receptors in Pyrophilous Insects**
H. SCHMITZ, A. SCHMITZ, D. KLOCKE, Institute of Zoology, University of Bonn, Germany; H. BOUSACK, Peter Grünberg Institute, Forschungszentrum Juelich, Germany

H-3:L07 **Ultrahigh-sensitive and -selective Bio-sniffer (Biochemical Gas Sensor) with UV-LED for Formaldehyde in the Gas Phase**
Y. SUZUKI, G. ITABASHI, K. MIYAJIMA, T. ARAKAWA, **H. KUDO**, K. MITSUBAYASHI, Tokyo Medical and Dental University, Tokyo, Japan

H-3:L08 **Detection of Salmonella Using Bio-inspired Autonomous Sentinels**
S. LI, H.C. WIKLE, III, **B.A. CHIN**, Materials Research & Education Center, Auburn University, Auburn, AL, USA

H-3:IL09 **Actuator-like Hydrogels Based on Conductive Chitosan**
J. DESBRIERES, S. REYNAUD, P. MARCASUZAA, F. EHRENFELD, Université de Pau et des Pays de l'Adour (UPPA) - IPREM/EPCP - UMR 5254 CNRS/UPPA - Helioparc Pau Pyrenees, Pau cedex, France

H-3:L10 **Enzymatically-activated Shape Memory Actuators**
R.S. JUSTICE[1], M.B. DICKERSON[1, 2], T.S. CREASY[3], J.W. BAUR[1], [1]US Air Force Research Laboratory, Materials and Manufacturing Directorate, Wright-Patterson AFB, OH, USA; [2]UES Inc., Dayton, OH, USA; [3]Texas A&M University, Department of Mechanical Engineering, College Station, TX, USA

H-3:L11 **Use of Textile Friction to Mimic Hill's Model in Dynamic Contraction of Braided Artificial Muscles**
B. TONDU, CNRS-LAAS and University of Toulouse, Toulouse, France

Session H-4
Biologically Inspired Systems and Robotics

H-4:IL01 **Biomolecular Motor-powered Devices**
H. HESS, Department of Biomedical Engineering, Columbia University, New York, USA

H-4:IL02 **Photon-fuelled DNA Nanomachine Carrying Azobenzene as Molecular Engine**
H. ASANUMA, H. NISHIOKA, X. LIANG, Department of Molecular Design and Engineering, Nagoya University, Nagoya, Japan

H-4:IL03 **Smart Materials and Systems in BioRobotics**
P. DARIO, C. LASCHI, C. STEFANINI, A. MENCIASSI, The BioRobotics Institute, Scuola Superiore Sant'Anna, Pisa, Italy; B. MAZZOLAI, Center for Micro-BioRobotics of IIT@SSSA, Pontedera (Pisa), Italy

H-4:L04 **A Low-temperature Approach to Spiking Neural Circuits**
E.M. VOGEL, School of Materials Science & Engineering, Georgia Institute of Technology, Atlanta, GA, USA; A. SUBRAMANIAM, K.D. CANTLEY, Department of Electrical Engineering, The University of Texas at Dallas, Richardson, TX, USA

H-4:IL05 **Bio-inspired Gecko-mimicking Robot: From Locomotion Behaviour and Dynamics to Robot Design**
ZHENDONG DAI, ZHIWEI YU, HAO ZHANG, AIHONG JI, ZHOUYI WANG, Institute of Bio-inspired Structure and Surface Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, China

H-4:IL06 **A Soft Robot Inspired to the Octopus**
C. LASCHI, M. CIANCHETTI, L. MARGHERI, M. FOLLADOR, M. CALISTI, P. DARIO, The BioRobotics Institute, Scuola Superiore Sant'Anna, Pisa, Italy; B. MAZZOLAI, Center for Micro-BioRobotics of IIT@SSSA, Pontedera (Pisa), Italy

H-4:IL07 **Biomechanics in Bio-flights and its Application to Bio-inspired Robots**
HAO LIU[1, 2], T. NAKATA[1], N. GAO[3], M. MAEDA[1], [1]Graduate School of Engineering, Chiba University, Chiba, Japan; [2]Shanghai Jiao Tong University and Chiba University International Cooperative Research Center; [3]Sumitomo Heavy Industries, Ltd., Japan

H-4:IL08 **Emergent Functionality of Cellular Buildup Wet Robotics**
K. MORISHIMA, Department of Mechanical Engineering, Osaka University, Suita, Japan

H-4:IL09 **Bio-inspired Strategies for Effective Navigation in Complex Chemical Plumes**
M.J. WEISSBURG, School of Biology, Georgia Inst. Technology, Atlanta, GA, USA; K.Y. VOLYANSKYY, D.R. WEBSTER, School of Civil and Environmental Engineering, Georgia Inst. Technology, Atlanta, GA, USA

H-4:IL10 **Energetically Autonomous Robots: EcoBot (Artificial Symbiosis for Self-sustainability)**
I.A. IEROPOULOS, J. GREENMAN, C.R. MELHUISH, I.R. HORSFIELD, Bristol Robotics Laboratory, Bristol, UK; UWE, Bristol, UK

H-4:IL11 **Underwater Adhesive Systems for Robotic Applications**
N. HOSODA, Interconnect Design Group, Hybrid Materials Unit, National Institute for Materials Science, Japan; S.N. GORB, Department of Functional Morphology and Biomechanics, Zoological Institute at the University of Kiel, Germany

H-4:L12 **Design and Application of Smart Soft-morphing Structure for Bio-mimetic Underwater Robot: Turtle-like Robot**
S.H. SONG, M.W. HAN, K.T. LEE, School of Mechanical and Aerospace Engineering, Seoul National University, Seoul, Korea; H.J. KIM, Doosan Infracore Institute of Technology, Gyeonggi-Do, Korea; S.H. AHN, School of Mechanical and Aerospace Engineering & Institute of Advanced Machinery and Design, Seoul National University, Seoul, Korea

Session H-5
Biomolecular Computing

H-5:IL01 **Progress in Molecular Computing**
M.N. STOJANOVIC, Department of Medicine, Columbia University, Fort Lee, NJ, USA

H-5:IL02 **Molecular Theory of Biointerfaces**
I. SZLEIFER, Department of Biomedical Engineering, Northwestern University, Evanston, IL, USA

H-5:IL03 **Driving DNA Nanodevices with in Vitro Transcription Circuits**
E. FRANCO, University of California, Riverside, CA, USA; J. KIM, R. MURRAY, E. WINFREE, Caltech, CA, USA; M. WEITZ, E. FRIEDRICHS, **F. SIMMEL**, TU München, Garching, Germany

Session H-6
Ongoing and Perspective Applications of Bio-inspired Technologies

H-6:IL01 **Bioinspired Surfaces for Friction Control**
B. MURARASH, Y. ITOVICH, **M. VARENBERG**, Dept. of Mechanical Engineering, Technion - IIT, Haifa, Israel

H-6:IL02 **DNA Origami as a Calibration Standard for Superresolution Microscopy**
P. TINNEFELD, Institut für Physikalische und Theoretische Chemie, Braunschweig University of Technology, Braunschweig, Germany

H-6:IL03 **An Antifouling Coating Having Low Surface Energy and a Bio-inspired Microstructure**
BIRU HU, YUNQIU LI, NAN TIE, CHAO LIANG, WENJIAN WU, Department of Chemistry and Biology, College of Science, National University of Defense Technology, Changsha, Hunan Province, P.R.China

H-6:L04 **Light Transmission in the Window Plant Fenestraria aurantiaca as Inspiration for Innovative Biomimetic Solutions**
I. SCHÄFER, Carinthia University of Applied Sciences (AT), Radolfzell, Germany

H-6:L05 **BioSkin - Solutions for Energy Efficience of Buildings**
P. GRUBER, Vienna University of Technology, Vienna, Austria; S. GOSZTONYI, Austrian Institute of Technology, Vienna, Austria

Special Session H-7
Biomimetic Flow Control in Aquatic and Aerial Systems and its Application to Bioinspired Autonomous Vehicles

H-7:IL01 **Influence of Flexibility on Flapping Wing Performance**
B. BALACHANDRAN, Department of Mechanical Engineering, University of Maryland, College Park, MD, USA

H-7:IL02 **Controlling Flow Structures by Wing Motion in a Flapping-flight Model**
M. IIMA, Hiroshima University, Higashi-Hiroshima, Japan

H-7:IL03 **Numerical Simulations of the Clap-fling-sweep of Hovering Insects**
K. SCHNEIDER, Aix-Marseille University, Marseille cedex, France; D. KOLOMENSKIY, Cerfacs, Toulouse, France; TH. ENGELS, Aix-Marseille University, France & TU Berlin, Germany; K. MOFFATT, Trinity College, Cambridge, UK; M. FARGE, Ecole Normale Superieure, Paris, France

H-7:L04 **How Free Flying Insects Deal with Air Disturbances?**
M. NAZRI M. NASIR, BioFuture Research Group, Department of Neurobiology, University of Ulm, Ulm, Germany

H-7:IL05 **Reversed Flapping Flight and Inverted Hydrodynamical Drafting**
JUN ZHANG, L. MORET, L. RISTROP, T. SCHNIPPER, Applied Mathematics Laboratory, Courant Institute, New York University, New York, USA

H-7:IL06 **Advantages of an Ornithopter against an Airplane with a Propeller**
S. SUNADA, Osaka Prefecture University, Sakai, Osaka, Japan

H-7:L08 **Fabrication Methods for Artificial Butterfly Scales and Shark Ribs for Micro Aerial Vehicles**
M. KOVAC, G. ROULET, M. SMITH, R. WOOD, Harvard Microrobotics Laboratory, Harvard University, Cambridge, MA, USA

H-7:IL09 **Aerodynamics of Flying Fish**
HAECHEON CHOI, HYUNGMIN PARK, DUHO JE, School of Mechanical and Aerospace Engineering, Seoul National University, Seoul, Korea

H-7:IL10 **Dynamics and Control of Biomorphic Swimming via Localized Vortex Shedding**
S.D. KELLY, Department of Mechanical Engineering and Engineering Science, University of North Carolina at Charlotte, NC, USA

H-7:IL11 **Robotics for Human Swimming Movement**
M. NAKASHIMA, Tokyo Institute of Technology, Tokyo, Japan

H-7:L12 **Biomimetic Wings**
D. PIETROGIACOMI, **G.P. ROMANO,** Dept. Mechanical and Aerospace Engineering, University "La Sapienza", Roma, Italy

H-7:IL13 **Handedness Helps Homing**
P. BANDYOPADHYAY, Naval Undersea Warfare Center, Newport, RI, USA

H-7:IL14 **Dynamics of Swimming in Larval Fish**
J.L. VAN LEEUWEN[1], U.K. MÜLLER[2], G. LI[3], H. LIU[3], [1]Experimental Zoology Group, Wageningen University, The Netherlands; [2]Department of Biology, California State University Fresno, USA; [3]Graduate School of Engineering, Chiba University, Japan

H-7:L15 **Dolphin Shape as an Inspiration for Small Drag Aquatic and Aerial Hulls without Boundary-layer Separation and Cavitation**
I. NESTERUK, Institute of Hydromechanics, National Academy of Sciences of Ukraine, Kyiv, Ukraine; J.H.E. CARTWRIGHT, Instituto Andaluz de Ciencias de la Tierra, CSIC-Universidad de Granada, Spain

H-7:L16 **Bioinspired Parylene-coated Stress-driven Artificial Hair Cell for Flow Sensing in Air and Water**
F. RIZZI, A. QUALTIERI, M. DE VITTORIO, Center for Biomolecular Nanotechnologies @UNILE, Istituto Italiano di Tecnologia, Arnesano (LE), Italy; E. PRIMICERI, G. EPIFANI, G. MARUCCIO, NNL, Istituto Nanoscienze-CNR, Lecce (LE), Italy

H-7:IL17 **Adaptations for Energy Saving in Aquatic Animals- What can be Learned?**
D. WEIHS, Faculty of Aerospace Engineering Technion, Israel Institute of Technology, Haifa, Israel

H-7:L18 **Optimal Motion Primitives for Anguilliform Swimming Control**
A.J. WIENS, M. NAHON, McGill University, Montreal, Quebec, Canada

H-7:L19 **Bionic AUVs - Innovative Robots Derived from Marine Biology**
R. BANNASCH, EvoLogics GmbH, Berlin, Germany

Poster Presentations

H:P01 **A Mechanical Biomimetic Model Inspired from Negative Stiffness and Adaptation Mechanism of Stereocilia Bundle**
CHANGWON LEE, SUKYUNG PARK, KAIST, Daejeon, Republic of Korea

H:P02 **Bio-inspired Reinforcement Models from Nacre and Bamboo**
AN YUANLIN, LIU ZHIMING, WU WENJIAN, Department of Chemistry and Biology, College of Science, National University of Defense Technology, Changsha, China

H:P03 **Enhanced Mixing in the Asymmetric Bifurcation Tube Network Mimicking the Lung Airway**
M.Y. KANG, J.E. HWANG, **JIN W. LEE**, Dep't of Mech. Eng., POSTECH, Pohang, South Korea

H:P04 **Plant Surface with Anisotropic Frictional Properties**
E.V. GORB, S.N. GORB, University of Kiel, Kiel, Germany

H:P05 **Self-assembly Driven Enzyme Motion**
J.S. LECKIE, R.V. ULIJN, M.D. HAW, University of Strathclyde, Glasgow, UK

H:P06 **Mimicking Bone Architecture in a Metallic Structure**
T.S. GOIA, K.B. VIOLIN, J.C. BRESSIANI, A.H.A. BRESSIANI, Instituto de Pesquisas Energéticas e Nucleares, Sao Paulo, SP, Brazil

H:P07 **Novel Bionic Biomembrane Supported by Gold Nanoparticles /Cellulose Hybrid Films**
ZHIMING LIU, YUANLIN AN, WENJIAN WU, SHUAI SHU, Department of Chemistry and Biology, College of Science, National University of Defense Technology, Changsha, P.R. China

H:P08 **Creation of Biomimetic polymer thin films by Single Step Phase Separation Method**
JIAN-JE CHEN, QUOC-PHONG HO, **MENG-JIY WANG**, Department of Chemical Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan, R.O.C.

H:P10 **Bio-inspired Active Electrolocation Sensors for Inspection of Tube Systems**
M. GOTTWALD, G. VON DER EMDE, Universität Bonn, Institut für Zoologie, Bonn, Germany

H:P11 **Design and Fabrication of Bio-inspired Artificial Cochlea**
WAN DOO KIM, SHIN HUR, WON JOON SONG, YOUNG DO JEONG, SUNG JAE BAE, Korea Institute of Machinery and Materials, Daejeon, Rep.of Korea

H:P12 **Gold Nanostructures on Flexible Substrates for Thrombin Detection**
H.-T. CHIU, Y.-L. CHEN, Dept. of Applied Chemistry, National Chiao Tung University, Hsinchu, Taiwan, R.O.C.; C.-Y. LEE, Dept. of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan, R.O.C.

H:P13 **Interaction of the Blue-light Receptor Cryptochrome in Columba Livia**
WEI-SONG PAN, XIAN-LI DU, QI-JUN LIU, WEN-JIAN WU, Department of Chemistry and Biology, College of Science, National University of Defense and Technology, Changsha, China

H:P14 **Detection of Hydrodynamic Events in Seals and Sea Lions**
L. MIERSCH[1], J. OEFFNER[1], W. HANKE[1], S. WIESKOTTEN[1], M. WITTE[2], M. BREDE[2], A. LEDER[2], G. DEHNHARDT[1], [1]Sensory & Cognitive Ecology Group, Marine Science Center, University of Rostock, Rostock, Germany; [2]Department of Fluid Mechanics, University of Rostock, Rostock, Germany

SYMPOSIUM I
PROGRESS IN WEARABLE/ WIRELESS AND IMPLANTABLE BODY SENSOR NETWORKS FOR HEALTHCARE APPLICATIONS

Oral Presentations

Session I-1
Sensor Technology

I-1:IL01 **Techniques for Contact-free Monitoring - Current Applications and Challenges**
S. LEONHARDT, Philips Chair for Medical Information Technology, Helmholtz-Institute, RWTH Aachen University, Aachen, Germany

I-1:IL02 **Continuous Monitoring of Functional Activities using Wearable, Wireless Gyroscope and Accelerometer Technology**
R.C. WAGENAAR, I. SAPIR, Y. ZHANG, S. MARKOVIC, L.M. VAINA, T.D.C. LITTLE, Boston University, Boston, MA, USA

I-1:IL03 **Sensing Biological Signals under Ambient Assisted Living**
KWANG SUK PARK, Seoul National University, Seoul, Korea

I-1:L04 **Smart Hydrogel-based Biochemical Microsensor Array for Medical Diagnostics**
M. GUENTHER, G. GERLACH, T. WALLMERSPERGER, Technische Universität Dresden, Dresden, Germany; M.N. AVULA, S.H. CHO, X. XIE, B.V. DEVENER, F. SOLZBACHER, P. TATHIREDDY, J.J. MAGDA, University of Utah, Salt Lake City, UT, USA; C. SCHOLZ, R. OBEID, T. ARMSTRONG, University of Alabama in Huntsville, Huntsville, AL, USA

I-1:IL05 **Biocompatible Chip and System Packaging for Implantable Applications**
M. OP DE BEECK, K. QIAN, J. O'CALLAGHAN, K. MALACHOWSKI, C. VAN HOOF, Imec, Leuven, Belgium

I-1:IL06 **Chip-level Electronic Noses for Breath Analysis**
M. CREGO-CALAMA, S.H. BRONGERSMA, D. KARABACAK, Holst Centre/ imec the Netherlands, Eindhoven, The Netherlands

I-1:IL07 **Clinical Evaluation of the new Miniaturised Chest-worn Multi Vital Signs Intelesens Device**
J.A. McLAUGHLIN[1], R. HARPER[2], N. DONNELLY, I. McCULLOUGH, J. FRANCEY, J. ANDERSON, P.A. CATHERWOOD, [1]NIBEC, University of Ulster, Northern Ireland; [2]Ulster Hospital, South Eastern Health & Social Care Trust

I-1:L08 **Micro-fluidic Device for Colorimetric Analysis of Sweat**
V.F. CURTO, C. FAY, S. COYLE, D. DIAMOND, F. BENITO-LOPEZ, Clarity: Centre for Sensor Web Technologies, National Centre for Sensor Research, Dublin City University, Dublin, Ireland

I-1:L09 **A Soft Contact Lens Type Biosensor for Tear Glucose Monitoring**
MING XING CHU, K. MIYAJIMA, T. ARAKAWA, K. SANO, SHIN-ICHI SAWADA, H. KUDO, Y. IWASAKI, K. AKIYOSHI, M. MOCHIZUKI, **K. MITSUBAYASHI**, Tokyo Medical and Dental University, Tokyo, Japan

Session I-2
Smart Fabrics and Wearables

I-2:IL01 **Upperlimb Gesture Reconstruction through Textile and Inertial Sensory Fusion**
F. LORUSSI, A. TOGNETTI, N. CARBONARO, G. ANANIA, **D. DE ROSSI**, Centro Interdipartimentale di Ricerca "E. Piaggio", Università di Pisa, Pisa, Italy

I-2:IL02 **Adhesive Bonding Technology for Reliable Interconnections of Smart Embedded Electronic Modules and Various Textile Circuits**
M. VON KRSHIWOBLOZKI, T. LINZ, Fraunhofer IZM, Berlin, Germany; A. NEUDECK, TITV, Greiz, Thüringen, Germany

I-2:L03 **A Wearable Remote Brain Machine Interface Using a Smartphone and the Mobile Network**
P. SHYAMKUMAR, S. OH, N. BANERJEE, V.K. VARADAN, Department of Electrical Engineering & Department of Computer Science and Computer Engineering, University of Arkansas, Fayetteville, AR, USA

I-2:L04 **A Novel Wearable System for Elderly Monitoring**
T. FAETTI, R. PARADISO, Smartex srl, Navacchio (PI), Italy

I-2:IL05 **Real-time Analysis of Sweat using Integrated Chemical Sensors**
C. COYLE, F. BENITO-LOPEZ, V. CURTO, R. BYRNE, D. DIAMOND, Dublin City University, Dublin, Ireland

I-2:IL06 **MICROFLEX Project - Microtechnology in Smart Fabrics**
S.P. BEEBY, M.J. TUDOR, R.N. TORAH, K. YANG, Y. WEI, University of Southampton, Southampton,UK

Session I-3
Wearable and Implantable Sensor Integration

I-3:KL **CMOS Integration of Nano-Bio-Sensors**
S. CARRARA, EPFL - École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

I-3:IL01 **Nanosensors, e-bra, Printable Electronics and Smart Devices for Point-of-Healthcare**
V.K. VARADAN, College of Medicine, University of Arkansas, Fayetteville, AR, USA & Pennsylvania State University, Hershey Medical Center, Hershey, PA, USA

I-3:IL02 **A Smart Biological Signal-responsive Focal Drug Delivery System for Treatment of Refractory Epilepsy**
M.T. SALAM[1], A.H. HAMIE[1], D.K. NGUYEN[2], **M. SAWAN**[1], [1]Polystim Neurotechnologies Laboratory, École Polytechnique de Montréal, Québec, Canada; [2]Neurology Service, Department of Medicine, Notre-Dame Hospital, Centre Hospitalier de l'Université de Montréal (CHUM), Québec, Canada

I-3:IL03 **Implantable Wireless System for Stimulation of the Retina**
W. MOKWA, Institute of Materials in Electrical Engineering I, RWTH Aachen University, Aachen, Germany

I-3:IL04 **Use of Machine Learning Algorithms for Interpreting Wearable Physical Activity Monitor Data**
P. FREEDSON, University of Massachusetts, Amherst, Department of Kinesiology, Amherst, MA, USA

Session I-4
Energy Harvesting, Sensor Networks, Signal Processing, Data Transmission

I-4:IL01 **Energy Harvesting from Motion for Body Sensor Networks**
E.M. YEATMAN, Department of Electrical & Electronic Engineering, Imperial College London, London, UK

I-4:IL02 **Signal Processing for Capsule Endoscope Video**
T.A. RAMSTAD, Dept. of Electronics and Telecommunications, The Norwegian University of Science and Technology (NTNU), Trondheim, Norway

I-4:IL03 **Algorithms for Strongly Increased Robustness and Reliability of Wearable Sensor Nodes**
J. PENDERS, I. ROMERO, T. BERSET, C. VAN HOOF, imec / Holst Centre, Eindhoven, The Netherlands

I-4:IL04 **Analysis and Biomedical Signal Processing in Wearable Devices for Cardiovascular Diseases Prevention**
A.M. BIANCHI, Dipartimento di Bioingegneria, Politecnico di Milano, Milano, Italy

I-4:IL05 **Ultra-Low-Power Circuits and Their Application in Ambulatory Wireless Cardiac Care**
F. YAZICIOGLU, imec, Leuven, Belgium

I-4:L06 **Wearable Hybrid Sensor Array for Motor Cortex Monitoring**
R.A. SHOURESHI, New York Institute of Technology, New York City, NY, USA; C.M. AASTED, University of Denver, Denver, CO, USA

I-4:L07 **BSN-based Activity Classification: A Low Complexity Windowing-&-Classification Approach**
M. GIUBERTI, G. FERRARI, University of Parma, Parma, Italy

I-4:IL08 **Data Fusion in BSN**
B. LO, Imperial College London, London, UK

I-4:IL09 **Ultra Low Power Signal Processing for Wearable Computers**
R. JAFARI, The University of Texas at Dallas, Richardson, TX, USA

I-4:IL10 **Modeling of Implantable Medical Sensor Networks**
I. BALASINGHAM, The Intervention Center, Oslo University Hospital, Oslo, Norway & Institute of Clinical Medicine, University of Oslo, Oslo, Norway & Department of Electronics and Telecommunications, Norwegian University of Science and Technology (NTNU), Trondheim, Norway

Session I-5
Healthcare Applications

I-5:IL01 **Capturing Surrogate Signs - The Role of BSN for Disease and Rehabilitation Management**
GUANG-ZHONG YANG, The Hamlyn Centre, Imperial College London, UK

I-5:IL02 **Remote Monitoring for Chronic Disease Management**
M. SARRAFZADEH, UCLA, Computer Science Department, Los Angeles, CA, USA

I-5:IL03 **Brain Computer Interfaces for Spinal Injured Patients**
H. LAKANY, University of Strathclyde, Department of Bioengineering, Glasgow, UK

I-5:L04 **Smart Healthcare Textile Sensor System for Pervasive Realtime Health Monitoring**
P. RAI, P. SHYAMKUMAR, S. OH, H. KWON, G.N. MATHURA, V.K. VARADAN, M.P. AGARWAL, Dept. of Electrical Engineering, University of Arkansas, Fayetteville, Arkansas, USA; Biomedical Engineering, University of Arkansas, Fayetteville, Arkansas, USA; Global Institute of Nanotechnology, Fayetteville, Arkansas, USA

I-5:IL05 **Wearable Inertia Sensor Application in the Rehabilitation Field**
T. TAMURA, M. SEKINE, H. MIYOSHI, Y. KUWAE, T. FUJIMOTO, Chiba University, Graduate School of Engineering, Chiba, Japan

I-5:IL06 **The Use of Wearable Sensors for Ambulatory, Remotely Supervised Treatment, in Patients with Chronic Disorders**
H.J. HERMENS, University of Twente & Roessingh Research, Enschede, The Netherlands

Poster Presentations

I:P01 **Towards ZnO-based Implantable Biosensing Devices**
S. ELZWAWI, H-K, KIM, R. HEINHOLD, **M.W. ALLEN**, Department of Electrical and Computer Engineering, University of Canterbury, Christchurch, New Zealand, and The MacDiarmid Institute for Advanced Materials and Nanotechnology, New Zealand

I:P02 **A Design of the Modular Clothing for ECG Monitoring Based on Reconstruction of the Clothing**
HAKYUNG CHO, Korea High Tech Research Institute, Gyeonggi-do, Korea; JOOHYEON LEE, Yonsei University, Seoul, Korea

I:P03 **Implantable Measurement System for Dairy-cattle Monitoring with Long Recording Time**
A. BJARNASON, T. VUORELA, J. VERHO, J. RIISTAMA, J. VAISANEN, J. VANHALA, J. LEKKALA, J. HYTTINEN, Tampere University of Technology, Tampere, Finland

I:P04 **Basic Characteristics of RFID Antenna for Urination Detection**
H. NAKAJIMA, M. TAKAHASHI, K. SAITO, K. ITO, Chiba University, Chiba, Japan

SYMPOSIUM J
BIOMEDICAL APPLICATIONS OF "SMART" TECHNOLOGIES

Oral Presentations

Session J-1
Active and Stimuli Responsive Biomaterials

J-1:IL01 **Design and Development of Light Sensitive Chitosan Based Nanocarriers for Gene Delivery**
N. DUCEPPE, **M. TABRIZIAN**, Biomedical Engineering Department, McGill University, Montreal, Quebec, Canada

J-1:IL02 **Movable Polyrotaxanes for Enhancing Mutivalent Interaction with Receptor Proteins**
N. YUI, Institute of Biomaterials and Bioengineering, Tokyo Medical and Dental University, Tokyo, Japan

J-1:IL03 **Smart Nano-bio Materials within Cellular Machinery**
E.A. ROZHKOVA, Center for Nanoscale Materials, Argonne National Laboratory, Argonne, IL, USA

J-1:IL04 **Design of Biodegradable Injectable Polymers Exhibiting Temperature-responsive Sol-gel Transition**
Y. OHYA, Department of Chemistry and Materials Engineering, Kansai University, Suita, Osaka, Japan

J-1:IL05 **Ureido-polymers Exhibiting UCST-type Phase Transition Behavior under Physiologically Relevant Conditions**
N. SHIMADA, M. NAKAYAMA, A. KANO, **A. MARUYAMA**, Institute for Materials Chemistry and Engineering, Kyushu University, Fukuoka, Japan

J-1:IL06 **Engineering Synthetic Hydrogels as Functional Stem Cell Microenvironments**
M.P. LUTOLF, Institute of Bioengineering, EPF Lausanne, Switzerland

J-1:L07 **Responsive Janus Hydrogels**
SUNAE HWANG, SONA LEE, **JONGHWI LEE**, Chung-Ang University, Seoul, South Korea

J-1:L08 **Biocompatible Hydroxyapatite Hollow Nanotubes**
D. KHUSHALANI, B. CHANDANSHIVE, TIFR, Colaba, Mumbai, India; D. DYONDI, R. BANERJEE, IIT Mumbai, India

J-1:IL09 **Nanomaterials Improve Cellular Interactions for Medical Implants**
HUINAN LIU, Dept. of Bioengineering, the Materials Science and Engineering Program, and the Stem Cell Center, University of California, Riverside, Riverside, CA, USA

J-1:IL10 **The Preparation of Injectable Angiogenic Bone Cement for Femoral Head Avascular Necrosis**
FENG-HUEI LIN, Division of Medical Engineering, National Health Research Institutes, Taiwan, & Institute of Biomedical Engineering, National Taiwan University, Taipei, Taiwan

J-1:L11 **The Gelling and Antimicrobial Optimisation of a Newly Developed Chitocel Fibre Intended for Wound Dressing Applications**
I. SWEENEY[1], M. MIRAFTAB[1], G. COLLYER[2], [1]Institute for Materials Research and Innovation, University of Bolton, Bolton, UK; [2]Sumed International (UK) Limited, Integrity House, Hadfield, Glossop, Derbyshire, UK

J-1:L12 **Clusters of Magnetic Nanoparticles Encapsulated in a Hydrogel: A Particle Architecture Generating Synergetic Enhancements of T2 Relaxation**
A.J. KELL, C. PAQUET, D.M. LEEK, B. SIMARD, Steacie Institute for Molecular Sciences, National Research Council, Ottawa, Ontario, Canada; H.Y. LIN, B. XIANG, G. TIAN, Institute for Biodiagnostics, National Research Council Canada, Winnipeg, MB, Canada; H.W. DE HAAN, Department of Physics, University of Ottawa, Ottawa, Ontario, Canada

J-1:L13 **Stimuli-responsive Cyclodextrin-based Polymer Containing Bioreducible Disulfide Linkage for Gene Delivery**
YUTING WEN[1], Z. ZHANG[2], J. LI[1, 2], [1]Division of Bioengineering, Faculty of Engineering, National University of Singapore, Singapore; [2]Institute of Materials Research and Engineering, A*STAR (Agency for Science, Technology and Research), Singapore

Session J-2
Enabling Tools

J-2:IL01 **FluidFM: A Force-controlled Nanosyringe for Single-cell Studies and More**
T. ZAMBELLI, Laboratory of Biosensors and Bioelectronics, ETH Zurich, Switzerland

J-2:IL02 **Microfluidic Devices for Cancer Cell Capturing**
B. THIERRY, Ian Wark Research Institute, University of South Australia, Mawson Lakes, SA, Australia

J-2:IL03 **New Methods of Bioanalysis using Functionalised Nanoparticles and SERS**
D. GRAHAM, University of Strathclyde, Glasgow, UK

J-2:IL04 **Metallic and Composite Functionalized Plasmonic Nanoparticles for Biomedical Applications**
N. KHLEBTSOV, B. KHLEBTSOV, E. PANFILOVA, V. KHANADEEV, V. BOGATYREV, L. DYKMAN, Institute of Biochemistry and Physiology of Plants and Microorganisms, Russian Academy of Sciences, Saratov, Russia; G. TERENTYUK, I. MAKSIMOVA, E. TUCHINA, V. TUCHIN, Saratov State University, Russia

J-2:IL05 **Directed Assembly of Cell Laden Microgels for Creation of Tissue Constructs**
A. KHADEMHOSSEINI, Center for Biomedical Engineering, Department of Medicine, Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA, USA

J-2:L06 **Investigation of Cell-nanostructure Interactions with Force Microscopy**
L. KADEM[1], M. LÓPEZ-GARCÍA[2], H. KESSLER[2], J. P. SPATZ[3], **C. SELHUBER-UNKEL**[1], [1]University of Kiel, Institute for Materials Science, Dept. Biocompatible Nanomaterials, Kiel, Germany; [2]Institute for Advanced Study and Center of Integrated Protein Science Munich, Technical University of Munich, Dept. of Chemistry, Garching, Germany; [3]Max-Planck-Institute for Intelligent Systems, Dept. of New Materials and Biosystems, Stuttgart, Germany

J-2:L07 **Self-folding Polymers Enable Microfluidics with a Twist**
M. JAMAL, Y.V. KALININ, A.M. ZARAFSHAR, D.H. GRACIAS, Department of Chemical & Biomolecular Engineering, Johns Hopkins University, Baltimore, MD, USA

Session J-3
Medical Diagnostics and Imaging

J-3:IL01 **Single Molecule Tracking in Live Cells**
B. LOUNIS, Laboratoire Photonique Numérique et Nanosciences, Université de Bordeaux, Institut d'Optique & CNRS, Talence, France

J-3:IL02 **MRI Tracking of Transplanted Stem Cells**
T. YAMAOKA, National Cerebral and Cardiovascular Center Research Institute, Suita, Japan

J-3:IL03 **Immuno-pillar Chip: New Platform as a Diagnostic Tool for Diseases**
M. TOKESHI, Department of Applied Chemistry & FIRST Research Center for Innovative Nanodevices, Nagoya University, Nagoya, Japan

J-3:IL04 **In Situ Orthopaedic Sensors**
S. SIRIVISOOT, Wake Forest Institute for Regenerative Medicine, Wake Forest University Health Sciences, Winston-Salem, NC, USA

J-3:IL05 **Developments at FBK of Imaging Devices for Medical Diagnostics**
P. BELLUTTI, MicroTechnologies Lab (CMM-FBK), Trento, Italy

J-3:IL06 **Multi-modal Nanoparticles for Diagnosis and Therapy**
K. NICOLAY, Department of Biomedical Engineering, Eindhoven University of Technology, Eindhoven, The Netherlands

J-3:IL07 **DNA-functionalized Nanoparticles for Biosensing**
M. MAEDA, Bioengineering Laboratory, RIKEN, Wako-shi, Saitama, Japan

J-3:IL08 **Single Gold Nanorod Detection Using Confocal Light Absorption and Scattering Spectroscopy**
L.T. PERELMAN, Harvard University, Boston, MA, USA

J-3:L09 **Nanoparticles for Detection of a Deadly Virus Using a Co-localization Strategy**
F. LISI, P. FALCARO, D. BUSO, A.J. HILL, CSIRO, Division of Materials Science and Engineering, Clayton South MDC, Victoria, Australia); J. BARR, G. CRAMERI, L. WANG, CSIRO, Division of Animal Health, Geelong, Victoria, Australia; T.L. NGUYEN, P. MULVANEY, Melbourne University, Parkville, Victoria, Australia

J-3:L10 **Fluorescent, Superparamagnetic Nanospheres for Medical Drug Storage, Targeting, and Imaging**
HOON-SUNG CHO[1], ZHONGYUN DONG[1], G.M. PAULETTI[2], **DONGLU SHI**[1], [1]Dept. of Chemical and Materials Engineering, University of Cincinnati, Cincinnati, OH, USA, & Dept. of Internal Medicine, College of Medicine, University of Cincinnati, Cincinnati, OH, USA; [2]James L. Winkle College of Pharmacy, University of Cincinnati, Cincinnati, OH, USA

J-3:L11 **Random, Aligned and Patterned Coaxially Electrospun Fibres as Biomimetic Materials in Medical Imaging**
FENG-LEI ZHOU, **P. HUBBARD**, G. PARKER, Imaging Sciences, School of Cancer and Enabling Sciences, Manchester Academic Health Centre, The University of Manchester, UK; S. EICHHORN, Physics and Astronomy, University of Exeter, UK

Session J-4
Tissue Engineering and Regenerative Medicine

J-4:IL01 **From Bone to Cartilage to Cardiac Tissue: Nanotechnology-derived Supramolecular Nanotubes for Tissue Engineering Applications**
L. SUN[1], X. MENG[2], L. ZHANG[4] , H. FENNIRI[5], **T.J. WEBSTER**[1, 3], [1]School of Engineering, Brown University, Providence, RI, USA; [2]Dept. of Chemistry, Brown University, Providence, RI, USA; [3]Dept. of Orthopaedics, Brown University, Providence, RI, USA; [4]Dept. of Mechanical and Aerospace Engineering, George Washington University, Washington, DC, USA; [5]National Institute for Nanotechnology and Department of Chemistry, National Research Council and University of Alberta, Edmonton, Canada

J-4:IL02 **Cellular Multilayers as an Engineered Tissue Model Fabricated by Layer-by-Layer Assembly of Cell and Proteins**
M. MATSUSAKI, M. AKASHI, Department of Applied Chemistry, Graduate School of Engineering, Osaka University, Suita, Osaka, Japan

J-4:L03 **Biomimetic Apatite-based Biomaterials: on the Underestimated Impact of Synthesis and Post-synthesis Parameters**
N. VANDECANDELAERE, C. REY, C. DROUET, CIRIMAT Carnot Institute, University of Toulouse, UMR CNRS/INPT/UPS 5085, Toulouse cedex, France

J-4:L04 **Surface Cell Growth Engineering Assisted by Novel Protein Nanomaterial and the Impact of Genetic Tailoring on their Properties**
I. RATERA, W. TATKIEWICZ, C. DÍEZ-GIL, J. VECIANA, Dept. of Molecular Nanoscience and Organic Materials, Institut de Ciencia de Materials de Barcelona (CSIC), Bellaterra, Spain and CIBER de Bioingeniería, Biomateriales y Nanomedicina (CIBER-BBN) Bellaterra, Spain; J. SERAS, E. GARCÍA-FRUITÓS, E. VÁZQUEZ, E. RODRÍGUEZ-CARMONA, R.M. FERRAZ, O. CANO, N. FERRER-MIRALLES, A. VILLAVERDE, CIBER de Bioingeniería, Biomateriales y Nanomedicina (CIBER-BBN) Bellaterra, Spain, Institut de Biotecnologia i de Biomedicina, Universitat Autonoma de Barcelona, Bellaterra, Spain, and Department of Genetics and Microbiology Universitat Autonoma de Barcelona, Bellaterra, Spain

J-4:L05 **Engineered Nanostructured Coatings for Enhanced Biointegration of Orthopaedic Implants**
F. NAMAVAR[1], A. RUBINSTEIN[1], R.F. SABIRIANOV[2], G.M. THIELE[3], J.G. SHARP[4], K.L. GARVIN[1]; [1]Dept. of Orthopaedic Surgery and Rehabilitation, University of Nebraska Medical Center, Omaha, NE, USA; [2]Dept. of Physics, University of Nebraska, Omaha, NE, USA; [3]Dept. of Internal Medicine - Rheumatology, University of Nebraska Medical Center, Omaha, NE, USA; [4]Dept. of Genetics, Cell Biology and Anatomy, University of Nebraska Medical Center, Omaha, Nebraska, USA

J-4:IL06 **Enzyme-mediated Injectable Biodegradable Hydrogel for Biomedical Applications**
N. KURISAWA, Institute of Bioengineering and Nanotechnology, Singapore

J-4:IL07 **Smart Nanocomposite Coatings, Core-shell Structures and Microcapsules Produced by LBL Assembly Method and their Biomedical Applications**
D. GORIN, Saratov State University, Saratov, Russia

J-4:L08 **Responsive Biomaterials for Dynamic Cell Culture and Regenerative Medicine**
A.M. KLOXIN, Department of Chemical Engineering and Department of Materials Science and Engineering, University of Delaware, Newark, DE, USA

J-4:L09 **Morphological Optimization of Silk Fibroin Electrospun Nanofibers for Wound Healing Enhancement**
J. CHUTIPAKDEEVONG, P. SUPAPHOL, Petroleum and Petrochemical College, Chulalongkorn University, Bangkok, Thailand; U. RUKTANONCHAI, National Nanotechnology Center, NSTDA, Thailand Science Park, Pathumthani, Thailand

Session J-5
Targeted Delivery and Release Systems

J-5:IL01 **Ligand Conjugated Self-assembled Nanoparticles for Targeting Tumor Stem Cells**
E. JABBARI, University of South Carolina, Columbia, SC, USA

J-5:IL02 **Molecular Chaperon Inspired Biomaterials for Protein Delivery**
K. AKIYOSHI, Department of Polymer Chemistry, Kyoto University, Kyoto, Japan

J-5:L03 **Synthesis, Stability, and Release Processes of Submicron Vaterite Containers in Biological Media**
B. PARAKHONSKIY[1, 3], A. HAASE[1], F. TESSAROLO[1], R. ANTOLINI[1], F. PICCOLI[2], [1]BIOtech - Interdipartimental Center for Biomedical Technologies, University of Trento, Trento, Italy; [2]Section of Electron Microscopy, Department of Laboratory Medicine, APSS, Trento, Italy; [3]A.V. Shubnikov Institute of Crystallography, Russian Academy of Science, Moscow, Russia

J-5:IL04 **Nanoparticle-mediated Drug Delivery: Biophysical Interactions to Therapeutic Applications**
V. LABHASETWAR, Department of Biomedical Engineering, Lerner Research Institute, Cleveland Clinic, Cleveland, OH, USA

J-5:IL05 **Stimuli-sensitive Liposomes for Drug Delivery**
K. KONO, Department of Applied Chemistry, Osaka Prefecture University, Sakai, Osaka, Japan

J-5:L06 **Fabrication of Hollow and Solid Microneedles for Transdermal Drug Delivery**
S.D. GITTARD[1, 2], A. DORAISWAMY[1], P.R. MILLER[1], CHUNMING JIN[1], T.N. MARTIN[1], A. OVSIANIKOV[2], B.J. CHISHOLM[3], S.J. STAFSLIEN[3], J.W. DANIELS[3], N. CILZ[3], N.A. MONTEIRO-RIVIERE[2, 4, 5], A. NASIR[5], B.N. CHICHKOV[2], **R.J. NARAYAN**[1], [1]Joint Dept. of Biomedical Engineering, University of North Carolina and North Carolina State University, Raleigh, NC, USA; [2]Dept. of Nanotechnology, Laser Zentrum Hannover e.V., Hannover, Germany; [3]Center for Nanoscale Science and Engineering, North Dakota State University, Fargo, ND, USA; [4]Dept. of Clinical Sciences, North Carolina State University, Raleigh, NC, USA; [5]Dept. of Dermatology, University of North Carolina, Chapel Hill, NC, USA

J-5:L07 **Hepatocyte-specific Gene Delivery with Galactose-bearing Cationic Polymers with Different Molecular Structures**
M.C. MUNISSO, Y. TACHIBANA, J.H. KANG, T. YAMAOKA, Departments of Biomedical Engineering, National Cerebral and Cardiovascular Center Research Institute, Suita, Osaka, Japan; Y. MIZUTANI, A. MURAKAMI, Graduate School of Science and Technology, Biomolecular Engineering, Kyoto Institute of Technology, Matsugasaki, Sakyoku, Kyoto, Japan

J-5:L08 **Poly(lactic acid) Nanofibers for Estrus Control in Livestock Animals**
J.E. OLIVEIRA[1], G.S. BRICHI[1], O.B.G. DE ASSIS[1], E.S. MEDEIROS[2], **L.H.C. MATTOSO**[1], [1]Embrapa Instrumentacao, Sao Carlos, Sao Paulo, Brazil; [2]Federal University of Paraíba, Brazil

J-5:IL09 **Supramolecular Nanodevices from Functionalized Block Copolymers for Molecular Therapy**
K. KATAOKA, Department of Materials Engineering, Graduate School of Engineering / Center for Disease Biology & Integrated Medicine, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan

J-5:IL10 **Nanostructure Processing of Advanced Biomaterials and Biosystems**
J.Y. YING, Institute of Bioengineering and Nanotechnology, Singapore

J-5:L11 **Development of Novel Polyion Complex Vesicles, "PICsomes", and their Biomedical Applications**
A. KISHIMURA, Y. ANRAKU, S. CHUANOI, W. KAWAMURA, S. KAKIYAMA, K. KATAOKA, Graduate School of Engineering, The University of Tokyo, Tokyo, Japan

J-5:L12 **Enhanced Nanoparticle Delivery Using Fractional Laser Microablation of Skin**
V.V. TUCHIN[1, 2, 3], E.A. GENINA[1], L.E. DOLOTOV[1], A.N. BASHKATOV[1], E.A. ZUBKINA[1], I.V. YAROSLAVSKY[4], G.B. ALTSHULER[4], [1]Research and Educational Institute of Optics and Biophotonics, N.G. Chernyshevsky National Research Saratov State University, Saratov, Russia; [2]Institute of Precise Mechanics and Control RAS, Russia; [3]University of Oulu, Finland; [4]Palomar Medical Technology Inc., MA, USA

J-5:L13 **Specific Targeting of Cell Organelles**
V.P. TORCHILIN, Center for Pharmaceutical Biotechnology and Nanomedicine, Northeastern University, Boston, MA, USA

Session J-6
Biomedical Applications of Shape Memory Materials and Smart Textiles

J-6:IL01 **Progress in Interactive Textiles for Health Monitoring**
J. LUPRANO, CSEM SA, Neuchâtel, Switzerland

J-6:IL02 **Shape Memory Polyurethanes for Minimally Invasive Surgical Procedures**
M.C. TANZI, S. FARÈ, S. BERTOLDI, Bioengineeering Dept; L. DE NARDO, A. CIGADA, Chimica, Materiali e Ingegneria Chimica "G. Natta" Dept., Politecnico di Milano, Italy

J-6:L03 **Application of a Shape-memory Polymer in a Soft-tissue Fixation Device for Anterior Cruciate Ligament Reconstruction**
K.E. SMITH, J. GRIFFIS, K. GALL, MedShape Solutions, Atlanta, GA, USA

J-6:L04 **Understanding in-vivo Abrasion Fatigue of Common Suture Materials Used in Arthroscopic and Open Shoulder Surgery**
C.J. HURREN[1], A. SUTTI[1], E. SAVAGE[3], S. SLADER[3], R.S. PAGE[2,3], [1]Centre for Material and Fibre Innovation, Deakin University, Geelong, Australia; [2]Barwon Orthopaedic Research Unit, Geelong Australia; [3]School of Medicine, Deakin University, Geelong, Australia

J-6:L05 **Faster Healing, Improved Safety, and Less Invasive Treatments: Shape Memory Alloy Medical Devices**
M. ELAHINIA, Nitinol Commercialization Accelerator Dynamic and Smart Systems Laboratory, The University of Toledo, Toledo, OH, USA

J-6:L06 **Coating Anti Bacterial, Anti Viral, Antibiofilm and Antifungi Nanoparticles on Textiles and Glasses Employing the Sonochemical Method**
A. GEDANKEN, Department of Chemistry, Bar-Ilan University, Ramat-Gan, Israel

Poster Presentations

J-1:P01 **Development of Nanosystems to Release Atenolol**
R.W. NOVICKIS, M.V. SURMANI MARTINS, L.F. DE MIRANDA, R.R. RIBEIRO, L. SILVA, **A.H. MUNHOZ Jr.**, U.P. Mackenzie, São Paulo, Brazil

J-1:P02 **Development of Biocompatible Y-stabilized ZrO2 Fabricated by Spark Plasma Sintering**
H. SAKAI[1], T. ASAOKA[2], [1]Course of Intelligent Mechanical Engineering, Graduate School of Science and Engineering, Tokyo Denki University, Ishizaka, Saitama, Japan; [2]Department of Intelligent Mechanical Engineering, School of Science and Engineering, Tokyo Denki University, Ishizaka, Saitama, Japan

J-1:P03 **Tissue Engineering Scaffold Fabricated from Alginate/ Hydroxyapatite Composite**
M. HAGHBIN NAZARPAK[1], F. POURASGARI[2], M. AGHAJAMALI[3]; [1]New Technologies Research Center (NTRC), Amirkabir University of Technology, Tehran, Iran; [2]Razi Institute of Serum and Vaccination, Tehran, Iran; [3]Faculty of Chemistry, University of Tehran, Tehran, Iran

J-1:P04 **The Effect of Reaction Temperature and Surface Modification on Magnetite Nanoparticles**
K. PETCHAROEN, A. SIRIVAT, The Petroleum and Petrochemical College, Chulalongkorn University, Bangkok, Thailand

J-2:P05 **Apatite Coating on Titanium Samples by Powder Metallurgy**
C.G. AGREDA, M.W.D. MENDES, J.C. BRESSIANI, A.H.A. BRESSIANI, Instituto de Pesquisas Energéticas e Nucleares, IPEN-CNEN/SP, Brasil

J-2:P06 **Development of Hydrogen Peroxide Detection Using Nanostructured Films of Novel Polyphthalocyanines**
S.A. KRUTOVERTSEV, O.M. IVANOVA, A.V. SHEVCHENKO, A.E. TARASOVA, JSC "Ecological sensors and systems", Zelenograd, Moscow, Russia; A.I. SHERLE, Institute of Chemical Physics of RAS, Moscow, Russia

J-3:P07 **High Sensitive Quantitative Profiling of Pancreatic Cancer Cells Using Protein-QD Hybrid Nanoprobes**
JONG-WOOK LEE, YU CHAN KIM, HYUN KWANG SEOK, KWAN HYI LEE, Center for Biomaterials, KIST Biomedical Research Institute, Seoul, Korea

J-3:P08 **High-sensitivity Detection for Biomarkers of a Pancreatic Cancer Using M13 Phage and Quantum-dot Nanocomplexes**
JANGWON SONG, YU CHAN KIM, HYUN KWANG SEOK, **KWAN HYI LEE**, Center for Biomaterials, KIST Biomedical Research Institute, Seoul, Korea

J-3:P09 **Co, Ni, and Fe Magnetic Nanoparticles Encapsulated in Carbon for Medical Applications**
ZH. ABDULLAEVA, E. OMURZAK, T. MASHIMO, Kumamoto University, Kumamoto, Japan

J-4:P10 **Tissue Regeneration Guided by Silicon Material**
L.L. COSSI CERBASI, Science Faculty Uruguay, Madrid, Spain

J-4:P11 **Effect of Surface Topography on Attachment and Growth Behaviors of Bone Cells Cultured on Novel Nanofibrous Replica Substrates**
P. EKABUTR, P. SUPAPHOL, The Petroleum and Petrochemical College, Chulalongkorn University, Bangkok, Thailand; P. PAVASANT, Department of Anatomy, Faculty of Dentistry, Chulalongkorn University, Bangkok, Thailand

J-4:P12 **A Room-temperature Procedure to Produce Porous Bone Defect Fillers**
A. CATTINI, D. BELLUCCI, A. SOLA, V. CANNILLO, Dipartimento di Ingegneria Dei Materiali e dell'Ambiente, Università Degli Studi di Modena e Reggio Emilia, Modena, Italy

J-4:P13 **Application of α-TCP/HAp Functionally Graded Porous Beads for Bone Regenerative Scaffold**
A. TAMURA[1], T. ASAOKA[1], K. FURUKAWA[2], T. USHIDA[2], T. TATEISHI[3], [1]Tokyo Denki University, Hiki, Japan; [2]University of Tokyo, Japan; [3]NIMS, Tukuba, Ibaraki, Japan

J-4:P14 **Development of Rotating-disk Electrospinning for High Throughput Production of PCL, PLA and PVA Nano-fibrous Scaffolds for Tissue Engineering Application**
J.J. NG, P. SUPAPHOL, The Petroleum and Petrochemical College, Chulalongkorn University, Bangkok, Thailand

J-4:P15 **Loading of Polilactide Electrospun Microfibers with Antioxidant Agents: Evaluation of the Effect on Cells under Oxidative Stress Conditions and Applications for DNA Purification**
E. LLORENS, J. PUIGGALÍ, L.J. DEL VALLE, Universitat Politecnica de Catalunya, Barcelona, Spain

J-4:P16 **Fabrication of Scaffold for Bone Regeneration by Taylor Made Stereolithography**
K. KUMAGAI[1], T. ASAOKA[2], [1]Course of Intelligent Mechanical Engineering, Graduate School of Science and Engineering, Tokyo Denki University, Hiki, Saitama, Japan; [2]Department of Intelligent Mechanical Engineering, School of Science and Engineering, Tokyo Denki University, Hiki, Saitama, Japan

J-5:P17 **Using Multifunctional Iron Oxide/Alumina Core/Shell Magnetic Nanoparticles as Affinity Probes and Photothermal Agents for Pathogenic Bacteria**
TSAI-JUNG YU, PO-HAN LI, TE-WEI TSENG, **YU-CHIE CHEN**, Department of Applied Chemistry, National Chiao Tung University, Hsinchu, Taiwan

J-5:P18 **Development of Cationic Poly(amino acid)s for Efficient Nucleic Acid Delivery**
K. MIYATA, H. UCHIDA, T. SUMA, T. ISHII, N. NISHIYAMA, K. KATAOKA, The University of Tokyo, Tokyo, Japan

J-5:P19 **Sol-gel Synthesis and Characterization of Lanthanide-substituted Nanostructured Calcium Hydroxyapatite**
I. BOGDANOVICIENE, M. MISEVICIUS, **A. KAREIVA**, Dept. of General and Inorganic Chemistry, Vilnius University, Vilnius, Lithuania; K. GROSS, Riga Biomaterials Innovation and Development Centre, Riga Technical Univ., Riga, Latvia; T.C.K. YANG, G.T. PAN, Dept. of Chemical Eng. and Biotechnology, National Taipei Univ. of Technology, Taipei, Taiwan; H.W. FANG, Inst. of Biotechnology, National Taipei Univ. of Technology, Taipei, Taiwan; J.C. YANG, Dept. of Dental Technology, Taipei Medical Univ., Taipei, Taiwan

J-5:P20 **Characterization of Hydrogels Based on PVP / Sodium Alginate Containing Pseudoboehmites Nanoparticles Treated with Octadecylamine for Pharmaco Applications**
L.F. de MIRANDA, A.H. MUNHOZ Jr., M.C. TERENCE, T.R. RIGOLIN, L. ENGEL, Mackenzie Presbyterian University, Sao Paulo, SP, Brazil

J-5:P21 **Calcium-alginate Hydrogel for Electrically Controlled Drug Release**
N. PARADEE, A. SIRIVAT, The Petroleum and Petrochemical College, Chulalongkorn University, Bangkok, Thailand

J-6:P22 **Skin Delivery of Gallic Acid from Biofunctional Polyamide Fabric**
M. MARTI, C. ALONSO, V. MARTÍNEZ, A. DE LA MAZA, J.L. PARRA, L. CODERCH, Advanced Chemical Institute of Catalonia (IQAC-CSIC), Barcelona, Spain

INFORMATION TO AUTHORS & PARTICIPANTS

LOCATION AND DATES

CIMTEC 2012 - 4th International Conference "Smart Materials, Structures and Systems" will be held June 10-14, 2012 in Montecatini Terme, an international renown Spa and tourist resort in the environments of Florence, the historical centre of the European Renaissance. The town is placed in a strategic position to reach the most interesting historical and tourist places in Tuscany, such as Florence, Pisa, Siena, Lucca, Pistoia, Volterra, "Le Cinque Terre (Five Lands)", and several others.

CONFERENCE VENUE

Palazzo dei Congressi
Via Amendola 2
I-51016 Montecatini Terme (PT) - Italy

Due to the need for a much larger number of parallel sessions than the ones formerly expected, some Symposia will be held in a satellite Congress Centre, very close to the Palazzo dei Congressi (3-4 min walking distance).

Technical Sessions will start Monday June 11 morning and continue until Thursday June 14 afternoon. The Conference will close with the *Conference Dinner* on Thursday June 14 evening.

CONFERENCE SECRETARIAT

CIMTEC 2012
Corso Mazzini 52
48018 Faenza
Italy
Tel.: +39 0546 22461
Fax: +39 0546 664138
E-mail: congress@technagroup.it

Address for express mail
CIMTEC 2012
Corso Mazzini 52
48018 Faenza
Italy

REGISTRATION DESK AND SECRETARIAT

Registration desk and secretariat will be open at the **Palazzo dei Congressi** according to the following time schedule:

June 10	Sunday	11.00-13.00	15.00-19.00
June 11	Monday	8.00-13.00	14.30-19.30
June 12	Tuesday	8.00-13.00	14.30-19.30
June 13	Wednesday	8.00-13.00	14.30-19.30
June 14	Thursday	8.00-13.00	14.30-19.30

No credit cards are accepted at the registration desk. On site registration payments can be made only by cash.

HOW TO REACH MONTECATINI TERME

Montecatini Terme is located in Central Italy between Florence and Pisa. It can be reached:

By Plane:

To Florence - International Airport "Amerigo Vespucci". From the airport you may reach Florence Central Railway Station "Santa Maria Novella" by public services or by taxi, then continue your journey by train to Montecatini Terme.

N.B. A public bus service to Montecatini Terme is also available at the Airport exit from 8.15 (first run) to 17.15 (last run) every hour in working days and every two hours on Sunday. Travel time is about 50 min. Tickets may also be made directly on the bus.

To Pisa - International Airport Galileo Galilei. Then by train to Montecatini Terme as explained below.

By Train:

From Florence: train connections to Montecatini Terme are excellent and very frequent (from about 6.00 a.m. to about 22.30 p.m.). Travel time from Florence Central Railway Station to Montecatini Central Railway Station (Montecatini Centro) is about 50 min.

From Pisa: Take the train of line Pisa-Lucca, then, at the Lucca Railway Station, change to line Lucca-Montecatini Centro. Travelling time from Pisa to Montecatini Terme (via Lucca) is about 90 min. Last departure from Pisa Railway Station at 21.50.

NOTE - Montecatini Terme has two railway stations. The closest to the Congress Centre and to the hotels is "Montecatini Centro".

By Car:

Montecatini Terme can be reached easily by car from any direction via the network of Italian highways. The exit to Montecatini Terme is located about midway between Florence and Pisa on the Firenze-Pisa (Florence-Pisa) expressway which is connected directly with the Central Italian expressway "Autostrada del Sole" ("Sun Highway").

A complimentary bus transfer service will be arranged for CIMTEC attendees from both the *Florence* and *Pisa* Airports to Montecatini Terme on Sunday June 10, with departure at every hour from 2.00 p.m. to 11.30 p.m. CIMTEC reception hostesses will be available at the exit of arrivals terminal on June 10 (2.00 p.m to 11.30 p.m.) to assist delegates.

PRESENTATION FORMATS

Oral Presentations

Electronic presentation (Power Point) facilities will be available including videoprojector, PC and laser pointer. Cost for any special audio-visual request will be the responsibility of the individual speaker.
Allowed time for presentation:
- Invited Lectures 30 min including discussion
- Contributed Lectures 20 min including discussion

Poster Presentations

Poster board: 200 cm (vertical) x 100 cm (horizontal). Pins have to be used to attach the poster. Authors are kindly requested to be present at their poster for discussion with attendees during the Poster Session. It is each author's responsibility to remove the poster immediately after the end of the session. The organisers do not assume any responsibility for posters left up after this time.
Guidelines for Poster preparation are available at the Conference web site. Attendance by at least one of the authors is mandatory for poster presentation and publication in CIMTEC 2012 Proceedings.

LANGUAGE

English will be the official language for the Conference.

REGISTRATION AND FEES

All those planning to attend CIMTEC 2012 must register and receive badges. Advanced and late registrations fees are offered as well as special student registration fees. All Registration Fees include 21% government taxes.
Registration rates are in EUR, but payments may be also performed in US$ at the exchange rate of the day in which the payment is made.

Early *(by April 20, 2012)*	
Full Member[a]	640.00 EUR
Student under 27[b]	350.00 EUR
Invited Lecturer[c]	320.00 EUR
Late and on site	
Full Member[a]	700.00 EUR
Student under 27[b]	400.00 EUR
Invited Lecturer[c]	350.00 EUR

[a] authors of lectures (L), posters (P), other Participants
[b] evidence of status and xerocopy of passport or other document showing the student age must accompany the registration
[c] and/or Member of Conference Committees

Fees include 21% VAT, general and secretariat costs, participation in the scientific sessions, coffees, printed booklet of the Final Programme, Book of Abstracts and other conference material, free access to the on-line Proceedings, and complimentary participation in the Social Programme.

Every attendee is requested to fill in and return the Registration Form, unless the payment is made on-line.

PAYMENTS

All payments shall be made in EUR or US$, **net of all charges**, by:
- Bank cheque made payable to: **Techna Group Srl, Faenza** (to be attached to the Registration Form)
- Bank transfer made payable to:
  Techna Group Srl, Banca di Romagna SpA
  SWIFT: BARM IT 2F
  IBAN: IT02 F062 0523 705C C505 0002 852
  Description: CIMTEC 2012 and participant name
  (copy of the bank transfer to be attached to the Registration Form)

Credit cards **cannot** be charged by the Conference organization, therefore payment by credit card cannot be accepted. However **on-line payment** by credit card can be made.

ON-LINE PAYMENT

To make on-line payment please go to:
http://www.cimtec-congress.org/2012/onlinereg.asp
a 3% commission is charged by the bank for on-line payment

Participants are encouraged to take advantage of the discounted rate, applicable only if **both** registration and **payment** are received by April 20.

FINAL PROGRAMME

The booklet of the Final Programme including titles and detailed timetable of Lectures, Posters and "HOT POSTERS" will be given at the registration desk. It also will be hopefully available on the conference web site approx. 10 days before the beginning of the conference.

ABSTRACTS

A book of abstracts of all Oral and Poster Presentations will be given to all registered members at the registration desk. It will hopefully be made available on the conference web approx. 10 days before the beginning of the conference.

PROCEEDINGS

Official Proceedings (about 10-12 volumes) of the contributions (Oral/Poster) presented at CIMTEC 2012 will be published by Trans Tech Publications (Switzerland) in the Techna Group series *"Advances in Science and Technology"* as Volume 77 onwards.
Submission and uploading instructions will be provided by Trans Tech Publications to the Presenting Author of each paper. Submission of the written text for the Proceedings is not mandatory. Free access to the on-line edition is included in the registration fee.

SOCIAL PROGRAMME

June 11
*Evening***:** Opening Concert
"Orchestra Filarmonica Nazionale Italiana"

June 13
Evening: Concert by "Caffè Concerto Strauss"

June 14
Evening: Conference Dinner

OPTIONAL TOURS

June 11
Afternoon: Guided tour to Pisa

June 12
Full day: Guided tour to Florence

June 13
Full day: Guided tour to Siena and San Gimignano

June 14
Morning: Guided tour to Lucca

Registration and payment for optional tours is to be made on site by cash only.

COMPANIONS PROGRAMME

June 11
Afternoon: Guided tour to Pisa
Evening: Opening Concert
"Orchestra Filarmonica Nazionale Italiana"

June 12
Full day: Guided tour to Florence

June 13
Full day: Guided tour to Siena and San Gimignano
Evening: Concert by "Caffè Concerto Strauss"

June 14
Morning: Guided tour to Lucca
Evening: Conference Dinner

Appropriate booking space may be found in the Registration Form. On-line registration is also available. Registration Fee: 240 EUR. After April 20: 260 EUR.

On-site registration is subject to availability of places.

CANCELLATION

Prepaid registration fees (conference, companions programme) are refundable, minus a 20% administration fee, if written notification of the cancellation is received before May 20, 2012. No refund can be made for cancellations received after May 20, 2012. However delegate substitution can be accepted. All refunds will be made after the Conference.

"HOT" POSTERS
(Last-minute Posters)

Late-news papers will be accepted for poster presentation, provided the following mandatory conditions be verified:

- *Poster submission from Presenting Authors who **do not** have oral or poster presentations already scheduled in the conference programme will only be accepted.*
- *Only one "HOT POSTER" may be contributed by the same Presenting Author.*
- *Submission shall be accompanied by the payment of the registration fee.*
- *The submission deadline of **April 20, 2012** be strictly respected.*

To submit go to:
www.cimtec-congress.org/2012/abstract_submission.asp

The Conference Secretariat will confirm receipt of the Hot Poster and will supply the Presenting Author with proper information about Poster Presentation.

Submission and uploading instructions for the preparation of the text for the Proceedings Volumes will be supplied by Trans Tech Publications Ltd. to the Presenting Author.

VISA ASSISTANCE

All travel, lodging and registration expenses will be responsibility of the individual participants. Special letters of invitation to be used for visa application will be provided upon written request by the participant to the conference organizers.
As the application for a visa may be a lengthy process, we recommend to start your visa application process in due advance. Those attendees who need a visa to entry in Europe are suggested to contact CIMTEC Secretariat as soon as possible indicating full mailing address, date and place of birth, passport number and date of expiration and any other information useful to obtain visa to: CIMTEC 2012 Secretariat, info@technagroup.it
All letters of invitation will be sent by airmail and PDF e-mail attachment or fax.
CIMTEC organisation is unable to contact Embassies in support of an individual attempting to gain entry to attend the Conference.

WEATHER

The weather in Montecatini Terme at the beginning of June is usually fine with temperatures ranging from 20 to 25 °C during the day and 12 to 15 °C during the night. Clothing suitable for (early) summer is recommended.

HOTEL ACCOMMODATION

Rooms have been reserved in a number of hotels located at walking distance from the Congress Centre. The following prices have been agreed:

Prices per Day per Person (EUR)

HOTEL CATEGORY	BB-Bed & Breakfast		HB-Half Board*		FB-Full Board**	
	DUS (Double Single Use)	Double (Per person)	DUS (Double Single Use)	Double (Per person)	DUS (Double Single Use)	Double (Per person)
5 star (Luxury)	135.00	92.00	150.00	107.00	165.00	122.00
4 star super	130.00	87.00	140.00	97.00	155.00	112.00
4 star	100.00	70.00	110.00	80.00	122.00	92.00
3 star super	89.00	56.00	98.00	65.00	108.00	75.00
3 star	65.00	44.00	72.00	49.00	80.00	57.00
2 star	55.00	38.00	60.00	43.00	65.00	48.00

FB in Montecatini Terme is the most recommended option, being restaurants limited in number and very expensive

All rooms are with private bath or shower. Third occupancy with additional bed in double room: 30% discount on third occupancy. Children less 2 years with no additional bed: no charge.
Prices include ¼ wine and ½ mineral water at each meal, service and government taxes. Prices do not include the new city tax to be paid directly to the hotel, that ranges from EUR 1.70 day/person in Luxury hotel to EUR 0.70 day/person for a 2 star hotel (children up to 10 years do not pay this tax).

*Prices for Half Board include breakfast and served lunch.
**Prices for Full Board include breakfast, served dinner and lunch. Full board starts from the dinner of the arrival day of the participant.

Room reservations have to be made by returning by **April 20, 2012** the Hotel Accommodation Form accompanied by one night hotel deposit to:

PAM Hotel Booking Centre
Via Palestro 2/A
51016 Montecatini Terme (PT)
Italy
Tel. +39 0572 75365
Fax +39 0572 771546
e-mail: pam@montecatinipromozione.com

CURRENCY, BANKING AND INSURANCE

Banks are generally open Monday to Friday from 8.30 a.m. to 1.30 p.m. and from 3.00 p.m. to 4.00 p.m. All banks are closed on Saturdays and Sundays. Major credit cards are accepted in most hotels, and in some restaurants and shops. The Organizers do not assume any responsibility for participant's personal accidents, sickness, thefts or property damage.

SUMMARY OF DEADLINES

April 20, 2012
Paper uploading for Proceedings Volumes

April 20, 2012
Registration at reduced rate

May 20, 2012
Conference Fees Cancellations (80% refund)

AVAILABLE ON THE WEB

http://www.cimtec-congress.org/2012/

as from February 2012
Final Announcement
Registration Form
Hotel Accommodation Form
On-line Registration

as from May 30, 2012
Final Programme
Abstracts

FURTHER INFORMATION

For scientific and organizational aspects of the conference ***(until June 5)***

CIMTEC 2012
Ms Stefania Bianchedi
Corso Mazzini 52
48018 FAENZA - ITALY
Tel. +39 0546 22461
Fax +39 0546 664138
e-mail: congress@technagroup.it

For aspects related to hotel accommodation (booking, schedule changes, cancellations, etc.)

PAM Hotel Booking Centre
Via Palestro 2/A
51016 Montecatini Terme (PT)
Italy
Tel. +39 0572 75365
Fax +39 0572 771546
e-mail: pam@montecatinipromozione.com

SOCIAL PROGRAMME

The Social Programme for Registered Members to CIMTEC 2012 will include:

Opening Concert "NuovoTeatro Verdi" Montecatini Terme (Monday June 11, evening)

The Opening Concert of CIMTEC 2012 will be performed by the "Orchestra Filarmonica Nazionale Italiana" (Italian National Philarmonic Orchestra) at the "Nuovo Teatro Verdi" of Montecatini Terme. The Orchestra is composed by about sixty players and soloists, directed by Maestro Andrea Colombini.
The Opera and Symphony Concert will be held Monday June 11 evening, 21.30-23.30.

Entrance ticket for non-registered companions: 25.00 EUR

Exhibition by "Caffè Concerto Strauss", Auditorium "Palazzo dei Congressi" (Wednesday June 13, evening)

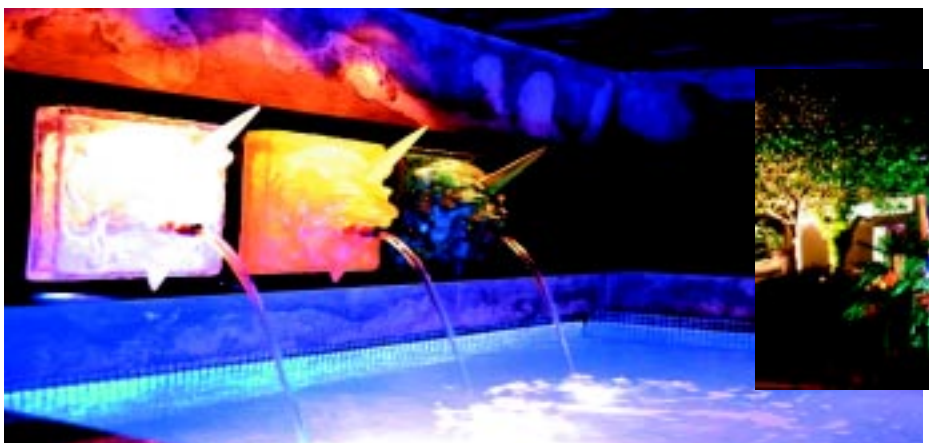
Founded in 1988 "Caffè Concerto Strauss" is a group of international orchestral soloists, directed by Maestro Christian Pintilie, specialised in repertoires that follow the style and interpretative modules of mittle European tradition of "Kaffe-hausen". The group has made performances in the most important Italian theatres and abroad and cooperates with national and foreign musical institutions. The group is often invited to perform at the Italian national RAI-TV.
The Concert will be held Wednesday, June 13 evening, 21.30-23.30.

Entrance ticket for non-registered companions: 15.00 EUR (subjected to place availability)

Conference Dinner (Thursday June 14, evening)

The Conference Dinner will be held at the "Lido Le Panteraie" in Montecatini Terme on Thursday June 14 (21.00-23.30).

Entrance ticket for non-registered companions: 40.00 EUR (subjected to place availability)



OPTIONAL TOURS

PISA (Monday June 11, afternoon)

Shown is one of the loveliest architectural complexes in the world. On a large smooth lawn stands the Cathedral, the Baptistery and the famous Leaning Tower, a unique group of buildings in an unrivaled setting, the legacy of a past age which now belongs to all mankind. Along the southern side of the piazza lie the buildings of the old University, center of research and thought and famous for scientific disciplines.

Meeting point: entrance of the "Palazzo dei Congressi" at 15.00. Return to Montecatini Terme at about 19.00. The participation fee (30 EUR) includes transportation, city entrance tax, English speaking hostess and local guide.

FIRENZE (FLORENCE) (Tuesday June 12, full day)

In the morning visit to the City Center. An unrivalled itinery of art and culture in the heart of Florence, Cathedral (Santa Maria del Fiore), with its Cupola by Brunelleschi, the Campanile (Bell Tower) by Giotto, and the Baptistery with the famous Gates of Paradise by Ghiberti and Andrea Pisano, Piazza della Signoria dominated by imposing Palazzo della Signoria flanked by the Loggia of Lanzi and the beautiful Neptune Fountain, Ponte Vecchio, the Uffizi Gallery, etc.
In the afternoon, after lunch, visit to Poggio Imperiale, Piazzale Michelangelo and San Miniato Church.

Meeting point: entrance of "Palazzo dei Congressi" at 9.00. Return to Montecatini Terme at about 19.00.
The participation fee (60 EUR) includes transportation, city entrance tax, English speaking hostess, local guide and lunch.

SIENA - SAN GIMIGNANO (Wednesday June 13, full day)

Takes you through one of the most attractive landscapes of Central Italy, with wooded hills and valleys and the renowned Chianti area, famous throughout the world for its high-quality wines. Siena is a treasure of history and art with its rich School of Sienese Painting, its marvellous Cathedral, the Palazzo Comunale rising majestically from the lovely fan-shaped Piazza del Campo, the Tower of Mangia, San Domenico, Piazza Salimbeni, Palazzo Ghigi, Piazza del Capitano, etc. It will leave unforgettable memories.

In the afternoon, visit to S. Gimignano, a small town famous for its numerous towers. It is a real gem of Medieval architecture which takes you back to the time of great battles and romantic love stories, as described by minstrels' tales.

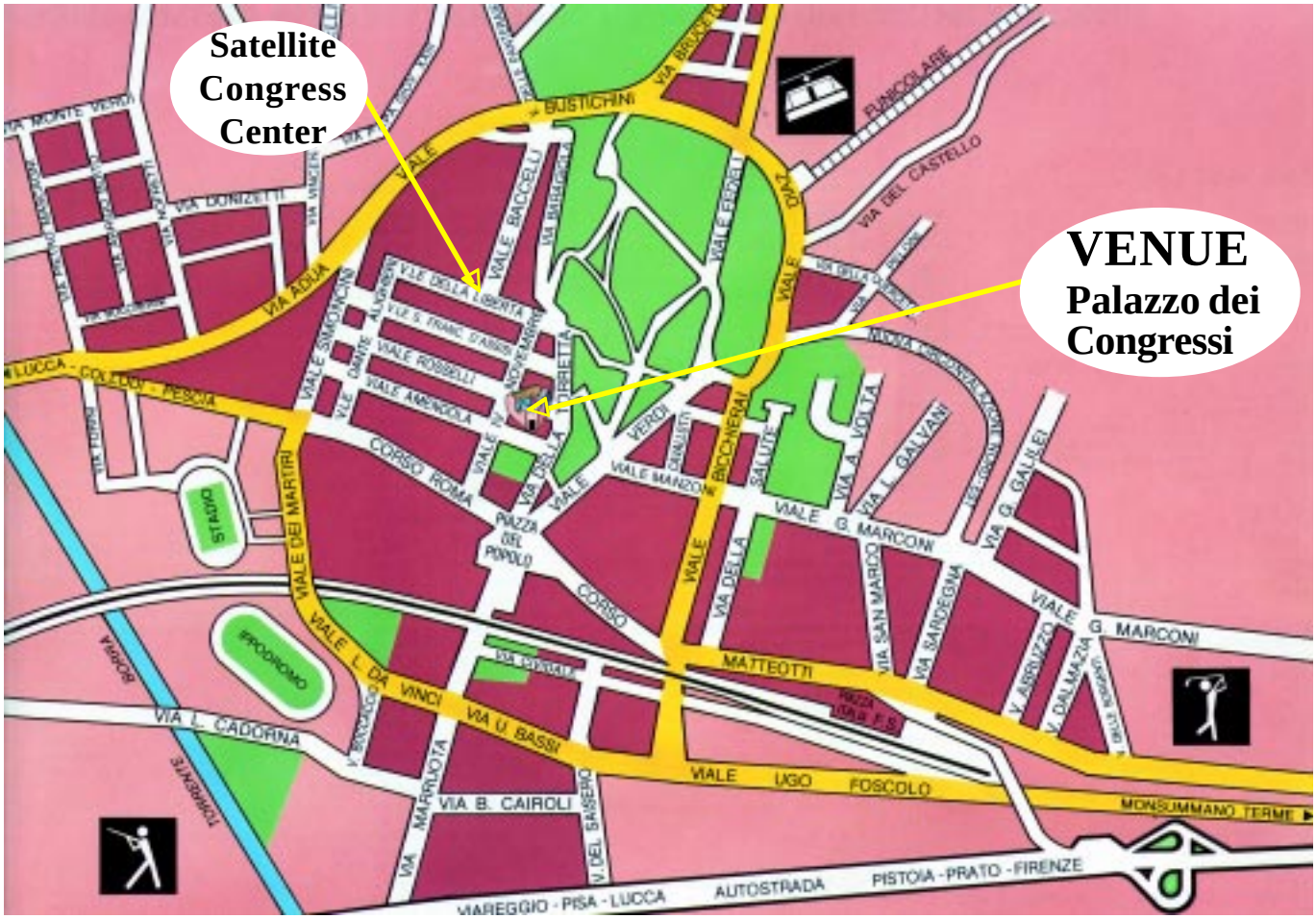
Meeting point: entrance of "Palazzo dei Congressi" at 9.00. Return to Montecatini Terme at about 19.30. The participation fee (65 EUR) includes transportation, cities entrance taxes, English speaking hostess, local guides and lunch.

LUCCA (Thursday June 14, morning)

A monumental city still wound by intact walls containing unique art treasures. Lucca is the only among the Tuscany district cities to have maintained its independence until 1847. This allowed full preservation of the over 4 km perimetral walls (XVI-XVII Century) surrounding the city centre inclusive of 10 bastions, one gun platform and well conserved or restored battlements. The tour in the medieval city includes views of art monuments belonging to the different periods such as the Roman Theatre, the Basilica of San Frediano, the San Michele church and square, the Duomo of San Martino with sculptures of Jacopo della Quercia, the Guinigi tower, Fillungo street, and the Palazzo Ducale in Napoleone Square, the last to bear witness of Lucca Princedom.

Meeting point: entrance of "Palazzo dei Congressi" at 9.00. Return to Montecatini Terme at about 13.00. The participation fee (30 EUR) includes transportation, cities entrance taxes, English speaking hostess and local guides.


Montecatini Terme


Satellite
Congress
Center
VENUE
Palazzo dei
Congressi
VIA MONTE VERO
VIA BUSTICHINI
VIA BRUNETTI
FUNICOLARE
VIA DEL CASTELLO
VIA DONIZETTI
VIALE
VIALE BACCELLI
VIALE FERRARI
DIAZ
VIA ADUA
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VIALE DANTE ALIGHIERI
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VIALE AMENDOLA
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VIALE
VERDI
VIALE MANZONI
BICCHIERAI
SALUTE
VIA A. VOLTA
VIA L. GALVANI
VIA G. GALILEI
LUCCA - COLLODI - PESCIA
CORSO ROMA
VIALE DEI MARTIRI
STADIO
PIAZZA DEL POPOLO
VIALE
VIALE G. MARCONI
VIA DELLA
VIALE
VIA SAN MARCO
VIA SARDEGNA
VIALE G. MARCONI
CORSO
IPPODROMO
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VIA U. BASSI
MATTEOTTI
V. ABRUZZO
V. DALMAZIA
VIA L. CADORNA
VIA MARRUCOTA
VIA B. CAIROLI
V. DEL SASSERO
VIALE UGO FOSCOLO
MONSUMMANO TERME
VIAREGGIO - PISA - LUCCA
AUTOSTRADA
PISTOIA - PRATO - FIRENZE

REGISTRATION FORM

Return by April 20, 2012 to:

CIMTEC Corso Mazzini 52 48018 FAENZA ITALY

Fax +39 0546 664138 - E-mail: congress@technagroup.it

PARTICIPANT for on-line registration and/or Hot Poster submission, please go to:
http://www.cimtec-congress.org/2012/onlinereg.asp

Family Name ..... First Name .....

Full Address .....

.....

Postal Code ..... City ..... Country .....

Phone ..... Fax ..... E-mail .....

VAT Number .....

Tax Code / Tax Identification Number .....

REGISTRATION FEES* (EUR)	**Early** (by April 20)	**Late and On Site**
Full Member[a]	❒ 640.00 EUR	❒ 700.00 EUR
Student under 27[b]	❒ 350.00 EUR	❒ 400.00 EUR
Invited Lecturer (IL)[c]	❒ 320.00 EUR	❒ 350.00 EUR

** Payment may also be made in US$ at the exchange rate of the day in which the payment is made*

[a]*Authors of Contributed Lectures (L) and Posters (P), other participants*

[b]*Evidence of student status and xerocopy of passport or other document showing the student age must accompany the registration*

[c] *and/or Member of Conference Committees*

Fees include 21% VAT, general and secretariat costs, participation in the scientific sessions, coffees, printed booklet of the Final Programme, Book of Abstracts and other conference material, free access to the on-line Proceedings, and complimentary participation in the Social Programme.

I confirm attendance in the following complimentary socials (check please)

Opening Concert (❒ June 11) Concert by Caffè Concerto Strauss (❒ June 13)

Conference Dinner (❒ June 14)

This section is to be filled-out ONLY if you are a **Presenting Author**

Please indicate below the code number of your presentation as assigned by the Conference Secretariat and reported in this Final Announcement **Code Number** .....

ACCOMPANYING PERSONS Family Name ..... First Name .....

Family Name ..... First Name .....

Family Name ..... First Name .....

Companions Programme	**Early** *(by April 20)*	**Late and On Site***
Persons	No. ..... x 240.00 EUR .....EUR	No. ..... x 260.00 EUR .....EUR

** On site registration is subject to availability of places*

SUMMARY OF FEES

Registration Fee (Full Member)	EUR .....
Registration Fee (Student)	EUR .....
Registration Fee Invited Lecturer or/and CIMTEC 2012 Committees Member	EUR .....
Registration Fee (Accompanying Persons)	EUR .....
TOTAL	EUR .....

PAYMENT (to be made ***net of all charges*** in EUR or equivalent in US$)

Payment of ..... EUR / US$ is being made:

❒ By bank transfer made payable to: **Techna Group Srl**, Banca di Romagna SpA
SWIFT: BARM IT 2F
IBAN: IT02 F062 0523 705C C505 0002 852
DESCRIPTION*:* CIMTEC 2012 and Participant Name
(please enclose copy of the bank transfer)

❒ By bank cheque, attached herewith, payable to **Techna Group Srl, Faenza**

❒ I will pay on-site (on-site payment to be made by cash only)

NOTE: USE A SEPARATE FORM FOR EACH INDIVIDUAL REGISTRATION

HOTEL ACCOMMODATION FORM Return by April 20, 2012 to:

PAM-Hotel Booking Center Via Palestro 2/A 51016 Montecatini Terme (PT) Italy
Tel. +39 0572 75365 Fax +39 0572 771546
pam@montecatinipromozione.com

PARTICIPANT (please use block letters or type)

Family Name ..... First Name .....

Full Address .....

.....

Post Code ..... City ..... Country .....

Phone ..... Fax ..... E-mail .....

VAT Number (for invoicing) .....

Prices per Day per Person (EUR)

HOTEL CATEGORY	BB-Bed & Breakfast		HB-Half Board*		FB-Full Board**	
	DUS (Double Single Use)	Double (Per person)	DUS (Double Single Use)	Double (Per person)	DUS (Double Single Use)	Double (Per person)
5 star (Luxury)	**135.00**	**92.00**	**150.00**	**107.00**	**165.00**	**122.00**
4 star super	**130.00**	**87.00**	**140.00**	**97.00**	**155.00**	**112.00**
4 star	**100.00**	**70.00**	**110.00**	**80.00**	**122.00**	**92.00**
3 star super	**89.00**	**56.00**	**98.00**	**65.00**	**108.00**	**75.00**
3 star	**65.00**	**44.00**	**72.00**	**49.00**	**80.00**	**57.00**
2 star	**55.00**	**38.00**	**60.00**	**43.00**	**65.00**	**48.00**

FB in Montecatini Terme is the most recommended option, being restaurants limited in number and expensive

All rooms are with private bath or shower. Third occupancy with additional bed in double room: 30% discount on third occupancy. Children less 2 years with no additional bed: no charge.
Prices include ¼ wine and ½ mineral water at each meal, service and government taxes. Prices do not include the new city tax to be paid directly to the hotel, that ranges from EUR 1.70 day/person in Luxury hotel to EUR 0.70 day/person for a 2 star hotel (children up to 10 years do not pay this tax).

*Prices for Half Board include breakfast and served lunch.
**Prices for Full Board include breakfast, served dinner and lunch. Full board starts from the dinner of the arrival day of the participant.

Please book No. ..... DUS ❒ Full Board ❒ Half Board ❒ Bed & Breakfast for No. ..... nights

Please book No. ..... Double ❒ Full Board ❒ Half Board ❒ Bed & Breakfast for No. ..... nights

in a ❒ 5 star ❒ 4 star super ❒ 4 star ❒ 3 star super ❒ 3 star ❒ 2 star hotel

at the prices reported above

Arrival on ..... Departure on .....

Arrival by: ❒ car ❒ train plane at ❒ Florence Airport ❒ Pisa Airport

Rooms Booked	Deposit per Room**	Total
No. ..... DUS Full Board	.....Euro	.....Euro
No. ..... DUS Half Board	.....Euro	.....Euro
No. ..... DUS B&B	.....Euro	.....Euro
No. ..... Double Full Board	.....Euro	.....Euro
No. ..... Double Half Board	.....Euro	.....Euro
No. ..... Double B&B	.....Euro	.....Euro
	GRAND TOTAL	**.....Euro**

***** First night deposit has to be forwarved for each booked room. The full amount of deposit received will be detracted from the final hotel bill.***

❒ The payment has been effected by **bank draft free of charge** to:
Promozione Albergatori Montecatini/Tettuccio Tour - **IBAN:** IT 91 Z 06200 70460 000000 180383
SWIFT BPAL ITL 1643
DESCRIPTION: CIMTEC 2012 and Participant Name

❒ Enclosed please find a cheque No..... Bank.....of Euro.....
drawn on: **PAM Soc.coop**

❒ The payment has been effected by telegraphic money-order to:
Promozione Albergatori, Via Palestro 2, 51016 Montecatini Terme, Italy
DESCRIPTION: CIMTEC 2012 and Participant Name

❒ PAYMENT BY CREDIT CARD

I authorise PAM to charge the indicated GRAND TOTAL amount for hotel reservation

Please charge my credit card ❒ VISA ❒ MASTERCARD

Credit card number…….... Expiration date……..

for the total payment (subject to verification) of Euro .....

…….
Signature (binding)

REMARKS

- *You will be informed by PAM about available accommodation giving the name of the hotel, the price and confirming receipt of the first night deposit. Balance will be made to hotel by each individual participant.*
- *In case of not showof the first night, room(s) availability or refund of the deposit cannot be guaranteed.*

*Cancellation policy: i. Cancellations received **by May 25**, refund of first night deposit less Bank charges.*
*ii. Cancellations received **after May 25**, no refund. However delegate substitution is admitted.*

Please send this form to PAM:

by mail: PAM-Hotel Booking Center Via Palestro 2/A 51016 Montecatini Terme (PT) Italy

or by fax: +39 0572 771546

or scanned copy by e-mail: pam@montecatinipromozione.com

NO RESERVATION WILL BE MADE WITHOUT PAYMENT OF THE HOTEL DEPOSIT


Siena
Florence
Lucca
Pisa
S. Gimignano
TVS
CIA
MONTECATINI
TERME

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