

Program

Nanotechnology for the Study of Cellular and Molecular Interactions

June 14-18, 2009

**Il Ciocco Hotel and Conference Center
Barga (Tuscany), Italy**

Conference Chairs

**Professor Kathleen J. Stebe
University of Pennsylvania, USA**

**Professor Denis Wirtz
Johns Hopkins University, USA**

Conference Co-Chair

**Professor Shouheng Sun
Brown University, USA**



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The organizers would like to thank the following for their support of this conference:

Brown University

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Sunday, June 14, 2009

14:00	Bus to Il Ciocco leaves Pisa Airport
16:30 - 18:00	Conference check-in
18:00 – 18:15	Welcome and conference overview
18:15 – 19:45	Opening Plenary: Shuming Nie (Emory University) Nanomedicine: Designing infrastructures for <i>in-vivo</i> molecular imaging and targeted therapy
19:45 – 20:15	Welcome drink on patio/veranda
20:15	Dinner followed by social hour

NOTES

- Audiotaping, videotaping and photography of presentations are strictly prohibited.
- Speakers – Please leave at least 5 minutes for questions and discussion.
- Please do not smoke at any conference functions.
- Turn your cellular telephones to vibrate or off during technical sessions.
- Tuesday's excursion to Lucca is optional. Information will be at the registration desk. Please sign up by Monday noon.
- Be sure to make any corrections to your name/contact information on the Master Participant List or confirm that the listing is correct. A corrected copy will be sent to all participants after the conference.

Monday, June 15, 2009

07:30 – 08:30	Breakfast buffet
08:30 – 12:30	Session I: <i>Nanoscale/Nanopatterned Structures for Cell Adhesion, Growth, and Motility</i> Session Chairs: Kate Stebe and Denis Wirtz
08:30 - 09:30	Keynote: Joachim Spatz (Max Planck Institute for Metals Research) Molecular engineering of cellular environments
09:30 - 10:00	Cherie Kagan (University of Pennsylvania) Molecular interactions at the surfaces of organic and nanowire devices
10:00 – 10:30	Coffee break
10:30 – 11:00	Muhammad Zaman (University of Texas) Cellular interactions with soluble and tethered nano-ligands: The role of size, shape, concentration, and mechanics of nanoparticles
11:00 – 11:30	Sharon Gerecht (Johns Hopkins University) Engineering in the microenvironment for vascular differentiation
11:30 – 12:00	Manuel Théry (Grenoble) Where does the primary cilium stand?
12:00 – 12:30	Denis Wirtz (Johns Hopkins University) Nano-biophysical basis of progeria
12:30 – 15:00	Buffet Lunch and Break
15:00 – 18:00	Session II: <i>Nanostructures for Molecular and Cellular Diagnostics and Therapeutics I</i> Session Chairs: Kate Stebe and Denis Wirtz
15:00 - 16:00	Keynote: Nick Abbott (University of Wisconsin) Using liquid crystals to amplify nanoscopic events in biological systems
16:00 – 16:30	Justin Cooper-White (Australian Institute for Bioengineering and Nanotechnology, University of Queensland) Self-assembled biomaterial surfaces and scaffolds for control of stem cell behavior and phenotype
16:30 - 17:00	Coffee break
17:00 – 17:30	Shouheng Sun (Brown University) Developing multifunctional magnetic nanoparticles for imaging and delivery applications
17:30 – 18:00	Paul Janmey (University of Pennsylvania) Nonlinear elastic materials to direct cell growth
18:00 – 18:30	Poster soundbites
18:30 – 19:30	Poster session/social hour
20:00 – 21:30	Dinner followed by poster session/social hour

Tuesday, June 16, 2009

07:30 – 08:30	Breakfast buffet
08:30 – 09:30	Keynote: Jeffrey Hubbell (Ecole Polytechnique Fédérale de Lausanne) Engineering polymer nanoparticles for modulating immune and regeneration function
09:30 – 10:00	Coffee break
10:00 – 12:30	Session III: <i>Commercialization of Bio-nanotechnology</i> Session Chairs: Misti Ushio and Laura Sepp-Lorenzino
10:00 - 10:25	Misti Ushio, Harris & Harris Group, Inc. Nanotech for Healthcare™: A venture capital perspective
10:25 - 10:50	Bernhard Sabel (University of Magdeburg) Technology transfer and commercializing nanobiotechnology
10:50 – 11:15	Liesbet Lagae (IMEC) Where nano-electronics and biology meet: a biomedical industrial affiliation program
11:15 – 11:40	Laura Sepp-Lorenzino (Merck Research Laboratories) RNA delivery challenges: How Merck is approaching the problem
11:40 – 12:05	Jason Rolland (Liquidia) Engineered drug therapies: Nanoparticles of controlled size, shape, deformability and Chemistry
12:05 – 12:30	Discussion
12:30 – 14:00	Buffet lunch for those not on excursion/Boxed lunches for those on excursion
12:45	Buses leave for optional excursion to Lucca
13:45 – 16:45	Lucca excursion
16:45	Board buses to return to Il Ciocco
17:45	Buses return to Il Ciocco
18:00 – 19:30	Session IV: <i>Nanostructures for Molecular and Cellular Diagnostics and Therapeutics II</i> Session Chairs: Shouheng Sun and Liesbet Lagae
18:00 - 18:30	Robert Hurt (Brown University) Design of carbon nanotubes for bio- and neuro-compatibility
18:30 - 19:00	Thomas Webster (Brown University) Better tissue engineering through nanotechnology: Decreasing biofilm formation through the use of magnetic nanoparticles
19:00 – 19:30	David Gracias (Johns Hopkins University) Lithographically micro-nanostructured tools and devices for medicine
20:00 – 21:00	Dinner followed by social hour

Wednesday, June 17, 2009

07:30 – 08:30	Breakfast buffet
08:30 – 12:30	Session V: Nanoscience for Neuroscience Session Chairs: Barclay Morrison, III and Stephanie Lacour
08:30 – 09:30	Keynote: Ravi Bellamkonda (Georgia Institute of Technology) Nanofiber-based topographical cues to enhance peripheral nerve regeneration
9:30 – 10:00	Barclay Morrison, III (Columbia University) Vertically-aligned carbon nanofiber arrays for electrophysiological and electrochemical recordings from brain slices
10:00 - 10:30	Coffee Break
10:30 – 11:00	Stephanie P. Lacour (Cambridge University) Soft neural electrodes: Design, properties, and applications
11:00 – 11:30	Brahim Lounis (Université Bordeaux) Single molecule tracking in live neurons
11:30 – 12:00	Nicholas Kotov (University of Michigan) Nanostructured materials for neuron interface and neural medicine
12:00 – 12:30	Elias Greenbaum (Oak Ridge National Laboratory) Nanoscience for the optical control of cellular activity
12:30 – 16:30	Buffet lunch and break
16:30 – 19:00	Session VI: DNA-directed Nanoparticle Assembly Session Chair: John Crocker
16:30 – 17:00	Keynote: Oleg Gang (Brookhaven National Laboratory) Manmade nanosystems with nature-developed components
17:00 – 17:30	John Crocker (University of Pennsylvania) How to build crystals of colloids and nanoparticles using DNA
17:30 – 18:00	Coffee break
18:00 – 18:30	Alexei Tkachenko (University of Michigan) Nanoparticles with key-lock interactions: From self-assembly to drug delivery
18:30 – 19:00	Shan Wang (Stanford University) Functional synthetic antiferromagnetic nanoparticles for magnetic manipulation and biomolecule detection
19:00 – 20:00	Social hour
20:00 – 21:30	Banquet or Mountainside Feast

Thursday, June 18, 2009

07:30 – 08:30	Breakfast buffet
08:30 – 10:00	Closing Plenary: Chris Murray (University of Pennsylvania) Tailoring monodisperse nanocrystals for bio-imaging, sensing, and therapeutics
10:00 – 10:30	Coffee Break
10:30 – 11:00	Poster Award Winner Presentation I
11:00 – 11:30	Poster Award Winner Presentation II
11:30 – 12:00	Closing Remarks: Denis Wirtz (Johns Hopkins University) Closing Remarks: Kate Stebe (University of Pennsylvania)
12:30 – 13:30	Buffet lunch and departure
13:30	Bus to Pisa will depart Il Ciocco

LIST OF POSTERS

1. **SERS-CODED GOLD NANORODS AS A MULTIFUNCTIONAL PLATFORM FOR DENSELY-MULTIPLEXED NEAR-INFRARED IMAGING AND PHOTOTHERMAL CANCER ABLATION**
Andrea Centrone, Massachusetts Institute of Technology
Geoffrey von Maltzahn, Renuka Ramanathan, Massachusetts Institute of Technology
Ji-Ho Park, Michael J. Sailor, University of California, San Diego
Sangeeta N. Bhatia, Massachusetts Institute of Technology
T. Alan Hatton, Massachusetts Institute of Technology
2. **NON-CYTOTOXIC SILVER NANOPARTICLE-POLYSACCHARIDE NANOCOMPOSITES WITH ANTIMICROBIAL ACTIVITY**
Andrea Travan, University of Trieste
Ivan Donati, Eleonora Marsich, Chiara Pelillo, Monica Benincasa, Tommaso Scarpa, Sabrina Semeraro, Gianluca Turco, Renato Gennaro, Sergio Paoletti, University of Trieste
3. **MECHANICAL ANALYSIS OF FIBROBLAST CELL LINE USING MEMS TECHNOLOGY**
Raffaella Fior, University of Trieste
Stefano Maggiolino, Department of Materials and Natural Resources
Orfeo Sbaizero, Department of Materials and Natural Resources
4. **POROUS NANO-HYDROXYAPATITE/ALGINATE SCAFFOLDS FOR BONE REGENERATION**
Gianluca Turco, University of Trieste
Francesca Bellomo, Department of Life Sciences, University of Trieste
Eleonora Marsich, Department of Life Sciences, University of Trieste
Sabrina Semeraro, Department of Life Sciences, University of Trieste
Paoletti Sergio, Department of Life Sciences, University of Trieste
5. **MAGNETIC NANOPARTICLE FOR GENE DELIVERY: CELLULAR UPTAKE, GENE EXPRESSION, AND CYTOTOXICITY STUDY**
Maria Arsianti, The University of New South Wales
Dr. May Lim, The University of New South Wales
Dr. Christopher Marquis, The University of New South Wales
Professor Rose Amal, The University of New South Wales
6. **FUNCTIONAL HYALURONIC ACID SURFACES FOR THE IN VITRO STUDY OF CANCER CELLS**
Laura Beasman, Johns Hopkins University
Michelle Ho, Johns Hopkins University
Geoffrey Wang, Johns Hopkins University
7. **A MULTIPLEXED MICRO/NANO PARTICLE ASSAY CHARACTERIZES THE CELLULAR ENVIRONMENT BY PROBING PORE SIZE, INTRACELLULAR AND EXTRACELLULAR RHEOLOGY SIMULTANEOUSLY**
Stephanie Fraley, Johns Hopkins University
Ranjini Krishnamurthy, Johns Hopkins University
Denis Wirtz, Johns Hopkins University
8. **ACTIN CIRCULARIZATION UNDER 2D CONFINEMENT AND PHOTO-INDUCED SUPERCOILING TRANSITION**
Tim Sanchez, Brandeis University
Zvonimir Dogic, Brandeis University
Igor Kulich, Centre national de la recherche scientifique

9. **PATCHY SURFACES IN CELLULAR ADHESION EVENTS**

ZiQiu Tong, Johns Hopkins University
Moniraj Ghosh, University of Pennsylvania
Christina Alves, Johns Hopkins University
Konstantinos Konstantopoulos, Johns Hopkins University
Kathleen J. Stebe, University of Pennsylvania

10. **RARE EARTH NANOPARTICLES: FROM PREPARATION TO BIOAPPLICATIONS**

Ling-Dong Sun, State Key Lab of Rare Earth Materials Chemistry and Applications
PKU-HKU Joint Lab in Rare Earth Materials Bioinorganic Chemistry, Peking University
Jie Shen, State Key Lab of Rare Earth Materials Chemistry and Applications
Jian-Qin Gu, State Key Lab of Rare Earth Materials Chemistry and Applications
Wei Feng, State Key Lab of Rare Earth Materials Chemistry and Applications
Chun-Hua Yan, State Key Lab of Rare Earth Materials Chemistry and Applications