## ENVR

## **ENVIRONMENTAL CHEMISTRY**

D. Dionysiou, Program Chair

## **OTHER SYMPOSIA OF INTEREST:**

National Science Foundation's Centers for Chemical Innovation (see *PRES*, *Sun*) Lab Safety 25 Years After Promulgation of the OSHA Laboratory Standard (see *CHAS*, *Sun*, *Mon*) Environmental and Energy-Related Inorganic Chemistry (see *INOR*, *Sun*, *Tue*) Transformation & Transport of Radionuclides in the Environment (see *NUCL*, *Tue*) Transforming University-Industry Partnerships for an Innovative Future (see *PRES*, *Tue*) Subsurface Geochemistry for Energy & the Environment (see *GEOC*, *Tue*, *Wed*)

## SOCIAL EVENTS:

Reception, 6:30 PM, Tuesday: Back Bay Harry's, 142 Berkeley St, Boston; Ticket required: \$20 Dinner, 8:00 PM, Tuesday: Back Bay Harry's, 142 Berkeley St., Boston; Ticket required: \$60

## **BUSINESS MEETINGS:**

Program Planning Meeting, 2:00 PM, Sunday: Brookline Rm, Boston Park Plaza Hotel
Long Range Planning Meeting, 3:00 PM, Sunday: Brookline Rm, Boston Park Plaza Hotel
Business Meeting, 7:00 PM, Sunday: Boylston Rm, Boston Park Plaza Hotel – *Refreshments Served*Executive Committee Meeting, 7:30 PM, Sunday: Boylston Rm, Boston Park Plaza Hotel

## SUNDAY MORNING

Boston Park Plaza Hotel and Towers Statler Room

New Challenges in Water Quality, Treatment, Reuse and Sustainability: Chemistry and Application of Advanced Oxidation Processes for Removal of Contaminants of Concern and Transformation Products

#### Processes

Cosponsored by CEI R. de Fatima Peralta Muniz Moriera, D. Minakata, K. E. O'Shea, *Organizers* D. D. Dionysiou, G. Li Puma, *Organizers, Presiding* 

8:00 Introductory Remarks.

**8:05 1.** Fundamental understanding of radical transformation in UV-AOPs with different parent compounds: Implication on treatability. **H. Liu**, T. Jain, W. Li

Section A

**8:30 2.** Utilizing chlorine atom reactivity in UV-based advanced oxidation processes: Kinetics and efficiencies of Cl atom reactions. **K. Couch**, S.P. Mezyk, K.P. Ishida

**8:55 3.** Discovery of new fate of transformation products in aqueous phase advanced oxidation processes using ab initio quantum mechanical calculations. **D. Minakata**, D. Kamath , M. Rouleau

9:20 4. Withdrawn

9:45 Intermission.

**10:00 5.** High-precision measurement of oxygen and hydrogen isotope ratios in water vapor using diode laser spectroscopy in the IR wavelength of 1.39 µm. **W. Al-Basheer**, A. Aljalal, K. Gasmi

**10:25 6.** Enhanced anti-Stokes emission and photocatalytic activity in a dual-sensitizer triplet-triplet annihilation upconversion system. **A. Hagstrom**, F. Deng, C. Li, H. Kim, J. Kim

10:50 7. Standard heats of oxidation for characterized soils. S.P. Mezyk, N. Moulton, M. Becker

**11:15 8.** Photocatalytic oxidation of bisphenols (A, F and AF) in BR and CSTR. **B. Erjavec**, P. Hudoklin, K. Perc, T. Tisler, M. Sollner, A. Pintar

Section B

Boston Park Plaza Hotel and Towers St. James Room

## **Designing Safer Chemicals**

Cosponsored by CEI A. Voutchkova, *Organizer* P. T. Anastas, J. B. Zimmerman, *Organizers, Presiding* 

8:00 9. On the design of safer commercial chemicals: Past, present, and future perspectives. S. DeVito

**8:30 10.** Predicting cytotoxity based on EPA ToxCast data and designing safer chemicals. L. Shen, F. Melnikov, R. Judson, A. Voutchkova, J. Kostal, **J.B. Zimmerman**, P.T. Anastas

**9:00 11.** Framework to guide selection of chemical alternatives. D. Dorman, E.J. Beckman, P. Beak, J. Cura, A. Fairbrother, N. Greene, **C. Henry**, H. Holder, J.R. Hutchison, G. Paoli, J. Quint, I. Rusyn, K. Shelton, J. Tickner, **A. Voutchkova**, M.H. Wolf, M. Shelton-Davenport, K. Hughes

9:20 12. Designing safer chemicals: Application of the principles of green chemistry in a chemical company. C. Rowlands

9:40 13. Predictive tools for bioavailability and oxidative stress based on spectroscopic data. N. An, A. Voutchkova-Kostal

10:00 Intermission.

**10:15 14.** Exploiting enhanced non-testing approaches to meet the needs for sustainable chemistry. **G. Patlewicz**, A. Richard, K. Houck, R. Judson

**10:35 15.** Advancing safety assessments of chemicals through biological read across using multidimensional in vitro toxicity testing. **F. Grimm**, I. Rusyn

**10:55 16.** Need for safer chemicals and rapid screening tools: The 2014 Freedom Industries chemical spill, West Virginia, USA. **A.J. Whelton** 

**11:15 17.** No substitutes allowed: Chemical processes that have thus far eluded a green alternative. C. Kashat, S. Anderson, J. Payne, S. Maurice, **M.A. Benvenuto** 

Section C

Boston Park Plaza Hotel and Towers Berkeley/Clarendon Room

#### Nano-Enabled Environmental Technologies

### Technologies for Treatment of Microbial and Carbon-Based Contaminants

Financially supported by Boston University, Division of Materials Science & EngineeringJ. L. Goldfarb, *Organizer*K. Doudrik, K. D. Hristovski, *Organizers, Presiding* 

8:00 Introductory Remarks.

8:05 18. Fullerene-based multifunctional antimicrobial composites via block copolymer templates. K. Moor, C.O. Osuji, J. Kim

**8:30 19.** Effects of rhamnolipid and carboxymethylcellulose coatings on reactivity of palladium-doped nanoscale zerovalent iron particles to trichloroethylene. **S. Bhattacharjee**, M. Basnet, N. Tufenkji, S. Ghoshal

**8:55 20.** Removal of carbamazepine and tetracycline from water by magnetic carbonaceous nano-adsorbents prepared by ballmilling. **D. Shan**, S. Deng, W. Bin, Y. Wang, Y. Huang, G. Yu

**9:20 21.** Drinkable book - a novel nano-enabled antibacterial paper filter for water purification in developing countries. **T.A. Dankovich** 

**9:45** Intermission.

10:00 22. Nanoscale colloidal manganese oxides formation and their implications for drinking water treatment. M.E. Vargas-Vallejo, G. Hinds, W.R. Knocke, M.F. Hochella, F.M. Michel, M. Murayama

**10:25 23.** Functional biodegradable nanoparticles for the remediation of environmentally relevant aldehyde and carboxylic acid contaminants in the gas phase. **D.C. Whitehead** 

**10:50 24.** Investigation of the kinetics and diffusion of carbon dioxide capture in amine modified MCM-36. **C.F. Cogswell**, H. Jiang, T. Nigl, S. Choi

**11:15 25.** Arsenic, cadmium, lead, nickel, and thallium removal by copper based metal organic framework and investigation of their adsorption kinetics and thermodynamics. **A. Yurdusen**, Y. Yurum

Section D

Boston Park Plaza Hotel and Towers Beacon Hill Room

## Advances in Drinking Water Disinfection: Byproducts Occurrence, Formation, Treatment, Health Effects, Epidemiology and Regulation

E. Sahle-Demessie, G. Sorial, Organizers, Presiding

**8:00 26.** Control of bromate formation in UV/peroxymonosulfate, UV/persulfate and Co/peroxymonosulfate processes by ammonia, chlorine-ammonia, and ammonia-chlorine processes. **L. Ling**, Z. Li, J. Fang, C. Shang

8:50 28. Withdrawn

9:15 29. Withdrawn

9:40 30. Withdrawn.

10:05 Intermission.

**10:20 31.** Ferrate (VI) mediated degradation and detoxification of the potent cyanotoxin, cylindrospermopsin. C. Zhao, V.K. Sharma, D. Dionysiou, **K.E. O'Shea** 

**10:45 32.** Ferrate oxidation of bromide: Formation of bromate in deionized and natural waters. **Y. Jiang**, J. Goodwill, D. Reckhow, J. Tobiason

11:10 33. Role of manganese oxide in the formation of disinfection byproducts. A. Bazilio, J.E. Tobiason

11:35 34. Efficient production of ozone in an oxygen microplasma for water treatment. J. Lozano

Section E

Boston Park Plaza Hotel and Towers Stuart Room

## Assessing Transformation Products by Non-Target and Suspected Target Screening: The New Frontier in Environmental Chemistry and Engineering

Financially supported by AEESP (Association of Environmental Engineering and Science Professors) S. A. Snyder, *Organizer* J. Drews, T. Letzel, *Organizers, Presiding* 

8:00 Introduction.

8:05 35. Fate of antiviral compounds and their transformation products in the urban water cycle. C. Prasse, D.L. Sedlak, T. Ternes

**8:25 36.** HRMS approaches for evaluating transformations of pharmaceuticals in the aquatic environment. **D. Barcelo**, B. Zonja, S. Perez

**8:45 37.** Identifying transformation products of organic micropollutants in conventional wastewater treatment by high-resolution mass spectrometry and differential non-targeted screening. **G.J. Getzinger**, L. Ferguson

**9:05 38.** Transformation and products of thiol drugs with the presence of humic substance in water during enzymatic catalysis. P. Du, **H. Zhao**, H. Cao

**9:25 39.** Accurate mass screening and data evaluation approaches for ozonation by-products in wastewater treatment plant effluents. **C. Zwiener**, S. Merel, S. Lege

**9:45 40.** Target, suspected-target, and non-target LC-MS(/MS) screening: New strategies for transformation products and metabolites in water bodies. **T. Letzel** 

10:05 Intermission.

**10:20 41.** Linking trace organic chemical attenuation to the metabolic capability of the microbiome in complex environments: Insights from laboratory- and full-scale managed aquifer recharge systems. **J. Regnery**, D. Li, S. Roberts, C.P. Higgins, J.E. Drewes

**10:40 42.** Characterization of products of 2,4-dinitroanisole (DNAN) microbial biotransformation using liquid chromatography coupled to quadrupole time-of-flight mass spectrometry (LC-QToF-MS) and their inhibitory impact to methanogens. **C.I. Olivares**, L. Abrell, J. Chorover, R. Sierra-Alvarez, J. Field

**11:00 43.** Identification of transformation products in sulfate radical based groundwater remediation and toxicity implications. **W.** Li, D. Schlenk, H. Liu

**11:20 44.** Formation of bioactive transformation products during glucocorticoid chlorination. **N.C. Pflug**, A. Kupsco, E.P. Kolodziej, D. Schlenk, J.B. Gloer, **D.M. Cwiertny** 

**11:40 45.** NORMAN Association: A network approach to scientific collaboration on emerging contaminants and their transformation products in Europe. **J. Slobodnik** 

12:00 Concluding Remarks.

Boston Park Plaza Hotel and Towers Cambridge Room

## Hydrothermal Carbonization: Possibilities and Limits for Feedstocks, Processes and Applications

#### **HTC Fundamentals and Sorption**

Cosponsored by AGRO Financially supported by AEESP (Association of Environmental Engineering and Science Professors) S. Chang, J. A. Libra, *Organizers* C. Coronella, K. Ro, *Organizers, Presiding* 

**8:00 46.** Sustainable carbon materials and chemicals from biomass via hydrothermal carbonization. **M. Titirici**, F. Pileidis, A. Marinovic

**8:35 47.** Putting the "hydro" in hydrothermal - chemistry of hot water and its influence on process efficiency of hydrothermal carbonization. **A. Funke**, T. Schäfer, A. Kruse

**9:00 48.** Mechanochemical modification of hydrothermal chars. **M.T. Timko**, A. Brown, B. McKeogh, J. Venegas, G. Tompsett, N.A. Deskins

**9:25 49.** Hydrothermal carbonization (HTC) for producing a biocaron with coal like properties from undervalued lignocellulosic biomass. **A. Dutta** 

**9:50** Intermission.

10:15 50. Characterization and adsorptive ability of CO<sub>2</sub> activated hydrochars. J. Fang, B. Gao

**10:40 51.** Hydrochar as sorbent for organic contaminant removal: connecting the effect of the char physicochemical properties with sorption capacity for pyrene and pharmaceuticals and personal care products (PPCPs). K. Sun, L. Han, K. Ro, **J. Libra**, H. Sun, B. Xing

11:05 52. Developing livestock odor reduction system using biochar/hydrochar - characteristics. S. Cho, O. Hwang, D. Han, K. Ro

Section F

Boston Park Plaza Hotel and Towers Stuart Room

#### Next Generation Nanomaterials: Advances and Perspectives for Biomedicine, Energy, and Environmental Protection

### **Biomedicine/Energy**

Cosponsored by ENFL J. Mi, J. Song, *Organizers, Presiding* 

8:00 236. Targeted polymeric nanoparticles: From discovery to clinical trials. O. Farokhzad

8:30 237. Allosteric ligands and nanoparticle conjugates for photocontrol of unmodified neurons. D.R. Pepperberg

9:00 238. Nanoscale metal oxide clusters for biomedicine and water splitting. J. Mi, J. Song

9:20 239. Sustainable antimicrobial polymers and nano-assemblies for killing MRSA. C. Tang

9:40 Intermission.

9:55 240. Thermostable RNA motif as boiling-resistant polymers in material science and nanotechnology. P. Guo

**10:25 241.** Synthesis, assembling, and actuation of plasmonic-active rotary nanomotors for controlled biochemical release and detection with Raman spectroscopy. X. Xu, K. Kim, **D. Fan** 

**10:45 242.** Novel antibiotic/silver nanomaterial hybrid as a surface coating on medical devices. **D.E. Gorka**, M. Arifuzzaman, J.C. Timmerman, R. Widenhoefer, S. Abraham, J. Liu

**11:05 243.** Mobility of iron oxide nanoparticles under representative reservoir conditions. **B.A. Lyon**, A. Kmetz II, M.D. Becker, E.L. Foster, E.E. Urena Benavides, M. Iqbal, Y. Fei, E. Moaseri, C.J. Ellison, K.P. Johnston, L.M. Abriola, K.D. Pennell

**Carbon Management: Recent Advances in Carbon Capture, Conversion, Utilization and Storage CO2 Capture Using Advanced Materials** Sponsored by ENFL, Cosponsored by ENVR<sup>‡</sup>

**Chemical Processes Involving Atmospherically Relevant Trace Gases, Aerosols & Clouds** Sponsored by PHYS, Cosponsored by ENVR

**Pesticide Dose: Effects on the Environment and Target and Non-Target Organisms** Sponsored by AGRO, Cosponsored by ENVR

**Biofuels for Powering the World: Discovery to Application Catalytic Fast Pyrolysis** Sponsored by ENFL, Cosponsored by CATL and ENVR

#### SUNDAY AFTERNOON

Boston Park Plaza Hotel and Towers Statler Room

#### New Challenges in Water Quality, Treatment, Reuse and Sustainability: Chemistry and Application of Advanced Oxidation Processes for Removal of Contaminants of Concern and Transformation Products

#### Reactors

Cosponsored by CEI R. de Fatima Peralta Muniz Moriera, D. D. Dionysiou, D. Minakata, K. E. O'Shea, *Organizers* G. Li Puma, *Organizer, Presiding* J. Sánchez Pérez, *Presiding* 

1:30 53. Withdrawn

**2:10 54.** Novel microfluidic approach for extremely rapid photochemical transformations of chemical and biological species. N.M. Reis, **G. Li Puma** 

**2:35 55.** Solar CPC reactor design using boundary layer of photon absorption and ray-tracing. **H.L. Otálvaro-Marín**, M.Á. Mueses, J.C. Crittenden, F. Machuca-Martinez

**3:00 56.** Cyanide removal by photo-Fenton process, assisted with ferrioxalate, under the sunlight, using a parabolic cylindrical rotary reactor (PCRR). **A. Barbosa Lopez**, D. Gil, K. Pajaro

**3:25** Intermission.

3:40 57. Withdrawn

4:05 58. Kinetics and modeling of reacted oxidants in saltwater ozonation. Y. Jung, E. Hong, M. Kwon, Y. Jung, H. Kye, J. Kang

**4:30 59.** Method for hydroxyl radical rapid production using a strong ionization discharge combined with effect of water jet cavitation. **M. Bai**, **Z. Zhang**, Y. Yu, H. Li, Y. Zhang

**4:55 60.** Effect of the absorption process over the discoloration of dyes by solar heterogeneous photocatalysis. M. Almansa-Ortegon, M. Hernandez-Ramirez, M. Mueses, J.A. Colina-Marquez, **F. Machuca-Martinez** 

Section B

Boston Park Plaza Hotel and Towers St. James Room

#### **Designing Safer Chemicals**

Cosponsored by CEI<sup>‡</sup> P. T. Anastas, *Organizer* A. Voutchkova, J. B. Zimmerman, *Organizers, Presiding* 

1:30 61. Alerts about toxicity alerts. A. Tropsha, D. Fourches, R. Politi, Y. Low, E. Muratov

**2:00 62.** Chemical design process at the crossroads of product efficacy and risk assessment. **C. Yang**, J.F. Rathman, C.H. Schwab, B. Bienfait

2:30 63. Use of computational toxicology for evaluating potential endocrine bioactivity and exposure. K. Markey

**2:50 64.** Assessing the accuracy of software predictions of mammalian and microbial metabolites. **M. Card**, C. Tebes-Stevens, E.J. Weber

**3:10 65.** Quantitative structure-functional ingredient relationships (qFIRs): Development of a data-driven workflow for alternatives ingredient assessments for in silico molecular repurposing. **M.R. Goldsmith**, D.T. Chang, A. Deschenes

**3:30** Intermission.

**3:45 66.** Quantitative structure-activity relationships for predicting toxicity and biodegradability of biosynthetic and bio-inspired glycolipid surfactants. **J. Pemberton**, R. Polt, L. Szabo, R. Palos Pacheco, L. Kegel, C. Coss, A. Fathi, R. Gonzalez, R. Eismin

**4:05 67.** Screening/prioritization of chemicals and QSAR "Benign by Design" approach: The cumulative PBT index model in QSARINS. **P. Gramatica**, E. Papa, S. Cassani, A. Sangion

**4:25 68.** Analysis of xenobiotic properties leading to electrophilic or radical activation of Nrf2-keep1 pathway in ToxCast. **F. Melnikov**, J. Kosal, L. Sehn, A. Voutchkova, J.B. Zimmerman, P.T. Anastas

4:45 69. Quantum chemistry blueprints for greener chelating agents. E.J. Beckman, M.N. Vo, J.A. Keith, K. Johnson

**5:05 70.** Coupling the power of high throughput zebrafish screening and synthetic chemistry to design safer chemicals. **R.L. Tanguay**, M. Simonich, L. Truong

Section C

Boston Park Plaza Hotel and Towers Berkeley/Clarendon Room

#### Nano-Enabled Environmental Technologies

#### **Technologies for Treatment of Inorganic Water Contaminants**

Financially supported by Boston University, Division of Materials Science & EngineeringK. D. Hristovski, *Organizer*K. Doudrik, J. L. Goldfarb, *Organizers, Presiding* 

1:30 Introductory Remarks.

**1:35 71.** Goethite nanoparticles impregnated cross-linked macroporous polymer for arsenic removal: full-scale system modeling. K. Taleb, J.S. Markovski, **K.D. Hristovski**, V. Rajaković-Ognjanović, A. Marinković

**2:00 72.** Engineering superparamagnetic metal oxide nanocrystals for chromium and arsenic sorption, and separation. **C. Kim**, S. Lee, W. Li, J. Fortner

**2:25 73.** Evidence of facilitated surface diffusion of arsenate in nano-metal (hydr)oxide hybrid ion exchange media. S. Dale, **K.D. Hristovski** 

2:50 Intermission.

**3:05 74.** Using hybrid ion exchanger with nanoscale zirconium oxide particles (HIX-NanoZr) to mitigate fluoride crisis in Africa and Asia. A.K. Sengupta, **J. Li**, M. German

**3:30 75.** Removal of fluoride using a nanostructured diatom-ZrO<sub>2</sub> composite synthesized from algal biomass. **M. Thakkar**, S. Mitra

**3:55 76.** Nanocoated fiber optics for photocatalytic drinking water treatment. H. Stancl, J. Robinson, P.K. Westerhoff, **K.D. Hristovski** 

4:20 Panel Discussion.

4:45 Concluding Remarks.

Section D

Boston Park Plaza Hotel and Towers Beacon Hill Room

## Advances in Drinking Water Disinfection: Byproducts Occurrence, Formation, Treatment, Health Effects, Epidemiology and Regulation

E. Sahle-Demessie, G. Sorial, Organizers, Presiding

**1:30 77.** Electrochemical drinking water disinfection – are all problems solved? **M.E. Bergmann**, W. Schmidt, A. Grunert, T. Grummt

**1:55 78.** Comparative study in treating disinfection by products (DBPs) in biotrickling filters (BTFs) under different environmental conditions. **B. Mezgebe**, K. Palanisamy, G. Sorial, E. Sahle-Demessie

**2:20 79.** Optimizing coagulation for treatment of high TOC surface water and minimizing disinfection byproduct formation potential. A. Waldron, **A. Manikonda**, C. Bellona

**2:45 80.** Modeling THM removals from a horizontal in-line diffused aeration system in pressurized water distribution pipes. **M.R. Collins** 

**3:10** Intermission.

3:25 81. Saving our bees: Removing neonicotinoids from waters using oxidizing radicals. B. Daws, J.J. Kiddle, S.P. Mezyk

**3:50 82.** Exploratory statistical analysis of drinking water treatments and water characteristics in Scotland: Best predictors of trihalomethanes (THMs) formation. **M.A. Valdivia-Garcia**, D. Werner, P. Weir

**4:15 83.** Prioritizing environmental health and household demographic factors impacting biosand filter maintenance and diarrheal occurrences in Brazil. **L.E. Voth-Gaeddert**, D. Oerther

Section E

Boston Park Plaza Hotel and Towers Stuart Room

#### Heterogeneous Catalysis for Environmental Applications

#### **Photocatalysis for Energy and Environment**

Cosponsored by CATL A. Savara, *Organizer* A. Orlov, S. Zhao, *Organizers, Presiding* 

1:30 Introductory Remarks.

1:35 84. Effect of crystal defects on visible-light photoreactivity. C. Huang

**2:00 85.** Directed assembly of cuprous oxide nanocluster catalyst for CO<sub>2</sub> reduction coupled to heterobinuclear light absorber in mesoporous silica. **W. Kim**, H.M. Frei

**2:20 86.** Development of a continuous flow photoreactor for the destruction of water soluble ethers using  $TiO_2$  and visible/near UV light light. **R.D. Barreto** 

**2:40 87.** Exploring tunability of catalysts for light induced reactions: Subnanometer particles and their interactions with support, reactants, and light. **A. Orlov**, Q. Wu, S. Zhao, Y. Li

**3:05 88.** Understanding the influence of catalyst structure on activity and stability in the oxygen evolution reaction (OER) using crystalline oxides as a platform. **G. Gardner**, J. Al-Sharab, Y.B. Go, M. Greenblatt, G.C. Dismukes

**3:25** Intermission.

**3:40 89.** Electrospun nanofibers of TiO<sub>2</sub>-PEDOT for heterogeneous photodegradation of pharmaceutical pollutants. **J. Liu**, D.L. McCarthy, M.J. Cowen, K.H. Skorenko, S.M. Boyer, L. Tong, W.E. Bernier, W.E. Jones

**4:00 90.** In-situ ATR-FTIR observation of selenate reduction by photocatalytic nano-metal oxides. **A.W. Lounsbury**, J.B. Zimmerman

**4:20 91.** Supporting of  $TiO_2$  with metallic nanoparticles to improve the decomposition of paracetamol by photocatalysis: The effect of ultrasound. **N.H. Ince** 

**4:40 92.** Efficient photocatalytic removal of aqueous  $NH_4^+$ - $NH_3$  by palladium-modified nitrogen-doped titanium oxide nanoparticles under visible light illumination, even in weak alkaline solutions. D. Sun, W. Sun, W. Yang, **Q. Li**, J.K. Shang

**5:00 93.** Novel microchannel photocatalytic reactor for environmental applications. N. Padoin, J. Ângelo, A. Mendes, L. Andrade, R.F. Moreira, **C. Soares** 

**5:20 94.** Simultaneous photocatalytic elimination of gaseous NO and  $SO_2$  in a BiOI/Al<sub>2</sub>O<sub>3</sub> wet scrubber system. **C. He**, L. Hu, W. Pan, Y. Hou

Boston Park Plaza Hotel and Towers Cambridge Room

## Hydrothermal Carbonization: Possibilities and Limits for Feedstocks, Processes and Applications

#### Municipal and Agricultural Applications and Economics of HTC

Cosponsored by AGRO Financially supported by AEESP (Association of Environmental Engineering and Science Professors) C. Coronella, K. Ro, *Organizers* S. Chang, J. A. Libra, *Organizers, Presiding* 

**1:30 95.** Hydrothermal carbonization (HTC) of sewage sludge: Challenges and synergies for future waste water treatment. **B.** Wirth, L. Herklotz, U. Lüder

**1:55 96.** Hydrothermal carbonization and wet oxidation of sewage sludge. **B. Weiner**, G. Riedel, R. Koehler, J. Poerschmann, F. Kopinke

2:20 97. Food waste as feedstock for hydrothermal carbonization and its products. S. Bae, S. Lee, S. Lee, Y. Hwang, S. Park

**2:45 98.** Understanding the environmental impact of the hydrothermal carbonization of food wastes for energy generation using life cycle assessment. **N.D. Berge**, L. Li, J. Flora, K. Ro

3:10 Intermission.

3:35 99. Leachate water quality from soils amended with swine manure based biochars. K. Ro, J.A. Libra, S. Bae

Section F

**4:00 100.** Hydrothermal carbonization (HTC) of cow manure: Carbon and nitrogen distribution in HTC products. M. Reza, M. Lu, T. Song, K. Conrad, S. Hiibel, H. Lin, **C. Coronella** 

**4:25 101.** Economics of decentralized hydrothermal carbonization of biogas digestate: A casy study from Germany. **K. Suwelack**, D. Wüst, A. Kruse

Section G

Boston Park Plaza Hotel and Towers Stuart Room

#### Next Generation Nanomaterials: Advances and Perspectives for Biomedicine, Energy, and Environmental Protection

## **Energy/General**

Cosponsored by ENFL J. Mi, J. Song, *Organizers, Presiding* 

1:30 279. Giving new life to materials for energy, the environment, and medicine. A.M. Belcher

2:00 280. Probing structure and dynamics of nanomaterials for energy applications. S. Corr

**2:30 281.** Microbial interactions of carbon nanotube-titania-platinum nanohybrid electrocatalyst. **N.B. Saleh**, N. Aich, D. Das, M. Kirisits, T. Sabo-Attwood

2:50 282. Plasmonic hot electron driven reactions: New insights gained from plasmon-enhanced spectroscopic studies. H. Wang

**3:10** Intermission.

3:25 283. Optimization strategies for nanostructured cobalt-based water oxidation catalysts. G.R. Patzke

**3:55 284.** Environmentally benign supercapacitor based on "green"chemistry and easily disposable material. **B. Dyatkin**, V. Presser, M. Heon, M.R. Lukatskaya, M. Beidaghi, Y. Gogotsi

4:15 285. Production of synthetic natural gas from catalytic syngas conversion using biomass waste. K. Kawamoto

**4:35 286.** Nanocomposite of silver nanoparticle loaded on graphene: Synthesis and spectroscopic behaviors. **T. Saleh**, A.A. Al-Saadi

4:55 287. EDTA functionalized superparamagnetic nanoparticles for heavy metal remediation. Y. Huang, A.A. Keller

Carbon Management: Recent Advances in Carbon Capture, Conversion, Utilization and Storage Prospects on CO2 Capture and Conversion Sponsored by ENFL, Cosponsored by ENVR<sup>‡</sup>

Latest Trends in Environmental Fate and Exposure Assessments: Filling in Knowledge and Data Gaps Across the Commodity Groups

Sponsored by AGRO, Cosponsored by ENVR

**Chemical Processes Involving Atmospherically Relevant Trace Gases, Aerosols & Clouds** Sponsored by PHYS, Cosponsored by ENVR

**Pesticide Dose: Effects on the Environment and Target and Non-Target Organisms** Sponsored by AGRO, Cosponsored by ENVR

#### Urban Agriculture: Turf, Ornamentals, Household Products, and Water-Re-Use Sponsored by AGRO, Cosponsored by ENVR

**Biofuels for Powering the World: Discovery to Application Pyrolysis** Sponsored by ENFL, Cosponsored by CATL and ENVR

## **Current Topics in Seed Treatment**

Sponsored by AGRO, Cosponsored by ANYL and ENVR

## MONDAY MORNING

Section A

Boston Park Plaza Hotel and Towers Statler Room

New Challenges in Water Quality, Treatment, Reuse and Sustainability: Chemistry and Application of Advanced Oxidation Processes for Removal of Contaminants of Concern and Transformation Products

## **Disinfection/Natural Organic Matter**

Cosponsored by CEI R. de Fatima Peralta Muniz Moriera, D. D. Dionysiou, D. Minakata, K. E. O'Shea, *Organizers* G. Li Puma, *Organizer, Presiding* J. Marugan, *Presiding* 

**8:00 102.** Photocatalytic disinfection and removal of emerging pollutants from real effluents of biological wastewater treatment. **J. Marugan**, K. Philippe, R. Timmers, R. van Grieken

**8:40 103.** Influence of variable amino acids on the photolysis and photochemical degradation of microcystins (cyanotoxins) in terms of reaction kinetics and mechanism. X. He, A.A. de la Cruz, **D. Dionysiou** 

**9:05 104.** Hybrid microfiltration-UV process for removal and photocatalytic inactivation of viruses. **B. Guo**, B. Starr, I. Xagoraraki, **V. Tarabara** 

**9:30** Intermission.

**9:45 105.** Characteristics and fate of natural organic matter during UV oxidation processes. **Y. Ahn**, D. Lee, M. Kwon, H. Kye, I. Choi, S. Nam, J. Kang

**10:10 106.** Advanced oxidation process effects on natural organic matter profiles in Nova Scotia drinking water. **S. MacIsaac**, G. Gagnon, L. Hu

Section B

Boston Park Plaza Hotel and Towers Plaza Ballroom

#### ACS Award for Creative Advances in Environmental Science and Technology: Symposium in Honor of Dr. Paul B Shepson

A. M. Grannas, K. A. Pratt, Organizers, Presiding

**8:00** Introductory Remarks.

8:10 107. Influence of sea spray aerosols on cloud and climate. K.A. Prather

**8:35 108.** Composition and chemistry of urban grime: a field and laboratory study. **D. Donaldson**, A. Baergen, S.A. Styler, H. Herrmann

**9:00 109.** Mercury chemical transformation and speciation in atmosphere. **P.A. Ariya**, A. Ghoshdastidar, M. Subir, D. Deeds, U. Kurien, A. Feinberg

9:25 110. Air-ice chemical interactions from the molecular to the global scale: Honoring Paul Shepson. V.F. McNeill

**9:50** Intermission.

10:15 111. Modeling of air quality from materials used in passenger vehicle interiors. G.D. Edwards, S. Canaday, P. Stratton

**10:40 112.** Connecting secondary organic aerosol in the field with the laboratory: Microspectroscopic analysis of aerosol particles from the SOAS field campaign and comparisons with proxies. **A.P. Ault**, A. Bondy, R.L. Craig, J.D. Rindelaub, M. Nhliziyo, S.B. Bertman, K.A. Pratt, P.B. Shepson

11:05 113. Air chemistry in a central Amazonian forest during 2014. J.D. Fuentes

11:30 114. Nutrient carry-over in fermented beverages. T. Starn, M. Van Vliet, L. McGoldrick

Boston Park Plaza Hotel and Towers Berkeley/Clarendon Room

#### Sensing of Environmentally Relevant Contaminants

Cosponsored by AGRO Financially supported by AEESP (Association of Environmental Engineering and Science Professors) B. P. Chaplin, D. Jassby, *Organizers, Presiding* 

8:00 Introductory Remarks.

**8:20 115.** Estimation of occupational risks from exposures to polycyclic aromatic hydrocarbons and trace metals in soils of automobile repair shop environs in Uyo, Nigeria. **N.O. Offiong**, F.M. Ibanga, J. Edet, **E. Inam** 

**8:45 116.** Real time emissions monitoring of diesel engines aboard marine vessels. **B. Sarnacki**, R. Kimball, T. Wallace, T. Lokocz, G. Harakas

**9:10 117.** Filter-based measurements of airborne particulate matter and metals in indoor environments using OPSIS SM200 system and ICP-MS. **J. Niu**, P.E. Rasmussen

9:35 118. Advances in the visualization of urban air quality data and environmental monitoring using TIBCO Spotfire<sup>®</sup> and the Elm sensor network. K.A. Kuhr

**10:00** Intermission.

**10:10 119.** Electrochemical detection of ciprofloxacin with a boron-doped diamond electrode modified with nafion-coated multiwalled carbon nanotubes. B.P. Chaplin, **P. Gayen** 

**10:35 120.** Developing an electrochemical aptamer-based sensor to detect endocrine disrupting compounds in natural waters. **S. Akki**, S.K. Silverman, R.M. Crooks, C.J. Werth

**11:00 121.** Voltammetric analysis of naturally occurring reductants in prairie pothole wetland sediment pore water. **B. McAdams**, Y. Chin, W. Arnold

11:25 122. 2-Aminobenzothiazole imines as sensetive colorimetric anion sensors. Y.M. Hijji, H. Aleasa

Section C

Boston Park Plaza Hotel and Towers Beacon Hill Room

#### Advanced Materials and Technologies for Desalination and Wastewater Reuse

Financially supported by AEESP (Association of Environmental Engineering and Science Professors) J. Kim, *Organizer* Q. Li, *Organizer, Presiding* 

**8:00 123.** Efficacy of hydrophilic, polyethylene glycol-grafted reverse osmosis membranes in the presence of mineral scalants and natural organic matter. J. Ray, W. Wong, **Y. Jun** 

**8:20 124.** Biofouling mitigation in forward osmosis by functionalization of thin-film composite polyamide membranes with graphene oxide nanosheets. **F. Perreault**, H. Jaramillo, M. Xie, M. Elimelech

8:40 125. UVC-radioluminescent materials for membrane biofouling control using X-rays. T. Johnson, E.L. Cates, F. Li

**9:00 126.** Block copolymer functionalized thin-film composite membranes for antifouling and antimicrobial properties using atomtransfer radical polymerization. **J. Lee**, G. Ye, F. Perreault, M. Elimelech

9:20 127. Withdrawn

**9:40 128.** Organic fouling of molecular layer-by-layer polyamide with different surface functionalities: A direct comparison of QCM and bench-scale membrane fouling. **M.E. Tousley**, D. Shaffer, C.O. Osuji, J. Lee, M. Elimelech

**10:00** Intermission.

10:15 129. Novel photothermal nanocomposite membrane using electrospun fibers for direct solar membrane distillation. J. Wu, K.R. Zodrow, Q. Li

10:35 130. In-situ and self-healing of water filtration membranes for wastewater reuse appications. B. Getchew, S. Kim, J. Kim

**10:55 131.** Mixed charge mosaic membranes prepared by layer-by-layer assembly for ion selective separations. S. Rajesh, M. Summe, **W.A. Phillip** 

11:15 132. Effective organic draw solutions for engineered osmosis processes. M. Islam, M. Lemieux, M. Rahaman

**11:35 133.** Carbon nanotube enhanced membrane distillation: A new generation membranes for sea or brackish water desalination. **S. Ragunath**, S. Roy, S. Mitra

Boston Park Plaza Hotel and Towers Tremont Room

## Heterogeneous Catalysis for Environmental Applications

#### Heterogeneous Catalysis for Energy and Environment

Cosponsored by CATL S. Zhao, *Organizer* A. Orlov, A. Savara, *Organizers, Presiding* 

8:00 Introductory Remarks.

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Section E

**8:05 134.** Hydrogen evolution on nickel phosphide electrocatalysts: A comparative study of efficiency and corrosion tolerance. **A.B. Laursen**, B. Liu, K.R. Patraju, M.J. Whitaker, M. Retuerto, T. Sakar, N. Yao, K.V. Ramanujachary, M.K. Greenblatt, G.C. Dismukes

**8:30 135.** First principles investigation of the hydrogen evolution reaction on nickel phosphides  $Ni_2P$  and  $Ni_5P_4$ . R. Wexler, J.M. Martirez, **A.M. Rappe** 

**8:50 136.** Heterogeneous catalysis for sustainable energy: Atomically dispersed gold clusters for hydrogen production. **N. Yi**, M. Stephanopoulos

**9:10 137.** Aromatic–hydroxyl interaction of a lignin model-compound on SBA-15, present at pyrolysis temperatures. **A. Savara**, M. Kandziolka, M. Kidder, L.W. Gill, Z. Wu

**9:35** Intermission.

**9:50 138.** Study of the mechanism for the formation of formic and levulinic acids from HMF. **E. Weitz**, A. Das, T. Drake, P.C. Stair

**10:10 139.** Understanding and enhancing the selectivity of reductive lignin disassembly over doped porous metal oxides. **C.M. Bernt**, J.A. Barrett, M.A. Chui, G. Bottari, H. Maneesuwan, K. Barta, S.L. Scott, P.C. Ford

**10:30 140.** Exploring the nature of active sites in Cu-exchanged SSZ-13 under realistic conditions. **F. Goeltl**, A. Love, P. Sautet, I. Hermans

**10:50 141.** Study of  $NH_3$ -SCR over Cu-zeolites: From straight channel zeolites to cage-type zeolites with *D6R* unit. **R. Xu**, B. Chen, Y. He, R. Zhang

11:10 142. Drawing bio-inspiration to design environmental catalysts. J. Liu, C.J. Werth, T.J. Strathmann

Boston Park Plaza Hotel and Towers Cambridge Room

## Green Chemistry and the Environment

Cosponsored by YCC S. O. Obare, *Organizer* A. M. Balu, R. Luque, *Organizers, Presiding* 

8:00 Introductory Remarks.

8:05 143. Organic reactions in water: A green avenue to added-value chemicals. C. Len

8:45 144. Ionic liquids as solvents for metal extraction: Engineering consideration. C. Janssen, M.N. Kobrak, M. Aguilar Martinez

9:05 145. Using the waste materials to generate nanoparticals and electrospun the nanofibers. Z. Katircioglu, S. Dursun, M. Yavuz

9:25 146. Withdrawn

9:45 Intermission.

**10:00 147.** Nitrilotriacetic acid functionalized *Adansonia digitata* bio-adsorbent: A potential means of waste water treatment in developing nations. **A. Adewuyi** 

**10:20 148.** Removal of acid red 114 and basic blue 3 from aqueous solutions by activated carbon obtained from waste tire. **G. Camargo**, P. Jimenez , J. Granados , J.C. Moreno

Section F

10:40 149. Immobilization of *Moringa* protein extracts on solid adsorbents for use in water disinfection. J. Barajas, S.A. Pagsuyoin

**11:00 150.** Lead removal from aqueous solution using pine wood biochar modified with chitosan. **N.W. Bombuwala Dewage**, T.E. Mlsna

ACS Scholars: Rising Stars in Academe Sponsored by PRES, Cosponsored by AGRO, CARB, CMA<sup>‡</sup>, COLL, ENFL, ENVR, PROF, SCHB and YCC

Carbon Management: Recent Advances in Carbon Capture, Conversion, Utilization and Storage CO2 Conversion, Utilization and Storage Sponsored by ENFL, Cosponsored by ENVR

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#### MONDAY AFTERNOON

Boston Park Plaza Hotel and Towers Statler Room

New Challenges in Water Quality, Treatment, Reuse and Sustainability: Chemistry and Application of Advanced Oxidation Processes for Removal of Contaminants of Concern and Transformation Products

#### **Electrochemical/Inorganics**

Cosponsored by CEI R. de Fatima Peralta Muniz Moriera, D. D. Dionysiou, D. Minakata, K. E. O'Shea, *Organizers* G. Li Puma, *Organizer, Presiding* X. Quan, *Presiding* 

**1:30 151.** Removal of ionizable organic contaminants from water by electro-assistant adsorption in a carbon-fiber filter. **X. Quan**, X. Li, S. Wang, M. Liu, S. Chen

**2:10 152.** Degradation of phenol by the Electro-Peroxono process. D. Pino-Sandoval, R. Núñez-Salas, **J. Rodriguez-Acosta**, N. Marriaga-Cabrales

2:35 153. Withdrawn

**3:00** Intermission.

3:15 154. Bromate formation from bromide oxidation by the UV/peroxymonosulfate process. D. Zhang, L. Ling, J. Fang, C. Shang

**3:40 155.** Removal of nitric oxide by combined aqueous persulfate and ferrous-edta systems: Effects of persulfate and edta concentrations, temperature, and pH. **Y.G. Adewuyi** 

**4:05 156.** Treatment of landfill leachate by Fenton-based process in batch reactor with ferric sludge reuse. **N. Dulova**, E. Kattel, M. Trapido

4:30 157. Treatment of fecal sludge in a prototype supercritical water oxidation reactor. M.A. Deshusses, W. Jacoby

4:55 158. Withdrawn

Section B

Boston Park Plaza Hotel and Towers Plaza Ballroom

## ACS Award for Creative Advances in Environmental Science and Technology: Symposium in Honor of Dr. Paul B Shepson

A. M. Grannas, K. A. Pratt, Organizers, Presiding

1:30 159. Measurements of atmospheric halogens using chemical ionization mass spectrometry. G. Huey

**1:55 160.** Probing the connections between aerosol particles, clouds, and climate in the high Arctic summer. **J.P. Abbatt**, H. Bozem, J. Burkart, A. Herber, P. Hoor, F. Koellner, R. Leaitch, J. Schneider, M. Willis

**2:20 161.** Evidence for snow photochemistry and surface emissions from a polluted, midlatitude snowpack in the Uinta Basin, Utah. **C. Thompson**, J. Hueber, D. Helmig, J. de Gouw, A. Koss, J. Roberts, P. Veres

**2:45 162.** Natural organic matter in cryosphere-atmosphere interactions: Chemistry and characterization. **A.M. Grannas**, A. Fede, V. Catanzano

**3:10** Intermission.

3:35 163. Influence of Arctic leads on sea spray production and snow chemistry. K.A. Pratt, N. May

4:00 164. ODE to Paul Shepson. J.W. Bottenheim, S. Netcheva, R. Staebler, A. Steffen

**4:25 165.** Award Address (ACS Award for Creative Advances in Environmental Science and Technology). Heterogeneous photochemical processes in a changing Arctic. **P.B. Shepson** 

Section C

Boston Park Plaza Hotel and Towers Berkeley/Clarendon Room

## Sensing of Environmentally Relevant Contaminants

Cosponsored by AGRO Financially supported by AEESP (Association of Environmental Engineering and Science Professors) B. P. Chaplin, D. Jassby, *Organizers, Presiding* 

1:30 Introductory Remarks.

1:40 166. Direct and rapid detection of adenovirus in environmental waste waters by SWCNTs modified biosensor system. N. Yildirim, J. Lee, H. Cho, S. Somu, A. Busnaina, A. Gu

2:05 167. Groundwater monitoring system for microbial activity. S.R. Burge, K.D. Hristovski, R.G. Burge

**2:30 168.** Comparison between various observing systems for monitoring harmful algal blooms and preliminary concept of innovative sensing network for in situ monitoring of biological toxins. **H. Zamankhan Malayeri**, S. Cho, J. Park, S. Jung, H. Choi

**2:55 169.** Portable detection of Ochratoxin A based on a structure-switching aptamer using a personal glucose meter (PGM). **C. Gu**, H. Shi

**3:20** Intermission.

**3:40 170.** Study on integrated phytoremediation measures for enhancing energy crops' performance in treating heavy metal-polluted soil. **T. Yeh** 

**4:05 171.** Comparing the partition and sorption behavior to agricultural soils of bisphenol A (BPA) and BPA alternatives: BPS and BPAF. **Y. Choi**, L.S. Lee

4:30 172. Withdrawn

**4:55 173.** Direct-reading exposure assessment through wireless chemical sensor and position tracking. **K. Brown**, K.R. Mead, P.B. Shaw, R.J. Kovein, R. Voorhees, A.R. Brandes

Section D

Boston Park Plaza Hotel and Towers Beacon Hill Room

#### Advanced Materials and Technologies for Desalination and Wastewater Reuse

Financially supported by AEESP (Association of Environmental Engineering and Science Professors) Q. Li, *Organizer* J. Kim, *Organizer*, *Presiding* 

1:30 174. Binder-free carbon nanotube electrode for electrochemical removal of chromium. C. Na, H. Wang

**1:50 175.** Selective electrochemical sorption of anions through heterogeneous redox processes for water remediation and waste control. **X. Su**, T. Hatton

**2:10 176.** Continuous-flow device for photocatalytic degradation and full mineralization of priority pollutants in water. **G. Rytwo**, T. Klein, G. Daskal

2:30 177. Coupling capacitive deionization with microbial fuel cells for water purification. C. Hou, C. Tsai, C. Ma

**2:50 178.** Exploiting the benefits of ionic liquids for the re-use of industrial and mining wastewater. **C. Janssen**, M.N. Kobrak, M. Aguilar Martinez

**3:10 179.** Recyclable epichlorohydrin free magnetic chitosan hydrogel film in removal of Cr(VI) from water. **M. Kassaee**, M. Mirabedini

**3:30** Intermission.

**3:45 180.** Removal of hexavalent chromium from electroplating wastewater using ammoniated wheat straw. **X. Yao**, S. Deng, S. Hong, Z. Du

**4:05 181.** Use of steel slag coated with sodium hydroxide for treatment of highly concentrated wastewater. **T. Park**, V. Ampunan, E. Chung

4:25 182. Enhanced bromate removal using polypyrrole-grafted activated carbon. S. Hong, X. Yao, S. Deng

**4:45 183.** Predictive modeling of bi-solute adsorption by polymeric resin based on adsorbed solution theories (ASTs). **H.J. Zhang**, S. Wang

5:05 184. Adsorption performance of hydroxyapatite powder in the removal of dyes in wastewater. A.A. Okoya

Boston Park Plaza Hotel and Towers Tremont Room

#### Heterogeneous Catalysis for Environmental Applications

#### Heterogeneous Catalysis for Water and Air Treatment

Cosponsored by CATL A. Savara, *Organizer* A. Orlov, S. Zhao, *Organizers, Presiding* 

1:30 Introductory Remarks.

1:35 185. Development of a fast measurement system for gaseous total reduced nitrogen species. Y. Liu, J. Roberts

**1:55 186.**  $SO_x$  tolerant CO oxidation catalysts and the effect of  $TiO_2$  and  $ZrO_2$  supports on catalytic activity. **K. Taira**, K. Nakao, K. Suzuki

**2:15 187.** Experimental and computational study of CO oxidation promoted by Nb in manganese oxide octahedral molecular sieve. **H.C. Genuino**, D. Valencia, S.L. Suib

2:35 188. Crystal structure- and morphology-dependent of MnO2 for catalytic decomposition of ozone. J. Jia, P. Zhang

**2:55** Intermission.

**3:10 189.** Tunable soft templated mesoporous manganese oxide as an efficient heterogeneous catalyst for solvent free aerobic oxidation of hydrocarbons. **S. Biswas**, S.L. Suib

**3:30 190.** Bimetallic palladium-indium catalyst technology for nitrate treatment in waste ion exchange (IX) brine to enable brine reuse. **A. Bergquist**, J. Choe, T.J. Strathmann, C.J. Werth

**3:50 191.** Shape- and size-dependent activity of Pd/Cu<sub>2</sub>O nanoparticles for sustainable light-activated hydrodehalogenation of polychlorinated biphenyls (PCBs). **E. Zahran**, W.A. Ranson, M.R. Knecht, L.G. Bachas

Section E

Boston Park Plaza Hotel and Towers Cambridge Room

#### Green Chemistry and the Environment

Cosponsored by YCC A. M. Balu, *Organizer* R. Luque, S. O. Obare, *Organizers, Presiding* 

1:30 Introductory Remarks.

**1:35 192.** On the use of the United States Environmental Protection Agency's toxics release inventory to assess implementation and impact of green chemistry practices by the pharmaceutical manufacturing sector. **S. DeVito** 

2:35 193. Sustainable chemistry: Hybrid photocatalysts for solar energy conversion. T. Jin, B. Stewart, S. Pantovich, G. Li

**2:55 194.** Designing polymer materials for degradation: The use of molecular simulations for green chemistry applications. **M.A. Pasquinelli** 

**3:15** Intermission.

**3:30 195.** Using the principles of green chemistry in biomass valorization. **F.M. Kerton**, C. Bottaro, K. Hawboldt, Y. Liu, G. Margoutidis, J. Murphy, V.H. Parsons

3:50 196. Catalysis using earth abundant transition metals. C.M. Kozak

**4:10 197.** Cellulose valorisation by catalytic hydrolytic hydrogenation towards sugar alcohols. P.A. Lazaridis, A. Panteli, S.A. Karakoulia, S.M. Coman, V. Parvulescu, **K. Triantafyllidis** 

**4:30 198.** Life cycle assessment of lignin-derived chemicals from catalytic depolymerization of candlenut shells. **M. Montazeri**, E.S. Beach, M. Eckelman

#### **ACS Scholars: Rising Stars in Industry**

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Undergraduate Research Posters Environmental Chemistry Sponsored by CHED, Cosponsored by ENVR and SOCED Section F

#### MONDAY EVENING

Boston Convention & Exhibition Center Hall C

#### Sci-Mix

D. D. Dionysiou, Organizer

8:00 - 10:00

**199**, 200, 373, 391, 412-413, 416-417, 420-421, 427, 432, 434, 443- 445, 448, 451, 453-455, 458, 463, 468-469, 472, 475, 478-480, 482, 485-489, 491-492, 513, 517, 527, 531, 537, 540, 542, 552, 556-557, 559-561. See subsequent listings.

#### **TUESDAY MORNING**

Section A

Boston Park Plaza Hotel and Towers Statler Room

New Challenges in Water Quality, Treatment, Reuse and Sustainability: Chemistry and Application of Advanced Oxidation Processes for Removal of Contaminants of Concern and Transformation Products

#### Pharmaceuticals and Contaminants of Emerging Concern

Cosponsored by CEI R. de Fatima Peralta Muniz Moriera, D. D. Dionysiou, D. Minakata, K. E. O'Shea, *Organizers* G. Li Puma, *Organizer, Presiding* D. Avisar, *Presiding* 

8:00 201. Withdrawn

**8:40 202.** On the removal of ketoprofen drug in persulfate aqueous systems: Thermal vs. chemical activation processes. **A. Ghauch**, N. Awad, S. Naim

**9:05 203.** Time-dependent by-product formation from ibuprofen degradation by the UV/chlorine process. **Y. Xiang, J. Fang**, J. Sun, C. Shang

9:30 204. Chlorine atom reactions with antibiotics in wastewater: Kinetics and mechanisms. C.A. Rice, S.P. Mezyk

**9:55** Intermission.

**10:10 205.** Sulfate-radical based remediation of pharmaceutical-contaminated waters: Evaluation of chemical association constants. **T. Reutershan**, S.P. Mezyk

10:35 206. Oxidation of amino acids by peroxymonosulfate. M. Ruiz, A. Chesney, C. Booth , C. Lietz, L. Li, J.A. Pedersen

11:00 207. Photocatalytic degradation of perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS). P. Zhang

**11:25 208.** Plasma-based water treatment: An effective method to degrade perfluorooctanoic acid and other emerging contaminants. **S. Mededovic**, F. Dai, G. Stratton, C. Bellona, T.M. Holsen, E. Dickenson

Section A

Boston Park Plaza Hotel and Towers Plaza Ballroom

#### Microorganism-Membrane Interactions: Towards Understanding Pathogen Removal and Membrane Biofouling

Cosponsored by AGRO Financially supported by AEESP (Association of Environmental Engineering and Science Professors) I. Xagoraraki, *Organizer* T. H. Nguyen, V. Tarabara, *Presiding Organizers* 

**8:00 209.** Probing virus capture during virus filtration with confocal microscopy: Effects of membrane morphology and solution conditions. **A.L. Zydney**, S.K. Dishari, M. Micklin, K. Sung, A. Venkiteshwaran, J. Earley

**8:30 210.** Selective cell interactions and antibacterial behavior of functional fibrous membranes. **S. Xu**, B.S. Hsiao, C.C. Han, B.T. Chu

8:50 211. Random sequential adsorption of human adenovirus on membrane surface. R. Lu, Q. Li, T.H. Nguyen

**9:10 212.** Human adenovirus removal by hollow fiber membranes: Effect of membrane fouling by suspended and dissolved matter. Z. Yin, **V. Tarabara**, I. Xagoraraki

9:30 213. Withdrawn

9:50 Intermission.

**10:00 214.** Initiation and succession of biofouling communities on hydrophobic and hydrophilic membrane surfaces in a submerged membrane bioreactor. **G. Matar**, G. Gonzalez-Gil, S. Bagchi, S. Nunes, J. Vrouwenvelder, P. Saikaly

**10:20 215.** Pyrosequencing of 16S rRNA gene reveals large differences in the sessile bacterial community in five full-scale membrane bioreactors. **G. Matar**, S. Bagchi, K. Zhang, D. Oerther, P. Saikaly

**10:40 216.** Microbial dynamics and membrane biofouling in suspended and attached-growth anaerobic membrane bioreactors treating low-strength wastewater. **M. Harb**, Y. Xiong, G. Amy, P. Hong

**11:00 217.** Interactions between GAC sizes, particle sizes and biofouling in anaerobic fluidized membrane bioreactor. **J. Kim**, M. Aslam, D. Kwon, R. Ahmad, J. Bae, P. McCarty

**11:20 218.** Quantification of extracellular polymeric substance (EPS) surrogate adsorption on polyamide water filtration membranes. **A. Vozar**, B.J. Marinas, J. Moore, A. Yang

**11:40 219.** Using luminescence to determine the impact of assimilable organic carbon on biological fouling of reverse osmosis membranes in seawater desalination. **L.A. Weinrich** 

Section B

Boston Park Plaza Hotel and Towers Berkeley/Clarendon Room

**Biological Inspiration for Environmental Sustainability: Bioinspired Approaches for Energy Conversion, Storage and Materials** 

#### Electron and Energy Transfer: From Molecular to Device Engineering for Minimizing Environmental Impacts

Cosponsored by CEI, ENFL, ORGN and PHYS K. Rajeshwar, V. I. Vullev, *Organizers, Presiding* 

8:00 Introductory Remarks.

8:05 220. DNA-based molecular wires and devices for photoinduced charge separation. F.D. Lewis

**8:45 221.** Charge and exciton transport: Can conjugated chains be "molecular wires". **J.R. Miller**, A.R. Cook, M. Bird, T. Mani, X. Xi, G. Rumbles, O. Reid, R. Holroyd

9:25 222. Light energy conversion aspects of organic metal halide perovskites. P.V. Kamat, Y. Chen, J. Manser, J. Christians

10:05 Intermission.

10:20 223. Inorganic spin chemistry in sustainable chemistry processes. M.D. Forbes

**11:00 224.** Developing new electron transfer proteins using a de novo protein design approach. **V.L. Pecoraro**, A. Tebo, J.S. Plegaria

11:40 225. Stark spectroscopy at the dye-sensitized TiO<sub>2</sub> interface. C. Ward, R. O'Donnell, G.J. Meyer

Boston Park Plaza Hotel and Towers Beacon Hill Room

#### **Reclamation, Remediation, Restoration: Novel Approaches to Environmental Challenges**

Cosponsored by AGRO L. S. Lee, M. Mashtare, L. Royer, *Organizers, Presiding* 

8:00 Introductory Remarks.

**8:20 226.** Radionuclide and heavy metal remediation via biological calcium carbonate precipitation. **E. Lauchnor**, L. Schultz, T.D. dos Santos, R. Gerlach

**8:40 227.** Environmental fate of <sup>14</sup>C- ring labeled 2,4-dinitroanisole (DNAN) in anaerobic saturated soils. **C.I. Olivares**, L. Abrell, R. Sierra-Alvarez, J. Chorover, J. Field

9:00 228. Reductive transformation of explosives in soil with zero-valent iron-bearing biochar. S. Oh, Y. Seo

**9:20 229.** Effect of nanosized zero-valent iron on the spectroscopic characteristics of a terrestrial humic acid. **C. Kim**, J. Ahn, Y. Chin, I. Hwang

**9:40 230.** Metal removal mechanisms using passive treatments in mining-impacted water. **S.R. Al-Abed**, P. Pinto, C.D. Holder, S.M. Lomnicki, J. McKernan

10:00 Intermission.

Section C

Section D

**10:10 231.** Zerovalent metals and vitamin B12 potential for remediation of persistent perfluoroalkyl acids in groundwater. **L.S. Lee**, S. Park, J.E. Zenobio

**10:35 232.** Spectroscopic investigation of interfacial interaction of organic compounds and manganese oxides. **M. Shaikh**, S. Taujale, H.J. Zhang, K. Artyushkova, J.M. Cerrato

10:55 233. Withdrawn

11:15 234. Characterization of valuable materials of the acid waste from a hydrometallurgical process. M.E. Gutierrez Ruiz, K. Martin del Campo, S. Castillo Blum, V. Luna Pabello

11:35 235. NMR evaluation of cyclodextrin-perfluorinated surfactant host-guest interactions. M.J. Weiss, K.E. O'Shea

11:55 Concluding Remarks.

Section F

Boston Park Plaza Hotel and Towers Cambridge Room

## Green Chemistry and the Environment

Cosponsored by YCC R. Luque, *Organizer* A. M. Balu, S. O. Obare, *Organizers, Presiding* 

8:00 Introductory Remarks.

**8:05 244.** Investigation of sonochemistry for biomass conversion: That *sounds* like a good idea. **G. Chatel**, D. Rinsant, K. De Oliveira Vigier, F. Jérôme

**8:30 245.** Carbon dioxide solvent applications for biodiesel production with a heterogeneous catalyst. **L. Soh**, C. Chen, J.B. Zimmerman

**8:55 246.** Insights on the solubility of CO2 in 1-Ethyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide from the microscopic point of view. **L.T. Costa**, D. Van Der Spoel, T. Lourenço

9:20 247. Trends in environmental releases of toxic chemicals from the automotive sector. C. Keenan

9:45 Intermission.

**9:55 248.** Does pollution prevention work? Evidence from twenty years of TRI reporting data. **M. Ranson**, B. Cox, C. Keenan, D. Teitelbaum

**10:20 249.** Trapping of methylglyoxal (MGO), a dicarbonyl metabolite derived from glucose by flavonoids present in okra seed extract and its implications in the down-regulation of receptor for advanced glycation end products (RAGE), a key cellular target. **B. Dayal** 

10:45 250. Preparation and properties of a novel interpenetrating network hydrogel with chitosan and hyaluronic acid. Y. Zhang, X. Fan, Q. Wang, P. Wang, L. Cui, J. Yuan, J. Xu, Y. Yu

11:10 251. Innovative benign by design methodologies for the synthesis of advanced nanomaterials. R. Luque

**11:35 252.** Analysis of perfluorinated compounds (PFCs), select pesticides, and a biocide using quick sample extraction/preparation followed by UPLC/MS/MS analysis. **L. Zintek**, D. Wesolowski, B. Shrestha, C. Bhardwaj

Boston Park Plaza Hotel and Towers Tremont Room

#### **Environmental Applications and Implications of Graphene-Based Nanomaterials**

I. Chowdury, M. Hersam, *Organizers* D. C. Bouchard, *Organizer, Presiding* W. M. Henderson, *Presiding* 

8:00 Introductory Remarks.

**8:05 253.** Simultaneous sensing and degradation of nitroaromatics with graphene oxide based multifunctional catalyst mat. **P.V.** Kamat, R. Alam

8:45 254. Monitoring a nitrifying biofilm using a graphene biotransistor. M. Brown, L. Barker, L. Semprini, E.D. Minot

**9:05 255.** Pd and Pd/Au nanocatalysts supported on exfoliated graphite for high throughput dehalogenation by nanocomposite membranes. **C.A. Crock**, V. Tarabara

**9:25** Intermission.

9:40 256. Graphene-based adsorbents for the removal of aqueous contaminants. B. Gao

**10:00 257.** Enhanced hydrogen production by carbone-doped  $TiO_2$  decorated with rGO under visible light irradiation. L. Kuang, W. Zhang

**10:20 258.** TiO<sub>2</sub>-graphene photocatalyst interfaces elucidated through density functional theory modeling. **N.A. Deskins**, B. Bukowski

10:40 Concluding Remarks.

**Transforming University-Industry Partnerships for an Innovative Future Envisioning, Enabling and Executing** Sponsored by PRES, Cosponsored by AGRO, CARB, CHAS, COLL, ENFL, ENVR, MEDI, PROF and SCHB

**Endangered Species Risk Assessment for Pesticides: Advances in Methods and Process** Sponsored by AGRO, Cosponsored by ENVR

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GMOs and the Entanglement of Intellectual Property Rights

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## TUESDAY AFTERNOON

Section A

Boston Park Plaza Hotel and Towers Statler Room

New Challenges in Water Quality, Treatment, Reuse and Sustainability: Chemistry and Application of Advanced Oxidation Processes for Removal of Contaminants of Concern and Transformation Products

#### Materials

Cosponsored by CEI R. de Fatima Peralta Muniz Moriera, D. D. Dionysiou, D. Minakata, *Organizers* G. Li Puma, K. E. O'Shea, *Organizers, Presiding* 

**1:30 259.** Roles of pH and carbonate radical on photochemical destruction of oxytetracycline. Y. Liu, X. He, X. Duan, Y. Fu, **D.D. Dionysiou** 

**1:55 260.** Insights into the formation of POPS (persistent organic pollutants) during application of AOPs to wastewater containing organo-chlorinated compounds. **I. Ortiz**, M. Vallejo, P. Fernández, M. San Román, Á. Irabien

**2:20 261.** Phenomenal synergistic pathway for degradation of organic pollutants using reduced graphene oxide supported photocatalyst under diffused sunlight. **S. Ganesh Babu**, B. Neppolian

**2:45 262.** Mineralization of phenol in presence of sulphate radicals using modified ZnAl layered double hydroxides. **A. Mantilla**, G. Romero, M. Suarez Quezada, V. Suarez, E. Navarro Ceron, F. Tzompantzi, L. Lartundo

**3:10** Intermission.

**3:25 263.** Radiocatalytic materials for pursuing fixed-bed heterogeneous advanced oxidation using X-rays. F. Li, T.A. Johnson, **E.L. Cates** 

3:50 264. Detection and remediation of pesticides contamination in water. S. Ahuja

**4:15 265.** Mass balance of fipronil in a wastewater treatment train and engineered wetland. **S. Supowit**, A.M. Sadaria, E.J. Reyes, R.U. Halden

Boston Park Plaza Hotel and Towers Plaza Ballroom

## The Debate: How Do We Respond to Climate Change

Cosponsored by CEI<sup>‡</sup> C. W. Avery, L. E. Pence, *Organizers, Presiding* 

3:30 Introductory Remarks.

**3:35** Opening Statements.

3:45 266. The debate: How do we respond to climate change? C.W. Avery, L.E. Pence

**5:05** Concluding Remarks.

Section B

Boston Park Plaza Hotel and Towers Berkeley/Clarendon Room

## Biological Inspiration for Environmental Sustainability: Bioinspired Approaches for Energy Conversion, Storage and Materials

#### **Bioinspired Designs: From Molecules to Functional Materials**

Cosponsored by CEI, ENFL, ORGN and PHYS K. Rajeshwar, V. I. Vullev, *Organizers, Presiding* 

1:30 Introductory Remarks.

**1:35 267.** Mimics of the Tyr<sub>y</sub>-His redox relay of photosystem II in water splitting schemes. **A.L. Moore**, T.A. Moore, D. Gust, A. Teillout, M.J. Llansola-Portelés, J.J. Tomlin, M.E. Tejeda-Ferrari

2:15 268. Electrochemical conversions of carbon with enzymes from the reverse TCA cycle. S.J. Elliott, B. Li, P. Steindel

2:55 269. Designing bioinspired molecular electrets for hole-transfer. J. Larsen, E.M. Espinoza, V.I. Vullev

**3:15** Intermission.

3:30 270. Protein-based hybrid catalysts for hydrogen production. G. Ghirlanda

**4:10 271.** Introducing Cu(I)-photosensitizers in artificial photosynthetic supramolecular assemblies. **L. Kohler**, K.L. Mulfort, S. Soltau, L.M. Utschig-Johnson

4:50 272. Multivalency through dendritic building blocks: Fabrication of functionalizable hydrogels. R. Sanyal

Boston Park Plaza Hotel and Towers Beacon Hill Room

#### C. Ellen Gonter Awards Symposium

T. Anderson, Organizer, Presiding

1:30 Introductory Remarks.

**1:35 273.** Stability of endocrine disrupting estrogens in dairy manure during pasteurization-anaerobic digestion process. **K.M.** Noguera-Oviedo, D.S. Aga

**2:00 274.** Changes in physicochemical and transport properties of a reverse osmosis membrane exposed to chloraminated seawater. **L. Valentino**, T. Renkens, T. Maugin, J. Croue, B.J. Marinas

**2:25 275.** Polysulfone membranes modified with bioinspired polydopamine and silver nanoparticles formed in situ to mitigate biofouling. **L. Tang**, K. Livi, K. Chen

**2:50** Intermission.

**3:05 276.** Influence of dissolved organic matter on the rates and mechanisms of 2,2',4,4'-tetrabromodiphenyl ether (BDE-47) photolysis. **M.L. Wei-Haas**, Y. Chin

**3:30 277.** Using in situ passive samplers to assess porewater concentrations in sediment beds influenced by groundwater flow. **J. Apell**, J.K. MacFarlane, P.M. Gschwend

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Section D

**3:55 278.** Aerobic bioremediation of PAH contaminated soil results in increased toxicity and no change in excess lifetime cancer risk. **L. Chibwe**, M. Geier, J. Nakamura, R.L. Tanguay, M. Aitken, S.L. Simonich

Section F

Boston Park Plaza Hotel and Towers Cambridge Room

## Emerging Electrochemical Water Remediation Technologies: A Symposium in Honor of Professor Enric Brillas and Professor Mehmet A. Oturan

## Membranes, Absorption and H<sub>2</sub>O<sub>2</sub> Production

Cosponsored by AGRO F. A. Monterrubio, I. S. Sardonil, *Organizers* V. K. Sharma, *Organizer, Presiding* M. E. Bergmann, E. Roberts, *Presiding* 

1:30 Introductory Remarks.

**1:55 288.** Combining adsorption with electrochemical oxidation for the treatment of dissolved organic contaminants in water. H. Mohammad, S.N. Hussain, A.D. Martin, N.W. Brown, **E. Roberts** 

**2:15 289.** High-throughput fabrication of all carbon nanotube hollow fiber membranes with improved performance in permeability and selectivity for water treatment. **G. Wei**, **X. Quan** 

2:35 290. Development of reactive electrochemical membranes for water treatment applications. B.P. Chaplin, Y. Jing, L. Guo

**2:55 291.** Characterization of electroactive membranes based on carbon nanotubes/Fe-nanoparticles and application in the degradation of emerging pollutants. **J.E. Yanez Heras**, C. Zwiener

3:15 Intermission.

**3:30 292.** Electro-peroxone: a promising electrochemical advanced oxidation process for water and wastewater treatment. **Y. Wang**, H. Wang, W. Yao

**3:50 293.** Enhancement of pharmaceutical degradation and inhibition of bromate formation by adapting ozonation to electroperoxone process. **H. Wang**, Y. Li, J. Zhan, Y. Wang

**4:10 294.** Mass transport characterization of oxygen reduction reaction to produce hydrogen peroxide using boron doped diamond, graphite felt and reticulated vitreous carbon cathodes in a filter press cell, using two types of supporting electrolyte. **G. Coria**, T. Perez, I. Sirés, J.L. Nava

4:30 295. Modular advanced oxidation process enabled by cathodic hydrogen peroxide production. J. Barazesh, D.L. Sedlak

**4:50 296.** Degradation of metribuzin by electrochemical advanced oxidation processes using a boron-doped diamond anode. **F. Gozzi**, S.C. de Oliveira, A. Machulek Junior, E. Brillas, I. Sirés

**5:10 297.** Mineralization of trans-ferulic acid by anodic oxidation, electro-Fenton and photoelectro-Fenton. **N.E. Flores**, I. Sirés, P.L. Cabot, F. Centellas, R. Rodríguez, J. Garrido, E. Brillas

Boston Park Plaza Hotel and Towers Tremont Room

#### **Environmental Applications and Implications of Graphene-Based Nanomaterials**

I. Chowdury, M. Hersam, Organizers D. C. Bouchard, Organizer, Presiding W. M. Henderson, Presiding

1:30 Introductory Remarks.

**1:35 298.** Sunlight-induced transformations of graphene-based nanomaterials in aquatic environments. **R.G. Zepp**, D.C. Bouchard, W. Hou, I. Chowdhury, H. Fairbrother, D.G. Goodwin, W. Henderson, C. Knightes, C. Chen

2:15 299. Withdrawn

**2:35 300.** Toxicological potential and environmental fate of molybdenum disulfide (MoS<sub>2</sub>), a post-graphene 2D material. **L.M. Guiney**, N.D. Mansukhani, P. Kim, X. Wang, Z. Ji, C. Chang, M. Wang, Y. Liao, T. Song, B. Sun, R. Li, J.D. Lanphere, C.J. Luth, S.L. Walker, T. Xia, A. Nel, M. Hersam

2:55 301. Low-level of Graphene inhibits the activity of ABC transporters and acts as chemosensitizer. S. Liu

**3:15** Intermission.

**3:30 302.** Heteroaggregation of graphene oxide with nanometer- and micrometer-sized hematite colloids: Rates and conformation. **K. Chen**, Y. Feng

**3:50 303.** Assessing the exposure and toxicological implications of environmental transformations of graphene oxide using in vitro methods. **W.M. Henderson**, I. Chowdhury, X. Chang, W. Hou, R.G. Zepp, D.C. Bouchard, S.J. Martin

**4:10 304.** Efficient removal of indoor pollutants by using graphene-layered double hydroxide composites in room temperature. **F.** Liu, P. Zhang

4:30 305. Ecotoxicity of carbon nanotubes to algae, Dunalliela tertiolecta. M. Thakkar, S. Mitra, L. Wei

**4:50** Concluding Remarks.

**Pollinators and Agrochemicals** Sponsored by AGRO, Cosponsored by ENVR

Subsurface Geochemistry for Energy & the Environment Operations and Resources Sponsored by GEOC, Cosponsored by ENVR<sup>‡</sup>

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**Endangered Species Risk Assessment for Pesticides: Advances in Methods and Process** Sponsored by AGRO, Cosponsored by ENVR

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**Immunochemistry Summit XII: Immunoassays and Other Bioanalytical Techniques** Sponsored by AGRO, Cosponsored by ANYL, ENVR and SCHB

#### WEDNESDAY MORNING

Boston Park Plaza Hotel and Towers Tremont Room

#### Anaerobic Sewage Treatment: Dissolved Methane and Nitrogen Control

G. Wells, Organizer P. Joonhong, H. Lee, Organizers, Presiding

8:00 Introductory Remarks.

**8:05 306.** Direct interspecies electron transfer by syntrophic interaction between exoelectrogens and methanogens via granular activated carbon. J. Lee, **H. Park** 

**8:20 307.** Toward mainstream nitritation-anammox bioprocesses for reactive nitrogen management in effluent from anaerobic dilute wastewater treatment. **G. Wells** 

8:35 308. Use of dissolved methane gas for denitrifictaion- process kinetics and microbiology. R. Goel, A. Bhattacherjee

**8:50 309.** Removing nitrogen from effluents of anaerobic wastewater treatment processes: Understanding control and operation through biofilm modeling. **J. Delgado Vela**, K.J. Martin, A. McFarland, N. Beaton, L.B. Stadler, S. Skerlos, L. Raskin, C.B. Bott, N. Love

9:05 310. Modeling soluble methane in an anaerobic baffled reactor. D. Sills, D. Cowell

**9:20** Intermission.

**9:35 311.** Complimentary or competitive – exploring dynamics between denitrifiers and anode-respiring bacteria in bioelectrochemical biofilms. **V. Srinivasan**, C. Butler

9:50 312. Enrichment of an anammox MBBR to treat mainstream wastewaters. Z. Li, K. Chandran

10:05 313. Anaerobic methane oxidation coupled to nitrate reduction using membrane biofilm reactors. H. Lee, W. Alrashed

**10:20 314.** Nitrous oxide ( $N_2O$ ) recovery from ammonia oxidizing culture (AMO) in membrane aerated biofilm reactor with high  $NH_3$  strength wastewater. **T.V. Doan**, J. Lee, S.K. Shukla, M. Lee, J. Park

**10:35 315.** Comparison of dissolved methane removal processes: Removal efficiency, energy consumption and application of recovered methane. **J. Bae** 

10:55 316. Performance of anaerobic electrochemical membrane bioreactor using graphene-coated nickel hollow fiber membrane as cathode electrode. C. Werner, K.P. Katuri, H. Anandarao, W. Chen, Z. Lai, B. Logan, G. Amy, P. Saikaly

11:10 317. Methane-driven microbial fuel cell for dissolved methane management in anaerobic effluents. S. Chen, A. Smith

Section A

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Boston Park Plaza Hotel and Towers Stuart Room

#### Status and Trends of Biological and Persistent Organic Chemicals in the Great Lakes

D. D. Dionysiou, J. J. Pagano, Organizers, Presiding

**8:00 318.** The Great Debate: Investigating the roles of nitrogen and phosphorus in driving the growth and toxicity of cyanobacterial harmful algal blooms in western Lake Erie. **T. Davis**, T. Johengen, M. Harke, G. Bullerjahn, S. Watson

**8:30 319.** Products of oxidation of microcystin-LR by ferrate(VI) as a function of reactant molar ratios and pH. L. Chen, Y. Rezenom, D.H. Russell, D. Dionysiou, K.E. O'Shea, B. Marsalek, R. Zboril, V.K. Sharma

**8:50 320.** Removal of cyanotoxins (microcystins and cylindrospermopsin) using UV-based processes. X. He, A.A. de la Cruz, **D.D. Dionysiou** 

9:10 321. Sorption of human and veterinary antimicrobials in soils and sediments. S.A. Pagsuyoin, J. Yap

9:30 322. Sediments as sinks of antimicrobials in rivers. S.A. Pagsuyoin

**9:50** Intermission.

**10:20 323.** Microplastics in surface water in and entering nearshore areas of the lower Great Lakes. G. Zimmer, M. Stones, J. Thibeau, W. Page, A. Sims, B. Thorburn, **P.A. Helm** 

**10:40 324.** Trends and toxic equivalence of PCDD/F and DL-PCBs in lake trout from the Great Lakes: 2004-2013. **J.J. Pagano**, A. Garner, B.S. Crimmins, M. Milligan, X. Xia, P.K. Hopke, T.M. Holsen

**11:00 325.** Spatial distribution and diffusive air-water exchange of dissolved flame retardants and synthetic musks in the lower Great Lakes. **C.A. McDonough**, R. Lohmann

**11:20 326.** Long term spatial and temporal trends of PBDEs and their replacements in the Great Lakes atmosphere. **L. Liu**, A. Salamova, M. Venier, R.A. Hites

**11:40 327.** Spatial distribution, air-water exchange and source apportionment of polychlorinated biphenyls in the lower Great Lakes Basin. M. Khairy, D.C. Muir, C. Teixeira, **R. Lohmann** 

Section C

Boston Park Plaza Hotel and Towers Berkeley/Clarendon Room

## Biological Inspiration for Environmental Sustainability: Bioinspired Approaches for Energy Conversion, Storage and Materials

Energy Storage, Solar Fuels, and Biofuels: Satisfying the Energy Needs While Decreasing the Carbon Footprint

Cosponsored by CEI, ENFL, ORGN and PHYS K. Rajeshwar, V. I. Vullev, *Organizers, Presiding* 

8:00 Introductory Remarks.

8:05 328. Bioinspired approaches for energy storage: Molecular excited states that drive bond formation. G.J. Meyer

**8:45 329.** Bioinspired structural motifs for multi-functional behavior in the design of molecular catalysts for  $CO_2/H_2$  interconversion with formic acid. **J.T. Muckerman**, M.Z. Ertem, Y. Himeda, E. Fujita

**9:25 330.** Electrosynthesis of hybrid organic/inorganic photocathodes for solar fuel generation. D. Hursan, K. Rajeshwar, C. Janaky

9:55 Intermission.

10:10 331. Homogeneous solar hydrogen photocatalysis. F.N. Castellano

**10:50 332.** Running on sun: Bioinspired approaches to achieving solar fuels. **G.F. Moore**, D. Khusnutdinova, A. Beiler, S. Jacob, E. Skibo, A. Echeverri

**11:30 333.** Microbial conversion of methane to methanol in a packed bed reactor by *Methylosinus trichosporium* OB3b immobilized in alginate beads. P. Molzahn, A. Taylor, **L. Semprini** 

Boston Park Plaza Hotel and Towers Beacon Hill Room

### Resource Recovery and Contaminant Elimination in Waste Streams of Increasing Concern

#### **Nutrient Recovery: Source Separated Urine**

Financially supported by AEESP (Association of Environmental Engineering and Science Professors) T. H. Boyer, C. Huang, *Organizers, Presiding* 

8:00 Introductory Remarks.

8:10 334. Removal of pharmaceuticals in source separated urine using biochar for nutrient recovery. A. Solanki, T.H. Boyer

**8:35 335.** Contaminant removal from source separated urine will enhance opportunities for nutrient recovery. **K. Landry**, P. Sun, C. Huang, T.H. Boyer

**9:00 336.** Unconventional treatment for unconventional waste: Removal of pharmaceuticals and metabolites by AOPs in source-separated human urine. **P. Sun**, R. Zhang, C. Huang

9:25 Intermission.

**9:40 337.** Implications of implementation scale on the environmental sustainability of wastewater treatment with resource recovery. **Q. Zhang**, P. Cornejo, J. Mihelcic

10:15 338. Adsorption applications for total nutrient recovery from urine. T.H. Boyer

10:40 339. Evaluating ion exchange and electrochemical nitrogen recovery from source-separated urine. W. Tarpeh, K. Nelson

**11:05 340.** Coupling chemical and biological processes for nutrient recovery and removal for better source separated urine management. **R. Goel**, P. Huang

Section D

Boston Park Plaza Hotel and Towers Statler Room

#### Environmental Transformation of Nanoparticles: Processes, Mechanisms, and Ecological Impacts

#### **Physicochemical Transformations**

M. Cledon, B. Lau, W. Yan, *Organizers* K. D. Hristovski, P. Larese-Casanova, *Organizers, Presiding* 

8:00 Introductory Remarks.

8:05 341. Case studies in the environmental transformations of nonequilibrium nanomaterials. R. Hurt

**8:35 342.** Surface interaction of gold and fullerene nanoparticles with pyrogenic carbonaceous materials. **S.M. Uchimiya**, J.J. Pignatello, J.C. White

9:05 343. Heteroaggregation between cerium oxide nanoparticles and nanoparticles of pyrolyzed biomass. P. Yi, J.J. Pignatello

**9:25 344.** Release and transformations of silver nanoparticles in polymeric nanocomposites exposed to environmental scenarios. **T.A. Dankovich**, G. Lowry

**9:45 345.** Measure the deposition of titanium dioxide nanoparticles on model rough surfaces using generalized ellipsometry technique. **N. Kananizadeh**, D. Peev, C. Rice, T. Hofmann, M. Schubert, S. Bartelt-Hunt, Y. Li

10:05 Intermission.

10:20 346. Role of nanoparticles in the fate and transport of hydrophobic pollutants. E. Sahle-Demessie, A. Zhao, Y. Shan

**10:40 347.** Evaluation and improvement of sample preparation protocols for the single particle ICP-MS measurement of silver nanoparticles. **J. Liu**, K.E. Murphy, V.A. Hackley, M.R. Winchester

**11:00 348.** Co-transport of gold nanospheres with single-walled carbon nanotubes in saturated porous media. A. Afrooz, D. Das, C.J. Murphy, P.J. Vikesland, **N.B. Saleh** 

**11:20 349.** Influence of natural organic matter on the interaction of functionalized diamond nanoparticles with supported lipid bilayer. **A.C. Mensch**, M. Torelli, J.A. Pedersen, R.J. Hamers

11:40 350. Withdrawn

Boston Park Plaza Hotel and Towers Cambridge Room

## Emerging Electrochemical Water Remediation Technologies: A Symposium in Honor of Professor Enric Brillas and Professor Mehmet A. Oturan

## **Electrocoagulation and Electro-Fenton Processes**

Cosponsored by AGRO F. A. Monterrubio, I. S. Sardonil, V. K. Sharma, *Organizers* E. Brillas, J. Luis Nava Montes de Oca, *Presiding* 

**8:00 351.** Advances in electrocoagulation: Self-powered systems and use of low-cost aluminium. **D.M. Valero Valero**, E. Expósito, V. García-García, A. Aldaz Riera, V. Montiel Leguey

**8:20 352.** Electrocoagulation of tannery wastewater: Optimization and comparison between pulse and direct current. **A. Suarez**, A.F. Lopez Vasquez, A.R. Albis, N. Agudelo

**8:40 353.** Treatment of food color additives in different water matrices by single and combined electrochemical processes. A. Thiam, E. Brillas, R. Rodríguez, J. Garrido, F. Centellas, P.L. Cabot, **I. Sirés** 

**9:00 354.** Optimization of the electro-Fenton process for removal of pharmaceuticals from water: Minimization of energy consumption, treatment time, and improvement of biodegradability. **O. Ganzenko**, N. Oturan, D. Huguenot, E. van Hullebusch, G. Esposito, M. Oturan

9:20 Intermission.

**9:35 355.** Combined electro-Fenton pre-treatment and a biological process for the mineralization of the pharmaceuticals Furosemide and Ranitidine. **H. Olvera Vargas**, N. Oturan, D. Buisson, M.A. Oturan

9:55 356. Rapid and complete removal of nitrophenols by heterostructured gold-magnetite nanocatalysts. R. Doong, F. Lin

**10:15 357.** Transformation products of oxidation of microcystin-LR by ferrate(V) and ferrate(IV): similarities and differences with ferrate(VI). L. Chen, Y. Rezenom, D.H. Russell, D. Dionysiou, K.E. O'Shea, B. Marsalek, R. Zboril, **V.K. Sharma** 

**10:35 358.** Recent development in enhanced electro-Fenton process efficiency: Electrode materials and coupling possibilities with other methods. **M.A. Oturan** 

**Subsurface Geochemistry for Energy & the Environment Mineral Reactions in Geologic Carbon Sequestration** Sponsored by GEOC, Cosponsored by ENVR<sup>‡</sup>

**Development of More Efficient Pesticide Exposure Screening Informed by Fate, Usage, and Monitoring Data** Sponsored by AGRO, Cosponsored by ENVR

**Chemical Processes Involving Atmospherically Relevant Trace Gases, Aerosols & Clouds** Sponsored by PHYS, Cosponsored by ENVR

**Computational Toxicology: From QSAR Models to Adverse Outcome Pathways** Sponsored by CINF, Cosponsored by AGRO, COMP, ENVR and MEDI

**Environmental Fate, Management, and Mitigation of Nitrogen in Agricultural Systems** Sponsored by AGRO, Cosponsored by ENVR

#### **Recent Advances in the Analysis of Environmental Contaminants in Foods and Feeds** Sponsored by AGRO, Cosponsored by ANYL and ENVR

#### **Pesticides and Hydrophobic Compounds in Sediment** Sponsored by AGRO, Cosponsored by ENVR

## WEDNESDAY AFTERNOON

Boston Park Plaza Hotel and Towers Tremont Room

#### Detection and Fate of Health-Related Microorganisms in Water

Cosponsored by AGRO K. Bibby, K. Wigginton, *Organizers, Presiding* 

**1:00 359.** Novel microbial source tracking microarray for pathogen detection and fecal source identification in environmental systems. **J. Weidhaas**, X. Li, V. Harwood

**1:20 360.** Development of CrAssphage as an Improved indicator of human fecal pollution in the environment. E. Stachler, **K. Bibby** 

1:40 361. Diversity of potentially pathogenic bacteria in municipal wastewater treatment plants. Q. Chen

2:00 362. Methods for the detection of infective enveloped viruses in municipal wastewater. Y. Ye, M. Ellenberg, K. Wigginton

**2:20 363.** Effect of chlorinated phenol in point-of-use drinking water filters on antibiotic resistance and opportunistic pathogens. **C. Wu**, N. Love, T.M. Olson

**2:40 364.** Public health and potable reuse: Challenges in pathogen control and detection. **B. Pecson**, S. Trussell, A.N. Pisarenko, R. Trussell

**3:00 365.** Removal of bacterial contaminants and antibiotic resistance genes by conventional wastewater treatment processes in Saudi Arabia: Is the treated wastewater safe to reuse for agricultural irrigation compared to the groundwater? **P. Hong**, N. Al-Jassim, M. Ansari, M. Harb

3:20 366. Predicting the fate of waterborne viruses in surface water using photochemistry tools. M.J. Mattle, D.V. Vione, T. Kohn

**3:40 367.** Fate and persistence of NDM-9 *Escherichia coli* in aerobic and anaerobic sludge under different micro-selective conditions. **D. Mantilla**, P. Hong

**4:00 368.** Fate of pathogens and indicator organisms in direct and indirect wastewater irrigation systems in the Cochabamba valley of Bolivia. **M.E. Verbyla**, M. Iriarte, A. Mercado, J. Mihelcic

Section A

Boston Park Plaza Hotel and Towers Stuart Room

#### Using Passive Sampling Techniques to Detect Organic Contaminants

Cosponsored by AGRO and ORGN Financially supported by AEESP (Association of Environmental Engineering and Science Professors) C. A. McDonough, *Organizer* R. Lohmann, *Organizer, Presiding* 

**1:30 369.** Calibration of a novel passive sampler for the measurement of 34 polar organic contaminants in aquatic systems. **J. Challis**, M. Hanson, C.S. Wong

1:50 370. Phytoforensics and novel passive samplers to assess vapor intrusion risk. J.L. Wilson, M. Limmer, J.G. Burken

**2:10 371.** Passive sampling in the water column using "fast" performance reference compounds. **D.P. Prendergast**, P.M. Gschwend

2:30 372. Polyethylene uptake of gaseous hydrophobic organic contaminants (HOCs). C.A. McDonough, R. Lohmann

2:50 373. Estimating sampling rate of polyethylene passive samplers using samplers of different thickness. C. Sun, R. Lohmann

**3:10 374.** Calculating the diffusive flux of DDTs and PCBs across the sediment-water interface at the Palos Verdes Shelf Superfund site using polyethylene and polyoxymethylene passive samplers. **L. Fernandez**, G.M. Flavetta, R.M. Burgess

**3:30 375.** Atmospheric polybrominated diphenyl ethers from an e-waste dismantling area: seasonal variation and sample pattern comparison. **X. Jiao**, **H. Cao** 

**3:50 376.** Spatial and temporal variations of PCBs and OH-PCBs in the Metropolitan Chicago area using passive air sampling. **N.J. Herkert**, A. Martinez, K.C. Hornbuckle

**4:10 377.** HCBz and PAHs trend in the atmosphere and surface seawater along a cruise pathway from the East China Sea to the Arctic Ocean. **M. Cai**, W. Zhao, D.A. Adelman, **R. Lohmann** 

**4:30 378.** Application of GC×GC and passive dosing for characterizing mixture toxicity of hydrophobic organic chemicals (HOCs). **A. Tcaciuc**, R. Nelson, L. Rotkovitz, C. Reddy, P.M. Gschwend

**4:50 379.** Passive sampling and target/non-target analyses as tools for tracking chemicals of concern in the Great Lakes. **P.A. Helm**, M. Robson, E. Reiner, M. Pena, P. Yang, D. Morse, K. MacPherson, I.D. Brindle

Section C

Boston Park Plaza Hotel and Towers Berkeley/Clarendon Room

## **Biological Inspiration for Environmental Sustainability: Bioinspired Approaches for Energy Conversion, Storage and Materials**

## Artificial Photosynthesis: Challenges and Strategies to Meet Energy Needs in an Environmentally Benign Manner

Cosponsored by CEI, ENFL, ORGN and PHYS K. Rajeshwar, V. I. Vullev, *Organizers, Presiding* 

1:30 Introductory Remarks.

1:35 380. Artificial photosynthesis – Helping nature regain control of the global carbon cycle. T.A. Moore, A.L. Moore, D. Gust

Section B

**2:15 381.** High valence homogeneous and amorphous metal oxide clusters as biomimetic catalysts: Identifying ligand-dependent changes in domain structure. **D.M. Tiede**, G. Kwon, D. Fazi, J.D. Emery, A.B. Martinson, J. Thomsen, S.W. Sheehan, G.W. Brudvig, R.H. Crabtree

**2:55 382.** Stabilization of oxygen sensitive hydrogenases towards oxidative damage by redox hydrogels. **O. Rüdiger**, A.A. Oughli, F. Conzuelo, M. Winkler, T. Happe, W.W. Lubitz, W. Schuhmann, N. Plumere

**3:25** Intermission.

3:40 383. Photocatalysis inspired by FAD/NAD cofactors: Merging dye-sensitized solar cells with catalysis. K. Glusac

**4:20 384.** Solar fuel biohybrids: Aqueous light-driven hydrogen production by photosensitizer-protein-molecular catalyst systems. **S. Soltau**, J. Niklas, P.D. Dahlberg, D.M. Tiede, O. Poluektov, K.L. Mulfort, L.M. Utschig-Johnson

**4:40 508.** Synthesis and characterization of p-type semiconductor inorganic nanocrystals for photoelectrochemical fuel generation. **A. Kormanyos**, A.L. Thomas, K. Rajeshwar, C. Janaky

**5:00 385.** In-situ structure function characterization of the cobalt oxide water oxidation catalyst films. **G. Kwon**, H. Kim, J.D. Emery, D. Fazi, A.B. Martinson, P.C. Stair, D.M. Tiede

Boston Park Plaza Hotel and Towers Beacon Hill Room

#### Resource Recovery and Contaminant Elimination in Waste Streams of Increasing Concern

## Metal Recovery: From Lithium to Gold

Financially supported by AEESP (Association of Environmental Engineering and Science Professors) T. H. Boyer, C. Huang, *Organizers, Presiding* 

1:30 Introductory Remarks.

**1:35 386.** Assessment of U.S.-based coal fly ashes as an alternative resource for rare earth elements. **H. Hsu-Kim**, R. Taggart, J.C. Hower, G.S. Dwyer

**2:10 387.** Lithium recovery from low temperature geothermal brines through membrane distillation and manganese oxide sorption. **J. Renew**, J. Rajterowski, J. Wos

**2:35 388.** Tunable anion exchange to treat Marcellus flowback wastewater and recover barium using impaired acid mine drainage (AMD). **A.K. Sengupta**, J. Li, M. German

**3:00** Intermission.

**3:15 389.** Precious metal and rare earth element recovery from waste streams: Techincal developments and life cycle considerations of recovering and recycling gold from nanomaterial waste streams. **P. Pati**, P.J. Vikesland, S. Mcginnis

**3:40 390.** Silver removal and recovery from waste streams: role of co-contaminants and regenerants and purity of silver recovered. **T. Nawaz**, S. Sengupta

**4:05 391.** Bioinspired adaptively reconfigurable material systems: A new paradigm for autonomous metal ion separation. **H. Nan**, Z. Zhao, J. Liu, X. He

**4:30 392.** Removal of PFOS and its alternative from electroplating wastewater using granular reactivated carbon. **Z. Du**, S. Deng, D. Liu, X. Lu, X. Yao, W. Bin, Y. Huang, Y. Wang, G. Yu

Section D

4:55 Concluding Remarks.

Boston Park Plaza Hotel and Towers Statler Room

#### Environmental Transformation of Nanoparticles: Processes, Mechanisms, and Ecological Impacts

#### **Biotransformations and Bioavailability**

K. D. Hristovski, P. Larese-Casanova, B. Lau, *Organizers* M. Cledon, W. Yan, *Organizers, Presiding* 

1:30 Introductory Remarks.

1:35 393. Heteroaggregation of nanoparticles with biocolloids and geocolloids. A.A. Keller, H. Wang, A.S. Adeleye, Y. Huang

**2:05 394.** Can carbon-based nanomaterials modulate the toxic activity of organic pollutants in the environment? **D. Barcelo**, J. Sanchis, M. Farre

2:35 395. Toxicity of rare earth element oxide nanoparticles on E. coli. V. Craver, N. Anaya, F. Solomon

**2:55 396.** Uptake, distribution, and physiological impacts of metal oxide nanoparticles in mature crop plants: Evidence for nanophototoxicity? J. Conway, S. Mazer, **A.A. Keller** 

**3:15 397.** Lithium nickel manganese cobalt oxide (NMC) nanomaterials: Interactions with biological systems. **M.N. Hang**, I. Gunsolus, J. Bozich, H.A. Wayland, E. Melby, A.C. Mensch, K. Hurley, J.A. Pedersen, R. Klaper, C.L. Haynes, R.J. Hamers

**3:35** Intermission.

**3:50 398.** Interaction of engineered materials with microbial biofilms and its potential applications. **H. Jing**, D. Clark, S. Palmer, V. Sumner, **E. Sahle-Demessie**, M.J. Kupferle, **G. Sorial** 

4:05 399. Microbial aging of fullerene C<sub>60</sub> nanoparticle aggregates in water. S. Chae, D.E. Hunt, C.K. Gunsch, M.R. Wiesner

**4:25 400.** Tracking trace amounts (ppb) of silica nanoparticles in complex fluids and seawage water plants using DNA tracers. **R.N. Grass**, D. Paunescu, R. Kaegi, W.J. Stark

4:45 401. Influence of phytoplankton on fate, transformations, and effects of iron nanoparticles. A.S. Adeleye, A.A. Keller

**5:05 402.** Evaluation of silver nanoparticle – impregnated textiles across their life cycle. R.B. Reed, M. Marco, T. Zaikova, A. Barber, J.E. Hutchison, J.F. Ranville, R.L. Tanguay, P.K. Westerhoff, **K.D. Hristovski** 

**5:25 403.** Preparation and characterization of strawberry fruit extraction loaded nano biodegradable chitosan particles. R. Pulicharla, C. Marques, S. Brar, T. Rouissi, **M. Cledon**, S. Sarma

Section E

Boston Park Plaza Hotel and Towers Cambridge Room

## Emerging Electrochemical Water Remediation Technologies: A Symposium in Honor of Professor Enric Brillas and Professor Mehmet A. Oturan

#### (Bio)electro-Oxidation

Cosponsored by AGRO F. A. Monterrubio, I. S. Sardonil, V. K. Sharma, *Organizers* M. Rodrigo, I. S. Sadornil, *Presiding* 

1:30 Introductory Remarks.

1:55 404. Electrochemical engineering for safer advanced oxidation processes (AOPs). M.E. Bergmann

**2:15 405.** Electrochemical disinfection of urban treated wastewater: An alternative to conventional disinfection processes. **S. Cotillas**, A. Raschitor, J. Pérez, M. Martín de Vidales, J. Llanos, C. Sáez, M. Rodrigo, P. Cañizares

2:35 406. Pharmaceutical wastewater treatment associated with energy recovery in microbial fuel cell. Z.Z. Ismail, A.A. Habeeb

2:55 Intermission.

**3:10 407.** Preparation of a dimensional stable anode for the production of heterogeneous hydroxyl radicals used to oxidize persistent organic compounds. **Z.G. Aguilar-Rico**, J.L. Nava, M.M. Salazar

**3:30 408.** Effect of different parameters on the electro-oxidation treatment of Congo red. H. Jalife, R. Feria, A. Alatorre, S. Gutierrez, **J. Peralta-Hernandez** 

**3:50 409.** Treatment of soil washing solutions by electro-oxidation with BDD anode: Selective removal of target pollutants and biodegradability enhancement. **C. Trellu**, Y. Péchaud, N. Oturan, D. Huguenot, E. van Hullebusch, G. Esposito, M. Oturan

**4:10 410.** Electrolytic and electro-irradiated processes with diamond anodes for the removal of persistent pollutants. M. Martín de Vidales, A. Raschitor, J. Pérez, S. Cotillas, J. Llanos, C. Sáez, **M. Rodrigo**, P. Cañizares

**4:30 411.** Synergistic coupling between electrochemical and ultrasound treatments for organic pollutant degradation as a function of the electrode material (IrO2 and BDD) and the ultrasonic frequency (20 and 800 kHz). **R.A. Torres-Palma**, G. Fernando, C. Pétrier, G. Peñuela, E. Herrera-Calderón, C. Pulgarin

**Subsurface Geochemistry for Energy & the Environment Mineral Reactions in Subsurface Energy and Waste Operations** Sponsored by GEOC, Cosponsored by ENVR

**Development of More Efficient Pesticide Exposure Screening Informed by Fate, Usage, and Monitoring Data** Sponsored by AGRO, Cosponsored by ENVR

**Chemical Processes Involving Atmospherically Relevant Trace Gases, Aerosols & Clouds** Sponsored by PHYS, Cosponsored by ENVR

**Computational Toxicology: From QSAR Models to Adverse Outcome Pathways** Sponsored by CINF, Cosponsored by AGRO, COMP, ENVR and MEDI

**Degradation of Halogenated Compounds in the Environment** Sponsored by AGRO, Cosponsored by ENVR

#### **Recent Advances in the Analysis of Environmental Contaminants in Foods and Feeds** Sponsored by AGRO, Cosponsored by ANYL and ENVR

**Formulation Technologies for Improved Crop Protection** Sponsored by AGRO, Cosponsored by ENVR and ORGN

## WEDNESDAY EVENING - POSTERS

Boston Convention & Exhibition Center Hall C

#### Advanced Materials and Technologies for Desalination and Wastewater Reuse

Financially supported by AEESP (Association of Environmental Engineering and Science Professors) J. Kim, Q. Li, *Organizers* 

6:00 - 8:00

**412.** Investigation of fluoride removal from brackish groundwater by single-pass capacitive deionization. **W. Tang**, P. Kovalsky, D. Waite

413. Characterization of fouling potential through the use of fluorescence techniques. L. Strahs, J. VanBriesen, K.L. Jones

**414.** Aqueous synthesis of polyvinyl alcohol-alginate-montmorillonite nanocomposite particles for applications in wastewater purification. **M. Bee, E. Kalivas, J.C. Schwabacher**, M.R. Hartings, D. Fox

415. Adsorption of metal ions by magnetic carbon tubes. C. Chang, B. Wang

#### Advances in Chemistry for Carbon Capture, Utilization and Sequestration

Cosponsored by ENFL P. Fennell, N. Florin, *Organizers* M. Zhao, *Organizer, Presiding* 

#### 6:00 - 8:00

416. Synthesis of a porphyrin polymer with benzimidazole linkages for CO<sub>2</sub> capture. V. Neti

417. CPO-27-Ni incorporated in nickel foam for efficient CO2 capture. Z. Liu, W. Han, K.L. Yeung

**418.** Study of sorption kinetics of CO2, CO, CH4, and N2 on an organic molecular porous material (cucurbit[6]uril). J. Lee, B. Min, H. Kim, Y. Park, D. Chun, **J. Moon** 

419. CO2 and H2S mixed gas absorption in mixed aqueous solutions of sulfolane and MDEA. B. Min, J. Lee, Y. Park, J. Moon

Section A

## Advances in Drinking Water Disinfection: Byproducts Occurrence, Formation, Treatment, Health Effects, Epidemiology and Regulation

E. Sahle-Demessie, G. Sorial, Organizers

6:00 - 8:00

**420.** Adsorption of selected antibiotics and endocrine disrupting compounds from aqueous solution by carbon nanomaterials. **X. Li**, S. Chen, X. Quan

421. On THM formation in direct electrochemical drinking water disinfection. M.E. Bergmann, J. Hartmann, T. Iourtchouk

**422.** Revealing the mechanism and kinetics of UV-254 nm/H<sub>2</sub>O<sub>2</sub>-based degradation of active sunscreen ingredient PBSA. **W. Abdelraheem**, X. He, D.D. Dionysiou

## Anaerobic Sewage Treatment: Dissolved Methane and Nitrogen Control

P. Joonhong, H. Lee, G. Wells, Organizers

6:00 - 8:00

423. Anaerobic digestion of renewable materials for biogas production: Experimental stage to the field. O.O. Adetule

**424.** Improved stability of methane-producing anaerobic biological reactors through novel use of ion-exchange fibers. **Y. Tian**, D. Brown, A. SenGupta

425. Tale of two cities (Boston and Detroit). S. Simoliunas, I. Welch, C. Darrah, S. Mcdonald, C. Dougherty

## Assessing Transformation Products by Non-Target and Suspected Target Screening: The New Frontier in Environmental Chemistry and Engineering

Financially supported by AEESP (Association of Environmental Engineering and Science Professors) S. A. Snyder, J. Drews, T. Letzel, *Organizer* 

## 6:00 - 8:00

426. Withdrawn

**427.** Suspected-target screening strategy to investigate degradation by ozonation or photolysis of urban micropollutants in wastewaters. **P. Bados**, B. Mathon, J. Choubert, J. Chovelon, M. Coquery, C. Miege, T. Brzokewicz

**428.** Widening the analytical perspective - polarity extended separations for the detection of trace organic compounds in environmental samples. **S. Bieber**, J. Drews, T. Letzel

**429.** Biofiltration: An advanced treatment process for removal of EDCs and PPCPs. **S. Zhang**, S. Gitungo, L.B. Axe, J.E. Dyksen, R.F. Raczko

**430.** Characterization and determination of oxygen types present in weathered Deepwater Horizon oil by Fourier transform ion cyclotron resonance mass spectrometry. **S.M. Rowland**, R.P. Rodgers

431. Withdrawn

**432.** Fate of six neonicotinoids during full-scale wastewater treatment and passage through an engineered wetland. **A. Sadaria**, S. Supowit, R.U. Halden

## **Biological Inspiration for Environmental Sustainability: Bioinspired Approaches for Energy Conversion, Storage and Materials**

Cosponsored by CEI, ENFL, ORGN and PHYS K. Rajeshwar, V. I. Vullev, *Organizers* 

#### 6:00 - 8:00

433. Glucose entrapped in titania under mild environmental conditions. Z. Yu, P. Huang, X. Wang

**434.** Analysis of *Cryptococcus* and *Rhodotorula* fungi in the extraction of lipids for biodiesel production. **S. McGee**, A.J. Reese, L.A. Welch

## Emerging Electrochemical Water Remediation Technologies: A Symposium in Honor of Professor Enric Brillas and Professor Mehmet A. Oturan

Cosponsored by AGRO F. A. Monterrubio, I. S. Sardonil, V. K. Sharma, *Organizers* 

## 6:00 - 8:00

**435.** Influence of nitrates, chlorides, and humic substances on electrochemical reduction of trichloroethylene. **L. Rajic**, N. Fallahpour, R. Nazari, A. Alshawabkeh

**436.** Electrochemical dechlorination of TCE in the presence of natural organic matter, metal ions and nitrates in a simulated karst aquifer. **N. Fallahpour**, X. Mao, L. Rajic, S. Yuan, A. Alshawabkeh

**437.** Electrochemical degradation of chlorobenzene in simulated groundwater using Pd-catalytic electro-Fenton's reaction. **R.** Nazari, A. Ciblak, I. Mousa, A. Alshawabkeh

**438.** Degradation of chlorophenols in the Fe/TPP/air system: The role of reactive oxygen species on the degradation kinetics and mechanism. **W. Li**, L. Zhang

**439.** Electrochemical oxidation of carbaryl on platinum and boron-doped diamond anodes using electro-Fenton process. **N. Oturan**, M. Sönmez Celebi, M.A. Oturan

**440.** Degradation and mineralization of the phenylurea herbicide fluometuron in aqueous media by electro-Fenton process. **N. Oturan**, P.A. Diaw, M.D. Gaye Seye, J. Aaron, M.A. Oturan

441. Fe@Fe<sub>2</sub>O<sub>3</sub> promoted E-Fenton mineralization of atrazine under a low current of 30 mA. D. Xing, L. Zhang

442. Electrochemical treatment of p-phenylenediamine by self electro-generative Fenton process. S. Yen, W. Hsieh

**443.** Remediation of bovine slurry wastewater using a combination of anaerobic biological digestion and solar photoelectro-Fenton processes. **J. Vidal**, R. Salazar, C. Huiliñir

**444.** Degradation and mineralization of Malathion by Solar Photo electro-Fenton in a 200 mL electrochemical reactor and in a10L flow plant. G. Palacios, D. Chavez, A. Hernandez-Ramirez, L. Hinojosa-Reyes, J. Guzman, **E. Ruiz** 

**445.** Degradation of antihypertensive drug hydrochlorothiazide in water by electro-oxidation with BDD: Application of method to pharmaceuticals tablets. **R. Salazar**, N. Contreras

**446.** Electrochemical degradation of the antihypertensive losartan in neutral aqueous medium by electro-oxidation with BDD electrode. **C.A. Salazar**, N. Contreras, H.D. Mansilla, J. Yanez, R. Salazar

447. Withdrawn.

**448.** Electrochemical treatment of petrochemical Industry effluent using Ti/IrO<sub>2</sub>-Ta<sub>2</sub>O<sub>5</sub> and BDD. S. Souza Leal Castro, D. Ribeiro da Silva, **C. Martinez-Huitle** 

**449.** New oxygen-diffusion electrodes for hydrogen peroxide electrogeneration: Application in wastewater decontamination and disinfection. F.A. Monterrubio, G. Alvarez, E. Brillas, H. Grande, O. Miguel, **I. Sirés** 

**450.** Electrolysis enhanced activated carbon catalyzing peroymonosulfate for the degradation of Acid Orange 7 in simulated water at ambient temperature. **J. Li**, L. Yang, M. Chen, **H. Zhang** 

**451.** Treatment of industrial wastewater by electochemical techniques: Systems powered by photovoltaic energy. **D.M. Valero Valero**, V. García-García, E. Expósito, A. Aldaz Riera, V. Montiel Leguey

**452.** Electrochemical and photoelectrochemical degradation of tetracyclines and quinolones on Ti/TiO<sub>2</sub> electrode. P. Moreira, P. Molina, **C. Berrios** 

## Environmental Applications and Implications of Graphene-Based Nanomaterials

I. Chowdury, M. Hersam, D. C. Bouchard, Organizers

#### 6:00 - 8:00

**453.** Electrochemical carbon nanotube filters for removal of perfluoroalkyl acids in the presence of natural organic matter. **Y. Zhi**, A. Bakr, M. Rahaman, J. Liu

454. Withdrawn

#### Environmental Transformation of Nanoparticles: Processes, Mechanisms, and Ecological Impacts

D. C. Bouchard, I. Chowdury, M. Hersam, Organizers

## 6:00 - 8:00

**455.** Use of single particle ICP-MS and asymmetric flow field flow fractionation to investigate silver nanoparticle corrosion in environment waters. **J. Liu**, J.M. Pettibone, M.R. Winchester, V.A. Hackley

456. Effects of ultra-violet light on silver nanoparticle mobility and dissolution. A. Mittelman, J. Fortner, K.D. Pennell

- 457. Shape-controlled synthesis of CuO/ZnO composites and their photocatalytic performance. L. Tan, J. Li, M. Yang, H. Gao
- 458. C<sub>60</sub> transformation(s) in water: Elucidating and connecting critical oxidation/reduction pathways and products. J. Wu
- 459. Quantum dot dissolution kinetics monitored with SEC-ICP-MS. P. Paydary, P. Larese-Casanova

**460.** Monitoring the environmental effects of CeO<sub>2</sub> and ZnO nanoparticle through the life cycle of corn (*Zea mays*) and cucumber (*Cucumis sativus*) plants. **L. Zhao**, Y. Sun, J.L. Gardea-Torresdey, J.R. Peralta-Videa, J. Hernandez-Viezcas, J. Hong, S. Majumdar, A. Servin, M. Duarte-Gardea

**461.** Effects of nano- and microscale microplastics on the transformation and Daphnia bioaccumulation of phenanthrene in fresh water. **Y. Ma**, R. Ji

### **General Posters**

D. D. Dionysiou, Organizer

#### 6:00 - 8:00

200. Selective detection of aliphatic alcohols via proximity-induced fluorescence modulation. D.J. DiScenza, M. Levine

**462.** Chlorine-free disinfection of water contaminated with *E.coli* by combination of electrolysis and photochemical treatment: Role of electrode material. **N. Barashkov**, **T. Sakhno**, I. Irgibayeva

**463.** Study of the redox and optical properties of NOM with different origin and pre-treatments. **S. Orsetti**, E. Subdiaga, **D.L. Macalady**, S.B. Haderlein

**464.** Engineering superparamagnetic iron oxide nanocrystals for environmental applications. **W. Li**, S. Lee, J. Wu, Y. Jiang, C. Kim, C.H. Hinton, J.D. Fortner

465. Mineralization of oxalic acid via advanced oxidation technologies. Y. Kim, H. Kwon, J. Kim, S. Choi

466. Effect of pH on the activation of persulfate by zero-valent iron. Y. Kim, Y. Luo, S. Woo, M. Kim, W. Lim

**467.** Degradation of tetracycline in synthesized wastewater using immobilized TiO<sub>2</sub> on rotating corrugated aluminum drum. **R. Bautista**, W. Anderson, S. Pagsuyoin

468. Dissolved organic matter mediated photolysis of 17α-ethynylestradiol. M.M. Freiberger, S.N. Eustis

469. Changes in redox properties of humic acid upon sorption to alumina. S. Orsetti, E. Subdiaga, S.B. Haderlein

**470.** Environmental fate of iron: study of the effect of the chelating and reductive properties of humic acids. **J.R. Borgatta**, J.G. Navea

471. Selective removal of As in heavy metal mixture solution using synthetic Fe-hydroxide. J. Kim, Y. Kim, J. Geum, J. Hwang

**472.** Characterization of  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> nanoparticles for removal of chemical warfare agent simulants. **J.R. Soliz**, W.O. Gordon, A. Balboa, J. Mahle, A.J. Hauser, K.M. Bussmann, M.S. Osofsky, C.J. Karwacki

473. Isotherm and kinetic studies on the adsorption of humic acid fractions onto clay minerals. M. Khalaf, M. Elsayed, J. Rice

**474.** Lead extraction from wastewater streams using diethylphosphatoethyl functionalized mesoporous silica. **C. Gunathilake**, M. Jaroniec, S. Huang, M. Kadanapitiye

**475.** New porous MgO-ZnO sorbent to capture CO<sub>2</sub> at 473 K. J. Zhu, Y. Li, Y. Wang

476. Interaction of tetracycline antibiotics with nanoceramics. H. Jufer, E.E. Mojica

**477.** Derivatization of chlorinated phenols (CPs) for their detection and analysis by Nuclear Magnetic Resonance Spectroscopy. **S. Hok**, R.N. Leif, C.A. Valdez

**478.** Characterizing phenolic compounds by LC/MS in New Hampshire sugar maple sap. E. Brady, W.C. Shortle, M. Carlson, B. Rock, S. Tomellini

**479.** Distribution of di(2-ethylhexyl)phthalate (DEHP) in sediments of the Kaohsiung Ocean Disposal Site, Taiwan. C. Chen, C. Chen, Y. Ju, C. Hung, **C. Dong** 

480. Effectiveness of Eucalyptus Globulus extract as an insect repellant. S. Bommakanti

**481.** Non-destructive screening of collagen content in archaeological bone samples using hand-held Raman spectroscopy. B.J. Vesper, **M.D. Colvard**, G.A. Cordell, W.J. Pestle

**482.** Degradation of polychlorinated biphenyls using magnesium/carbon with Ethanol/Ethyl Lactate solvent system and its potential applications for contaminated soil. **F.M. Zullo**, A. Almutairi, D.E. Richardson, C. Clausen, C. Yestrebsky

483. Using an artificial oil platform to study the dissolution rates of different PAHs from micron sized droplets. K.A. Sandoval

**484.** Solid phase extraction of naproxen in environmental samples using molecularly imprinted polymer sorbents. **R. Wise**, E.E. Mojica

**485.** Analysis of continuous-flow column and batch bottle microcosm perchloroethylene biodegradation treatability studies. **E.M. Driver**, J. Roberts, P. Dollar, M. Charles, P. Hurst, R.U. Halden

**486.** Elemental distribution in influent, biosolids, and effluent of five wastewater treatment plants in Savannah, Georgia, USA. **K. Sajwan**, K. Ballou, T. Newsome, T. Morris, K. Meadows, B.G. Loganathan

**487.** Photo-enhanced biodegradation of a test substance using artificial sunlight with a ready biodegradation test design. **S.P. McLaughlin**, T. Timmons, A. Griffith, K. Malekani

**488.** *Triumfetta semitriloba mucilage* a promising natural floculant for water treatment. **L.G. Romero**, A. Araya, J. Valverde, J. Jiménez, P. Rojas, A. Acuña

**489.** Phytotoxicity of copper nanowires in environmentally relevant species. **D.E. Gorka**, K.A. Marsh, P. Flowers, B.J. Wiley, J. Liu

**490.** Effects of environmental contaminants on the weathering of stone cultural properties in South Korea. **J. Jung**, M. Jung, B. Shon, K. Yoo, Y. Phee, H. Lim

**491.** Evaluating the operation of an enhanced aquisition system for conducting vapor pressure measurements on volatile organic compounds (VOCs). **S. Abernathy** 

492. New technique for ppt levels of mercury in air and water. J.N. Driscoll, J.L. Maclachlan

493. Withdrawn

**494.** Illicit drugs in the air of three Northern European cities. **A. Cecinato**, C. Balducci, M. Perilli, R. Krejci, C. Johansson, D.C. Green, P. Panteliadis

495. Illicit drugs in the indoor air. A. Cecinato, C. Balducci, M. Perilli, P. Romagnoli

**496.** Comparison of various chemical scrubbing agents used in the simultaneous removal of  $SO_2$  and  $NO_x$  in simulated flue gas systems. **Y.G. Adewuyi** 

497. Particle size distributions of trace elements in a community near industrial and traffic sources. I. Han, Y. Guo, M. Afshar

498. Withdrawn.

499. Withdrawn.

**500.** Zinc-glutamate metal organic framework catalyst for the cycloaddition of  $CO_2$  with epoxides. A. Cherian K, K. Hwang, **D. Park** 

**501.** Development of DMC synthesis process using adsorptive copper-based catalysts. **J. Moon**, N. Yoo, J. Woo, Y. Park, H. Kim, D. Chun, G. Jin

**502.** Synthesis of metal-organic porous catalysts and their catalytic properties for the synthesis of propylene carbonate through CO<sub>2</sub> fixation to propylene oxide. **Y. Park**, H. Kim, J. Moon, D. Chun

**503.** Mn-Fe/TiO<sub>2</sub> catalysts synthesized by deposition precipitation - promising for SCR of NO with  $NH_3$  at low temperatures. L. Schill, S. Putluru, R. Fehrmann, A.D. Jensen

**504.** Promoted  $V_2O_5/TiO_2$  catalysts for selective catalytic reduction of NO with NH<sub>3</sub>. **P. Siva Sankar Reddy**, L. Schill, A.D. Jensen, R. Fehrmann

505. Selective gas absorption by ionic liquids. **R. Fehrmann**, A. Riisager, S. Mossin, P.L. Thomassen, H. Kolding, A. Kunov-Kruse

**506.** Conversion of flue gas  $NO_x$  to nitric acid using ionic liquids – an optimized  $NO_x$  abatement strategy. **P. Thomassen**, S. Mossin, A. Riisager, R. Fehrmann

507. Determining electronic waste flows. J.A. Glaser

**509.** Water quality change along urbanization processes according to pesticides and PPCPs distribution within different population area in Suzhou, China. **S. Qin**, H. Jeong

510. Polybenzoxazine-based carbon aerogel for carbon dioxide capture. N. Jungsawat, U. Suriyapraphadilok

511. Withdrawn

**512.** Differeent approaches of surface treatmnt on activated carbon for CO<sub>2</sub> captured enhancement. **N. Thongwichit**, U. Suriyapraphadilok

**513.** Ecotoxicological risk assessment of pesticidal persistent organic pollutants in the surface riverine water from eastern and north-eastern part of India. P. Chakraborty, S. Khuman, S. Selvaraj, **B. Loganathan** 

**514.** Carbohydrate aldehydes as homobifunctional cross-linker analogues for biopolymer stabilization and immobilized enzyme systems. **D.E. Wong**, J.M. Goddard

515. Withdrawn

**516.** Wastewater treatment using an integrated fixed-film activated sludge-sequencing batch biofilm reactor (IFAS-SBR): Impact of carbon nitrogen ratio on microbial population dynamics. **Y. Shao**, Y. Shi, A. Mohammed, Y. Liu

## Green Chemistry and the Environment

Cosponsored by YCC A. M. Balu, R. Luque, S. O. Obare, *Organizers* 

#### 6:00 - 8:00

**517.** Selective oxofuncionalization of aliphatic compounds by semiconductor-based heterogeneous photocatalysis. **D. Contreras**, **A. Henriquez**, F. Benitez, L. Cornejo, H.D. Mansilla, J. Freer

**518.** Crystallographic studies of fully dehydrated and partially  $Zn^{2+}$ -exchanged zeolites Y (FAU, Si/Al = 1.56) depending on  $Zn^{2+}$  concentration of aqueous solution during exchange. D. Moon, H. Kim, H. Lee, S. Choi, J. Kim, Y. Kim, W. Lim

**519.** Crystallographic determination of  $Mn^{2+}$ -ion exchange sites in zeolite Y (FAU, Si/Al = 1.56). D. Moon, S. Seo, J. Seo, H. Lee, H. Kim, C. Lee, **W. Lim** 

**520.** Single-crystal structures of Cs<sup>+</sup>-exchanged Zeolite Y:dependence on Cs<sup>+</sup> concentration of aqueous solution during exchange. H. Kim, H. Lee, D. Moon, D. Chung, E. Lee, K. Kim, K. Lee, W. Lim

521. Investigation of the thermal behavior of magnesium ammonium phosphate hexahydrate. M.V. Ramlogan, A. Rouff

522. Assessing quality of herbal medicines contaminated by heavy metals. F. Hassaine-Sadi

**523.** Sustainable dyeing technique using environmental friendly solvents to eliminate waste streams from coloration of cotton. **B. Wang**, L. Chen, X. Ruan, J. Chen, Y. Yang

**524.** Sustainable and hydrolysis-free dyeing process for polylactic acid using nonaqueous medium. **S. Xu**, J. Chen, B. Wang, Y. Yang

**525.** Non-toxic, renewable, and cost-effective crosslinking system based on citric acid and xylitol as a replacement of the formaldehyde-releasing N-methylol crosslinkers. **J. Liu**, B. Wang, J. Chen, X. Xu, Y. Yang

#### Heterogeneous Catalysis for Environmental Applications

Cosponsored by CATL S. Zhao, A. Orlov, A. Savara, *Organizer* 

#### 6:00 - 8:00

**199.** Developing novel perovskite-based nano-composite materials for photocatalytic energy applications. Q. Wu, J. Cen, Y. Zhao, E.L. Connors, D. Su, S. Zhao, M.G. White, **A. Orlov** 

#### 526. Withdrawn

**527.** Application of Fe<sub>3</sub>O<sub>4</sub> activated persulfate oxidation for the degradation PAHs in sediments. C. Hung, C. Chen, C. Chen, Y. Jhuang, **C. Dong** 

**528.** Heterogeneous catalytic conversion of biomass-derived vicinal di-ols to epoxides. T. Kim, J. Baek, C. Song, Y. Yun, D. Yun, W. Kim, J. Han, J. Yi

529. Infrared heating synthesis of carbon nitride nanorods with enhanced photocatalytic activities. H. Li, M. Chen

## Hydrothermal Carbonization: Possibilities and Limits for Feedstocks, Processes and Applications

Cosponsored by AGRO Financially supported by AEESP (Association of Environmental Engineering and Science Professors) S. Chang, J. A. Libra, C. Coronella, K. Ro, *Organizers* 

#### 6:00 - 8:00

530. Withdrawn

**531.** Optimization of activated carbons for supercapacitors from hydrothermally carbonized sugars. **K. Lee**, W. Hao, E. Björkman, F. Bjorefors, A.M. Andersson, N. Hedin

532. Herbicide sorption capacities of chars made from animal manures and food waste. S. Lee, K. Ro, S. Bae

#### Nano-Enabled Environmental Technologies

Financially supported by Boston University, Division of Materials Science & Engineering J. L. Goldfarb, K. Doudrik, K. D. Hristovski, *Organizer* 

#### 6:00 - 8:00

533. Aerogel catalysts for direct remediation of NH3 malodor in air. H. Chen, W. Han, Z. Liu, K.L. Yeung

534. Nanometal oxides as potential remediating materials in removing heavy metals in water samples. M. Qiu, E.E. Mojica

## New Challenges in Water Quality, Treatment, Reuse and Sustainability: Chemistry and Application of Advanced Oxidation Processes for Removal of Contaminants of Concern and Transformation Products

Cosponsored by CEI R. de Fatima Peralta Muniz Moriera, G. Li Puma, D. Minakata, K. E. O'Shea, D. D. Dionysiou, *Organizers* 

#### 6:00 - 8:00

**535.** Decomposition of perfluorooctanoic acid by palladium doped nanoscale zerovalent iron conjugated with persulfate and peroxymonosulfate. **W.A. Lawal**, H. Choi

**536.** Regional distribution of styrene oligomer generated from polystyrene surrounding Japan. B. Kwon, **K. Koizumi**, A. Okabe, H. Sato, S. Chung, D.M. Karl, M. Nishimura, Y. Kodera, **K. Saido** 

**537.** Photolytic and photocatalytic decomposition of pharmaceuticals in water: Introduction of UV-LEDs and impact of wavelengths. **M. Eskandarian**, M. Fazli, M. Rasoulifard, H. Choi

**538.** Comparative study on the catalytic degradation of paracetamol by Pd-TiO<sub>2</sub> and TiO<sub>2</sub> induced advanced oxidation processes. **A. Ziylan Yavas** 

539. Fenton reaction driven by catechols. D. Contreras, A. Henriquez, V. Melin, P. Salgado, H.D. Mansilla, L. Cornejo

**540.** Oxidation of three selected emerging contaminants by persulfate ion coupled with UV irradiation. **J. Benitez**, F. Real, J. Acero, F. Casas

**541.** Evaluation of sensitizing effect of methyl red in the photocatalytic degradation of diclofenac under natural sunlight. J. Diaz-Angulo, M. Mueses, **F. Machuca-Martinez** 

**542.** TiO<sub>2</sub>-graphene composites for the degradation of pollutants in aqueous and gaseous medium. J. Suave, J. Ângelo, L. Andrade, **R.F. Moreira**, A. Mendes

**543.** Photocatalytic oxidation of gentisic acid on ZnO using UVA and solar light. **H.D. Mansilla**, K. Antil-Martini, D. Contreras, J. Yanez, L. Cornejo

**544.** Experimental evaluation, modeling, and simulation of a new pilot-scale photocatalytic solar reactor for wastewater treatment. **M.Á. Mueses**, K.S. Ochoa-Gutiérrez, F. Machuca-Martinez, G. Li Puma

**545.** Degradation of commercial drugs with a solar flat plate reactor by means of supported  $TiO_2$  - based photocatalysis. J.A. Colina-Marquez, **F. Machuca-Martinez**, **M.Á. Mueses** 

**546.** Advanced oxidation processes for sulfur molecules removal with Fe-Mo/C catalysts. **A. Barbosa Lopez**, W. Licona, A. Alvarez

**547.** Evaluation of the catalytic effect of the ozone/graphene process: Comparison of GO, nGO, and oGO. **H. Oh**, Y. Yoon, Y. Ahn, M. Kwon, W. Park, W. Yang, J. Kang

**548.** Reaction kinetics, decomposition pathways, and reactor modeling of anthraquinone dye reactive Blue 19 oxidation using ozone and UV radiation. M. Lovato, M. Fiasconaro, **C. Martin** 

**549.** Photocatalytic performance of WO<sub>3</sub>/TiO<sub>2</sub>-N on the degradation of diclofenac solution under visible light radiation. **A. Hernandez-Ramirez**, A. Cordero-García, M. Rodriguez-Ramirez, E. Ruiz-Ruiz, M. Villanueva-Rodriguez, L. Hinojosa-Reyes, J. Guzman-Mar

**550.** Enhanced degradation rate of emerging contaminants using luminscent materials promoted visible light active photocatalyst. **O. Sacco**, D. Sannino, V. Vaiano, P. Ciambelli

**551.** Solar photocatalytic treatment of commercial dicloxacillin using a pilot-scale CPC reactor. **A. Arce-Sarria**, H.L. Otálvaro-Marín, F. Machuca-Martinez, M.Á. Mueses, J.A. Colina-Marquez, A. Hernandez-Ramirez

**552.** Organotitanias: New approaches based in hybrid titanias for photocatalytic and solar cell applications. M. Rico, A.E. Sepulveda, C. Ezquerro, E. Lalinde, E. Serrano, J.R. Berenguer, **J. Garcia Martinez** 

**553.** Comparative study for the removal and destruction of pentachlorophenol using activated magnesium treatment systems. **A. Garbou**, P.M. Cole, C. Clausen, C. Yestrebsky

**554.** Biosorption of phenolic compounds from aqueous solutions using marine macroalgae. **A. Hernandez-Vega**, S. Marrero, C. Declet, L. Diaz, A. Navarro

555. Occurrence of glyphosate in agricultural farm drainage waters. B.G. Loganathan, P. Yerneni, K. Sajwan

## **Reclamation, Remediation, Restoration: Novel Approaches to Environmental Challenges**

Cosponsored by AGRO L. S. Lee, M. Mashtare, L. Royer, *Organizers* 

6:00 - 8:00

**556.** Sulfamethazine adsorption isotherms and kinetics with hypercrosslinked polymer MN250 at varying ionic strengths. **M.E. Grimmett** 

557. Application of superoxide chemistry to ocean acidification. M. Johnson

#### Resource Recovery and Contaminant Elimination in Waste Streams of Increasing Concern

Financially supported by AEESP (Association of Environmental Engineering and Science Professors) T. H. Boyer, C. Huang, *Organizers* 

6:00 - 8:00

558. Removal of Cr(VI) using lignin and sericin beads. K. Lee, H. Kwak, H. Yun

559. Strategic and rare earth elements in produced waters. J. Rajterowski, J. Renew

**560.** Screening the effects of ligand chemistry and geometry on rare earth element partitioning from saline solutions to functionalized adsorbents. **C. Noack**, K. Perkins, N. Washburn, D.A. Dzombak, A. Karamalidis

#### Sensing of Environmentally Relevant Contaminants

Cosponsored by AGRO Financially supported by AEESP (Association of Environmental Engineering and Science Professors) B. P. Chaplin, D. Jassby, *Organizers* 

#### 6:00 - 8:00

**561.** Ratiometric Cu(II) sensor: Design and synthesis of a Zn(II)-chelator to minimize interference with Cu(II) sensing. **M.** Abdalrahman

### Using Passive Sampling Techniques to Detect Organic Contaminants

Cosponsored by AGRO and ORGN Financially supported by AEESP (Association of Environmental Engineering and Science Professors) C. A. McDonough, R. Lohmann, *Organizer* 

#### 6:00 - 8:00

562. Evaluating the effectiveness of passive sampling as a surrogate for organism bioaccumulation. A. Joyce, R.M. Burgess

563. Polyethylene: An alternative passive sampler for monitoring fluorotelomer alcohol. E. Dixon-Anderson, R. Lohmann

564. Non-granular graphitic carbon passive samplers. P. Benedetti, E. Guerriero, C. Crescenzi

**565.** Spatial distribution and source identification of dissolved PCBs, OCPs, and PAHs in the surface water of the Narragansett Bay Watershed using passive polyethylene samplers. W. Zhao, M. Cai, D. Adelman, **R. Lohmann** 

## THURSDAY MORNING

Boston Park Plaza Hotel and Towers Tremont Room

### Advances in Chemistry for Carbon Capture, Utilization and Sequestration

Cosponsored by ENFL P. Fennell, N. Florin, M. Zhao, *Organizers* 

**8:00 566.** Thermodynamic properties of carbon dioxide clathrate hydrates toward CCUS application. **R. Belosludov**, O. Subbotin, R. Zhdanov, V. Belosludov, Y. Kawazoe

8:20 567. Withdrawn

8:40 568. Analysis of nitrosamines in amine-based CO<sub>2</sub> capture. M. Combs, J. Thompson, K. Liu

**9:00 569.** New approach to carbon dioxide utilization: The carbon molten air battery. **J.F. Stuart**, J. Lau, J. Ren, F. Li, M. Lefler, S.L. Licht

**9:20 570.** Effective CO<sub>2</sub> capture by covalent organic polymers through amine binding and N<sub>2</sub> rejection. J. Byun, H.A. Patel, D. Thirion, E. Ozdemir, S. Subramanian, C.T. Yavuz

**9:40** Intermission.

9:55 571. CO2 capture using metal oxyhydroxide-biochar nanocomposites. A. Creamer, B. Gao

10:15 572. CO<sub>2</sub> solubility performance of deep eutectic solvents. M. Atilhan, S. Aparicio-Martinez, R. Ullah

10:35 573. Minimizing nitrosamine formation in amine-based post-combustion CO<sub>2</sub> capture systems by amine selection. N. Dai

10:55 574. Reactivity of CO<sub>2</sub> in molten alkali carbonates: A DFT study. D. Corradini, F. Coudert, R. Vuilleumier

11:15 575. Withdrawn

Boston Park Plaza Hotel and Towers Berkeley/Clarendon Room

**Biological Inspiration for Environmental Sustainability: Bioinspired Approaches for Energy Conversion, Storage and Materials** 

#### **Bioinspired Designs: From Molecules to Functional Materials**

Cosponsored by CEI, ENFL, ORGN and PHYS K. Rajeshwar, V. I. Vullev, *Organizers, Presiding* 

8:00 Introductory Remarks.

**8:05 576.** Challenges to the use of anthocyanins as natural coloring agents and anti-oxidants. **F.H. Quina**, C. Pacheco da Silva, B. Held, V. Oliveira Silva

8:45 577. Nitropyrene derivatives for bioinspired charge-transfer system. E.M. Espinoza, B. Xia, J.M. Larsen, V.I. Vullev

Section B

Section C

**9:05 578.** Erythrocyte-derived nanoparticles for actively targeted near infrared imaging of cancer biomarkers. **J. Mac**, V. Nunez, B. Bahmani, Y. Guerrero, V.I. Vullev, B. Anvari

9:25 579. Withdrawn

**9:45** Intermission.

10:00 580. Bioinspired superhydrophobic surfaces: From molecule to materials. F. Guittard

10:40 581. Sticky coatings: Design and synthesis of functionalizable polymeric interfaces. A. Sanyal

**11:20 582.** Nature-inspired synthesis of hybrid nanomaterials and nanoparticles based on a smart use of natural hyperbranched polyelectrolytes – humic substances. **I.V. Perminova**, A.B. Volikov, S. Ponomarenko, A.Y. Polyakov, E.A. Shirshin, V.A. Lebedev, E.A. Goodilin, K. Hatfield

**11:40 583.** Characterization of metabolic changes in *Ettlia oleaobundans* under nitrate limitation. **E. Matich**, D. Butryn, M. Ghafari, D.S. Aga, G.E. Atilla-Gokcumen, B.Z. Haznedaroglu

Section D

Boston Park Plaza Hotel and Towers Beacon Hill Room

Resource Recovery and Contaminant Elimination in Waste Streams of Increasing Concern

## Nutrient Recovery: Wastewater and Organic Byproducts

Financially supported by AEESP (Association of Environmental Engineering and Science Professors) T. H. Boyer, C. Huang, *Organizers, Presiding* 

8:00 Introductory Remarks.

**8:05 584.** Efficient phosphate remediation using existing wastewater treatment plant technology. **D. Riccardi**, C. Van Cleave, A.S. Hood, L.M. Pegram, D. Michael

**8:30 585.** Development of anion exchange resins using various waste lignocellulosic materials and environment friendly methods for the removal of phosphate from water. **M. Wazne** 

8:55 586. Withdrawn

9:20 Intermission.

9:35 587. Interaction of trace elements with struvite during phosphorus recovery from contaminated water. A. Rouff

**10:10 588.** Phosphorus speciation in wastewater biosolids for efficient phosphorous recovery. **C.F. Gutierrez**, L.E. Katz, K. Kinney

**10:35 589.** Recovering phosphorus from poultry litter: Impact of organic matter on recovery. U. Shashvatt, K.P. Mangalgiri, L.M. Blaney

**11:00** Panel Discussion.

Boston Park Plaza Hotel and Towers Stuart Room

#### Environmental Transformation of Nanoparticles: Processes, Mechanisms, and Ecological Impacts

#### **Physicochemical Transformations**

M. Cledon, K. D. Hristovski, P. Larese-Casanova, *Organizers* B. Lau, W. Yan, *Organizers, Presiding* 

8:00 Introductory Remarks.

**8:05 590.** Photo-induced transformations of polymeric coatings on gold nanoparticles. **S.M. Louie**, E.A. McGivney, K.B. Gregory, V.A. Hackley

**8:30 591.** Influence of solution chemistry and protein corona on the interactions of silver nanoparticles with model biological nembranes: Implications for nanotoxicity. **Q. Wang**, M. Lim, K. Chen

**8:50 592.** Aggregation of chemical mechanical planarization nanoparticles and their interactions with model cell membranes. **X.** Liu, K. Chen

**9:10 593.** Exchange of surfactant by natural organic matter on the surfaces of multiwalled carbon nanotubes. **X. Chang**, D.C. Bouchard

**9:30 594.** Catalytic activity of interfacial iron on mineral nanoparticles: Effects of aqueous iron precursors and mineral substrates. **Y. Li**, W. Yan

**9:50** Intermission.

**10:05 595.** Aggregation kinetics of carbon nanotube and metal or metal oxide nanohybrids in aquatic environment. **D. Das**, I.V. Sabaraya, N. Aich, **N.B. Saleh** 

10:25 596. Nano-bio interaction: Influence of carbon nanotubes on virus like particle (VLP) transport through saturated porous media. **D. Das**, A. Afrooz, J. Lednicky, T. Sabo-Attwood, **N.B. Saleh** 

10:45 597. Withdrawn

**11:05 598.** Detection and quantification of engineered metal nanoparticles in municipal wastewaters and biosolids. **M.M. Azodi**, F. Piccapietra, N. Tufenkji, S. Ghoshal

**11:25 599.** Particles and VOC emissions properties from recent gasoline DI and DPF diesel vehicles. **H. Yamada**, S. Inomata, H. Tanimoto

**11:45 600.** Formation, aggregation, and deposition of NOM-iron colloids formed at anoxic-oxic interfaces. **P. Liao**, S. Yuan, D. Giammar, C. Pan

Boston Park Plaza Hotel and Towers Cambridge Room

## Emerging Electrochemical Water Remediation Technologies: A Symposium in Honor of Professor Enric Brillas and Professor Mehmet A. Oturan

**Photo-Assisted Processes** 

Cosponsored by AGRO F. A. Monterrubio, I. S. Sardonil, V. K. Sharma, *Organizers* M. A. Oturan, H. Zhang, *Presiding* 

8:00 601. Withdrawn

**8:20 602.** Simultaneously photoelectrochemical oxidation of azo dye and generation of hydrogen via C-N co-doped  $TiO_2$  nanotube arrays. **Y. Peng**, H. Chen, Q. Sun, Y. Chiu

8:40 603. Copper recovery combined with electricity production in a photoelectrochemical device. C. He, L. Hu, W. Pan, Y. Hou

**9:00 604.** Salicylic acid degradation and mineralization by coupling advanced oxidation processes: Photo electro Fenton, anodic oxidation and heterogeneous photocatalysis. **B. Garza**, A. El-Ghenymy, E. Brillas, A. Hernandez-Ramirez, **E. Ruiz** 

**9:20** Intermission.

9:35 605. Treatment of biologically treated landfill leachate by solar photoelectro-Fenton system using a recirculation reactor. Z. Ye, J. Geng, M. Chen, L. Wu, Y. Qian, L. Yang, H. Zhang

**9:55 606.** Solar photoelectro-Fenton degradation of the antibiotic metronidazole using a flow plant with Pt/air-diffusion cell and a CPC photoreactor. **T. Perez**, S. García-Segura, A. El-Ghenymy, J.L. Nava, E. Brillas

10:15 607. Solar photoelectro-Fenton treatment of organic pollutants in waters. E. Brillas

11:00 Concluding Remarks.

**Biomonitoring for Pesticide Exposures** Sponsored by AGRO, Cosponsored by ENVR

Chemical Processes Involving Atmospherically Relevant Trace Gases, Aerosols & Clouds Sponsored by PHYS, Cosponsored by ENVR

**Degradation of Halogenated Compounds in the Environment** Sponsored by AGRO, Cosponsored by ENVR

**Spray Application Technology** Sponsored by AGRO, Cosponsored by ENVR

## THURSDAY AFTERNOON

**Data to Decisions: Software Solutions for Modern Analytical Workflows** Sponsored by AGRO, Cosponsored by ANYL and ENVR Section F

# **Degradation of Halogenated Compounds in the Environment** Sponsored by AGRO, Cosponsored by ENVR

**Spray Application Technology** Sponsored by AGRO, Cosponsored by ENVR