

246th ACS National Meeting & Exposition Indianapolis, IN – September 8-12, 2013

Division of Environmental Chemistry
Dionysios D. Dionysiou, Program Chair

ENVR SOCIAL & NON-TECHNICAL EVENTS	S	M	T	W	T
Program Planning Committee Meeting Southern Rm, Crowne Plaza at Union Station	1:00–2:00 pm				
Long Range Planning Committee Meeting Southern Rm, Crowne Plaza at Union Station	2:00–3:00 pm				
Open Business Meeting Edison South Rm, Crowne Plaza at Union Station	7:00–7:30 pm				
Executive Committee Meeting Edison South Rm, Crowne Plaza at Union Station	7:30–10:00 pm				
Symposium Organizers' Lunch Harry & Izzy's Downtown, 153 S. Illinois Ave.		12:00–1:30 pm			
Dinner & Social (Tickets required) Shula's Steak House, 50 S. Capitol Ave., Indianapolis			6:30–9:00 pm		
ENVR TECHNICAL PROGRAM	S	M	T	W	T
Biogeochemical Interactions Affecting Bioavailability and Remediation of Hazardous Substances in the Environment (Cosponsored by GEOC; financially supported by NIEHS) Organizers: H. Henry, M. Maddaloni, J. Chorover Penn Station B, Crowne Plaza at Union Station	D	A		E	
Distribution and Fate of Emerging Contaminants in Hydrologic Systems of the Built Environment (Cosponsored by CEI) Organizers: A. MacKay, Y.P. Chin Penn Station A, Crowne Plaza at Union Station	D			E	
Environmental Fate and Reactivity of Highly Condensed Aromatic Carbon (Cosponsored by GEOC) Organizers: T. Filley, C. Jafvert, C. Johnston Victoria Station D, Crowne Plaza at Union Station	D			E	
Chemistry and Application of Green Catalysts for Energy Transformation and Emission Control (Cosponsored by CEI, ENFL) Organizers: V. Sharma, S.M. Chang, R.A. Doong Penn Station C, Crowne Plaza at Union Station	P			E	
Green Chemistry and the Environment (Cosponsored by CEI, GCI) Organizers: R. Luque, S. Obare Penn Station C, Crowne Plaza at Union Station		D		E	
Heterogeneous Catalysis for Environmental and Energy Applications (Cosponsored by CATL, ENFL) Organizers: A. Orlov, M. Castaldi Victoria Station D, Crowne Plaza at Union Station		D		E	
Predicting Molecular Properties of Environmental Contaminants: Empirical and Theoretical Methods (Cosponsored by AGRO, COMP) Organizers: P. Tratnyek, K. Fenner, D. Ditoro, E. Weber Penn Station A, Crowne Plaza at Union Station		D	A	E	
Air Monitoring (Cosponsored by AGRO, ANYL, CHAS) Organizer: J. Maclachlan Penn Station B, Crowne Plaza at Union Station		P		E	
Sci-Mix Halls F&G, Indiana Convention Center		E			
Advances in Understanding the Aquatic Fate of Metals: Nanomaterials and Natural Organic Materials. Organizer: E. Carraway Penn Station C, Crowne Plaza at Union Station			A		
Environmental Impacts of Electronic Technologies, Products and Processes: The Search for Sustainable Electronics (Cosponsored by CEI) Organizers: E. Sahle-Demessie, S.J. Lee Penn Station B, Crowne Plaza at Union Station			D	E	

Water: Global Problems, Local Solutions (Cosponsored by AGRO, CEI, IAC; Financially supported by ACS Global Innovation Imperatives) <i>Organizers: I. Urasa, A. Rimando, E. Contis</i> Penn Station D, Crowne Plaza at Union Station			D		
C. Ellen Gonter Environmental Chemistry Award Symposium. <i>Organizer: T. Anderson</i> Penn Station C, Crowne Plaza at Union Station			P		
Status and Trends of Classical and Emerging Contaminants Across the World (Cosponsored by AGRO, CEI; financially supported by: ACS Global Innovation Imperatives) <i>Organizers: K. Hristovski, S. Ahuja, N. Savage, B. Loganathan</i> Penn Station A, Crowne Plaza at Union Station			P	E	
Environmental Implications and Effects of Unconventional Gas Development (Cosponsored by GEOC) <i>Organizers: J. Vanbriesen, K. Gregory</i> Penn Station B/C, Crowne Plaza at Union Station				AE	
Fate and Toxicology of Emerging Environmental Contaminants (Cosponsored by: AGRO) <i>Organizers: X. Pan, S. Uchimiya, B. Zhang</i> Victoria Station D, Crowne Plaza at Union Station				DE	A
Materials-Based Technologies for Water and Energy Sustainability: Research Frontiers and Practical Challenges to Adoption (Cosponsored by AEESP, CEI, ENFL) <i>Organizers: T. Strathmann, D. Cwiertny, C. Na, M. Kumar</i> Penn Station A, Crowne Plaza at Union Station				DE	A
Membranes for Water Purification (Cosponsored by POLY) <i>Organizers: K. Jones, D. Jassby, B. Mi</i> Penn Station B, Crowne Plaza at Union Station				DE	
Environmental Electrochemistry: Principals and Applications. <i>Organizers: C.P. Huang, G.H. Chen, K. Nakata, J.H. Qu, S.C. Yen</i> Penn Station C, Crowne Plaza at Union Station				PE	
Fate of Environmental Pollutants in Biogeochemical Interfaces (Cosponsored by GEOC) <i>Organizers: W. Lee, S. Han</i> Penn Station B, Crowne Plaza at Union Station				E	A
General Posters. <i>Organizer: D. Dionysiou</i> Halls F&G, Indiana Convention Center				E	
Co-sponsored Symposia:					
ADME: The Motion of Veterinary Drugs and Xenobiotics (AGRO; cosponsored by ENVR, AGFD) <i>Organizers: Teresa Wehner, Sara Lupton</i> B&O, Crowne Plaza at Union Station	P				
Air Quality at the Interface of Megacities and Agricultural Areas (AGRO; cosponsored by ENVR, CEI; financially supported by SETAC) <i>Organizers: Elin Ulrich, George Cobb, Laura McConnell, Peter Green, Sasha Madronich</i> Milwaukee, Crowne Plaza at Union Station					D
Environmental Fate, Transport, and Modeling of Agriculturally-Related Chemicals (AGRO; cosponsored by ENVR) <i>Organizers: Natalia Peranginangin, Scott Jackson, Thomas Potter</i> Milwaukee, Crowne Plaza at Union Station		D			
High-Throughput Pesticide Residue Analysis (AGRO; cosponsored by ENVR, ANYL; financially supported by Monsanto) <i>Organizers: Leah Riter, Manasi Saha</i> B&O, Crowne Plaza at Union Station			A		
Uptake, Translocation, and Distribution of Agrochemicals in Plants (AGRO; cosponsored by AGFD, ENVR; financially supported by Dow AgroSciences) <i>Organizers: Kyung Myung, Coleen Kennedy, Norbert Satchivi</i> Illinois Street Ballroom East, Crowne Plaza at Union Station				P	
Undergraduate Research Posters (CHED; cosponsored by ENVR, SOCED) <i>Organizers: Carmen Collazo, Elzbieta Cook</i> Halls F&G, Indiana Convention Center		P			
Science-Based Policy Development in the Environment, Food, Health, and Transport Sectors (CINF) Crowne Plaza at Union Station		P			
Biomass and Biotechnologies for Energy (ENFL; cosponsored by ENVR) <i>Organizers: Jillian Goldfarb, Feng Zhao, Lanrong Bi, Calvin Mukarakate, Mark Nimlos</i> Rm 124, Indiana Convention Center				D	A

Fuels, Chemicals, Materials, and Energy from Coal, Natural Gas, Oil Shale, and other Natural Resources (ENFL; cosponsored by ENVR) <i>Organizer: Yun Hu</i> Rm 126, Indiana Convention Center	D	A			
Hydrogen Energy (ENFL; cosponsored by ENVR) <i>Organizers: Jingbo Liu, Hui Xiong, Huaiyu Shao</i> Rm 122, Indiana Convention Center		D			
Materials and Technologies for CO ₂ Capture, Sequestration, and Conversion (ENFL; cosponsored by ENVR) <i>Organizers: Ah-Hyung Park, Fangming Jin, Liang-Nian He</i> Rm. 125, Indiana Convention Center	D	D	D		
Solar Energy Conversion and Utilization (ENFL; cosponsored by ENVR) <i>Organizers: Yat Li, Ranjit Koodali</i> Rm. 127, Indiana Convention Center	D	D			
Biogeochemical Controls on Transition Metal Concentrations in Natural Waters (GEOC; cosponsored by ENVR) <i>Organizers: Laura Wasylenki, Lev Spivak-Birndorf</i> Rm. 117, Indiana Convention Center		P			
Chemical Approaches to Understanding Metabolic Activity of Microorganisms in Environmental Settings through Geological Time (GEOC; cosponsored by ENVR) <i>Organizers: Greg Druschel, Edward Crane</i> Rm. 114, Indiana Convention Center			P		
Geochemistry of Shales: From Gas to Hydraulic Fracturing (GEOC; cosponsored by ENVR) <i>Organizers: Maria Mastalerz, Nancy Hasenmueller</i> Rm. 114, Indiana Convention Center		A			

Legend: **A** = AM; **P** = PM; **D** = AM/PM; **E** = EVE; **AE** = AM/EVE; **DE** = AM/PM/EVE; **PE** = PM/EVE;

246th ACS National Meeting, Indianapolis, IN September 8-12, 2013

DIVISION OF ENVIRONMENTAL CHEMISTRY

D. Dionysiou, *Program Chair*

SUNDAY MORNING

Section A

Crowne Plaza at Historic Union Station
Victoria Station D

Environmental Fate and Reactivity of Highly Condensed Aromatic Carbon

Cosponsored by GEOC

T. Filley, C. Johnston, *Organizers*

C. Jafvert, *Organizer, Presiding*

9:00 Introductory Remarks.

9:05 1. Charcoal chemistry: Irrelevant to environmental residence time? **C. A. Masiello**, C. E. Brewer, B. Dugan, H. M. Gonnermann, K. Zygourakis, C. Davies, P. Panzacchi, V. J. Chuang, L. A. Pyle

9:25 2. Evidence for stability vs. biodegradability of condensed carbon materials in soil. **P. A. Holden**, Y. Ge, J. Priester, J. Kim

9:45 3. Photochemical transformations of carbon nanotubes in suspension and embedded in polymer nanocomposites. **H.**

Fairbrother, J. Bitter, R. Lankone, S. Beigzadeh-Milani, C. Jafvert

10:05 4. Feedstock and pyrolysis processes affect chemical properties of biochars. **J. M. Gonzalez**, A. Hass, I. M. Lima, D. Patel, A. A. Boateng

10:25 Intermission.

10:40 5. Spectroscopic, molecular dynamics and sorption studies of PCDDs and PAHs interactions with black carbon and contrasting geosorbents. **C. T. Johnston**, B. Khan, K. Das, C. Liu, B. J. Teppen, S. A. Boyd, E. F. Barth, S. Chattopadhyay

11:00 6. Using solid-state NMR to monitor the chemical structure of pyrogenic organic matter from pine and maple forest species. **S.**

Chatterjee, K. Dastmalchi, B. Itin, S. Abiven, J. A. Bird, R. E. STARK

11:20 7. Sequential photochemical-biochemical decay pathways for condensed aromatic carbon in the terrestrial environment. **T.**

Filley, T. Berry, C. Gibson, R. Wang

11:40 8. C₆₀ oxide as a key component of aqueous C₆₀ colloidal suspensions. **K. D. Ausman**, B. S. Murdianti, J. T. Damron, M. E.

Hilburn, R. D. Maples, R. S. Hikkaduwa Koralege, S. I. Kuriyavar

Section B

Crowne Plaza at Historic Union Station
Penn Station A

Distribution and Fate of Emerging Contaminants in Hydrologic Systems of the Built Environment

Cosponsored by CEI

Y. Chin, *Organizer*

A. MacKay, *Organizer, Presiding*

8:30 Introductory Remarks.

8:35 9. Evaluation of analytical and model-based rapid screening approaches to assess exposure of surface waters to human pharmaceuticals. **K. Fenner**, C. S. McArdeell, A. E. Woessner, H. P. Singer

9:00 10. Developing a watershed-level protocol for choosing indicators for endocrine disrupting compounds and pharmaceuticals and personal care products (EDCs/PPCPs) using analytical methods and chemometrics. **V. Srinivasan**, D. Reckhow, M. Park

9:20 11. Antibiotics and antibiotic resistance in a river impacted by agricultural and municipal inputs. **K. H. Wammer**, M. E. Moffatt, E. W. Beck, T. R. Burch, T. M. LaPara, D. R. Stoll

9:40 12. Chemical and microbial contaminants of emerging concern in source and treated drinking water. **S. T. Glassmeyer**, E.

Furlong, D. Kolpin, A. Batt, B. Benson, S. Boone, O. Conerly, M. Donohue, M. Kostich, H. Mash, S. Pfaller, K. Schenck, J. Simmons, E. Varughese, S. Vesper, E. Villegas, V. Wilson

10:00 Intermission.

10:15 13. Occurrence and fate of carbamezapine and five metabolites in an urban aquifer under different redox conditions. **D.**

Barcelo, A. Jurado, R. Lopez-Serna, E. Vazquez, J. Carrera, E. Pujades, M. Petrovic

10:35 14. Fate of steroid hormones in constructed wetlands. **H. Hakk**, F. X. Casey

10:55 15. Evaluating the implications of unique transformation pathways on the environmental fate of synthetic steroids used in animal agriculture. **E. P. Kolodziej**, D. M. Cwiertny, E. Cole, G. D. Jones, E. A. Marchand, S. Qu

11:15 16. Reversible photohydration of dienone and trienone steroids. **D. M. Cwiertny**, E. P. Kolodziej, S. Qu

Crowne Plaza at Historic Union Station
Penn Station B

Biogeochemical Interactions Affecting Bioavailability and Remediation of Hazardous Substances in the Environment

Challenges of In-Situ Pb Immobilization: Environmental Factors, Policy, and Risk

Cosponsored by GEOC

J. Chorover, *Organizer*

H. Henry, M. Maddaloni, *Organizers, Presiding*

8:30 Introductory Remarks.

8:35 17. State of the science: New recommendations on elevated Pb blood level and implications to lead soil remediation. **M. Maddaloni**

9:00 18. Understanding microbial communities, lead availability, and their potential Interactions at an abandoned firing range in Oak Ridge, TN. **C. W. Schadt**, T. S. Sullivan-Guest, K. G. Scheckel, P. M. Jardine, N. T. Basta

9:25 19. Are phosphorus in situ Pb stabilization treatments equal? **N. T. Basta**, K. K. Minca, K. G. Scheckel, M. E. Moser

9:50 Intermission.

10:05 20. Lead stabilization and arsenic mobilization by phosphate and alternative amendments: Implications on urban soil remediation and urban agriculture. **Z. Cheng**, M. Maddaloni, K. G. Scheckel

10:30 21. Potential for transfer of lead, arsenic, and polycyclic aromatic hydrocarbons from amended urban soils to vegetables and humans. **G. M. Hettiarachchi**, C. Attanayake, P. Defoe, S. Martin, G. Pierzynski

10:55 22. Challenges of Pb immobilization and risk assessment. **K. G. Scheckel**, B. W. Miller, L. Li

11:20 Panel Discussion.

Fuels, Chemicals, Materials, and Energy from Coal, Natural Gas, Oil Shale, and other Natural Resources

Sponsored by ENFL, Cosponsored by ENVR

Materials and Technologies for CO₂ Capture, Sequestration, and Conversion

CO₂ Utilization in Green Chemistry

Sponsored by ENFL, Cosponsored by ENVR

Solar Energy Conversion and Utilization

Photovoltaics and Dye Sensitized Solar Cells

Sponsored by ENFL, Cosponsored by ENVR

SUNDAY AFTERNOON

Crowne Plaza at Historic Union Station
Victoria Station D

Environmental Fate and Reactivity of Highly Condensed Aromatic Carbon

Cosponsored by GEOC

C. Johnston, T. Filley, *Organizers*

C. Jafvert, *Organizer, Presiding*

1:30 23. Abiotic reactions involving single-walled carbon nanotubes in the aquatic environment. **C. T. Jafvert**, S. Beigzadeh-Milani, H. Hsieh

1:50 24. Turnover and microbial utilization of pyrogenic organic matter in forest soils. **J. A. Bird**, F. Santos, A. Winner, N. Singh, B. Maestrini, S. Abiven, M. W. Schmidt, M. S. Torn

2:10 25. Molecular sieving by micropores of carbonaceous geosorbents: Steered classical mechanics simulations. C. Liu, **B. J.**

Teppen, C. T. Johnston, H. Li, S. A. Boyd

2:30 26. Characteristics of biochars and potential benefits from biochar application to soils. **B. Singh**

2:50 27. Kinetics and reversibility of carbon nanotube deposition on supported lipid bilayers as model biological membranes. **P. Yi**, K. Chen

3:10 Panel Discussion.

Crowne Plaza at Historic Union Station
Penn Station A

Distribution and Fate of Emerging Contaminants in Hydrologic Systems of the Built Environment

Cosponsored by CEI

A. MacKay, *Organizer*

Y. Chin, *Organizer, Presiding*

1:30 Introductory Remarks.

- 1:35 28.** Generation of hydroxyl radicals by dissolved organic matter isolated from wastewater treatment plant outflows. **M. C. Semones**, A. A. Mackay, Y. Chin
- 1:55 29.** Probing the reactivity of triplet state dissolved organic matter from river water and treated wastewater. **L. C. Bodhipaksha**, Y. Chin, A. A. MacKay
- 2:15 30.** Application of advanced oxidation processes for the removal of organic contaminants from wastewater. **F. Rosario_ortiz**, E. Wert
- 2:35 31.** Coupled photocatalytic-biodegradation of 2,4,5-trichlorophenol: Effects of photocatalytic effluent composition on bioreactor community diversity and performance. **M. D. Marsolek**, M. Kirisits, K. A. Gray, B. E. Rittmann
- 2:55** Intermission.
- 3:10 32.** Evaluation of graphene particles for the removal of endocrine disrupting compounds and pharmaceuticals from water. **N. Cai**, P. Larese-Casanova
- 3:30 33.** Manganese oxide geomedia for treatment of trace organic contaminants in urban stormwater. **J. E. Grebel**, J. Charbonnet, D. L. Sedlak
- 3:50 34.** Cr(VI) treatment using pilot-scale UV photocatalytic reactor with nTiO₂. **H. Stancl**, P. Westerhoff
- 4:10 35.** Design of a micro-mini pulsed electric field device for drinking water disinfection. **S. Kwan**, K. Lam, P. Hung, O. Lee, J. Kwan, K. Yeung
- 4:30** Concluding Remarks.

Section C

Crowne Plaza at Historic Union Station
Penn Station B

Biogeochemical Interactions Affecting Bioavailability and Remediation of Hazardous Substances in the Environment

Metals: Mining and Drinking Water Residuals

Cosponsored by GEOC

H. Henry, M. Maddaloni, *Organizers*

J. Chorover, *Organizer, Presiding*

1:30 Introductory Remarks.

1:35 36. Toxic metal(loid) speciation is controlled by iron mineral (bio)weathering in phyto-stabilized mine tailings. **J. Chorover**, R. Root, C. Hammond, A. Valentin, R. Maier

1:55 37. Analysis of the metabolic potential and phylogenetic composition of rhizosphere microbial communities during the phytostabilization of metalliferous mine tailings. **A. V. Vargas**, K. N. Nelson, R. A. Root, J. Chorover, R. M. Maier

2:15 38. (Bio)geochemical mechanisms of metalloid phytostabilization in arid mine tailings. **R. A. Root**, C. M. Hammond, A. Adel, M. Amistadi, R. M. Maier, J. Chorover

2:35 39. Microbial nanointerfaces for uranium bioremediation. **G. Reguera**, R. M. Worden

2:55 Intermission.

3:10 40. Assessing chemical and microbial processes affecting arsenic stability in concrete containing arsenic-bearing wastes from drinking water treatment. **T. M. Clancy**, K. V. Snyder, K. F. Hayes, L. Raskin

3:30 41. Metal release from mine tailings under oxic and anoxic conditions. **S. R. Al-Abed**, P. X. Pinto, C. D. Holder

3:50 42. Anaerobic treatment of mine impacted water by sulfate-reducing bacteria using a chitin product substrate. **P. X. Pinto**, S. R. Al-Abed, C. D. Holder

4:10 43. Nanomaterials as intracellular detectors to monitor chromate reduction in remediating bacterium. **J. Irudayaraj**

4:30 44. Combined spectroscopic and topographic characterization of nanoscale electron transfer reactivity and distributions of redox proteins on bacterial cell surfaces. **H. Lu**

4:50 Panel Discussion.

Section D

Crowne Plaza at Historic Union Station
Penn Station C

Chemistry and Application of Green Catalysts for Energy Transformation and Emission Control

Cosponsored by CEI and ENFL

R. Doong, *Organizer*

V. Sharma, S. Chang, *Organizers, Presiding*

C. Wu, *Presiding*

1:30 Introductory Remarks.

1:35 45. Is surface doping or bulk doping more beneficial to the photocatalytic activity of TiO₂? **S. Chang**, W. Liu

1:55 46. Effect of ferric ions on the formation of hydroxyl radical from modified TiO₂ photocatalyst under visible light. C. Wu, K. Tu, **C. Wu**

2:15 47. Iron-enriched mineral oxides: A class of sustainable oxygenation catalysts for water decontamination. **W. Yan**, Y. Li, M. Ridley

2:35 48. High hydroxyl group density on the surface of TiO₂ pretreated with alkaline hydrogen peroxide. **C. Wu**, K. Tu, **C. Wu**

2:55 49. Kinetics of Tamiflu oxidation by Fe(VI). **J. Lee**, Y. Hong, C. Kim, V. K. Sharma, H. Ahn, **H. Kim**

3:15 Intermission.

3:30 50. Photocatalytic activity of carbon-based AgBr nanocomposites for reduction of CO₂ under visible light. **C. He**, J. Yang, Z. Fang, M. Abou Asi, L. Zhu

3:50 51. Use of densified biomass for improving energy security and mitigating greenhouse gas. G. K. Parshetti, **R. Balasubramanian**

4:10 52. Chemical characteristics of particulate emissions from diesel and biofuel combustion. **G. Engling**, K. Lin, O. Popovicheva

4:30 53. Fabrication of titania nanotubes as an photocathode for hydrogen evolution. **R. Doong**, H. Liao

4:50 54. Ferrate(VI): A green molecule in odorous gas treatment. **V. K. Sharma**, C. He, R. Zboril

5:10 Concluding Remarks.

ADME: The Motion of Veterinary Drugs and Xenobiotics

Sponsored by AGRO, Cosponsored by AGFD and ENVR

Fuels, Chemicals, Materials, and Energy from Coal, Natural Gas, Oil Shale, and other Natural Resources

Sponsored by ENFL, Cosponsored by ENVR

Materials and Technologies for CO₂ Capture, Sequestration, and Conversion

CO₂ Conversion into Energy Products and Chemicals

Sponsored by ENFL, Cosponsored by ENVR

Solar Energy Conversion and Utilization

Sponsored by ENFL, Cosponsored by ENVR

MONDAY MORNING

Section A

Crowne Plaza at Historic Union Station

Victoria Station D

Heterogeneous Catalysis for Environmental and Energy Applications

Cosponsored by CATL and ENFL

M. Castaldi, *Organizer*

A. Orlov, *Organizer, Presiding*

8:30 Introductory Remarks.

8:35 55. Tailoring the photocatalytic efficiency of nano-TiO₂ photocatalyst for the treatment of hazardous chemicals in water and more. **C. Huang**

9:15 56. Restraining the physical access of NOM into nanostructured TiO₂ photocatalysts for enhancing the decomposition of target water contaminants. **A. Zakersalehi, H. Choi**

9:40 57. Plasmonic photocatalysts for CO₂ conversion. **C. Wang**

10:05 58. Sunlight-based artificial photosynthesis systems for converting carbon dioxide to solar fuels and high-value commodity chemicals. **Y. Chen**, A. Thamban, M. T. Nguyen, B. Schupeta, M. Minkara, H. Menkara

10:30 Intermission.

10:45 59. Synthesis of Er³⁺/Yb³⁺/Fe³⁺-CaF₂@TiO₂ nanoparticles with enhanced near-infrared photocatalytic performance based on the upconversion luminescence properties. **S. Huang, L. Gu, Z. Lou**, N. Zhu

11:10 60. Proposed field scale photocatalytic reactor for in situ groundwater remediation. **L. Lim**, R. J. Lynch

11:35 61. Development of novel nanostructured biomimetic ceramics for sustainable energy applications. Q. Wu, **P. Shen**, S. Zhao, D. Su, Y. Li, A. Orlov

Section B

Crowne Plaza at Historic Union Station

Penn Station A

Predicting Molecular Properties of Environmental Contaminants: Empirical and Theoretical Methods

Partitioning

Cosponsored by AGRO and COMP⁺

E. Weber, K. Fenner, *Organizers*

P. G. Tratnyek, D. Ditoro, *Organizers, Presiding*

8:30 Introductory Remarks.

8:35 62. Perspective on the evolution and future of partition coefficients. **D. Mackay**, A. Celsie, M. Parnis

9:05 63. How accurate are physical property estimation programs for organosilicon compounds? **R. S. Boethling**, W. Meylan

9:25 64. Assessing the reliability of QSAR predictions for structurally complex chemicals. **T. N. Brown**, A. Stenzel, K. Goss

9:45 65. Physicochemical properties of C₆₀ related to its environmental fate and exposure. **C. T. Jafvert**, P. P. Kulkarni, C. Chen

10:05 Intermission.

10:25 66. Molecular simulation-based thermodynamic protocol for computing physicochemical properties of environmental contaminants. **S. I. Sandler**, A. Ahmed

10:55 67. Applications of polyparameter linear free energy relationships (PP-LFERs) for evaluating environmentally relevant partition coefficients of organic chemicals. **S. Endo**, K. Goss

11:15 68. Predicting chemical partitioning to environmental phases using molecular structure. **D. M. Di Toro**, O. Dmitrenko

11:35 69. General linear free energy relationship models for predicting vapor pressure and boiling point of organic and organosilicon compounds. **G. E. Kozerski**

Crowne Plaza at Historic Union Station
Penn Station B

Biogeochemical Interactions Affecting Bioavailability and Remediation of Hazardous Substances in the Environment

Stabilization of Organic Contaminants in the Environment

Cosponsored by GEOC

J. Chorover, M. Maddaloni, *Organizers*

H. Henry, *Organizer, Presiding*

9:00 Introductory Remarks.

9:05 70. Measurements and prediction of freely-dissolved PCB sediment pore water concentrations in enriched black carbon sediment. **A. Martinez**, C. O'Sullivan, D. Reible, K. C. Hornbuckle

9:25 71. Passive sampling coupled to UVB irradiation: A useful analytical approach for modeling toxic oxygenated polycyclic aromatic hydrocarbon formation in bioavailable mixtures. **M. R. Elie**, N. D. Forsberg, S. G. O'Connell, R. Tanguay, K. A. Anderson

9:45 72. Effects of surfactant on the removal of disinfection byproducts in an anaerobic biotrickling filter (BTF). **B. Mezgebe**, G. Sorial, A. Aly Hassan, E. Sahle-Demessie

10:05 Intermission.

10:20 73. Role of black carbon conductivity in mediating hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) degradation on carbon surfaces by sulfides. **W. Xu**, J. J. Pignatello, W. A. Mitch

10:40 74. Bioconcentration of energetic compounds - munitions constituents - in grasses (barley). **T. L. Torralba-Sanchez**, D. T. Kuo, D. M. Di Toro, H. E. Allen

11:00 75. Suppression of immune responses in mice as a result of feeding with TCDD sorbed to clay minerals or silica. **B. J. Teppen**, S. A. Boyd, B. L. Kaplan, C. T. Johnston, H. Li, N. E. Kaminski

11:20 Concluding Remarks.

Crowne Plaza at Historic Union Station
Penn Station C

Green Chemistry and the Environment

Cosponsored by CEI

Financially supported by ACS Green Chemistry Institute

R. Luque, S. Obare, *Organizers, Presiding*

8:30 Introductory Remarks.

8:35 76. WITHDRAWN

9:05 77. Understanding microbial biodegradability of green chemicals. **K. M. Docherty**

9:35 78. Revealing the intermediates and pathways of microcystin-LR degradation under visible light TiO₂ photocatalysis. J. M. Andersen, **D. D. Dionysiou**

10:05 79. Ultrasound as a basic and auxiliary process for dye remediation. **Z. Eren**

10:35 Intermission.

10:50 80. Role of surface chemistry in the photocatalytic properties of carbon-doped TiO₂. **W. Ching**, S. Ferdousi, K. Yeung

11:10 81. Degradation of thermal properties of surface treated woven flax fibers. **V. F. Powell-Rose**, M. Hosur, A. Tcherbi-Narteh, S. Jeelani

11:30 82. Reuse of waste coffee grounds to produce biodiesel and purification material. **Y. Liu**, M. Lu

Environmental Fate, Transport, and Modeling of Agriculturally-Related Chemicals

Sponsored by AGRO, Cosponsored by ENVR

Fuels, Chemicals, Materials, and Energy from Coal, Natural Gas, Oil Shale, and other Natural Resources

Sponsored by ENFL, Cosponsored by ENVR

Geochemistry of Shales: From Gas to Hydraulic Fracturing

Sponsored by GEOC, Cosponsored by ENVR

Hydrogen Energy

Hydrogen Utilization and Storage

Sponsored by ENFL, Cosponsored by ENVR

Materials and Technologies for CO₂ Capture, Sequestration, and Conversion

CO₂ Conversion into Energy Products and Chemicals

Sponsored by ENFL, Cosponsored by ENVR

Solar Energy Conversion and Utilization

Sponsored by ENFL, Cosponsored by ENVR

MONDAY AFTERNOON

Section A

Crowne Plaza at Historic Union Station
Victoria Station D

Heterogeneous Catalysis for Environmental and Energy Applications

Cosponsored by CATL and ENFL

M. Castaldi, A. Orlov, *Organizers, Presiding*

- 1:30 83.** Inhibition of alumina-supported Pd hydro(dehalo)genation catalysts by dissolved organic matter and hydrophobic fractions of effluent organic matter. T. Paul, T. Merle, J. Croue, **T. J. Strathmann**
- 1:55 84.** Kinetics and mechanism of CBZ degradation at neutral pH by an NTA modified Fenton reaction in solution and by a heterogeneous Fenton reaction with nano-magnetite and NTA. **A. T. Lemley**, S. Sun
- 2:20 85.** Nickel-iron bimetallic nanoparticles for groundwater remediation: Nature of catalytic sites and deactivation mechanisms by groundwater constituents. **Y. Han**, W. Yan
- 2:45 86.** Computational studies of catalytic reactions of group IVB and VIB transition metal oxide clusters. **D. A. Dixon**, Z. Fang
- 3:10** Intermission.
- 3:25 87.** Selective nitrate reduction by Cu-Pd/Hematite catalyst. **S. Jung**, S. Bae, W. Lee
- 3:50 88.** Nanoporous solid acid and base catalysts for sustainable biofuels production. **A. F. Lee**, K. Wilson, C. Pirez, J. J. Woodford, J. Dacquin
- 4:15 89.** Mechanistic and kinetic analysis of the aqueous phase hydrogenation of levulinic acid over Ru/C. **J. Q. Bond**, O. A. Abdelrahman
- 4:40** Concluding Remarks.

Section B

Crowne Plaza at Historic Union Station
Penn Station A

Predicting Molecular Properties of Environmental Contaminants: Empirical and Theoretical Methods

Reactivity

Cosponsored by AGRO and COMP⁺

D. Ditoro, K. Fenner, *Organizers*

P. G. Tratnyek, E. Weber, *Organizers, Presiding*

- 1:30** Introductory Remarks.
- 1:35 90.** Reliable predictions of molecular properties for environmental studies. **D. A. Dixon**
- 2:05 91.** Quantum mechanical modeling of PAH metabolic intermediates and their association with metals and minerals. **J. D. Kubicki**, H. D. Watts
- 2:25 92.** Correlation analysis of oxidation kinetics for organic solutes: Meta-analysis of QSARs for the major aqueous oxidants. **P. G. Tratnyek**
- 2:45 93.** QSAR for the suitability of activated carbon adsorption for EDC removal. **L. Morkowchuk**, A. Kennicutt, J. Kilduff, C. Breneman
- 3:05** Intermission.
- 3:25 94.** Modeling remediation pathways available to environmental contaminants. **C. J. Cramer**
- 3:55 95.** Quantifying the many possible hydrolysis reactions of nitroaromatic compounds using computational methods. **E. J. Bylaska**, K. Glaesmann, A. J. Salter-Blanc, P. G. Tratnyek
- 4:15 96.** Effects of solvation methodology on hydrolysis and oxidation pathways of organophosphorus compounds: Implications for QSPR model development. **T. T. Sanan**, M. L. Magnuson, H. Mash
- 4:35 97.** Quantum chemical vs. group contribution method based estimates of aqueous phase Gibbs free energy data for halophenols. **J. Dolfing**, I. Novak

Section C

Crowne Plaza at Historic Union Station
Penn Station B

Air Monitoring

Cosponsored by AGRO, ANYL, and CHAS

J. Maclachlan, *Organizer, Presiding*

- 1:30** Introductory Remarks.
- 1:35 98.** Comparison of Federal Equivalent Method (FEM) and Federal Reference Method (FRM) in evaluating PM_{2.5} in Cincinnati, Ohio. **K. Li**, M. Lu
- 1:55 99.** Characterization of particulate matter (PM) generated from commercial DC-8 jet burning petroleum-based JP-8 and synthetic FJ and HRJ fuels. **C. Huang**, R. L. Vander Wal
- 2:15 100.** Impact of nanostructure on soot oxidation: Pressure and fuel comparisons. **C. K. Gaddam**, R. L. Vander Wal
- 2:35 101.** Dynamics of airborne PCBs illuminated using a strategic deployment of active and passive samplers. **D. Hu**, T. Schulz, C. Persoon, K. Hornbuckle
- 2:55 102.** Pyrolysis behavior of engineered carbon nanotube polymer composites. **C. J. Akinyi**
- 3:15** Intermission.
- 3:30 103.** Modern high resolution gas chromatography: Air sampling approaches that exploit the high performance, small size, and low power requirements of person-portable GC-MS instrumentation now available. **P. A. Smith**

3:50 104. Personal PID chemical sensor coupled with a real-time location system to create a novel direct-reading exposure assessment method. **K. K. Brown**, K. R. Mead, P. B. Shaw, R. J. Kovein, R. T. Voorhees, A. R. Brandes
4:10 105. Tunable electronic noses for monitoring volatile small molecules. **K. Benkstein**, A. Vergara, C. Montgomery, S. Semancik
4:30 106. Assessing spatiotemporal commensurability for semi-volatile compounds in passive and active sampling through simulated passive air sampling rates and concentrations. S. N. Spak, N. T. Petrich, C. E. Shanahan, G. R. Carmichael, D. Hu, A. Martinez, Z. Rodenburg, **K. C. Hornbuckle**
4:50 Discussion.
5:20 Concluding Remarks.

Section D

Crowne Plaza at Historic Union Station
Penn Station C

Green Chemistry and the Environment

Cosponsored by CEI
Financially supported by ACS Green Chemistry Institute
R. Luque, S. Obare, *Organizers, Presiding*

1:30 107. Solid-state chemistry and mechanochemistry for clean, rapid, and efficient synthesis of porous and pharmaceutical metal-organic materials. **T. Friscic**
2:00 108. Sequester of toxic metal by banana peel powder. S. Veera, S. Shukla, **A. J. Gomes**, A. Shukla
2:30 109. Assessment of the catalytic activity of metallic and bimetallic nanoparticles in glass capillary microreactors. **R. Y. Ofoli**, R. Lin, X. Ma, S. Obare
3:00 110. Establishing the role of carbon dioxide for extractions and processing in an integrated biorefinery. **L. Soh**, J. Zimmerman
3:20 Intermission.
3:35 111. Hydrothermal liquefaction of *Chlamydomonas reinhardtii*: Influence of varying cell composition on liquid fuel yield and quality. **S. Leow**, I. Bradley, D. R. Vardon, B. K. Sharma, J. S. Guest, T. J. Strathmann
3:55 112. Spectrophotometric determination of trace nitrite with a novel self-coupling diazotizing reagent J acid. **W. Wu**, W. Shi
4:15 113. Preparation and characterization of modified lignin for energy storage applications. **S. Chatterjee**, O. Rios, A. Johs
4:35 114. P-recovery as calcium phosphate by a hybrid system consisting of selectrodialysis and pellet reactor. **A. T. Tran**, B. Meesschaert, L. Pinoy, B. Van der Bruggen
4:55 Concluding Remarks.

Biogeochemical Controls on Transition Metal Concentrations in Natural Waters

Sponsored by GEOC, Cosponsored by ENVR

Environmental Fate, Transport, and Modeling of Agriculturally-Related Chemicals

Sponsored by AGRO, Cosponsored by ENVR

Hydrogen Energy -- Hydrogen Production

Sponsored by ENFL, Cosponsored by ENVR

Materials and Technologies for CO₂ Capture, Sequestration, and Conversion

CO₂ Separation and Capture

Sponsored by ENFL, Cosponsored by ENVR

Science-Based Policy Development in the Environment, Food, Health, and Transport Sectors

Sponsored by CINP, Cosponsored by AGFD, ANYL, ENVR, and MEDI

Solar Energy Conversion and Utilization

Sponsored by ENFL, Cosponsored by ENVR

Undergraduate Research Posters

Environmental Chemistry

Sponsored by CHED, Cosponsored by ENVR and SOCED

MONDAY EVENING

Section A

Indiana Convention Center
Halls F&G

Sci-Mix

D. Dionysiou, *Organizer*

8:00 - 10:00

246, 247, 248, 257, 267, 271, 272, 274, 275, 276, 277, 278, 279, 282, 283, 286, 290, 298, 299, 304, 313, 314, 316, 320, 321, 326. See subsequent listings.

TUESDAY MORNING

Section A

Crowne Plaza at Historic Union Station
Victoria Station D

Water: Global Problems, Local Solutions

Water Treatment

Cosponsored by AGRO, CEI, and IAC
Financially supported by Global Innovation Imperatives
A. M. Rimando, E. Contis, I. Urasa, *Organizers, Presiding*

8:30 Introductory Remarks.

8:35 115. Water filters based on composite iron matrix: Fundamental studies and large scale deployment. **A. Hussam**

9:05 116. Sustainable and low cost approach for cleaning metal contaminated waters using pyrolyzed banana peel. **E. Sahle-Demessie**

9:35 117. Analysis of drinking water from the Blue Zone island of Ikaria Greece. **E. Tratras Contis**

10:05 Intermission.

10:20 118. Developing a bioreactor for water defluoridation: A university-community partnership. **I. T. Urasa**, T. B. Lash, W. J. Mavura, A. Kimaro

10:50 119. Removal of Pb by metal oxide nanoparticles. **M. Ossman**, M. Abdelfattah

11:20 120. Removal of Ni by activated carbon produced from Egyptian rice straw by chemical activation. **M. Abdelfattah**, M. Ossman

11:50 Concluding Remarks.

Section B

Crowne Plaza at Historic Union Station
Penn Station A

Predicting Molecular Properties of Environmental Contaminants: Empirical and Theoretical Methods

Biodegradation, Toxicity, Risk

Cosponsored by AGRO and COMP⁺
P. G. Tratnyek, D. Ditoro, *Organizers*
E. Weber, K. Fenner, *Organizers, Presiding*

8:30 Introductory Remarks.

8:35 121. External validation of regulatory QSBR models for predicting the biodegradability of xenobiotics. **J. Devillers**, P. Pandard, B. Richard

9:05 122. Application of cheminformatics tools for encoding the process science necessary for prediction of abiotic transformation pathways for organic chemicals in aquatic ecosystems. C. T. Stevens, **E. J. Weber**

9:25 123. On the role of vitamin B₁₂ in the reductive dehalogenation of perfluorinated persistent organic pollutants: A DFT study. M. E. Duenas-Fadic, V. L. Ochoa-Herrera, M. A. Mendez, C. H. Zambrano, **F. J. Torres**

9:45 124. Complexation facilitated reduction of aromatic N-oxides by aqueous Fe^{II}-tiron complex: Reaction kinetics and mechanisms. **Y. Chen**, H. Zhang

10:05 Intermission.

10:25 125. Non-animal approaches for the predictive assessment of the aquatic toxicity of organic compounds. **G. Schüürmann**

10:55 126. Prediction of aquatic toxicity mode of action using linear discriminant and random forest models. **T. M. Martin**, C. M. Grulke, D. M. Young, C. L. Russom, N. Wang, C. R. Jackson, M. G. Barron

11:15 127. Predicting adverse health effects of transformation products formed from organic micropollutants during water treatment. **M. L. Card**, K. Fenner, B. I. Escher

11:35 128. Investigating the role of hydrophobicity in environmental transport prediction. **M. J. Wells**

11:55 Concluding Remarks.

Section C

Crowne Plaza at Historic Union Station
Penn Station B

Environmental Impacts of Electronic Technologies, Products and Processes: The Search for Sustainable Electronics

Cosponsored by CEI
E. Sahle-Demessie, S. Lee, *Organizers, Presiding*

8:00 Introductory Remarks.

8:05 129. Unit process life cycle inventory: Comparisons of a new core-shell Cu-Ag nanoparticle interconnect technology with reflow soldering. **M. J. Kammer**, C. A. Handwerker, F. Zhao

8:30 130. Indiana's E-Waste Law. **M. W. Jones**

8:55 131. Global sustainability: The case for electronics. **C. Handwerker**, R. Pfahl, B. Bader

9:20 132. Impacts from toxic chemicals in electronics lifecycle. **B. Kyle**

10:00 Intermission.

10:15 133. Technology trends heading for a collision. **W. Rifer**

10:40 134. WITHDRAWN

11:05 135. E-waste bans and U.S. households' preferences for disposing of their e-waste. **J. M. Saphores**, N. Milovantseva

11:30 Discussion.

Crowne Plaza at Historic Union Station
Penn Station C

Advances in Understanding the Aquatic Fate of Metals: Nanomaterials and Natural Organic Materials

E. Carraway, Organizer, Presiding

8:00 Introductory Remarks.

8:05 136. Strong complexation of metals in natural waters: The case of methylmercury. **R. J. Hudson**

8:35 137. Role of Fe(II) on actinide redox processes at mineral surfaces. **Y. Wen**, L. Shuller-Nickles, D. Renock

8:55 138. Hydroxyl radical reactivity and production in EfOM-containing wastewaters: pH dependence. **J. R. Peller**, G. McKay, S. P. Mezyk, K. P. Ishida

9:15 139. Influence of natural and engineered coatings on the heteroaggregation of gold nanoparticles and hematite colloids. **J. A. Nason**, B. M. Smith

9:35 140. Influence of pH, organic ligands, ionic strength on dissolution kinetics of CeO₂ nanoparticles. **Y. Arai**, J. T. Dahle

9:55 Intermission.

10:10 141. Iron (hydr)oxide nanoparticle formation on polyaspartate- and alginate-surface coatings. **Y. Jun**, J. R. Ray

10:40 142. Dynamics of aggregation state of iron oxides in reactive solutions. **J. H. Strehlau**, A. M. Stemig, W. A. Arnold, R. L. Penn

11:00 143. Single-particle analysis of silver engineered nanomaterials in wastewater treatment facilities. **O. Quiñones**, D. M. Mitrano, B. J. Vanderford, D. B. Mawhinney, H. P. Christopher, J. F. Ranville, E. Dickenson

11:20 144. Removal of oil and Cr(VI) in wastewater by using modified pectin flocculants. **K. Yang**, C. Y. Cheng

11:40 145. Hexavalent chromium reduction by nano-zerovalent iron and metalloporphyrins in sol-gel matrices. J. H. Ball, **E. R. Carraway**, M. A. Schlautman

High-Throughput Pesticide Residue Analysis

Sponsored by AGRO, Cosponsored by ANYL and ENVR

Materials and Technologies for CO₂ Capture, Sequestration, and Conversion

Fundamentals in Activation of the CO₂ Molecule

Sponsored by ENFL, Cosponsored by ENVR

TUESDAY AFTERNOON

Crowne Plaza at Historic Union Station
Victoria Station D

Water: Global Problems, Local Solutions

Source Water/Natural Water Assessment and Evaluation

Cosponsored by AGRO, CEI, and IAC

Financially supported by Global Innovation Imperatives

A. M. Rimando, E. Contis, I. Urasa, Organizers, Presiding

1:30 Introductory Remarks.

1:35 146. Water availability and watershed management: Local solutions to global problems through USDA research. **M. R. Walbridge**

2:15 147. Determining contaminate sources to the Chesapeake Bay to discern the effectiveness of conservation practices. **C. J. Hapeman**, L. L. McConnell, G. W. McCarty, C. P. Rice, W. Hively, M. W. Lang, D. R. Whitall, A. M. Sadeghi, A. Torrents, A. Goel

2:45 148. Management of field edges in the agricultural landscape to mitigate farm chemical impacts. **M. A. Locke**, M. T. Moore, R. E. Lizotte, Jr.

3:15 Intermission.

3:30 149. Small infrastructure and development: Sustainable water and sanitation services for rural developing communities. **G. Louis**

4:00 150. Bringing relevant local and global water themes into the classroom. **J. C. Vites**

4:30 151. New global contamination generated from plastic. **K. Saïdo**, A. Okabe, **K. Koizumi**, M. Yamamoto, A. Nishino, H. Sato, Y. Togawa, S. Chung, K. Kogure

5:00 Concluding Remarks.

Crowne Plaza at Historic Union Station
Penn Station A

Status and Trends of Classical and Emerging Contaminants Across the World

Cosponsored by AGRO and CEI

Financially supported by Global Innovation Imperatives

N. Savage, S. Ahuja, K. Hristovski, B. Loganathan, Organizers, Presiding

1:30 Introductory Remarks.

1:35 152. Spatial and temporal trends and possible sources of methoxylated polybrominated diphenoxybenzenes in herring gull eggs from the Laurentian Great Lakes of North America. **D. Chen**, R. Letcher
1:55 153. Environmental occurrences of nonylphenols. T. Romaine, **K. D. Hristovski**
2:15 154. Fate and risk of perfluorinated alkyl substances in environmental and food samples across the world (Spain, Brazil, Saudi Arabia, and Serbia). **D. Barcelo**, F. Perez, M. Farre, N. Al-Harbi, L. F. Silva
2:35 155. Classical and emerging metal contaminants in India: Associated problems and their solutions via green and sustainable pathway. **R. K. Sharma**, A. Puri
2:55 Intermission.
3:10 156. Water sustainability and reclamation: Bringing stakeholders together to solve problems. **S. Ahuja**
3:30 157. Affordable and clean drinking water using nanomaterials. **P. Thalappil**
3:50 158. Relative importance of *N*-nitrosodimethylamine compared to total *N*-nitrosamines in drinking waters. **N. Dai**, W. A. Mitch
4:10 159. Global contamination trends of persistent organic pollutants and their effect on wildlife and human health. **B. G. Loganathan**, K. S. Sajwan
4:30 Discussion.
4:35 Panel Discussion.
5:05 Concluding Remarks.

Section C

Crowne Plaza at Historic Union Station
Penn Station B

Environmental Impacts of Electronic Technologies, Products and Processes: The Search for Sustainable Electronics

Cosponsored by CEI

S. Lee, *Organizer*

E. Sahle-Demessie, *Organizer, Presiding*

1:30 160. Sustainable electronic forum: Developing a technology roadmap. **E. Sahle-Demessie**, J. Leazer
1:55 161. Environmental life cycle and economic assessment of CRT funnel glass waste management options. Q. Xu, M. Yu, A. Kendall, W. He, G. Li, **J. M. Schoenung**
2:20 162. Environmental impacts of photovoltaic solar panels at end-of-life. **K. Collins**, A. Ancil
2:45 163. Examining both sides of the coin: The environmental benefits of IT applications. **E. Masanet**
3:10 Intermission.
3:25 164. Environmental impacts of 3D printed parts for use in consumer electronics. **M. McCoy**, F. Zhao, K. Ramani
3:50 165. Identifying substances of concern during informal recycling of electronics. **C. A. Wray**, S. A. Balan, J. Bours, S. I. Daniels, M. F. Kausch, N. Pabo, S. Plamthottam, M. J. Mulvihill, M. R. Schwarzman
4:15 166. Overview of the Sustainable Electronics Initiative at the University of Illinois at Urbana-Champaign. **J. Scrogum, W. Bullock**
4:40 Discussion.
4:55 Concluding Remarks.

Section D

Crowne Plaza at Historic Union Station
Penn Station C

C. Ellen Gonter Environmental Chemistry Award Symposium

T. Anderson, *Organizer, Presiding*

1:30 Introductory Remarks.
1:35 167. Reversibility of multiwalled carbon nanotube deposition on silica surfaces: A QCM-D study. **P. Yi**, K. Chen
2:00 168. Association of carcinogenic polycyclic aromatic hydrocarbon emissions and smoking with lung cancer mortality rates on a global scale. **O. Motorykin**, M. M. Matzke, K. M. Waters, S. Simonich
2:25 169. PCBs and OH-PCBs in serum from children and mothers in urban and rural U.S. communities. **R. F. Marek**, P. S. Thorne, K. Wang, J. DeWall, K. C. Hornbuckle
2:50 170. Photoproduct-to-parent reversion for trenbolone acetate metabolites: An unrecognized route to endocrine disruption in agriculturally impacted surface waters? **S. Qu**, E. Kolodziej, D. Cwiertny
3:15 Intermission.
3:30 171. Influence of natural organic matter fouling on pressure retarded osmosis energy production with natural salinity gradients. **N. Yip**, M. Elimelech
3:55 172. Reductive sequestration of pertechnetate (99TcO₄⁻) as Tc(VI) sulfide under sulfidogenesis stimulated by nanozerovalent iron (nZVI) and limited remobilization. **D. Fan**, R. P. Anitori, P. G. Tratnyek, B. M. Tebo, M. H. Engelhard, L. Kovarik, J. S. Lezama Pacheco

Chemical Approaches to Understanding Metabolic Activity of Microorganisms in Environmental Settings through Geological Time

Sponsored by GEOC, Cosponsored by ENVR

Materials and Technologies for CO₂ Capture, Sequestration, and Conversion

CO₂ Separation and Capture

Sponsored by ENFL, Cosponsored by ENVR

Crowne Plaza at Historic Union Station
Victoria Station D

Fate and Toxicology of Emerging Environmental Contaminants

Cosponsored by AGRO
S. Uchimiya, B. Zhang, *Organizers*
X. Pan, *Organizer, Presiding*

8:30 Introductory Remarks.

8:35 173. Biodegradational influence on poly and perfluoroalkyl substance (PFAS) release into landfill leachate. **M. Allred**, J. Lang, M. Barlaz, J. Field

8:55 174. Investigating crude oil-dispersant mixture-induced reproductive toxicity and its mechanism in *C. elegans*. **J. R. Polli**, Y. Zhang, X. Pan

9:15 175. Oil/dispersant induced the aberrant expression of miRNAs in *C. elegans*: Implications in reproductive toxicity. **Y. Zhang**, J. Polli, **X. Pan**

9:35 176. Determination of PCB 11 in human blood serum from populations in northwest Indiana and rural Iowa. **W. Koh**, P. S. Thorne, K. C. Hornbuckle

9:55 177. WITHDRAWN

10:15 Intermission.

10:35 178. Polycyclic hydrocarbons (benzo[a]pyrene and benzo[k]fluoranthene) in boiled, grilled, and roasted meat. **B. O. Opeolu**, O. S. Olatunji, O. S. Fatoki, B. J. Ximba

10:55 179. WITHDRAWN

11:15 180. Influence of nicotine on the expression of nAChRs and selected miRNAs in *Caenorhabditis elegans*. **J. R. Polli**, X. Pan

11:35 181. Mixture effects of triclosan and triclocarban on their aquatic chemistries. **K. Albanese**, R. Lanno, M. Chakraborty, C. Hadad, Y. Chin

Crowne Plaza at Historic Union Station
Penn Station A

Materials-Based Technologies for Water and Energy Sustainability: Research Frontiers and Practical Challenges to

Adoption

Cosponsored by CEI and ENFL
Financially supported by Association of Environmental Engineering and Science Professors
C. Na, M. Kumar, *Organizers*
T. Strathmann, D. Cwiertny, *Organizers, Presiding*

8:00 Introductory Remarks.

8:10 182. Electrospun materials for water and power. **J. R. McCutcheon**, N. Bui, L. Huang, S. Manickam, B. Muratori, M. Chwatko

8:40 183. Role of D-tyrosine on biofilm formation and biofouling control. **C. Yu**, X. Li, J. Wu, **Q. Li**

9:00 184. Hybrid nanoreactors composed of biomimetic vesicles and biological enzymes for perchlorate treatment. **J. M. Hutchison**, S. K. Poust, M. Kumar, D. M. Cropek, I. E. MacAllister, C. M. Arnett, J. L. Zilles

9:20 185. Functional reconstitution and characterization artificial water channels for desalination. **Y. Shen**, E. Licsandru, M. Barboiu, **M. Kumar**

9:40 Intermission.

9:55 186. Encapsulated triplet-triplet annihilation-based upconversion in the aqueous phase for sub-band-gap semiconductor photocatalysis. J. Kim, **J. Kim**

10:15 187. Substoichiometric titanium dioxide reactive electrochemical membranes for water treatment. **B. P. Chaplin**, M. Duran, A. M. Zaky, K. Ding

10:35 188. Nanostructured TiO₂-based photocatalysts for drinking water treatment. C. Han, J. Andersen, V. Likodimos, A. G. Kontos, P. Falaras, **D. D. Dionysiou**

10:55 189. Framework for developing photocatalysts for nitrate reduction in water. **K. Doudrick**, N. Geiger, K. Hristovski, P. Westerhoff

11:15 190. Deactivation and regeneration of immobilized photocatalysts during treatment of pharmaceutical micropollutants in groundwater. **Z. Sasnow**, T. J. Strathmann

Crowne Plaza at Historic Union Station
Penn Station B

Membranes for Water Purification

Cosponsored by POLY
D. Jassby, B. Mi, K. Jones, *Organizers, Presiding*

8:00 Introductory Remarks.

8:05 191. Changes in RO/NF membrane performance resulting from physicochemical transformation of their active layers. **B. J. Marinas**

8:35 192. Well imposed boundary conditions for modeling ion transport across membranes. **L. Song**

- 8:55 193.** Transport properties in reverse osmosis membranes using a quartz crystal microbalance with dissipation. **N. K. Nadermann**, E. Chan, C. Stafford
- 9:15 194.** Effects of chloraminated seawater on a reverse osmosis membrane. **L. Valentino**, B. J. Marinas, T. Maugin, J. Croue
- 9:35 195.** Highly tunable graphene-oxide nanocomposite membranes. **M. Hu**, B. Mi
- 9:55** Intermission.
- 10:10 196.** Application of nano- and biotechnology in membrane biofouling control. **Q. Li**
- 10:40 197.** Membrane surface modification for control of fouling and selectivity. M. Ramamoorthy, **K. L. Jones**
- 11:00 198.** Grafting polyzwitterions to polyamide membranes for improved antifouling performance. **B. Mi**, H. Yu
- 11:20 199.** Antimicrobial properties of polysulfone membranes modified with PAH/PAA multilayers and silver nanoparticles. **L. Tang**, K. Chen
- 11:40 200.** Nanofiltration membrane performance reduction due to cake-enhanced osmotic pressure in multicomponent soluble macromolecular synthetic solutions. **A. L. Vozar**, B. J. Marinas

Section D

Crowne Plaza at Historic Union Station
Penn Station C

Environmental Implications and Effects of Unconventional Gas Development

Cosponsored by GEOC

K. Gregory, J. Vanbriesen, *Organizers, Presiding*

8:15 Introductory Remarks.

8:20 201. Source water challenges from energy extraction activities in Pennsylvania. J. M. Wilson, **J. M. VanBriesen**, Y. Wang

8:40 202. Impacts of water chemistry on trace element mobilization during shale-fluid contact. **L. Wang**, B. Karakocak, D. E. Giammar, J. D. Fortner

9:00 203. Biodegradation in produced waters: Chemistry, microbiology, and engineering. L. C. Strong, T. Gould, L. Kasinkas, M. J. Sadowsky, **A. Aksan**, L. P. Wackett

9:20 204. Fate of radium from flowback/produced water in centralized impoundments, treatment facilities, and solid waste disposal options. **T. Zhang**, D. Bain, R. Vidic

9:40 205. Sharing water quality and quantity data in areas of the Marcellus Shale energy resource to encourage sustainable choices for communities. **R. D. Vidic**, S. L. Brantley, J. D. Abad, J. Vastine, D. Yoxtheimer, C. Wildermann, R. P. Hooper

10:00 Intermission.

10:15 206. Cement failure rates of shale gas production wells in Pennsylvania. **A. Ingraffea**, R. Santoro, S. B. Shonkoff

10:35 207. Biodegradation of hydraulic fracturing fluids in sediment microcosms. **S. Liu**, J. J. Lenhart, P. J. Mouser

10:55 208. Microbial communities and the fate of uranium in simulated produced water impoundments from hydraulic fracturing. **K. B. Gregory**, A. Murali Mohan, R. D. Vidic

11:15 209. Use of acid mine drainage in recycling of Marcellus Shale flowback water: Solids removal and fouling mechanism identification. **C. He**, R. D. Vidic

11:35 Discussion.

11:50 Concluding Remarks.

Biomass and Biotechnologies for Energy

Biomass and Biofuels

Sponsored by ENFL, Cosponsored by ENVR

WEDNESDAY AFTERNOON

Section A

Crowne Plaza at Historic Union Station
Victoria Station D

Fate and Toxicology of Emerging Environmental Contaminants

Cosponsored by AGRO

S. Uchimiya, X. Pan, *Organizers*

B. Zhang, *Organizer, Presiding*

1:30 Introductory Remarks.

1:35 210. Ecotoxicological effects of nanostructured titania to bacteria: Mechanistic insights of regulating factors. **T. Tong**, C. Binh, A. Shereef, J. Wu, J. J. Kelly, J. Gaillard, K. A. Gray

1:55 211. Impacts of the interaction of silver nanoparticles with microbial biofilm. **H. Jing**, B. Mezgebe, A. Hassan, E. Sahle-Demessie, G. Sorial, C. Bennett-Stamper

2:15 212. Transport behavior of nanoscale zerovalent iron stabilized with carboxymethylcellulose under simulated aquifer conditions. **L. L. Williams**, M. N. Goltz, **A. Agrawal**

2:35 213. ZnO nanoparticle induced phytotoxicity and differential anti-oxidative stress in green peas (*Pisum sativum* L.) cultivated in soil. **A. Mukherjee**, S. Bandyopadhyay, C. Rico, L. Zhao, J. Peralta-Videa, J. Gardea-Torresdey

2:55 Intermission.

3:10 214. Effect of cerium oxide nanoparticles on the metabolic activity of kidney bean plants and the first filial generation plants. **S. Majumdar**, J. Trujillo-Reyes, J. R. Peralta-Videa, J. L. Gardea-Torresdey

3:30 215. Toxicity assay comparing differing surface chemistries of nanoparticles on *Daphnia magna*. **J. Bozich**, S. Lohse, M. Torelli, C. Murphy, R. Hamers, R. Klaper

- 3:50 216.** Toxicological effects of iron and copper nanoscale oxides and their bimetallic system in onion (*Allium cepa*). **J. Trujillo-Reyes**, S. Majumdar, J. R. Peralta-Videa, J. L. Gardea-Torresdey
- 4:10 217.** Comparative eco-toxicities of nanoparticulate ZnO, bulk ZnO and ionic zinc (ZnCl₂) to the alfalfa-*Sinorhizobium meliloti* system in soil matrix. **S. Bandyopadhyay**, A. Mukherjee, J. Peralta-Videa, G. Plascencia-Villa, C. Rico, M. José-Yacamán, J. Gardea-Torresdey

Section B

Crowne Plaza at Historic Union Station
Penn Station A

Materials-Based Technologies for Water and Energy Sustainability: Research Frontiers and Practical Challenges to

Adoption

Cosponsored by CEI and ENFL

Financially supported by Association of Environmental Engineering and Science Professors

C. Na, D. Cwiertny, *Organizers*

T. Strathmann, M. Kumar, *Organizers, Presiding*

1:30 Introductory Remarks.

1:35 218. Development of sustainable catalytic materials for removal of oxyanions from drinking water. **C. J. Werth**, D. Shuai, D. C. McCalman, J. K. Choe, T. J. Strathmann, J. R. Shapley, W. F. Schneider

2:05 219. Ligand-enhanced Re-Pd/C catalyst for perchlorate reduction in water: Preparation, characterization, structure-activity relationship, and reaction mechanisms. **J. Liu**, J. Choe, J. R. Shapley, C. J. Werth, T. J. Strathmann

2:25 220. Metal hydrogenation catalysts immobilized in core-shell silica materials for water purification. **Y. Wang**, J. Liu, P. Wang, C. J. Werth, T. J. Strathmann

2:45 221. Environmental and economic sustainability assessment of a hybrid ion exchange/catalytic treatment system for nitrate removal from drinking water. **J. Choe**, A. M. Bergquist, C. J. Werth, T. J. Strathmann

3:05 Intermission.

3:20 222. Achieving sustainable water-energy: Waste-heat-driven advanced oxidation processes for removal of emerging contaminants. **D. Shuai**, D. M. Cwiertny

3:40 223. Monte Carlo simulation on magnetic nanoscavenger-based water disinfection system. **M. Zhang**, X. Xie, C. S. Criddle, Y. Cui, S. X. Wang

4:00 224. Toward the development of carbon nanotube-enabled advanced oxidation processes. **D. M. Cwiertny**, R. L. Oulton, J. Haase

4:20 225. Direct growth of carbon nanotubes on engineering supports for water treatment. **H. Wang**, C. Na

4:40 226. Cryogel materials for point-of-use water purification and disinfection. **X. Hu**, S. L. Loo, A. G. Fane, T. T. Lim, W. B. Krantz

Section C

Crowne Plaza at Historic Union Station
Penn Station B

Membranes for Water Purification

Cosponsored by POLY

D. Jassby, B. Mi, K. Jones, *Organizers, Presiding*

1:30 Introductory Remarks.

1:35 227. New studies of hybrid adsorption/membrane treatment systems: Mechanisms of fouling mitigation. **M. Benjamin**, J. Liu, B. Malczewska

2:05 228. Mineral scale inhibition using electrically conductive tight nanofiltration membranes. **D. Jassby**

2:25 229. Energy spending patterns analysis in RO desalination processes. C. Liu, K. Rainwater, **L. Song**

2:45 230. Ultrathin carbon nanotube-blended polyelectrolyte membrane: Fabrication and its antifouling properties for water treatment. **L. Liu**, M. Son, H. Park, H. Choi

3:05 231. Incorporation of graphene oxide into the polysulfone matrix to enhance the performance of ultrafiltration membranes. **Y. Kang**, B. Mi

3:25 Intermission.

3:40 232. Membrane systems for wastewater reclamation and water purification. **A. E. Childress**

4:10 233. Novel membrane platforms for forward osmosis. **J. R. McCutcheon**, N. Bui, J. T. Arena, L. Huang, S. Manickam, K. Reimund

4:30 234. Arsenic removal from water by forward osmosis. **P. Mondal**, N. Hermans, B. Van der Bruggen

4:50 235. Fabrication of forward osmosis membrane with TiO₂ additive through in situ sol-gel phase separation. **H. Kong**, S. Han

Section D

Crowne Plaza at Historic Union Station
Penn Station C

Environmental Electrochemistry: Principals and Applications

C. Huang, K. Nakata, G. Chen, S. Yen, *Organizers*

B. Chaplin, J. Farrell, *Presiding*

1:30 Introductory Remarks.

1:35 236. Electrocatalytic remediation of 1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113) at a silver cathode. **E. R. Wagoner**, J. Barnes, D. G. Peters

- 1:55 237.** Electrochemical generation of persulfate using boron-doped diamond film electrodes. **J. Farrell**, J. R. Davis, J. C. Baygents
- 2:20 238.** Reaction mechanism of the reductive removal of NTO and DNAN from IM wastewater using bimetals. **E. Kitcher**, J. Pavlov, A. Koutsospyros, C. Christodoulatos, W. Braid
- 2:40 239.** Understanding chlorite and chlorate production by boron-doped diamond film anodes during electrochemical hypochlorite generation. **J. Farrell**, D. K. Hubler, J. C. Baygents, B. P. Chaplin
- 3:05 240.** Significant role of humic acid on removal of bisphenol A in electro-enzymatic oxidative coupling reaction. **H. Zhao**, H. Li, H. Cao
- 3:25** Intermission.
- 3:40 241.** Preparation of TiO₂/stainless steel electrode for degradation of dye solution using photoelectrochemical oxidation process. S. Yang, **C. Liu**, C. Huang, J. R. Pan
- 4:00 242.** Degradation treatment of salicylic acid by photo-assisted electro-Fenton method. T. Chen, T. Chueh, **S. Yen**
- 4:25 243.** Evaluation of a novel electro-dialysis process for phosphate fractionation in wastewater. **A. T. Tran**, B. Meesschaert, L. Pinoy, B. Van der Bruggen
- 4:45 244.** Sulfidation of nano-zerovalent iron (nZVI): Characterization by electrochemical impedance spectroscopy (EIS). **D. Fan**, D. Turcio-Ortega, P. G. Tratnyek
- 5:05 245.** Understanding perchlorate byproduct formation on boron-doped diamond film anodes during anodic oxidation of organic contaminants. **B. P. Chaplin**, A. Donaghue
- 5:30** Concluding Remarks.

Biomass and Biotechnologies for Energy

Pyrolysis and Gasification

Sponsored by ENFL, Cosponsored by ENVR

Uptake, Translocation, and Distribution of Agrochemicals in Plants

Sponsored by AGRO, Cosponsored by AGFD and ENVR

WEDNESDAY EVENING

Section A

Indiana Convention Center
Halls F&G

Air Monitoring

Cosponsored by AGRO, ANYL, and CHAS
J. Maclachlan, *Organizer*

6:00 - 8:00

- 246.** Chemical exposure monitor with indoor positioning (CEMWIP). **K. K. Brown**, P. B. Shaw, K. R. Mead, R. J. Kovein, R. T. Voorhees, A. R. Brandes
- 247.** Nanostructure characterization of flat flame soot derived from petroleum-based, synthetic, and surrogate jet fuels. **C. Huang**, R. L. Vander Wal
- 248.** Indoor and outdoor airborne PCBs in residential areas of East Chicago, IN and Columbus Junction, IA. T. Schulz, D. Hu, P. Thorne, J. DeWall, **K. Hornbuckle**
- 249.** Atmospheric polychlorinated biphenyl congeners and synthetic musk fragrances in Chicago and Lake Michigan. **Z. L. Rodenburg**, D. Hu, Y. Ma, M. Venier, R. A. Hites, K. C. Hornbuckle
- 250.** Improved quantitation of sulfur compounds in the atmosphere by hyphenated GC-FPD-PID. J. N. Driscoll, **J. L. Maclachlan**
- 251.** Particulate PCBs and OH-PCBs in Chicago air. **A. Awad**, A. Martinez, R. Marek, W. Koh, K. Hornbuckle

Section A

Indiana Convention Center
Halls F&G

Biogeochemical Interactions Affecting Bioavailability and Remediation of Hazardous Substances in the Environment

Cosponsored by GEOC
H. Henry, J. Chorover, M. Maddaloni, *Organizers*

6:00 - 8:00

- 252.** Synthesis of thermo-sensitive magnetic-cored dendrimers for microbial growth enhancement with thermo-control. **H. Kim**, J. Jang, J. Park
- 253.** Effect of humic acid on the oxidative reactivity of manganese dioxide in binary oxide mixtures. **S. Taujale**, H. J. Zhang

Indiana Convention Center
Halls F&G

Chemistry and Application of Green Catalysts for Energy Transformation and Emission Control

Cosponsored by CEI and ENFL

R. Doong, S. Chang, V. Sharma, *Organizers*

6:00 - 8:00

254. Preparation of ZnO photocatalyst by plasma-enhanced vapor deposition and correlation between film structures and their photocatalytic activity. **W. Den**, M. Lee

255. Synthesis of acidochromic Hg²⁺-sensing properties of novel naphthalimide derivatives. **W. Den**, P. Kuo

256. Assessment of cellulosic fungi community in kitchen waste compost. J. Zeng, W. Chen, S. Cheng, **H. Kuo**

Indiana Convention Center
Halls F&G

Distribution and Fate of Emerging Contaminants in Hydrologic Systems of the Built Environment

Cosponsored by CEI

A. MacKay, Y. Chin, *Organizers*

6:00 - 8:00

257. Diurnal kinetics of triplet-induced transformation of isoproturon in the presence of aromatic ketones and fulvic acids. **C. Yuan**, L. Weavers, Y. Chin

Indiana Convention Center
Halls F&G

Environmental Electrochemistry: Principals and Applications

C. Huang, K. Nakata, S. Yen, G. Chen, *Organizers*

6:00 - 8:00

258. Electrodialysis of high-salinity wastewater and process optimization of a hybrid system with reverse osmosis for water recovery. C. Kuo, J. Yu, **S. Lue**

259. Comparison of removal of Acid Orange 7 by electro-oxidation using various anode materials. **C. Wang**, W. Chou, Y. Chen

260. Electrocatalytic reduction of 4,4'-(2,2,2-trichloroethane-1,1-diyl)bis(chlorobenzene) (DDT) at a silver electrode. **C. M. McGuire**, D. G. Peters

261. Combination of chlorine-free electrolytic and photochemical methods for sterilization of water contaminated with *Campylobacter jejuni*. **N. Barashkov**, S. Yergeshbayeva, I. Irgibaeva, L. Lam, D. Eisenberg, T. Novikova

262. Study of a carbon paste sensor synthesized with titanium/zirconium dioxide in the detection of heavy metals by electrochemistry. **P. Q. Nguyen**, S. K. Lunsford

263. Treatment of polyvinyl alcohol by electro-Fenton using an activated carbon fiber cathode. **W. Chou**, C. Wang

Indiana Convention Center
Halls F&G

Environmental Fate and Reactivity of Highly Condensed Aromatic Carbon

Cosponsored by GEOC

C. Jafvert, C. Johnston, T. Filley, *Organizers*

6:00 - 8:00

264. Carboxylated carbon nanotubes as electron transfer shuttles in reactive oxygen species (ROS) generation. **H. Hsieh**, R. Wu, **C. T. Jafvert**

265. Hydroxyl radical induced photo-transformation of single-walled carbon nanotubes in the aquatic environment. **S. Beigzadeh-Milani**, C. T. Jafvert, W. Hou, R. G. Zepp

266. Treatment methods for reducing the polycyclic aromatic hydrocarbon content of biochar. **F. N. Khalid**, D. G. Klarup

267. Assessing trophic transfer of ¹⁴C-labeled multi-walled carbon nanotubes in microbial food chains. **J. Kim**, J. Priester, Y. Ge, B. Buchholz, E. Petersen

268. WITHDRAWN

269. Priming effects of black carbon additions on carbon mineralization in malt extract media by the white-rot fungus, *Trametes versicolor*. **C. D. Gibson**, T. D. Berry, R. Wang, T. R. Filley, J. Bird

270. Surficial oxidation of black carbon in the environment and its chemical implications. **R. Wang**, T. Filley, C. Gibson, C. Johnston, J. Yong

271. Brown rot basidiomycete fungal alteration of C60 fullerols. **T. Filley**, K. Schreiner

Indiana Convention Center
Halls F&G

Environmental Impacts of Electronic Technologies, Products and Processes: The Search for Sustainable Electronics

Cosponsored by CEI

E. Sahle-Demessie, S. Lee, *Organizers*

6:00 - 8:00

272. Distribution of As, Ba, Cu and Zn during waste plasma display panel glass recycling process by electro-kinetics. **M. Chen**, J. Huang, H. Chen, O. A. Ogunseitan, S. Chen

273. Leachability assessment of heavy metals in waste plasma display panels. **M. Chen**, P. Jiang, H. Chen, O. A. Ogunseitan, S. Chen

274. Clay as a fire retardant alternative in electronic components. **A. Bruce**, I. Hua, J. Howarter

275. Lignin-epoxy nanocomposites as an alternative to brominated flame retardants. **G. Mendis**, J. Youngblood, J. Howarter

276. Identifying environmental and human health impacts from exposure to toxins found in incinerated electronic waste (e-waste), through laboratory and TRACI analysis of categorized e-waste ash. **K. Hibbert**, O. A. Ogunseitan

277. Cellulose nanocrystals reinforced epoxy nanocomposite for microelectronic applications. **S. X. Peng**, R. J. Moon, J. Youngblood

278. Tracking separated plastic components from e-scrap. **M. L. Johnston**, N. Peters-Michaud, J. J. Wilker

Section A

Indiana Convention Center
Halls F&G

Environmental Implications and Effects of Unconventional Gas Development

Cosponsored by GEOC

J. Vanbriesen, K. Gregory, *Organizers*

6:00 - 8:00

279. Transport of selected hydraulic fracturing fluid organic compounds through aquifer sediment in laboratory columns. **J. N. Dehart**, S. G. Osborn, J. N. Ryan

Section A

Indiana Convention Center
Halls F&G

Fate and Toxicology of Emerging Environmental Contaminants

Cosponsored by AGRO

B. Zhang, S. Uchimiya, X. Pan, *Organizers*

6:00 - 8:00

280. Reproductive toxicity and mechanism of ZnO nanoparticles in *C. elegans*. **B. O'Donnell**, J. R. Polli, X. Pan

281. Environmental fate of pharmaceuticals and hormones derived from water reuse. **W. Zheng**, Y. Zou, M. L. Machesky

282. Effects of Bisphenol A on growth and locomotion behaviors of *C. elegans*. **Z. D. Flood**, J. R. Polli, X. Pan

283. Trace analysis and imaging of heavy metal accumulation in rat tissues. **S. R. Wegst**, E. J. Mullin, D. Ding, R. J. Salvi, J. A. Roth, D. S. Aga

284. Predominant role of human CYP2B6 in the oxidative metabolism of BDE-47 and BDE-100 to potentially toxic metabolites. **M. S. Gross**, D. M. Butryn, B. P. McGarrigle, S. T. Singleton, A. L. Crane, J. R. Olson, D. S. Aga

285. Degradation potential of emerging contaminants by zerovalent zinc (Zn) and specific bimetallic reductants (Pd-Zn and Cu-Zn) in batch reactors. **C. S. Cushman**, **A. Agrawal**

286. Biodegradation of 4-*tert*-Octylphenol by bacteria: Kinetics and pathways. **K. Dong**, Y. Liu, J. Gan

287. Bench-scale degradation of emerging contaminants and recalcitrant organics by zerovalent magnesium and related bimetallic reductants. **B. Wang**, F. Yu, M. N. Goltz, **A. Agrawal**

288. Isomer specific reaction of HBCD with reduced sulfur species in aqueous solution. J. H. Wilson, **U. Jans**

289. Photochemical destruction of thyroid hormone. **X. Duan**, X. He, S. P. Mezyk, R. Marfil-Vega, M. A. Mills, D. D. Dionysiou

290. Interactions of functionalized nanomaterials on membrane gut of *Daphnia magna*. **G. A. Dominguez**, S. Lohse, M. Torelli, C. Murphy, R. Hamers, R. Klaper

Section A

Indiana Convention Center
Halls F&G

Fate of Environmental Pollutants in Biogeochemical Interfaces

Cosponsored by GEOC

W. Lee, S. Han, *Organizers*

6:00 - 8:00

291. Product analysis during reductive degradation of RDX by lepidocrocite and iron reducing bacteria with riboflavin. **Y. Lee**, S. Bae, M. Kwon, W. Lee

292. Kinetics and oxygen isotope effects of selenate reactions with Fe layered double hydroxides. **A. E. Schellenger**, P. Larese-Casanova

- 293.** Mercury and methylmercury in Masan Bay sediment: Impact of organic matter on methylation. **S. Noh**, E. Kim, S. R. Kundu, B. Lee, S. Han
- 294.** Mercury reduction by reduced humic substances under dark and anoxic conditions: Importance of organic radicals. **S. Lee, S. Han**
- 295.** Kinetics of divalent mercury reduction by reduced quinone in anaerobic environments. H. Duong, **S. Lee**, S. Han
- 296.** Arsenic(V) is more prone to precipitate than to adsorb to Fe oxides in the presence of divalent heavy metals. **K. Vaca-Escobar**, M. Villalobos

Section A

Indiana Convention Center
Halls F&G

General Posters

D. Dionysiou, *Organizer*

6:00 - 8:00

- 297.** Evaluation of a novel starch-based amphoteric chemically bonded composite flocculants. **Z. Yang, H. Yang**, B. Yuan, A. Li, R. Cheng
- 298.** Considerations for nitrate source determination in environmental forensics studies. **C. Fenech**, L. Rock, K. Nolan, A. J. Morrissey
- 299.** Comparative uptake and translocation of pharmaceutical and personal care products (PPCPs) by common vegetables. **X. Wu**, F. Ernst, J. Gan
- 300.** Solvent effects on sulfur-doped TiO₂ nanostructured porous films for water treatment. **C. Han**, J. Andersen, V. Likodimos, A. G. Kontos, P. Falaras, D. D. Dionysiou
- 301.** Oxidation reaction pathways of succinic acid in the aqueous phase. **J. L. Hofstra**, P. de Lijser, P. K. Hudson
- 302.** Fenton and Fenton-like reactions using malonic acid as an additive for stabilization of H₂O₂. **Y. Kim**, J. Kim, J. Kim, H. Jeong
- 303.** As(III) oxidation during UV photolysis of NO₂⁻ and NO₃⁻. **D. Kim**, K. Kim, W. Choi
- 304.** Integrated decomposition of perfluorooctanoic acid by advanced oxidation activated by nanoscale zerovalent iron. **W. A. Lawal**, H. Choi
- 305.** Study on geochemistry of stream receiving mine water in the Sambong mine, Korea. **J. Kim**, Y. Kim, H. Jeong, J. Yun, W. Lim
- 306.** Characteristics of oxa-diamide-HNO₃ extractant in the supercritical fluid extraction of uranium from solid phase. **K. Chiu**, W. Liao, J. Wang
- 307.** Analyzing dissolved phosphorus in freshwater systems: A novel method. **J. M. Berry**, C. E. Spiese
- 308.** Impacts of pH on the morphology, mineralogy, and thermal properties of struvite. **N. Ma**, A. A. Rouff, B. L. Phillips
- 309.** Characterization of humic acid from fruit bat's guano-impacted wetland soil and application in adsorption of malachite green from aqueous solution. **E. Inam**, E. Effiong, S. Umoren, J. Essien
- 310.** Major ion chemistry and stable isotope signatures as a tool in assessing groundwater pollution dynamics at Delhi, India. **S. Saxena**, J. P. Shrivastava, M. S. Rao
- 311.** Pedagogical benefits of the new ACS Climate Change Toolkit for deaf and hard-of-hearing laboratory technology students. **A. D. Ross**
- 312.** Infrared spectroscopy studies of ammonia oxidation on TiO₂ surfaces as a photolytic source of nitrous acid. **N. K. Scharko**, J. D. Raff
- 313.** Photochemistry of ammonia on surfaces containing Titanium dioxide. **M. A. Kebede**, J. D. Raff
- 314.** Influence of sea ice on Arctic marine sulfur biogeochemistry in the Community Earth System Model. **C. Deal**, M. Jin, S. Elliott, E. Hunke, M. Maltrud, N. Jeffery
- 315.** Aggregation and segregation behavior of TiO₂ particles under controlled sonication. **H. Zamankhan Malayeri**, **H. Choi**
- 316.** Exposomics approach to understanding the metabolic profile of Parkinson's disease. **D. I. Walker**, J. R. Roede, Y. Park, S. A. Factor, G. W. Miller, D. P. Jones, K. D. Pennell

Section A

Indiana Convention Center
Halls F&G

Green Chemistry and the Environment

Cosponsored by CEI

Financially supported by ACS Green Chemistry Institute

R. Luque, S. Obare, *Organizers*

6:00 - 8:00

- 317.** Utilization of treated abattoir sludge as soil conditioner. **M. E. Chukwuedo**
- 318.** Sonochemical production of biofuels using solid Lewis acid catalysis. **R. Hart**, D. J. Casadonte
- 319.** On the properties of CO₂ and flue gas at the piperazinium-based ionic liquids interface. M. Atilhan, **S. Aparicio**
- 320.** Green synthetic pathways toward shape-controlled nanomaterials and their stability under various environmental conditions. **C. P. Adams**, S. O. Obare
- 321.** Sustainable preparation of size-dependent metal nanoparticles and their applications in energy harvesting applications. **L. Ariyadasa**, S. O. Obare

Indiana Convention Center
Halls F&G

Heterogeneous Catalysis for Environmental and Energy Applications

Cosponsored by CATL and ENFL
A. Orlov, M. Castaldi, *Organizers*

6:00 - 8:00

322. Application of sewage sludge based catalyst in Fenton's degradation of a naphthalenedye: 1-Diazo-2-naphthol-4-sulfonic acid. **L. Gu**, N. Zhu, **Z. Lou**, **S. Huang**

323. Effect of pH and organic buffer on catalytic nitrate reduction by TiO₂/Cu/Pd catalyst. **S. Bae**, J. Jung, W. Lee

Indiana Convention Center
Halls F&G

Materials-Based Technologies for Water and Energy Sustainability: Research Frontiers and Practical Challenges to

Adoption

Cosponsored by CEI and ENFL
Financially supported by Association of Environmental Engineering and Science Professors
C. Na, D. Cwiertny, M. Kumar, T. Strathmann, *Organizers*

6:00 - 8:00

324. Bimetallic palladium-indium catalysts for treatment of nitrate in waste ion exchange brines. **A. M. Bergquist**, J. K. Choe, T. J. Strathmann, C. J. Werth

325. Hydrothermal catalytic conversion of waste vegetable oil to liquid hydrocarbon fuel without external hydrogen addition. D. Kim, D. Vardon, B. Sharma, **T. J. Strathmann**

326. Settling and sorption behaviors of colloidal carbon nanotube bundles. **H. Ma**, H. Wang, C. Na

327. Studies of gas phase NO₂ removal using fresh and recycled concrete. **G. Ramakrishnan**, A. Orlov

Indiana Convention Center
Halls F&G

Membranes for Water Purification

Cosponsored by POLY
B. Mi, D. Jassby, K. Jones, *Organizers*

6:00 - 8:00

328. Preparation and characterization of PVDF nanofibrous membrane containing bimetal for synergistic dechlorination of trichloromethane. **F. Huang**, H. Zhang, Q. Wei, Y. Xu

329. Use of an insoluble polyacrylic acid ion exchange membrane coated solid support column for the removal of lead from aqueous solutions. **S. Corcoran**, C. Philipp, M. Mills

330. Effects of surface roughness and interface chemistry on reverse osmosis membrane performance and lifetime. **L. Kearney**, J. Howarter

331. Graft polymer brushes on nanoporous polysulfone membrane to enhance filtering efficiency. **K. Gao**, **J. A. Howarter**

332. Removal of inorganic arsenic by forward osmosis: Influence of membrane orientation. **P. Mondal**, N. Hermans, B. Van der Bruggen

Indiana Convention Center
Halls F&G

Predicting Molecular Properties of Environmental Contaminants: Empirical and Theoretical Methods

Cosponsored by AGRO and COMP⁺
D. Ditoro, E. Weber, K. Fenner, P. G. Tratnyek, *Organizers*

6:00 - 8:00

333. Predicting reduction rates of energetic nitroaromatic compounds. A. J. Salter-Blanc, **P. G. Tratnyek**, E. J. Bylaska

334. Gas-particle partitioning of polycyclic aromatic hydrocarbons: State of knowledge. **G. Lammel**, M. D. Mulder, L. Landlová, J. Klánová

335. Leaching potential of antibiotics estimated in soil and peat. **M. R. de Marchi**, P. Toledo Netto, C. Lourencetti

336. Identification of potential skin sensitizers based on non-animal chemoassay and in vitro bioassay information. A. Böhme, W. Zhang, **G. Schüürmann**

337. Effect of concentration and size of suspended sediment on nitrogen dynamics in freshwater ecosystem. **Q. Le**, C. Yoshimura, M. Fujii

Indiana Convention Center
Halls F&G

Status and Trends of Classical and Emerging Contaminants Across the World

Cosponsored by AGRO and CEI

Financially supported by Global Innovation Imperatives

B. Loganathan, K. Hristovski, N. Savage, S. Ahuja, *Organizers*

6:00 - 8:00

338. Concentrations of perfluorinated chemicals and their precursors in wastewater matrices across United States. **K. Dasu**, M. A. Mills, K. Tadele, B. Crone

339. Tracing the temporal trends of inorganic elements and polychlorinated biphenyls using annual growth rings of pine trees from western Kentucky, USA. **B. Patibandla**, B. G. Loganathan

340. PCB congeners, chlorinated pesticides, and PBDEs in sediment and fish samples from riverine and brackish waters of Savannah, Georgia, USA. D. Benningfield, B. Cassidy, J. P. Richardson, **K. S. Sajwan**, B. G. Loganathan

THURSDAY MORNING

Crowne Plaza at Historic Union Station
Victoria Station D

Fate and Toxicology of Emerging Environmental Contaminants

Cosponsored by AGRO

B. Zhang, X. Pan, *Organizers*

S. Uchimiya, *Organizer, Presiding*

8:00 341. Fate of organophosphorus pesticides in water under environmental conditions. **M. G. Miller**, J. J. Kiddle, K. Clark, S. P. Mezyk

8:20 342. Chemical speciation of organotin compounds in seawater from Cape Town Harbour, South Africa: Seasonal variations and their toxicity effects. **O. S. Fatoki**, H. K. Okoro, F. A. Adekola, B. J. Ximba, R. G. Snyman

8:40 343. Fate of organic and inorganic contaminants in biochar amended soils. **S. M. Uchimiya**

9:00 344. Potential impact of biochar water-extractable substances on environmental sustainability. **C. R. Smith, J. W. Lee**

9:20 345. Assessing the role of natural organic matter in the photochemical degradation of lampricides. **M. B. McConville**, C. K. Remucal

9:40 346. Enhancement of carboxylic acids on the degradation of trichloroethylene with zerovalent iron. **C. Tso**, Y. Shih

10:00 Intermission.

10:15 347. Fate of aromatic nitrosamines in oxidative and reductive water remediation methods. **J. E. Toth**, B. Sjelin, J. J. Kiddle, S. P. Mezyk, K. A. Rickman

10:35 348. Degradation mechanisms during the removal of the emerging cyanobacterial toxin cylindrospermopsin by advanced oxidation. **X. He**, A. A. de la Cruz, D. D. Dionysiou

10:55 349. Photochemical reactions of ibuprofen, naproxen, and tylosin. **Y. He**, I. Hua

11:15 350. Photochemical fate of triclosan: Experimental and theoretical evidence for a radical pathway leading to dioxins and PCBs. **S. N. Eustis**, S. Kliegman, K. McNeill

11:35 Concluding Remarks.

Crowne Plaza at Historic Union Station
Penn Station A

Materials-Based Technologies for Water and Energy Sustainability: Research Frontiers and Practical Challenges to

Adoption

Cosponsored by CEI and ENFL

Financially supported by Association of Environmental Engineering and Science Professors

T. Strathmann, M. Kumar, *Organizers*

C. Na, D. Cwiertny, *Organizers, Presiding*

8:00 Introductory Remarks.

8:05 351. Hydrothermal catalytic deoxygenation of fatty acids with in situ hydrogen production from glycerol using Pt/C and Pt-Re/C catalysts. **D. R. Vardon**, B. K. Sharma, H. Jaramillo, T. J. Strathmann

8:25 352. Titanium dioxide/carbon nanotube nanocomposites for improved H₂ production. **M. Li**, G. Krylova, C. Na

8:45 353. Solar hydrogen production using biomimetic 2D crystals of photosynthetic proteins. **P. Saboe**, C. E. Lubner, N. S. McCool, N. M. Vargas-Barbosa, J. H. Golbeck, M. Kumar

9:05 354. Harnessing osmotic energy for sustainable power generation with high performance thin-film composite pressure retarded osmosis membranes. **N. Yip**, M. Elimelech

9:25 Intermission.

9:40 355. Minimizing nanomaterial release in Pickering emulsion-based oil-water separation. **T. Wu**, H. Wang, K. Li, C. Na

10:00 356. Surface modified activated carbon nanofiber nonwoven as a high surface area sorbent in water treatment. **T. M. Vadas**, Y. Han, E. Meehan, J. McCutcheon, C. Brückner

- 10:20 357.** Understanding and modeling the sorption of anion exchange resins using poly-parameter linear free-energy relationships and phase conversion. B. Pan, **H. Zhang**
10:40 358. Revisit sorption mechanisms of organic compounds on cation exchange resins. **N. Jadbabaei**, H. Zhang
11:00 359. Synthesis and application of granular mesoporous carbon for removal of pharmaceuticals from pharmaceutical manufacturers. **Y. Kim**, H. Park, J. Bae, H. Choi
11:20 360. Engineering bacterial efflux pumps: Applications in bioremediation of surface water. **V. Kapoor**, D. Wendell

Section C

Crowne Plaza at Historic Union Station
Penn Station B

Fate of Environmental Pollutants in Biogeochemical Interfaces

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W. Lee, S. Han, *Organizers, Presiding*

8:00 Introductory Remarks.

8:05 361. Role of iron in degradation of carcinogenic and noncarcinogenic polycyclic aromatic hydrocarbons in contaminated with heavy metals soil. **V. A. Jouraeva**, S. Peng, B. Sirin, K. Vidal

8:25 362. Reactivity of chemogenic and biogenic green rust toward reductive dechlorination of PCE. **N. Lee**, S. Bae, W. Lee

8:45 363. Biodegradation of emerging contaminants in plant rhizosphere: Role of aerobic-anaerobic interface in shallow wetland environments. **A. Agrawal**, M. M. Smith, K. Qin, G. C. Struckhoff, M. L. Shelley

9:05 364. Promoted reduction of tellurite and formation of extracellular tellurium nanorods by concerted reaction between iron and *Shewanella oneidensis* MR-1. **D. Kim**, M. Kim, J. Lee, H. Hur

9:25 365. Structural and chemical modification of nontronite associated with microbial Fe(III) reduction: Implication of contaminant removal. **J. Kim**

9:45 Intermission.

10:05 366. Kinetics of oxidative UO₂ dissolution by soluble Mn(III). **Z. Wang**, W. Xiong, S. Lee, B. M. Tebo, D. E. Giammar

10:25 367. WITHDRAWN

10:45 368. Reduction and immobilization of hexavalent chromium by Fe-bearing clay minerals. **M. E. Bishop**, P. Glasser, H. Dong, B. Arey, L. Kovarik

11:05 369. Impacts of humic acids on production of volatile mercury by *Shewanella oneidensis* MR-1. **E. Kim**, S. Noh, H. v. Duong, S. Han

11:25 Concluding Remarks.

Air Quality at the Interface of Megacities and Agroecosystems

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