Program

Wastewater and Biosolids Treatment and Reuse: Bridging Modeling and Experimental Studies

June 8-14, 2014
Otranto, Italy

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Sunday, June 8, 2014

ARRIVAL AND WELCOME RECEPTION

17:00 – 19:00  Registration
19:00 – 20:00  Welcome reception
20:00 – 22:00  Dinner

NOTES

• Audiotaping, videotaping and photography of presentations are prohibited.
• Speakers – Please have your presentation loaded onto the conference computer prior to the session start (preferably the day before).
• 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.
• Technical and poster sessions will be in the Conference Center.
• Meals will be in the restaurant.
• Be sure to check your contact information on the Participant List in this program and make any corrections to your name/contact information online. A corrected copy will be sent to all participants after the conference.
Monday, June 9, 2014 (session with simultaneous translation)

PLENARY SESSION – WASTEWATER AND BIOSOLIDS TREATMENT AND REUSE: WHAT DOES THE FUTURE HOLD?

Session Chairs: Domenico Santoro and Antonio Lopez

08:00 – 08:45 On-Site registration
08:45 – 09:00 Opening remarks
09:00 – 09:30 Keynote 1: Wastewater treatment: the paradigm shift
Antonio Lopez, National Research Council (CNR), Water Research Institute, Italy
09:30 – 10:00 Keynote 2: Role of anaerobic digestion in next generation wastewater treatment and biosolids management
Damien Batstone, Queensland University, Australia
10:00 – 10:30 Keynote 3: Approaches to rational microbial risk assessment of treated biosolids and wastewater
Charles N. Haas, Drexel University, USA
10:30 – 11:00 Coffee break
11:00 – 11:30 Keynote 4: Is industry ready to address wastewater treatment challenges?
Marvin Devries, Trojan Technologies, Canada
11:30 – 12:00 Keynote 5: Computational modeling: valuable tool or math exercise?
Carlo Poloni, University of Trieste, Italy
12:00 – 12:30 Round Table
12:30 – 14:00 Lunch
14:00 – 15:00 ad hoc sessions / free time
15:00 – 19:30 Tour of Lecce
20:00 – 22:00 Dinner
22:00 – 23:00 Social hour
Tuesday, June 10, 2014

**TECHNICAL SESSION A - WASTEWATER AND BIOSOLIDS TREATMENT AND REUSE: THE MATERIAL AND ENERGY “FACTORY”**

Session Chairs: Wun Jern Ng and Giuseppe Mininni

08:45 – 09:00 Opening remarks

09:00 – 09:30 Keynote 6: Perspectives of sewage sludge management in Europe and expected development of legislation
Giuseppe Mininni, National Research Council (CNR), Water Research Institute, Italy

09:30 – 10:00 Keynote 7: Sludge pretreatment methods for enhanced volatiles solids destruction and methane production
Wun Jern Ng, NEWRI-Nanyang Technology University, Singapore

10:00 – 10:30 Keynote 8: Harmless treatment and materials utilization of sludge containing high levels of heavy metals
Guoren Xu, Harbin Institute of Technology, China

10:30 – 11:00 Coffee break

11:00 – 11:30 Keynote 9: Valorization of sewage sludge via nitrite nutrients removal from anaerobic effluents
Francesco Fatone, University of Verona, Italy

11:30 – 12:00 Aerobic conditions prevail over scarce aeration and starvation conditions for activated sludge degradation
Jonathan Habermacher, Eawag, Switzerland

12:00 – 12:30 Round Table

12:30 – 14:00 Lunch

14:00 – 16:00 ad hoc sessions / free time

16:00 – 16:20 Innovative treatment solutions for sewage sludge management set up in the ROUTES FP7 project
Giuseppe Mininni, National Research Council (CNR), Water Research Institute, Italy

16:20 – 16:40 Impact of enhanced stabilization treatments on sludge quality and methane recovery
Camilla Braguglia, National Research Council (CNR), Water Research Institute, Italy

16:40 – 17:00 Comparative study of the mechanisms of ultrasonic, alkaline, and sono-alkaline pretreatment of industrial biosludge
Santosh Pathak, AEBC-NEWRI-NTU, Singapore

17:00 – 17:20 Sludge minimization: ozonolysis and pure oxygen autothermal thermophilic digestion
Pier Luigi Radavelli, SIAD SpA, Italy
Tuesday, June 10, 2014 (continued)

17:20 – 17:40 Influence of one step temperature increase acclimation method on microbial community dynamics during thermophilic biochemical methane potential test of an industrial wastewater
Santosh Pathak, AEBC-NEWRI-NTU, Singapore

17:40 – 18:20 Coffee break

18:20 – 18:40 Phototrophic bacteria for complete nutrient recovery from domestic wastewater
Tim Huelsen UQ/AWMC, Australia

18:40 – 19:00 Integrating the selection of PHA storing biomass and nitrogen removal via nitrite for the treatment of the sludge reject water
Francesco Fatone, University Ca’Foscari of Venice, Italy

19:00 – 19:20 The integrated biohydrogen reactor clarifier system (IBRCS): setup, performance, and application
Hesham El Naggar, University of Western Ontario, Canada

19:20 – 19:40 Sewage sludge valorization by pyrolysis using a mechanically fluidized reactor
Franco Berruti, ICFAR/Western University, Canada

19:40 – 20:00 Treatment of carbide slurry using electrocoagulation
Shereen Hasan, UAEU, United Arab Emirates

20:00 – 22:00 Dinner

22:00 – 23:00 Poster session and social hour
Wednesday, June 11, 2014

TECHNICAL SESSION B - WASTEWATER AND BIOSOLIDS TREATMENT AND
REUSE: THE WATER "FACTORY"

Session Chairs: Ronald Gehr and Franco Berruti

08:45 – 09:00 Opening remarks

09:00 – 09:30 Keynote 10: How drugs in wastewater enforce advanced drinking water treatment
Bram Martijn, PWN Technologies, Netherlands

09:30 – 10:00 Keynote 11: New insights into the ultraviolet disinfection of wastewater
Ramin Farnood, University of Toronto, Canada

10:00 – 10:30 Keynote 12: Wastewater disinfection with UV or PAA: Are those surviving microbes
really benign?
Ronald Gehr, McGill University, Canada

10:30 – 11:00 Coffee break

11:00 – 11:30 Keynote 13: High-rate sieve microfiltration as an alternative unit process to primary
clarifiers
Domenico Santoro, Trojan Technologies, Canada

11:30 – 12:00 CFD optimized woven filter media for wastewater application
Markus Knefel; GKD, Germany

12:00 – 12:30 Round Table

12:30 – 14:00 Lunch

14:00 – 16:00 ad hoc sessions and free time

16:00 – 16:20 Peracetic acid use in north America as a wastewater disinfectant
Thomas Mooney, PeroxyChem, USA

16:20 – 16:40 Peracetic acid: a good choice for wastewater reuse
Paola Toniolo, Solvay Chimica Italia Spa, Italy

16:40 – 17:00 Agricultural reuse of treated wastewater: the case of Milano-Nosedo municipal
wastewater treatment plant
Francesca Pizza, MilanoDepur SpA, Italy

17:00 – 17:20 Perfomic acid as disinfectant in wastewater treatments: effectiveness and
comparisons
Patrizia Ragazzo, ASI, Italy

17:20 – 17:40 Large wastewater agricultural reuse with adaptive nutrient removal case study of
Milano S. Rocco
Luca Pedrazzi, Degremont, Italy

17:40 – 18:20 Coffee break
Wednesday, June 11, 2014 (continued)

18:20 – 18:40  Sludge ozonation and intermittent aeration through the OSCAR® controller – A combined strategy for OPEX minimization in wastewater treatment
Giuseppe Guglielmi, ETC Engineering, Italy

18:40 – 19:00  Phenolic wastes valorization through bioenergy and bioactive compounds production
Francesco La Cara, Istituto di Bioscienze e Biorisorse, CNR, Italy

19:00 – 19:20  Evaluating the performance of spouted bed bio-reactor (SBBR) during aerobic biodegradation of 2,4 dichlorophenol (DCP)
Taghreed Al-Khalid, UAE University, United Arab Emirates

19:20 – 19:40  Ecotoxicological bioassays for treated wastewater monitoring and assessment
Maria Giulia Lionetto, University of Salento, Italy

19:40 – 20:00  Liquid waste treatment: can combined biological processes be really effective?
Luca Rondi, University of Brescia, Italy

20:00 – 22:00  Dinner

22:00 – 23:00  Poster session and social hour
Thursday, June 12, 2014

**TECHNICAL SESSION C - WASTEWATER AND BIOSOLIDS TREATMENT AND REUSE: THE ROLE OF MODELING**

Session Chairs: Charles N. Haas and M. Concetta Tomei

08:45 – 09:00  Opening remarks

09:00 – 09:30  **Keynote 14: Modeling reactions between activated sludge fractions and ozone to optimize biosolids reduction processes**
Dominic Frigon, McGill University, Canada

09:30 – 10:00  **Keynote 15: Modeling of anaerobic digestion of sludge**
M. Concetta Tomei, National Research Council (CNR), Water Research Institute, Italy

10:00 – 10:30  **Keynote 16: Simulation based feed stream estimation of wastewater treatment plants using a surrogate model**
Peter Kern, Cologne University of Applied Sciences, Germany

10:30 – 11:00  Coffee break

11:00 – 11:30  **Keynote 17: Accelerating product innovation using computational fluid dynamics**
Ted Mao, Trojan Technologies, Canada

11:30 – 12:00  **Reactor configuration modeling for anaerobic digestion of waste activated sludge**
Daniele Montecchio, National Research Council, Water Research Institute, Italy

12:00 – 12:30  Round Table

12:30 – 16:00  Boxed Lunch & Excursion (Masseria L'Astore)

16:00 – 17:40  **Modeling and Optimization Workshop**
Vito Primavera, EnginSoft SpA, Italy

- Introduction to modeFRONTIER
- Case Study 1
- Case Study 2
- Case Study 3

17:40 – 18:20  Coffee break

18:20 – 18:40  **Temperature adjustment and calibration of an ASM2D-ADM1 model**
Alessio Fenu, Aquafin, Belgium

18:40 – 19:00  **Optimal control for activated sludge alternating flow/aeration systems with more than two basins**
Alessio Fenu, Aquafin, Belgium
Thursday, June 12, 2014 (continued)

19:00 – 19:20  Linear time invariant model of anaerobic digestion of waste activated sludge development and analysis
Antonius Yudi Sendjaja, AEBC-NEWRI-NTU, Singapore

19:20 – 19:40  Life cycle assessment of a full scale case study on agricultural reuse of treated agro-industrial wastewater
Pompilio Vergine, National Research Council (CNR), Water Research Institute, Italy

19:40 – 20:00  Surface modified cellulosic membrane and its application in membrane bioreactor (MBR) system
Ning Yan, University of Toronto, Canada

20:00 – 20:20  Equilibrium, kinetic and thermodynamic study of adsorption of rhodamine B from aqueous solution by activated carbon from *Peltophorum Pterocarpum* leaf
Jeyaraj Boniface, Loyola College, India

21:00 – 23:00  Banquet Dinner in Otranto
Friday, June 13, 2014 (session with simultaneous translation)

TECHNICAL SESSION D - WASTEWATER AND BIOSOLIDS TREATMENT AND REUSE: FIELD STUDIES AND FULL-SCALE APPLICATIONS

Session Chairs: Gianfranco Boari and Antonio Lopez

08:00 – 08:45  On-site registration

08:45 – 09:00  Opening remarks

09:00 – 09:30  Keynote 18: On the sustainable management of sewage sludge disposal in Apulia
Adriana Lotito, Arpa Puglia & Politecnico Di Bari, Italy

09:30 – 10:00  Keynote 19: Agricultural use of sewage sludge data as a tool for legislative revision
Giuseppe Mininni, National Research Council (CNR), Water Research Institute, Italy

10:00 – 10:30  Keynote 20: Developments in sludge dewaterability characterization
Ludovico Spinosa, CEN/TC308/WG1 and ISO/TC275/WG6, Italy

10:30 – 11:00  Coffee break

11:00 – 11:30  Wastewater reuse in Apulia: between dream and reality
Antonio Lopez, National Research Council (CNR), Water Research Institute, Italy

11:30 – 12:00  Wastewater reuse in Apulia: constraints and perspectives
Vito Colucci, Apulia Hydric Authority (AIP), Italy

12:00 – 12:30  Back to future: The success story of Fasano’s agricultural wastewater reuse plant
Oronzo Santoro, AquaSoil SrL, Italy

12:30 – 13:00  Round Table

13:00 – 15:00  Lunch

15:00 – 15:20  Surface filtration technologies for municipal wastewater reuse for irrigation – Preliminary results of demo-scale activities
Pompilio Vergine, National Research Council (CNR), Water Research Institute, Italy

15:20 – 15:40  Wastewater treatment and reuse in the oil & petrochem industry – a case study
Alberto Girardi, Degremont, Italy

15:40 – 16:00  Design of semiconductors-based composites for the efficient photodegradation of organic micropollutants in water
Giuseppe Mele, University of Salento, Italy

16:00 – 16:20  Experimental measurement and modeling of radiation fields in TiO2 nanoparticle photocatalysis
Andrea Turolla, Politecnico de Milano, Italy

16:20 – 16:40  Deep UV-LEDs based on group III-nitride for water disinfection applications
Iolanda Pio, National Nanotechnology Laboratory CNR, Italy

16:40 – 17:00  Closing Remarks
Wastewater and Biosolids Treatment and Reuse: Bridging Modeling and Experimental Studies

Poster List

1. **Impacts of temperatures and physico-chemical conditions on biosolids electro-dewatering**
   Dominic Frigon, McGill University, Canada

2. **Measurement and modeling of photogenerated holes and hydroxyl radicals production in TiO2 nanoparticle photocatalysis**
   Andrea Turolla, Politecnico di Milano, Italy

3. **Modeling of vertical constructed wetland for embedded greywater treatment**
   Matjaz Nekrep Perc, University of Maribor, Slovenia

4. **Removal of arsenic from drinking water by coagulation-adsorption combined process**
   Anna Scarlino, University of Salento, Italy

5. **Synthesis, characterization and binding studies of water compatible ion imprinted polymer as sorbent materials for Hg(II) removal from water**
   Lucia Mergola, University of Salento, Italy

6. **Sawdust-based natural clay sorbents from removal of heavy metals from wastewater**
   Lucia Mergola, University of Salento, Italy