



2nd Dissemination Workshop of the Nano4water Cluster

Recent Advances in Nanotechnology-based Water Purification Methods



24-25, April 2012

Aegean Melathron Hotel, Chalkidiki, Thessaloniki, Greece

23rd of April: Opening Day of the Workshop

18:00 – 21:00 Registration

20:30 **Welcome Reception**

24th of April: First Day of the Workshop

08:00 – 08:50 Registration

08:50 – 09:00 Opening Remarks

Session 1: New Projects Funded under FP7

Chairman: Costas Kiparissides

09:00 – 09:20 **CERAMPOL: Ceramic and Polymeric Membranes for Water Purification of Heavy Metals and Hazardous Organic Compounds**

Mirko Faccini

LEITAT Technological Center, Spain

09:20 – 09:40 **CeraWater: Fouling Resistant Ceramic Honeycomb Nanofilters for Efficient Water Treatment – Trends of Project**

Marcus Weyd

Fraunhofer Institute for Ceramic Technologies and Systems IKTS, Germany

09:40 – 10:00 **NANOPUR: Development of Functionalized Nanostructured Polymeric Membranes**

Sabine Paulussen

Flemish Institute for Technological Research (VITO), Belgium

10:00 – 10:20 **LbLBRANE: Regenerable Active Polyelectrolyte Nanofiltration Membranes for Water Reuse and Metal/Acid Recovery**

John Erik Wong and M. Wessling

Chemical Process Engineering, RWTH Aachen University, Germany

10:20 – 10:40 **NanoSelect: Nanoenabled Membranes Based on Bio-Materials for Water Purification**

Aji P Mathew

Division of Materials Science Luleå University of Technology, Sweden

10:40 – 11:10 *Coffee Break, Poster Exhibition*

Session 2: Projects Funded under FP7 – PART A: Nanotechnology, Materials and Process Innovation

Chairman: Enrique García-Bordejé

11:10 – 11:30 **NEW ED: Advanced Bipolar Membrane Processes for Remediation of Highly Saline Waste Water Streams**

Said Abdu

Chemical Process Engineering, RWTH Aachen University, Germany

11:30 – 11:50 **Nametech: Nanotechnology for Water Treatment: Overview of the Project**

Inge Genné

Flemish Institute for Technological Research (VITO), Belgium

11:50 – 12:10 **CHEMWATER: Coordinating European Strategies on Sustainable Materials, Processes and Emerging Technologies Development in Chemical Process and Water Industry across Technology Platforms**

Inge Genné

Flemish Institute for Technological Research (VITO), Belgium

12:10 – 13:30 *Lunch Break, Poster Exhibition*

Session 3: Projects Funded under FP7 – PART B: Bioinspired Membranes and Processes

Chairman: Aji P Mathew

13:30 – 13:50 **MultiPlat: Biomimetic Ultrathin Structures as a Multipurpose Platform for Nanotechnology-Based Products**

Jovan Matovic

Institute of Sensor and Actuator Systems, TU Wien, Vienna, Austria

13:50 – 14:10 **SURFUNCCELL: Surface Functionalization of Cellulose Matrices Using Cellulose Embedded Nano-particles**

Martin R. Kulterer

Institute of Chemistry, University Graz, Austria

14:10 – 14:30 **BioNexGen: Development of the Next Generation Bioreactor System**

Jan Hoinkis

Karlsruhe University of Applied Sciences, Karlsruhe, Germany

14:30 – 14:50 **BacWire: Bacterial Wiring for Energy Conversion and Bioremediation**

Juan M. Feliu

Instituto de Electroquímica, Universidad de Alicante, Spain

14:50 – 15:20 *Coffee Break, Poster Exhibition*

Session 4: Projects Funded under FP7 – PART C: Nanostructured Membranes and Nano-catalysts

Chairman: Thomas Wintgens

15:20 – 15:40 **MONACAT: Monolithic Reactors Structured at the Nano and Micro Levels for Catalytic Water Purification**

Enrique García-Bordejé

Instituto de Carboquímica, ICB-CSIC, Zaragoza, Spain

15:40 – 16:00 **Clean Water: Water Detoxification Using Innovative vi-Nanocatalysts**

Polycarpos Falaras

Institute of Physical Chemistry, NCSR Demokritos, Athens, Greece

16:00 – 16:20 **NATIOMEM: Development of Treatment Concept for Contaminated Water Based on Visible Light Photocatalytic Membranes**

Gerald Heinicke

DHI, Hørsholm, Denmark

16:20 – 16:40 **WATERMIM: Water Treatment by Molecularly Imprinted Materials**

Costas Kiparissides

Centre for Research and Technology Hellas, Thessaloniki, Greece

Poster Session

17:00 – 19:00 **Poster Exhibition**

20:30 **Dinner**

25th of April: Second Day of the Workshop

Session 1: Nanotechnology, Materials and Process Innovation

Chairman: **Mirko Faccini**

09:00 – 09:20 **Tailor-made Membrane Separation through Nano-sized Polyelectrolyte Films**

Jozef Kochan, John E. Wong, Thomas Melin, Matthias Wessling

NAMETECH

09:20 – 09:40 **Catalytic Ozonation of Organic Micropollutants Using CNF Supported on Structured Reactors**

Manuel Fernando R. Pereira, João Restivo, Alexandra Gonçalves, José J.M. Órfão, Sabino Armenise, Enrique Garcia-Bordeje, Delphine Bourdin, Béatrice Houssais, Pascal Roche, Salim Derrouiche

MONACAT

09:40 – 10:00 **New Developments in Hollow Fiber Nanofiltration**

F.J. Spenkelink, W.B. Wennekes, B. Blankert, F. Knops, R. Dekker, J. Potreck

NAMETECH

10:00 – 10:20 **Life Cycle Assessment of Nanoparticles Use in Membrane**

Stefano Zuin, Andrea Brunelli, Petra Scanferla, Antonio Marcomini, Thomas Wintgens, Inge Genné

NAMETECH

10:20 – 10:50 **Coffee Break, Poster Exhibition**

Session 2: Bioinspired Membranes and Processes

Chairman: Sabine Paulussen

10:50 – 11:10 **Nanostructuring of Hollow Fiber Membranes Using Renewable Resources: Anti-fouling and Introduction of Specific Binding Sites**

Martin R. Kulterer, Victoria E. Reichel, Karin Tradt, Karin Stana-Kleinscheck, Jens Potreck, Volker Ribitsch

SURFUNCELL

11:10 – 11:30 **NanoMIP-Loaded Composite Membranes to Extract Micropollutants from Water**

Klaus Niedergall, Monika Bach, Guenter Tovar

WATERMIM

11:30 – 11:50 **BacWire Project: Simultaneous Cogeneration of Energy and Bioremediation. Pilot Plant Results**

Juan M. Ortiz, Beatriz Maestro, Antonio Aldaz, Víctor Climent, Juan M. Feliu

BACWIRE

11:50 – 12:10 **Molecularly Imprinted Polymers as Modular Building Blocks for Water Analysis and Purification**

Lei Ye, Changgang Xu, Xiantao Shen

WATERMIM

12:10 – 13:30 *Lunch Break, Poster Exhibition*

Session 3: Nanostructured Membranes and Nano-catalysts

Chairman: Jan Hoinkis

13:30 – 13:50 **N-doped TiO₂ Nanostructured Coatings for Water Purification**

Daniela Di Camillo, Fabrizio Ruggieri, Sandro Santucci, Luca Lozzi, Wilson Smith, Jerome Pulpytel, and Farzaneh Arefi-Khonsari

NATIOMEM

13:50 – 14:10 **Evaluation of Operating Parameters and Photocatalytic Mechanism of Highly Active TiO₂ Materials for Degradation of Diphenhydramine Pharmaceutical in Aqueous Solutions**

Luisa M. Pastrana-Martínez, Joaquim L. Faria, José M. Doña-Rodríguez, Cristina Fernández-Rodríguez, Adrián M.T. Silva

Clean Water

14:10 – 14:30 **Structured Catalysts for the Reduction of Nitrates and Bromates**

A.E.Palomares, L.Kiwi-Minsker, C. Franch, T. Iouranova, S. Armenise, E. García-Bordejé, M. Rønning

MONACAT

Coffee Break

Session 4: Nanotechnology and Water Treatment, EC Water Policies and Round Table Discussion

Chairman: Stefaan Vandendriessche

14:30 – 14:50 **European Research and Technology Policies in Water Industry**

14:50 – 15:00 **Closing Remarks**

Poster Session Presentations (of the first day)

Removal of Herbicides by Using Sol-Gel Synthesized Nano-Crystalline TiO₂: Operational Parameters Optimization and Toxicity Studies

E.I. Seck, J.M. Doña-Rodríguez, D. Portillo-Carrizo, M.J. Hernández-Rodríguez, C. Fernández-Rodríguez, O.M. González-Díaz and J. Pérez-Peña

Clean Water

Hybrid Ultrafiltration/Photocatalysis Water Treatment Processes

G. E. Romanos, V. Likodimos, P. Aloupogiannis, P. Falaras

Clean Water

Anion Doped TiO₂ Nanocatalysts for Water Purification under Visible Light

V. Likodimos, C. Han, M. Pelaez, A. G. Kontos, G. Liu, D. W. Zhu, S. J. Liao, A. A. de la Cruz, K. O'shea, P. S. M. Dunlop, J. A. Byrne, D. D. Dionysiou, P. Falaras

Clean Water

Effective Catalysts under Solar Light for the Removal of Endocrine Disruptors

V. Maroga Mboula, V. Héqueta, Y. Andrès, J.M. Doña-Rodríguez, D.D. Dionysiou and P. Falaras

Clean Water

Reduced Graphene Oxide-TiO₂ as High-Performance Photocatalysts for Degradation of Water Pollutants under Near-UV/Vis and Visible Light Irradiation

Luisa M. Pastrana-Martínez, Sergio Morales-Torres, Vlassis Likodimos, José L. Figueiredo, Joaquim L. Faria, Polycarpos Falaras, Adrián M.T. Silva

Clean Water

Synthesis of Innovative Nanostructured Titania-based Photocatalysts for Degradation of Diphenhydramine Pharmaceutical and Methyl Orange Dye

L.M. Pastrana-Martínez, S. Morales-Torres, J.M. Doña-Rodríguez, N.G. Moustakas, A.G. Kontos, J.L. Faria, P. Falaras, A.M.T. Silva

Clean Water

Photocatalytic Degradation of Taste and Odour Compounds in Water Using Visible Light-Activated TiO₂ Nanomaterials

T. Triantis, T. Fotiou, T. Kaloudis, N.G. Moustakas, A.G. Kontos, P. Falaras, M. Pelaez, D. Dionysiou, A. Hiskia

Clean Water

Photocatalytic Degradation and Mineralization of Microcystin-LR Under UV-A, Solar and Visible Light Using Nanostructured Nitrogen Doped TiO₂

T.M. Triantis, T. Fotiou, T. Kaloudis, N.G. Moustakas, A.G. Kontos, P. Falaras, D.D. Dionysiou, M. Pelaez, A. Hiskia

Clean Water

Life Cycle Assessment of Novel Catalytic Technology Based on Nanocatalysts for Water Purification

P. Yaseneva, X. Fan, A. Lapkin

MONACAT

A Potent MIP Estrogen Receptor

Eric Schillinger, Monika Möder, Gustaf D. Olsson, Ian A. Nicholls and Börje Sellergren

WATERMIM

Steps towards Rational Molecularly Imprinted Material (MIM) Design: Insights from Case Studies

Gustaf D. Olsson and Ian A. Nicholls

WATERMIM

Design of Molecularly Imprinted Polymeric Membranes and Nanoparticles Using Novel Surface Grafting Techniques for Water Treatment

Dhana Lakshmi, Petya Ivanova Mitseva and Sergey Piletsky

WATERMIM

Development of Noble Metal Nano-Catalysts for the Reductive Treatment of Water Pollutants

Ulf Prüße and Klaus-Dieter Vorlop

WATERMIM

Degradation of Clopyralid by the Fenton Reaction

Katharina Westphal, Ramona Saliger, Dennis Jäger, Linda Teevs, Ulf Prüße

WATERMIM

Development of Molecularly Imprinted Membranes for the Removal of Synthetic Organic Compounds from Water

Chrysoula Gkementzoglou, Olympia Kotrotsiou and Costas Kiparissides

WATERMIM

Advanced Enzymatic Elimination of Phenolic Contaminants in Wastewater: Nano Approach at Field Scale

Gregor Hommes, Christoph A. Gasser, Liang Yu, Jan Svojitka, Thomas Wintgens, Erik Ammann, Patrick Shahgaldian and Philippe F.-X. Corvini

NAMETECH

Testing a Novel Nano-Silver Membrane for Medical Applications

W.B. Wennekes, A. Pacak, J. van Erkel, M. Nijhuis, J.W. Assink, J. Kochan, J. E. Wong, M. Wessling

NAMETECH

Membrane Modification with Nanofibre Structure Containing Silver

J. Dolina, T. Jiříček, T. Lederer

NAMETECH

Design of a Novel Electro-Fenton System for the Elimination of Toxic Organic Substances from Water

Konstantinos V. Plakas, Anastasios J. Karabelas

NHPON

A Hybrid Photocatalysis – Membrane Continuous Process for Degradation of Refractory Organic Matter

Sotiris I. Patsios, Vasilis C. Sarasidis, Anastasios J. Karabelas

NHPON