



## 2<sup>nd</sup> Dissemination Workshop of the Nano4water Cluster: Recent Advances in Nanotechnology-based Water Purification Methods



24-25 April 2012

Aegean Melathron Hotel, Chalkidiki, Thessaloniki, Greece

### First Day

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**

*Jan Stodollick*

*Chemical Process Engineering, RWTH Aachen University, Germany*

11:30 – 11:50 **Nametech: Development of Intensified Water Treatment Concepts by Integrating Nano- and Membrane Technologies**

*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**

*Thomas Track*

*DECHEMA, Germany*

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**

*Volker Ribitsch*

*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**

*Polycarpus 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**

### Second Day

#### Session 1 Nanotechnology, Materials and Process Innovation

**Chairman:** **Mirko Faccini**

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

*J. Kochan, J. E. Wong, T. Melin, M. 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 **Novel Capillary Nanofiltration Membrane for Direct Filtration of (Surface) Water**

*Frederik Spenkelink, Wilco Wennekes, Jens 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 TiO<sub>2</sub> Nanostructured Coatings for Water Purification**

*Daniela Di Camillo, Fabrizio Ruggieri, Sandro Santucci, and Luca Lozzi, Eda Cetinorgu-Goldenberg, Ines Chayoun, Reuven Avni, and Raymond L. Boxman, Wilson Smith, Jerome Pulpytel, and Farzaneh Arefi-Khonsari*

NATIOMEM

13:50 – 14:10 **Removal of Herbicides by Using Sol-Gel Synthesized Nano-Crystalline TiO<sub>2</sub>: Operational Parameters Optimization and Toxicity Studies**

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

Clean Water

14:10 – 14:30 **Evaluation of Operating Parameters and Photocatalytic Mechanism of Highly Active TiO<sub>2</sub> 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

14:30 – 14:50 **Structured Catalysts for the Reduction of Nitrates and Bromates**

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

MONACAT

14:50 – 15:20 *Coffee Break*

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

**Chairman:** Dr. Stefaan Vandendriessche

15:20 – 15:40 **Presentation of EC Water Policies**

15:40 – 16:30 **Round Table Discussion**

**Hybrid Ultrafiltration/Photocatalysis Water Treatment Processes**

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

*Clean Water*

**Anion Doped TiO<sub>2</sub> 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-TiO<sub>2</sub> 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 TiO<sub>2</sub> Nanomaterials**

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

*Clean Water*

**Photocatalytic Degradation and Mineralization of Microcystin-LR Under UV-A, Solar and Visible Light Using Nanostructured Nitrogen Doped TiO<sub>2</sub>**

*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*

**An Artificial Estrogen Receptor Obtained by Combinatorial Imprinting**

*Eric Schillinger and Borje Sellergren*

*WATERMIM*

**Steps Towards Rational Molecularly Imprinted Polymer Design: Insights from Case Studies**

*Gustaf Olsson and Ian 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**

*Chrysoula Gkementzoglou, Olympia Kotrotsiou, Costas Kiparissides*

WATERMIM

**Advanced Enzymatic Elimination of Phenolic Contaminants in Wastewater: A 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

**Nano-silver in Membranes for Medical Applications**

*W.B. Wennekes, A. Pacak, J. van Erkel, M. Nijhuis, J. Kochan*

NAMETECH

**Membrane Modification with Nanofibre Structure Containing Silver**

*J. Dolina, T. Jiříček, T. Lederer*

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