

ENVR

DIVISION OF ENVIRONMENTAL CHEMISTRY

J.L. Goldfarb, *Program Chair*

SUNDAY MORNING

Section A

Catalysis for Environmental & Energy Applications

Treatment of gas and water pollutants

Cosponsored by CATL

A. Orlov, A. Savara, Y. Wang, *Organizers, Presiding*

8:10 Introductory Remarks.

8:15 Revisiting Effects of Alkali and Alkaline Earth Co-cation Additives to Cu/SSZ-13 Standard Selective Catalytic Reduction Catalysts. **F. Gao**, Y. Cui, Y. Wang, E.D. Walter, D. Mei, J. Szanyi, Y. Wang

8:35 Proof of Concept Study in Experimental Data Based Combinatorial Kinetic Simulations for Predictions of Synergistic Catalyst Mixtures. **A. Savara**, H. Vuong, J.E. Sutton, A.J. Binder, T. Toops

8:55 Heterogeneous UV/Fenton for Efficient VOCs Oxidation Over Fe/ZSM-5 Catalyst In Wet Scrubber Process. **R. Xie**, Y. Gao

9:15 Efficient photocatalytic oxidation of gaseous toluene in a bubbling reactor of water. **B. Liu**, Y. Zhan, H. Huang

9:35 Sonochemical and sonocatalytic degradation of PPCPs: A case study with methylparaben and salicylic acid. **N.H. Ince**, B. Savun-Hekimoğlu

9:55 Intermission

10:15 Iron catalysts for dye containing wastewater treatment. B. McGhee, D. Henninger, R. Stefan, **S.A. Maicaneanu**

10:35 Bimetallic PdAg Nanoparticles for Sustainable Nitrite Reduction in Drinking Water. **J. Troutman**, S.M. Humphrey, C.J. Werth

10:55 Catalytic reduction of aqueous chlorate with vanadium/palladium bimetallic catalyst. **J. Gao**, C. Ren, J. Liu

11:15 Bimetal treatment of Insensitive Munitions 2,4-dinitroanisole (DNAN) and nitroguanidine (NQ). **A. Mai**, E. Hadnagy, A. Koutsospyros, W. Braida

11:35 Fabrication of fungal biochar supported silver nanoparticles for catalytic reduction of 4-nitrophenol. **y. zhang**, B. Chen

11:55 Concluding Remarks.

Section B

Emerging Contaminants in Wastewater

Financially supported by Association of Environmental Engineering & Science Professors (AEESP)

Y. Huang, *Organizer*

A. S. Adeleye, P. Cervantes, *Organizers, Presiding*

Y. Huang, *Presiding*

8:30 Introductory Remarks.

8:35 Fate of pharmaceuticals in Wastewater: Roles of environmental factors and toxicological implications. **G. Rubasinghege**

9:15 Antibiotic resistance genes, microbiomes and *Salmonella* survival in lettuce exposed to antibiotics via soil surface irrigation. **Y. Shen**, W. Zhang, H. Li, E. Ryser

9:35 Deleterious Effects of Urban Watersheds on HT29 Colon Cells. **D.A. Abdullah-Smoot**

9:55 Antibiotic resistance genes and heavy metal co-selection dynamics in reclaimed water for irrigation in northwest Mexico. **V.A. Whitener**, W. Hung

10:15 Intermission.

10:30 Fate of Emerging Contaminants in aerobic and anaerobic wastewater treatment: A non-targeted approach. **L.A. Steinberg**, W. Richardot, E. Hoh, N. Dodder, N. Mladenov, B.S. Martincigh, S. Chao, C. Graves

10:55 Ultrahigh Resolution Mass Spectral Characterization of Carbon and Nitrogen in A Landfill Leachate Pre-Treated by a Submerged Anaerobic Bioreactor. **A.M. McKenna**, H. Chen, L. Li, R. Li, Y. Tang

11:15 Nitrosamines analysis in drinking water using GC/MS/MS for Performance Equivalent to EPA Method 521. **D. Wong**, R. Honnold, T. Anumol

11:35 Does a Contaminant Prefer Soil or Groundwater? The Determination of Adsorption Isotherms *via* Quantum Chemistry. **G. Jenness**, S. Giles, M.K. Shukla

11:55 Concluding Remarks.

Section C

Water in the Solid State: Reactions & Interactions with Impurities

Nucleation and Growth

Cosponsored by GEOC

Financially supported by Korean Polar Research Institute (KOPRI)

W. Choi, K. Kim, *Organizers*

E. Asenath Smith, *Organizer, Presiding*

V. Molinero, *Presiding*

8:00 Introductory Remarks.

8:05 Many faces of ice: A molecular view of growth and interactions. **M.J. Shultz**, P.J. Bisson, A.N. Carey, J.M. Marmolejos

8:35 Understanding heterogeneous ice nucleation through synergistic simulations and experimental studies. **S. Sarupria**

9:05 Surface Features that Promote Heterogeneous Ice Nucleation. **M. Freedman**

9:35 Modeling Elementary Heterogeneous Atmospheric (Photo)chemical Processes on Ice and their Dynamics using Amorphous Solid Water. **P. Ayotte**

9:55 Acceleration of Amorphous Solid Water Crystallization by Acidic Impurities. **D. Lee**, H. Kang

10:15 Intermission.

10:25 Icephobic Surfaces: Definition and Figures of Merit. **H. Ghasemi**, P. Irajizad, S. Nazifi

10:55 Antifreeze Proteins, Nature's Cryoprotectants. **K. Varga**, K.W. Elliott, K. Jovic, J. Sreter, E. Asenath Smith, P.W. Baures, J. Tsavalas

11:15 Polymer BioConjugates and Polyol Based Polymers for Ice Recrystallization Inhibition and Thermal Hysteresis Activity in Anti-Icing Coatings. **J. Tsavalas**, M. mousazadeh, M. Ishak, Y. Lin, A. Huebner, A. Pandey, A. Massie, R. Marquis, I. Lehner, P.W. Baures, J. Sreter, K. Jovic, K. Varga, E. Asenath Smith

11:35 Physics of Condensation Frosting. **f. ahmadi**, S. Nath, C. Bisbano, G. Iliff, P. Yue, J. Boreyko

11:55 Closing Remarks.

Section D

Chemistry of Water Reuse Processes toward Water Sustainability

Cosponsored by AGRO and PRES

Financially supported by Association of Environmental Engineering & Science Professors (AEESP)

R. Doong, W. Hou, **C. P. Huang**, Z. Qiang, V. K. Sharma, *Organizers*

H. Kim, T. Lin, T. Wang, *Presiding*

8:25 Introductory Remarks.

8:30 Sustainable bimetallic catalyst supported by red mud for enhanced nitrate reduction. S. Hamid, S. Bae, E. Ramazanova, **W. Lee**

9:00 Elucidation of phosphodiesterase Type V (PDE-5) inhibitors ozonation: Degradation pathway and kinetics. **I. Lee**, Y. Hong, S. Pan, L. Valentino, H. Kim

9:20 Degradation of ketoprofen, ibuprofen and atrazine by catalytic ozonation with graphene oxides (GOs): determination of GOs kinetic behaviors and simulations of pollutant removal. **K. Chen**, Y. Lin

9:40 Recovery of sulfuric acid from piranha solution over a dimensionally stable anode (DSA) Ti-RuO₂ electrode and beyond. **D. Sanchez Carretero**, C. Huang, C. Huang

10:00 Intermission.

10:15 Effect of adding graphene oxide composite on the performance of anammox for nitrogen removal. **T. Huang**, F. Tung, J. Lin, W. Chen

10:35 Ferrate oxidation of pharmaceuticals in hydrolyzed urine: Impacts of organic constituents. **C. Luo**, V.K. Sharma, C. Huang

10:55 Performance of ferrate as a disinfectant under varying conditions of water reclamation: Physiological and chemical assessments. **S. Daer**, K. Ikuma

11:15 Leaching of lithium and cobalt from spent lithium-ion batteries using subcritical water. **J. Liu**, J. lie, S. Tanda

11:35 Recovery of basic cobalt carbonate crystal from cobalt-containing wastewater using fluidized-bed homogeneous crystallization (FBHC) process. **W. Jun-Bo**, Y. Shih, Y. Huang

11:55 Concluding Remarks.

Section E

Water, Health, & Environmental Justice in Marginalized Communities

(A) Toxic Chemicals in Water; and (B) Sanitation and Wastewater Resource Recovery Technologies

Cosponsored by CMA

F. de los Reyes, A. Harris, *Organizers*

J. Kearns, *Organizer, Presiding*

8:00 Introductory Remarks.

8:10 Is it time to move beyond the trihalomethane paradigm in developing countries? Lessons learned from wastewater-impacted drinking waters in South Asia. **K. Furst**, R. Coyte, D. Smith, J. Davis, A. Vengosh, W. Mitch

8:35 Meta-analysis of nationwide loadings of pharmaceuticals to Indian aquatic and terrestrial environments from human excreta. **V. Kelkar**, J. Steele, R.U. Halden

9:00 Field Testing and Deploying a Low-Cost Groundwater Defluoridation Technology Using Locally Sourced Bauxite in Resource-Constrained Regions. **K. Cherukumilli**

9:25 Developing biosensors for detecting pesticide traces in water for human use by marginalized communities. **D. Bahamon-Pinzon**, **D. Vanegas**, D.M. Hurtado-Chaves, A.M. Torres-Gonzalez, I. Velez-Torrez, E.S. McLamore

9:50 Intermission.

10:05 On-site Sanitation, Energy, and Food Nexus for Climate Justice. **B. Hunter**, M. Deshusses

10:30 Going Viral: Emerging Opportunities for Phage-Based Bacterial Control in Water Treatment and Reuse. **P. Yu**, J. Mathieu, P. Zuo, P.J. Alvarez

10:55 Life Cycle Economic and Environmental Assessment of Resource Recovery from an Agricultural Waste System in Costa Rica. **K. Orner**, M. Alvarez, X. Ramirez, **P.K. Cornejo**

11:20 Light conducting photocatalytic membrane for low maintenance provision of safe water to marginalized communities. L.T. Nyamutswa, B. Zhu, D. Navaratna, S. Collins, K. Linden, **M. Duke**

11:45 Discussion.

**Showcasing Emerging Investigators & Future Perspectives: A Symposium
by the RSC Environmental Science Journals**

Cosponsored by ENVR

Financially supported by Royal Society of Chemistry; Association of
Environmental Engineering & Science Professors (AEESP)

D. M. Cwiertny, *Organizer*

K. P. McNeill, S. Neil, P. Novak, P. J. Vikesland, *Organizers, Presiding*

8:15 Introductory Remarks.

8:20 Interactions of Nanomaterials with the Cell Plasma Membrane: Can
Model Membranes Predict Nanoparticle-induced Membrane Damage in Cells?.
A. Farnoud

8:45 Quantitative analysis for the environmental fate of carbon nanotubes in
soil-plant systems for their environmental implication and application. **Y. Yang**

9:10 Designing Sustainably at the Nano-Scale. **L.M. Gilbertson**

9:35 Promoted heterogeneous reaction of SO₂ in atmosphere by CO₂ and flue
gas SO₂ utilization. **L. Zhang**

10:00 Intermission.

10:15 Sunlight Photolysis of Anthropogenic Chemicals on Simulated
Environmental Surfaces. **N. Dai**, L. Su

10:40 Using aerosol optical tweezers to learn and predict the chemical
evolution of the composition, pH, and phase separated morphology of complex
atmospheric particles. **R.C. Sullivan**, H. Boyer, K. Gorkowski, N.M. Donahue,
L. Jahl, L. Monroe

11:05 Exploring the surface properties of aqueous organic aerosol. S. Li, S.
Cheng, **L. Du**

11:30 Disentangling the contributions of metabolism, light and flocculation to
removing dissolved organic carbon from vertically stratified aquatic
environments.. **R.M. Couture**, J. Guerrero, T. Moore, H.A. DeWit, E.
Jennings, D. Pierson

11:55 Concluding Remarks.

Novel Polymeric Materials & Polymer-Based Processes for Energy-Efficient Treatment of Water & Resource Recovery / Membrane Formation, Sponsored by PMSE, Cosponsored by ENVR

Geogenic & Anthropogenic Sources of Trace Elements within Surface and Groundwater Systems and their Effects on Water Quality / Geogenic & Anthropogenic Sources of Trace Elements within Surface and Groundwater Systems and their Effects on Water Quality, Sponsored by GEOC, Cosponsored by ENVR

Chemists Without Borders: Celebrating 15 Years of Scientific/Humanitarian Collaboration, Sponsored by MPPG, Cosponsored by CEI[‡], ENVR and PRES

Future Insights into Syngas Conversion Catalysis: Symposium in honor of Burtron H. Davis, Sponsored by CATL, Cosponsored by ENFL, ENVR, INOR and PHYS

Advances in Catalysis with Ceria & Other Reducible Oxides / Model ceria catalyst, Sponsored by CATL, Cosponsored by ENFL, ENVR, INOR and PHYS

Characterization of Plastics in Aquatic Environments, Sponsored by POLY, Cosponsored by ANYL, BIOL, CEI, ENVR, I&EC, PMSE[‡] and PRES

Creative Thinking in Designing Efate Studies & Data Analysis to Meet Agrochemical Regulatory Challenges, Sponsored by AGRO, Cosponsored by ENVR

Showcasing Emerging Investigators & Future Perspectives: A Symposium by the RSC Environmental Science Journals, Cosponsored by ENVR

SUNDAY AFTERNOON

Section A

Catalysis for Environmental & Energy Applications

Oxidative process for water treatment

Cosponsored by CATL

A. Orlov, A. Savara, Y. Wang, *Organizers, Presiding*

1:30 Introductory Remarks.

1:35 Rapid Photocatalytic Degradation of Glyphosate by Palladium-Decorated *m*-BiVO₄/BiOBr Nanosheets. **E.M. Zahran**, N. Ensinger

1:55 Novel bismuth oxyhalides-based hybrid materials with improved photocatalytic performance. L. Wang, X. Min, **Y. Wang**

2:15 Enhanced Performance for Catalytic Ozonation of Methyl Mercaptan on Single-Atom Ag Deposited Mesoporous MnO₂. **C. He**, I. Hu, Y. Huang

2:35 Synthesis and photocatalytic degradation of pollutants using dual metal ferrite (Zn_{0.5}Mn_{0.5}Fe₂O₄) and its graphene oxide composite. **M. Zahid**, R. Asif, N. Nadeem, I.A. Bhatti, H.N. Bhatti

2:55 Activation of peroxymonosulfate by α -Fe₂O₃ for oxidation of organic compounds through nonradical mechanism. **H. Kang**, H. Kim, K. Lee, J. Seong, S. Kim, C. Lee

3:15 Intermission

3:35 Electro-catalytic Degradation of Antibiotic Tetracycline in Aqueous System by a Novel CNTs/AG/ITO Electrode. **H. Liu**, J. Qu, Y. Zhang

3:55 Electrocatalytic generation of reactive chlorine species and simultaneous conversion of CO₂ into formate. **W. Choi**, H. Park

4:15 Solar hydrogen peroxide production and As(III) oxidation using carbon nanotubes wired to titania nanorods arrays. **s. choi**, H. Park

4:35 Electrodialysis-driven electrocatalytic water treatment and CO₂ conversion. **B. Kim**, H. Park

4:55 Concluding Remarks.

Section B

Emerging Contaminants in Wastewater

Supported by Association of Environmental Engineering & Science Professors (AEESP)

Y. Huang, *Organizer*

A. S. Adeleye, P. Cervantes, *Organizers, Presiding*

Y. Huang, *Presiding*

1:30 Introductory Remarks.

1:35 Emerging Contaminants: Occurrence and removal of pharmaceuticals and personal care products and steroids in wastewater treatment plants. **V.**

Phonsiri, L. Sanchez

2:20 Spatial and Temporal Variability of Pharmaceutical Mixtures and Potential Impacts to a Wastewater Effluent-Dominated Stream in Iowa, September 2017 to August 2018. **G.H. LeFevre**, H. Zhi, D.W. Kolpin, R. Klaper, L.R. Iwanowicz, E.B. Meade, M.T. Meyer, R.F. Lane, S.M. Meppelink, M.M. Powers, J. Quin

2:45 Fate of pharmaceuticals and personal care products in wastewater treatment plants. **V. Desgens-Martin**, A.A. Keller

3:10 Fate and transport of extracellular DNA found in wastewater discharge and its role in antibiotic resistance propagation in rivers. **M. Legg**, K. Ikuma, C. Rehmann

3:35 Intermission.

3:50 Alternatives for removal of imidazolium ionic liquids in wastewater. A.F. Mohedano, E. Diaz, **I. Moreno-Andrade**

4:10 Extraction of Dyes from Water Using an Amino acid-Based Hydrophobic Ionic Liquid. D. Bwambok, **S. Smith**, **V. Marta**, M. Angon

4:30 Electrochemically-Mediated Redox-Systems for the Controlled Remediation of Emerging Contaminants. **X. Su**

4:50 Ampicillin (AMP) degradation and AMP resistant *E.coli* and its gene removal by UV-LED/chlorine process. **K. Zoh**, T. Kim

5:10 Concluding Remarks.

Section C

Water in the Solid State: Reactions & Interactions with Impurities

Microstructural and mechanical aspects of ice

Cosponsored by GEOC

Financially supported by Korean Polar Research Institute (KOPRI)

E. Asenath Smith, W. Choi, K. Kim, *Organizers, Presiding*

1:30 Introductory Remarks.

1:35 Ion exclusion at the ice water interface: surprising results and insight. **p. wilson**, T. Haymet

2:05 Salty ice surfaces: Microscopy and reactivity. **T.F. Kahan**, S. Chakraborty, P. Malley, A. Stathis, A. Stubbs

2:25 Distributions and structures of ions in polycrystalline and monocrystalline ice. **T. Okada**, M. Harada, Y. Okada

2:55 Intermission.

3:15 Microstructures and mechanical response of ice mixtures, with application to terrestrial glaciers and icy satellites. **C. McCarthy**

3:45 How sulfuric acid affects the mechanical behavior and microstructural properties of polycrystalline ice. **K. Hammonds**, C. Donahue, I. Baker

4:15 Interaction of colloidal particles with propagating cracks in loaded ice. **E. Asenath Smith**, R. Lieb-Lappen, S. Taylor, R.D. Moser, R. Haehnel

4:35 Discussion.

4:50 Closing Remarks.

Section D

Chemistry of Water Reuse Processes toward Water Sustainability

Cosponsored by AGRO and PRES

Financially supported by Association of Environmental Engineering & Science Professors (AEESP)

R. Doong, W. Hou, **C. P. Huang**, Z. Qiang, *Organizers*

V. K. Sharma, *Organizer, Presiding*

J. Liu, Y. Shih, *Presiding*

1:30 Introductory Remarks.

1:35 Inactivation of *E. tarda* and *V. harveyi* by free chlorine. **J. Cho**, T. Kim, C. Lee

1:55 Strengths of correlations between concentrations of chlorination disinfection byproducts and aquatic descriptors: What is important?. **B. Manivannan**

2:15 Reactivity of free chlorine with organic matter under wastewater treatment conditions. R.N. Tran, **S.P. Mezyk**

2:35 Performance and Photo-Disinfection Mechanism of Visible-Light-Responsive TiO₂ Composites for Removal of Water Pathogen. **K. Iamsaard**, C. Chang, C. Weng, J. Tzeng, L. Yen, Y. Lin

2:55 Interplay between Manganese Oxide and Microporous Carbonaceous Support in Capacitive Deionization. S. Li, S. Xu, **T. Wang**, C. Wang

3:15 Intermission.

3:30 Controlling micro/mesoporosity of activated carbon fiber with electrospinning for membrane capacitive deionization. **N. Liu**, C. Hou

3:50 Polarization alleviation in flow-electrode CDI enables extremely high water recovery rate in desalination and reclamation. **J. Ma**, J. Ma, C. Zhang, R. Collins, D. Waite

4:10 Fit-for Purpose Water Technology of Selective Desalination. **Y.J. Lin**

4:30 Removal of Scale-forming Constituents from Desalination Concentrate via Photochemical Oxidation of Phosphonate-Containing Antiscalants. **T. Jain**, H. Liu

4:50 Optimization of electrochemical peroxidation and activation of persulfate and hypochlorite using iron electrodes. **E. Escobedo**, K. Cho, Y. Chang

5:10 Concluding Remarks.

Section E

Water, Health, & Environmental Justice in Marginalized Communities

Socio-Cultural and Economic Dimensions of Water and Health

Cosponsored by CMA

F. de los Reyes, J. Kearns, *Organizers*

A. Harris, *Organizer, Presiding*

1:30 Introductory Remarks.

1:35 Water, sanitation and hygiene for people experiencing homelessness: A transdisciplinary approach for developing sustainable solutions for unhoused individuals. **M. Welsh**, S. Flanigan, M. Garcia, N. Mladenov, M.E. Verbyla

2:00 Wastewater management issues in the rural Alabama Black Belt and a proposed path forward. **K. White**, M. Elliott, M.O. Barnett

2:25 Engineering Justice in the Sanitation Value Chain: Socio-technical Responses to WASH Insecurity in Placencia, Belize. **C. Wells**, C. Prouty, C. Haberstroh, W. Webb, M.A. Trotz

2:50 Systems-based, Community-Engaged Insights that Safeguard Health and Wastewater Management in Vulnerable Communities and Coastlines. **C. Prouty**, M. Trotz, Q. Zhang, D.A. Delgado, J.R. Mihelcic

3:15 Intermission.

3:30 Environmental justice and stormwater management: A Tampa case study towards multi-functional stormwater infrastructure in coastal communities of color. **M.E. Carrasquillo**, E. Ortiz Carabantes, M. Trotz

3:55 Elemental contamination of Navajo unregulated water sources. J.M. Credo, L.M. Jones, **J.C. Ingram**

4:20 Water, Health, and Environmental Justice in California's Central Valley: Geospatial Analysis of Water Contamination and Health Disparities. **C. Naughton**

4:45 Baseline Study Evaluating Water Quality and Microbial Ecology in Seven Alaskan Native Communities. **N.B. Saleh**, L. Rowles, M. Kirisits

5:10 Discussion.

5:25 Closing Remarks.

Section F

Showcasing Emerging Investigators & Future Perspectives: A Symposium by the RSC Environmental Science Journals

Cosponsored by ENVR

Financially supported by Royal Society of Chemistry; Association of Environmental Engineering & Science Professors (AEESP)

D. M. Cwiertny, *Organizer*

K. P. McNeill, S. Neil, P. Novak, P. J. Vikesland, *Organizers, Presiding*

1:30 Introductory Remarks.

1:35 Organic contaminants of emerging concerns: environmental fate and impacts. **Y. Men**, Y. Xing, Y. Yu, K. Zhang

2:00 Biomimetic and Bioinspired Membranes: Challenges and Opportunities. **M. Kumar**

2:25 Next Generation Graphene-Based Membranes for Water Treatment: Evolving from 2D to 3D Materials. **J. Fortner**

2:50 Chemistry of Wildfire Smoke: Measuring Emissions and Evolution of Submicron Particles. **D. Farmer**, L.A. Garofalo, E. Levin, M. Pothier, S. Kreidenweis

3:15 Intermission.

3:30 Characterizing Urban Stormwater Impacts on Water Quality. **E.P. Kolodziej**, K.T. Peter, Z. Tian, J. McIntyre

3:55 Nucleic acid reactivity with UV radiation and HOCl and the impact of virus capsids. **K. Wigginton**, Z. Qiao

4:20 Development of low-cost colorimetric sensor for the detection of aqueous nitrite ion. **L. PHILIP**

4:45 Achieving low levels of lead at the tap through a multi-faceted corrosion control program. B. Trueman, **G. Gagnon**

5:10 Concluding Remarks.

Novel Polymeric Materials & Polymer-Based Processes for Energy-Efficient Treatment of Water & Resource Recovery / Membrane Processes, Sponsored by PMSE, Cosponsored by ENVR

Future Insights into Syngas Conversion Catalysis: Symposium in honor of Burtron H. Davis, Sponsored by CATL, Cosponsored by ENFL, ENVR, INOR and PHYS

Chemistry & Water: Opening Session (Invited), Sponsored by MPPG, Cosponsored by CEI[‡], ENVR and PRES

Advances in Catalysis with Ceria & Other Reducible Oxides / Theory of ceria catalysts, Sponsored by CATL, Cosponsored by ENFL, ENVR, INOR and PHYS

Characterization of Plastics in Aquatic Environments, Sponsored by POLY, Cosponsored by ANYL, BIOL, CEI, ENVR, I&EC, PMSE[‡] and PRES

Showcasing Emerging Investigators & Future Perspectives: A Symposium by the RSC Environmental Science Journals, Cosponsored by ENVR

SUNDAY EVENING

Chemistry & Water: Poster Session, Sponsored by MPPG, Cosponsored by CEI[‡], ENVR and PRES

Surfaces & Interfaces in the Environment: Symposium in Honor of Vicki Grassian, Posters, Sponsored by COLL, Cosponsored by ENVR

MONDAY MORNING

Section A

Current Advances in Water Analysis: From Citizen Scientists to Laboratory Breakthroughs

Cosponsored by AGRO, CEI

J. L. Goldfarb, *Organizer*

M. E. Verbyla, *Organizer, Presiding*

8:15 Introductory Remarks.

8:20 Optimum Condition for Formation of Monochloramines during Reagent addition to a Pipeline for Water Disinfection. **F. Samadi**

8:45 Citizen science and water analysis. **S. Simoliunas**

9:10 Citizen-Science Based Water Quality Monitoring: Organic Micropollutants in New York Lakes. **S. Wang**, T. Zeng, M. Perkins, D. Matthews, S. Moran

9:35 Monitoring water quality in arctic rivers: a citizen science approach. **C. Gueguen**

10:00 Intermission.

10:15 How to Make Dioxin Analysis in Water Simpler. **H. Lin**, J. Betz, D. Wong, T. Anumol, M. Greg

10:40 Imaging the coffee ring effect for tap water fingerprinting. **R. Lahr**, X. Li

11:05 Drinking Water and Citizen Science: Between Perceived Concerns and Actual Microbiological Quality. X. Li, **T. Yan**

11:30 Non-targeted screening of wastewater for water reuse using mass spectrometry. **J. Zweigenbaum**, A.J. Williams

11:55 Closing Remarks.

Emerging Contaminants in Wastewater

Financially supported by Association of Environmental Engineering & Science Professors (AEESP)

Y. Huang, *Organizer*

A. S. Adeleye, P. Cervantes, *Organizers, Presiding*

Y. Huang, *Presiding*

8:15 Introductory Remarks.

8:20 Effects of man-made nanoparticles on aerobic denitrification by strain *Pseudomonas stutzeri* PCN-1. **Q. Chen**

8:45 Transformation of N-methylamine Stimulant Drugs to (Halo)nitromethanes during Wastewater Reuse. **D. McCurry**, J.(. Shi

9:05 Assessment of the Biodegradability of Trace Organic Contaminants during Biological Treatment in Water Resource Recovery Facilities. **W. Khunjar**

9:25 Monochloramine Reactivity with Amino Acids in Wastewater: Kinetic and Temperature Dependence. **R. Shinh**, J. Gleason, S.P. Mezyk

9:45 Intermission.

10:00 Variation in regional risk of engineered nanoparticles: nanoTiO₂ as a case study. **A.A. Keller**

10:40 Fast multi-element quantification of nanoparticles in wastewater sludge using single particle ICP-MS. **Y. Huang**, J. Nelson, P. Cervantes, A.A. Keller

11:05 Multi-technique approach to study the stability of silver nanoparticles at environmental realistic concentrations in aqueous media. **P. Cervantes**, Y. Huang, A.A. Keller

11:30 Rapid Screening Technique for Emerging Contaminants Utilizing spICP-MS/MS and MassHunter 4.5. **J. Nelson**, M. Yamanda

11:55 Concluding Remarks.

Water in the Solid State: Reactions & Interactions with Impurities

Ice in earth and environmental systems

Cosponsored by GEOC

Financially supported by Korean Polar Research Institute (KOPRI)

E. Asenath Smith, W. Choi, K. Kim, *Organizers, Presiding*

8:00 Introductory Remarks.

8:05 Raman mapping of ice surface with organic constituents. **S. Chakraborty**, T. Kahan

8:35 Natural organic matter in snow and ice: Chemistry and Characterization. **A.M. Grannas**, V. Boschi, R. Tiu, M. Barr

9:05 Interactions of acetone with ice monitored with IR spectroscopy and mass spectrometry. **R.R. Michelsen**, J. Charney

9:25 Enhanced fluorescence detection on ferrous ion by freezing. **Y. Lee**, K. Kim

9:45 Intermission.

10:05 Freezing-enhanced redox chemical reactions and their application for water treatment. **J. Kim**, K. Kim, J. Ju, Y. Choi

10:35 Application of Biochar for Removal of Hexavalent Chromium during Freezing Process. **T. Han**, K. Kim

10:55 Thermal imaging: a novel approach to study evaporation kinetics in porous media. **J. Maurais**, É. Beaumont, J. Bourret, E. Dauphinais, C. Larivière-Loiselle, É. Morin, A. Royer, N. Bouchard, P. Ayotte

11:15 New abiotic pathway of humification in frozen solutions. **D. Min**, K. Kim, K. Lui, b. kim, S. Kim, J. Cho, W. Choi

11:35 Marine Surfactants as Chemical Herders for Maritime Oil Spill Remediation. H. Zhou, **G. John**, C. Maldarelli

11:55 Concluding Remarks.

Section D

Chemistry of Water Reuse Processes toward Water Sustainability

Cosponsored by AGRO and PRES

Financially supported by Association of Environmental Engineering & Science Professors (AEESP)

R. Doong, C. Huang, Z. Qiang, V. K. Sharma, *Organizers*

W. Hou, *Organizer, Presiding*

W. Lee, Y. Peng, *Presiding*

8:00 Introductory Remarks.

8:05 Mesoporous carbon nitride as a green multifunctional material for water purification. T. Nguyen, L. Paragas, M.G. de Luna, **R. Doong**

8:35 Stability and phosphate adsorption study of a magnetic LDH composite as a function of pH. **C. Lu**, T. Kim, U. Gro Nielsen, H. Christian Bruun Hansen

8:55 Heterogeneous activation of peroxymonosulfate by CoO-doped ordered mesoporous carbon nitride for removal of sulfamethoxazole from aqueous solution. **T. Nguyen**, C. Chen, C. Dong

9:15 Simultaneous adsorption and biodegradation of soil washing solution containing PAHs with high concentrations by degrading bacteria immobilized in PVA-SA hydrogel beads. **W. Chen**, X. Wang

9:35 Synergy of graphene oxide-iron oxide composite and hydrogen peroxide for adsorption and degradation of diclofenac and chlorphenamine in water. **W. Chen**, Y. Huang, J. Huang, S. Lin, C. Li

9:55 Intermission.

10:10 Advanced oxidation of recycled water with UV/H₂O₂: Comparison of treatment efficiencies with UVC-LED and LPUV. H. Chen, D. Leong, T. Ou, **G. Wang**

10:35 Impact of physical and chemical pretreatment to RO fouling during the water reuse. **H. Kim**, D. Park, A. Jang, S. Kang

10:55 Novel hybrid ion exchange process for municipal wastewater reclamation and nutrient recovery driven by waste carbon dioxide. **H. Dong**, C. Shepsko, A. SenGupta

11:15 Membrane Bioreactor/ Reverse Osmosis System for Gray Water Treatment and Re-Use. **C.S. Griggs**

11:35 Pore Wetting in Membrane Distillation Treatment of Wastewater Reverse Osmosis Concentrate: Causes and Prevention. **F. Perreault**

11:55 Concluding Remarks.

Section E

Wastewater-Based Epidemiology: Opportunities, Challenges & Applications to Public Health & Safety

Financially supported by Biobot Analytics; Association of Environmental Engineering & Science Professors (AEESP)

D. A. Burgard, M. Matus, B. Subedi, *Organizers, Presiding*

8:00 Introductory Remarks.

8:05 Expanding wastewater-based epidemiology to inform on public health. **K. Thomas**, J. O'Brien, B. Tschärke, P. Choi, P. Thai, M. Mackie, R. Verhagen, K. Shimko, F. Ahmed, E. O'Malley, Q. Zheng, J. Mueller

8:50 Biobot Analytics: a novel platform to estimate opioid consumption in cities by analyzing opioid urinary metabolites in wastewater. **M. Matus**

9:15 Implication of in-sewer stability testing of markers for wastewater-based epidemiology. **J. O'Brien**, G. Jiang, J. Gao, J. Li, A. Banks, J. Mueller, P. Choi, K. Thomas, C. Ort, B. Tschärke, P. Thai

9:40 Measuring the scale of opioid consumption in Australia by wastewater analysis. **C. Gerber**, I. Nguyen, R. Bade, J. White, B. Tschärke, J. O'Brien, J. Mueller, K. Thomas

10:05 Intermission.

10:20 New methods in wastewater-based epidemiology: Plant-based dietary trends and *in situ* active sample collection. **E.M. Driver**, D.A. Bowes, A.J. Gushgari, R.U. Halden

10:45 Monitoring Opioid Use through Wastewater-Based Epidemiology: The Case of Methadone in Australia and China. **P. Thai**, J. O'Brien, B. Tschärke, P. Du, X. Li, R. Bruno, K. Thomas, J. Mueller

11:10 Is 24-hour Composite Sampling Enough?. **R.A. Huffines**, J.E. Mauk, B. Nelson, T.L. Croft, B. Subedi

11:35 Wastewater Sampling as Input to National Statistics on Recreational Drug Use: Results of a Canadian Pilot Study and Future Directions. **T. Werschle**, **S. McLean**

Section F

Showcasing Emerging Investigators & Future Perspectives: A Symposium by the RSC Environmental Science Journals

Cosponsored by ENVR

Financially supported by Royal Society of Chemistry; Association of Environmental Engineering & Science Professors (AEESP)

D. M. Cwiertny, *Organizer*

K. P. McNeill, S. Neil, P. Novak, P. J. Vikesland, *Organizers, Presiding*

8:20 Introductory Remarks.

8:25 Biologically mediated chiral inversion of emerging contaminants: The role of wastewater treatment. **S.J. Khan**, A. Branch, J. McDonald, S.N. Berry, L. Nghiem, P. Neale, F. Leusch, K.A. Jolliffe

8:55 Putting the “Bio” in Bioretention: Microbial, Plant, and Fungal Transformation Processes in Green Stormwater Infrastructure for Sustained Removal of Emerging Contaminants. **G.H. LeFevre**

9:25 Which Photo-oxidant for Potable Reuse? Treatment Efficiency and Toxicity Considerations. **H. Liu**, D. Schlenk

9:55 Intermission.

10:10 Modulation of nanoparticle-membrane interaction by proteins. **J.A. Pedersen**, E.E. Carlson, C.J. Murphy, R. Hernandez

10:40 Transformation-determined Nanotoxicity. **S. Liu**

11:10 Toward predictive analysis of nanoparticle protein corona populations. **K. Wheeler**, M. Findlay, D. Freitas, M. Mobed-Miremadi, S. Eramo, K. Baumgartner

11:40 Discussion.

11:55 Concluding Remarks.

Novel Polymeric Materials & Polymer-Based Processes for Energy-Efficient Treatment of Water & Resource Recovery / Fundamentals of Water & Solute Transport in Membranes, Sponsored by PMSE, Cosponsored by ENVR

Analytical Methodologies for Process Chemistry & Formulation Research, Sponsored by AGRO, Cosponsored by ENVR

Surfaces & Interfaces in the Environment: Symposium in Honor of Vicki Grassian / Catalysis, Surfaces & Minerals, Sponsored by COLL, Cosponsored by ENVR[‡] and WCC

Agrochemicals & Water: Advances in Prevention, Monitoring, & Treatment, Sponsored by AGRO, Cosponsored by ENVR

Agrochemicals & Water: Advances in Prevention, Monitoring, & Treatment, Sponsored by AGRO, Cosponsored by ENVR

Advances in Catalysis with Ceria & Other Reducible Oxides / Reactions of ceria catalysts, Sponsored by CATL, Cosponsored by ENFL, ENVR, INOR and PHYS

Future of Biomacromolecules at a Crossroads of Polymer Science & Biology / Synthetic Cells, Sponsored by POLY, Cosponsored by BIOL, CARB, CELL, COLL, ENVR, MEDI, PHYS and PMSE[‡]

Off-target Transport of Field Applied Agricultural Chemicals: Study Designs, Monitoring, Modelling, & Risk Assessment, Sponsored by AGRO, Cosponsored by ENVR

Showcasing Emerging Investigators & Future Perspectives: A Symposium by the RSC Environmental Science Journals, Cosponsored by ENVR

MONDAY AFTERNOON

Section A

Sensors & Biosensors for Widespread Environmental Monitoring

Cosponsored by AGRO

T. Li, V. V. Rajasekharan, W. Zhang, *Organizers*

M. Romero-Gomez, P. L. Schorr, *Organizers, Presiding*

1:00 Introductory Remarks.

1:05 Biological and Ecological Strategy for Biomimicry and Its Application. **J. Kim**, E. Lee, H. Bae, Y. Lee, E. Park

1:25 Simple yet sophisticated environmental sensors for citizen science and widespread use. **J. Hofstetter**

1:45 Autonomous Detection of Nutrients in Marine and Freshwaters using Next Generation Environmental Sensors. **M. McCaul**, A. Donohoe, P. McCluskey, C. Hazel, A. Shinde, D. Diamond

2:05 Rapid and simple assay to detect the presence of biocides that inhibit nitrification. **P. Morkus**, D. Montpetit, C. Filipe, D.R. Latulippe

2:25 Evaluation of biosensors for in-situ hydrocarbon detection in aquatic environments. **H. Nandimandalam**, V. Gude

2:45 High Selective and Sensitive Noble Metal decorated MoS₂ based gas sensor array. **S. Park**

3:05 Intermission.

3:15 Electrochemical determination of copper(II) ions in water using polyacrylic-graphene-thiourea modified electrode. **N.B. Abdul Razak**, S.B. Hasbullah, L. Tan, Y. Lee

3:35 Uranium isolation and concentration using reactive membranes for quantitative analysis. **A.W. Darge**, T.A. Devol, S.M. Husson

3:55 Sensing of penicillins and cephalosporins in neutral aqueous solution using a calcein-PAMAM complex. **Y. Xu**, M. Bonizzoni

4:15 Carbon Nanomaterials Sensors for Lead Detection in Drinking Water. **N.T. Alvarez**, K. Ojo, A. Kile, W.R. Heineman, V. Shanov, K. Gazica, C. Rahm

4:35 Can spectroscopy with 'real time' monitors provide data to suggest horizontal gene transfer during an algal bloom?. **P.L. Schorr**

4:55 Concluding Remarks.

Section B

Emerging Contaminants in Wastewater

Y. Huang, *Organizer*

A. S. Adeleye, P. Cervantes, *Organizers, Presiding*

Y. Huang, *Presiding*

1:00 Introductory Remarks.

1:05 Pharmaceuticals in wastewater treatment plants: Presence, abundance, and fate. **Y. Sun**, Z. Han, J. Xue, Y. Zhu, A.S. Adeleye

1:30 Direct electron transfer based peroxymonosulfate activation by iron doped manganese oxide (Mn₃O₄): A new approach for water treatment. **K. Huang**, H. Zhang

1:55 Pollen solutions: A novel and green approach to water treatment. **A. Meichanetzoglou**, A. Boa

2:20 Carbon Metal Organic Framework Composite (CMOF) for the Adsorption of Contaminants of Emerging Concern from Water. **J. Munoz**, S. Kim, Y. Yoon, A.J. Hernandez

2:45 Intermission.

3:00 Evaluation of contaminant of emerging concern removal in wastewater by a hybrid Forward Osmosis-Reverse Osmosis system. **A. Szczuka**, W. Mitch

3:25 Removal of multidrug-resistant *Salmonella*, antibiotics and antibiotics resistance genes in water by electrochemical oxidation. **B. Wang**, H. Shi, Q. Huang

3:50 Removal of Meropenem from Environmental Matrices by Electrochemical Oxidation. **A. Ahmadi**, T. Wu

4:15 Degradation of Selected Hormones and Antibiotics in Subcritical Water. N. Saha, **M. Reza**

4:40 Concluding Remarks.

Section C

Nanomaterials & Sustainability

Cosponsored by CEI
S. Ahuja, *Organizer*

1:00 Introductory Remarks.

1:05 Nanomaterials: friends or foes. **S. Ahuja**

1:25 Self-Propelled Natural Halloysite Nanoclay Nanomotors for Heavy Metal Remediation. **T. Maric**, C.C. Mayorga-Martinez, B. Khezri, M.M. Mohamad Nasir, X. Chia, M. Pumera

1:45 Reduction of nitrate by nanoscale palladized zero-valent iron@graphene composite: synthesis, characterization, kinetics and reduction mechanism. **f. zhang**, X. Huang, S. Li

2:05 Simultaneous removal and inactivation of Legionella pneumophila using electrically heatable carbon nanotube interfaces. Y. Oh, R. Noga, V. Shanov, H. Ryu, J. Yadav, **S. Chae**

2:25 Formulation Rules for Integration of Metal Organic Framework Nanoparticles into Mixed-Matrix Membranes for Post-Combustion Carbon Capture. **S.K. Elsaïdi**, S. Venna, M.H. Mohamed, A. Sekizkardes, D. Hopkinson

2:45 Intermission.

3:00 Enhanced water disinfection using vertically aligned TiO₂ nanowires through physical puncture and photocatalytic action. **E. Kim**, M. Choi, w. kim

3:20 Water treatment sludge as reactive sorbent for sulfate removal. **n. pimpha**, K. Sitthisuwannakul

3:40 Role of Stomata in Foliar Sorption of Silver Nanoparticles by *Arabidopsis thaliana*. **J. He**, L. Zhang, S. He, E. Ryser, H. Li, W. Zhang

4:00 Structural controls on reactivity and long-term performance of sulfidized zerovalent iron. **D. Tobler**, M. Mangayayam, K. Dideriksen, M. Ceccato

4:20 Linking sulfidation treatment and contaminant selectivity of sulfidized zero-valent iron. **M. Mangayayam**, V. Alonso de Linaje, R. Espinosa, K. Dideriksen, D. Tobler

4:40 Efficient removal of Hazardous Fluoride from Drinking Water by Using Bionanomaterial Derived from Nitro-Oxidized Carboxynanocellulose. **S. Sharma**, P. SHARMA, B.S. Hsiao

Section D

Chemistry of Water Reuse Processes toward Water Sustainability

Cosponsored by AGRO and PRES

Supported by Association of Environmental Engineering & Science Professors (AEESP)

W. Hou, **C. P. Huang**, Z. Qiang, V. K. Sharma, *Organizers*

R. Doong, *Organizer, Presiding*

C. Dong, G. Wang, *Presiding*

1:00 Introductory Remarks.

1:05 Oxidation treatment of new cyano-neurotoxins BMAA and two isomers. **T. Lin**, Y. Chen, M. Lee, W. Chen

1:35 Characterization and applications of green-synthesized Cu₂O/ TiO₂ nanotube arrays. **Y. Peng**, Y. Lin, K. Chen

1:55 Evanescent waves generated in TiO₂-coated quartz optical fibers coupled with UV-LEDs improve quantum yields of pollutant degradation. **Y. Song**, L. Ling, C. Shang

2:15 Sunlight-driven formation of silver nanoparticles: The roles of natural organic matter, and silver-chloride complex. **A. Singh**, W. Hou, T. Lin

2:35 Intermission.

2:55 Photo-disinfection processes over visible-light selective non-metallic/metallic -TiO₂ composites. **J. Tzeng**, C. Weng, L. Yen, G. Gaybullae, Y. Lin, C. Huang

3:10 Equilibrium modeling of struvite recovery in wastewater processes. **A. Bowers**

3:30 Morphological effect of electroless copper substrate on catalytic efficiency of CuPd, CuSn, CuSnPd electrodes in electrochemical reduction of nitrate ion. **Y. Shih**, C. Huang

3:50 Nickel hexacyanoferrate electrodes for sodium intercalation. **C. Peng**, C. Lin, H. Tung

4:10 Phosphate recovery using electrodialysis reactor with a magnesium anode from wastewater. **Y. Cai**, Z. Han

4:30 Closing Remarks.

Section E

Wastewater-Based Epidemiology: Opportunities, Challenges & Applications to Public Health & Safety

Financially supported by Biobot Analytics; Association of Environmental Engineering & Science Professors (AEESP)

D. A. Burgard, M. Matus, B. Subedi, *Organizers, Presiding*

1:00 Introductory Remarks.

1:05 Wastewater-based epidemiology (WBE) toolkit platform: Could WBE be a Spotify, Netflix or Twitter like-platform for population health?. **J. Baz Lomba**, K. Thomas, M. Reid

1:30 24-hour multi-omics analysis of residential sewage reflects human activity and informs public health. M.G. Matus, **C. Duvallet**, M. Kido Soule, K.

Longnecker, N. Endo, N. Ghaeli, S. Kearney, I. Brito, c. ratti, E.B. Kujawinski, E. alm

1:55 Using Municipal Wastewater to Monitor Community Microbial Infectious Diseases: Antimicrobial Resistance in *Salmonella* . **T. Yan**, S. Diemert

2:20 Assessing the Human Condition Globally in Near Real-time Using the Human Health Observatory. **R.U. Halden**

2:45 Intermission.

3:00 Determining diversity of community salmonellosis cases using municipal wastewater surveillance. **S. Diemert**, T. Yan

3:25 Multi-site sampling and risk prioritization reveals the public health relevance of antibiotic resistance genes found in wastewater environments. **c. dai**, C. Duvallet, A. Zhang, M.G. Matus, N. Ghaeli, S. Park, N. Endo, S. Isazadeh, K. Jamil, c. ratti, E. alm

3:50 Wastewater Pharmacometabolomics: A feasibility study using liquid-chromatography mass spectrometry to estimate illicit drug consumption during college football games. **D.J. Lemas**, M. Loop, M. Duong, A. Schleffer, C. Collins, A. Ciesielski, Z.D. Ridge, J. Wagner, C. Delcher

4:15 Four-Year Illicit Stimulant use Trends in Seattle, WA USA. **D.A. Burgard**, R. Rushing

4:40 Closing Remarks.

Section F

Green Chemistry & the Environment

Cosponsored by CEI
R. Luque, S. O. Obare, *Organizers, Presiding*

1:00 Introductory Remarks.

1:05 Using Green Chemistry for REE Recovery from Coal Fly Ash: Hydrothermal Extraction and Ligand-associated Media Sorption. **T.M. Dittrich**, M. Dardona, J. Hovey, M.J. Allen, S.K. Mohanty, H. Boukhalfa

1:25 Ultrasonic particle detection: Filter backwash optimization, part I. **C. Steary**

1:45 Environmental issues associated with herbicidal ionic liquids – from synthesis to advanced field studies. **L. Chrzanowski**, L. Lawniczak, T. Praczyk, J. Pernak

2:05 Towards sustainable water treatment: Selective adsorption of arsenic over competing phosphate by transition metal cross-linked chitosan. **L.N. Pincus**, J.B. Zimmerman

2:25 Detoxification of waste water of Pb^{2+} and Cd^{2+} using agricultural waste of boiled groundnut(*Arachis hypogaea*) shells. **T.A. Abii**

2:45 Intermission.

2:55 Green chemistry in a successful Science Coaches collaboration: Making molecules for water remediation. **M.A. Benvenuto**, S.P. Kosmas

3:15 Medical waste management in Republic of Serbia. **L.B. Stojkovic**

3:35 Distribution, Sources and Carcinogenic Potentials of Polycyclic Aromatic Hydrocarbons in Farmland Soils and Crops around the Vicinity of Tobacco Processing Local Industry, Oke-Aran, Igbobo, Nigeria. **T.A. Adedosu**, J.O. Ajibade, H.O. Adedosu

3:55 Tetracycline sorption by a Tailor- made adsorbent in Aqueous System. **A.O. RUTH**

4:15 Sustainable production of polyhydroxybutyrate (PHB) by *Zobellella denitrificans* ZD1 grown with non-sterile salty waste streams. **F. Asiri**, C. Chen, M. Hwangbo, Y. Shao, K. Chu

4:35 Bi-functionalized ionic liquid immobilized on MIL-53(Al) for efficient carbon dioxide capture and conversion. **L. Sun**, **S. Tang**

4:55 Closing Remarks.

Plastics in Aquatic Environments, Part II: Transport, Fate & Global Impacts

Cosponsored by POLY

K. Ikehata, R. T. Mathers, S. V. Orski, M. A. Pasquinelli, *Organizers*

J. A. Glaser, *Organizer, Presiding*

1:00 Introductory Remarks.

1:10 Environmental biodegradation of plastics. **J.A. Glaser**

1:40 Toxicological effects of microplastics and its attachment of metals as vector on the zooplankton *Moina monogolica* Daday. **Z. Wang**

2:00 Synthetic microfibers: incorporating particulate pollutants into water quality monitoring. **J.R. Peller**, C.R. Iceman, L. Eberhardt, E. Kostelnik

2:30 Addressing nano/microplastics fouling on filtration membranes by surface plasma treatment. **M. Enfrin**, L.F. Dumee, J. Lee

2:50 Intermission.

3:05 Development of an experimental approach to improve lab-scale assessments of the environmental behavior of microplastics. **F. Perreault**

3:35 Municipal sewage sludge as a source of microplastics in the environment. **C. Rolsky**, V. Kelkar, R.U. Halden

3:55 Release of microfibers during textile laundering and their behavior in aquatic environments: effect of fabric finishes. **M. Zambrano**, R.A. Venditti, J. Pawlak, J. Cheng, J. Daystar, C. Goller, M. Ankeny

4:15 Adsorption behavior of antibiotics by micro-plastics in water. **F. Yu**, G. Huang, Y. Li, J. Ma

4:35 Concluding Remarks.

Novel Polymeric Materials & Polymer-Based Processes for Energy-Efficient Treatment of Water & Resource Recovery / Energy-Efficient Water Purification & Resource Recovery, Sponsored by PMSE, Cosponsored by ENVR

Surfaces & Interfaces in the Environment: Symposium in Honor of Vicki Grassian / Aqueous Surfaces to Ocean & Organic-Surface Interactions, Sponsored by COLL, Cosponsored by ENVR[‡] and WCC

Water Scarcity: Challenges for Agriculture, Sponsored by AGRO, Cosponsored by ENVR and PRES

Advances in Catalysis with Ceria & Other Reducible Oxides / Reactions and other metal oxides, Sponsored by CATL, Cosponsored by ENFL, ENVR, INOR and PHYS

Future of Biomacromolecules at a Crossroads of Polymer Science & Biology / Tissue Engineering, Sponsored by POLY, Cosponsored by BIOL, CARB, CELL, COLL, ENVR, MEDI, PHYS and PMSE[‡]

Off-target Transport of Field Applied Agricultural Chemicals: Study Designs, Monitoring, Modelling, & Risk Assessment, Sponsored by AGRO, Cosponsored by ENVR

TUESDAY MORNING

Section A

Chemistry & Applications of Free Radical-based Technologies for Water Treatment & Purification

UV-based free radicals-based technologies and application

Cosponsored by AGRO

Financially supported by Association of Environmental Engineering & Science Professors (AEESP)

D. S. Aga, D. Minakata, K. E. O'Shea, W. Song, *Organizers*

D. D. Dionysiou, G. Li Puma, *Organizers, Presiding*

A. Pisarenko, *Presiding*

8:00 Degradation of Some Insensitive Munitions Compounds in Water through Computational Chemistry Approach. **M.K. Shukla**

8:25 Toward predicting potentially hazardous transformation products in aqueous-phase advanced oxidation processes: Where are we standing by and where are we heading. **D. Minakata**

8:50 Aldehydes and organosulfates: advanced oxidation byproducts of direct radical addition to aromatic contaminants. **J. Van Buren**, C. Prasse, E. Marron, D.L. Sedlak

9:15 Innovative Groundwater Treatment of 1,4-Dioxane and VOCs in Los Angeles. **N. Blute**, **C. Cotton**, J. Collins, K. Wells, T. Rother, A. Siyahian

9:40 Coupling of UV/H₂O₂ and biological treatment for the removal of the pharmaceuticals metoprolol and metoprolol acid from hospital wastewater. A. Jaen-Gil, G. Buttiglieri, A. Benito, J. Mir-Tutusa, R. Gonzalez-Olmos, G. Caminal, M. Sarra, S. Rodriguez-Mozaz, **D. Barcelo**

10:05 Intermission.

10:20 Predicting the Contribution of Chloramines to Contaminant Decay during UV/Hydrogen Peroxide Advanced Oxidation Process (AOP) Treatment for Potable Reuse. **Z. Zhang**, W. Mitch

10:45 Chloramines in UV/Advanced Oxidation Processes: Impacts and Insights into Water Reuse. **S.D. Patton**, K. Mangalgiri, L. Wu, W. Li, K.D. Couch, S.P. Mezyk, K.P. Ishida, H. Liu

11:10 Impact of groundwater quality parameters on 1,4-dioxane removal and associated byproducts formation during UV/hydrogen peroxide advanced oxidation process treatment. **C. Lee**, A. Venkatesan, H. Walker, C. Gobler

11:35 Investigation of 1,4-dioxane oxidation byproducts during UV Advanced Oxidation Processes. **L. Wu**, K. Mangalgiri, S.D. Patton, D. Schlenk, H. Liu

Section B

Legacy & Emerging Per- & Polyfluoroalkyl Substances: Identification, Fate, Transport, Exposure, & Removal

Supported by Association of Environmental Engineering & Science Professors (AEESP)

K. Chu, J. Liu, M. Sun, F. Xiao, *Organizers*

F. Xiao, *Presiding*

8:05 Introductory Remarks.

8:10 Defluorination of PFAS by *Acidimicrobiaceae* sp. A6 during Feammox Incubations. **P.R. Jaffe**

8:40 Removing PFOA and PFOS from water by reductive processes. **S.P. Mezyk**, L. Twight

9:05 Degradation of PFAS in AFFF-contaminated Water by Oxidative BOHP/UV and Reductive BiPO₄/UV Photocatalytic Processes Within a Commercial Pilot-scale Slurry Reactor. D. Wang, M. Qanbarzadeh, **E.L. Cates**

9:30 UV assisted electrochemical oxidation of PFAS by degenerate semiconductor electrodes. **Y. Yang**, S. Yang

9:55 Intermission.

10:15 Relationship between perfluorooctanoate and perfluorooctane sulfonate in blood concentrations in the general population and routine drinking water exposure. S. Zhang, Q. Kang, H. Peng, M. Ding, F. Zhao, Y. Zhou, Z. Dong, H. Zhang, M. Yang, S. Tao, **J. HU**

10:40 Per- and Polyfluoroalkyl Substances (PFASs): Percutaneous Absorption and Implications for Total Human Exposure. **J.N. Rewerts**, J.C. Kissel, J.A. Field

11:05 PFAS binding affinity with liver fatty acid binding protein, intestinal fatty acid binding protein, and peroxisome proliferator-activated receptors alpha, delta, and gamma. M. Khazaei, **E. Christie**, M. Michalsen, J.A. Field, C. Ng

11:30 Screening of PFASs in aqueous film forming foam for binding to human serum albumin and characterization of mechanisms. **W. Li**, T.M. Young, H. Bischel

11:55 Concluding Remarks.

Section C

Nanomaterials & Sustainability

Cosponsored by CEI
S. Ahuja, *Organizer*

8:00 Introductory Remarks.

8:05 Effect of Nano and Bulk Copper Oxide Particles on The Development of Two Varieties of Bok choy (*brassica rapa*) Plants. **C. Deng**, Y. Wang, J.A. Hernández-Viezcás, J. Peralta-Videa, J.L. Gardea-Torresdey

8:25 Effect of the presence of iron oxide nanoparticles on the transport of zinc oxide nanoparticles through water-saturated porous media under different condition. **m. dibyanshu**, T. Raychoudhury

8:45 Lithium extraction from hydraulic fracturing flowback water. **A. Seip**, S. SafariMohsenabad, D.S. Alessi

9:05 Inhibited dinitrogen fixation in soybeans grown with carbonaceous nanomaterials is compensated by enhanced soil nitrogen assimilation. **Y. Wang**, J.P. Schimel, R.M. Nisbet, J.L. Gardea-Torresdey, P. Holden

9:25 Radiation Grafted Microfibrous and Nanofibrous Amine-containing Adsorbents for Carbon dioxide Capture. N. Mohamed, A. Abbasi, E. Abouzari, A. Ahmad, **M.M. Nasef**

9:45 Intermission.

10:00 Characterization of nanoparticle suspensions with microdeposition and microscopy. **L.C. Elliott**, R. Verkouteren, A. Pintar, S.M. Stavis

10:20 Process Modification for Organic Solvent separation via Carbon Nanotube Immobilized Membrane using Membrane Distillation. **O. Gupta**, S. Roy, S. Mitra

10:40 Inactivation of *Legionella pneumophila* harbored by amoebae using a nano-enabled alternative technology. **N.B. Saleh**, **C. Ayres**, M. Kirisits

11:00 Passive sampling of pesticides in air and water using electrospun nanofiber mats. **M. Nagorzanski**, J. Qian, A. Martinez, R.F. Marek, D.M. Cwiertny

11:20 Membranes made of Nitrogen-doped CNTs decorated with Magnetite NPs for cleaning treated wastewater. **E. Contreras**, D. Dominguez, H. Tiznado, J. Guerrero-Sánchez, N. Takeuchi, G. Alonso-Nunez, O.E. Contreras, M.T. Oropeza, J. Romo-Herrera

11:40 Nanocellulose Scaffold for Water Purification. **P. Sharma**, S.K. Sharma, B.S. Hsiao

Section D

Chemistry of Water Reuse Processes toward Water Sustainability

Cosponsored by AGRO and PRES

Financially supported by Association of Environmental Engineering & Science Professors (AEESP)

R. Doong, W. Hou, C. Huang, Z. Qiang, V. K. Sharma, *Organizers*

R. Doong, C. P. Huang, V. K. Sharma, *Presiding*

8:15 Introductory Remarks.

8:20 Treatment and Reuse of Tunnel Construction Wastewater by Coagulation-Flocculation Process. **J. Liu**

8:40 Reactions of dichloramine with amino acids in wastewaters: A kinetic study. **E.D. Walker**, K.P. Ishida, S.P. Mezyk

9:00 Development of Energy-Efficient Electrokinetic Separation for Water Reuse in Agriculture. **S. Pan**, C. Fan, H. Kim, S.W. Snyder

9:20 Wastewater production footprints of hydraulic fracturing operations: Current pace and future impacts. **A. Zolfaghari**, J. Gehman, D.S. Alessi

9:40 Catalytic Regeneration and Surface Reactivity of Soot-laden Diesel Particulate Filter. J. Chang, T. Yang, C. Chen, **C. Hsieh**

10:00 Intermission.

10:15 Enhancing carbon capture and utilization for energy-positive wastewater treatment. **G. Sarpong**, **V. Gude**

10:35 Overcoming the Yuk Factor: How Public Understanding, Politics and Framing Mediate Support for Recycled Water Policies. **D.L. Kriner**, **J.L. Goldfarb**

10:55 Morphology and adsorption removal of ^{110m}Ag in the radioactive waste liquid of the pressurized water reactor nuclear power plant. **Q. Zhao**

11:15 Fenton-like degradation of RB-5 dye using the magnetite recovered from iron-containing wastewater treated by fluidized-bed homogeneous crystallization (FBHC) process. Y. Huang, N.N. Mahasti, **Y. Shih**

11:35 Efficient, Energy-Saving and Energy-Recovering Fuel Cell Type Wastewater Treatment System with Activated Carbon in Anode and Catalytic Cathode. **L. Liu**

11:55 Concluding Remarks.

Section E

Non-targeted Analysis to Understand Fate & Effects of Pharmaceuticals & Emerging Contaminants in Agriculture & Natural Environments

Cosponsored by AGRO

Financially supported by Association of Environmental Engineering & Science Professors (AEESP)

D. S. Aga, J. B. Sallach, *Organizers, Presiding*

8:00 Introductory Remarks.

8:05 Global reconnaissance of antimicrobials and other emerging contaminants in surface water by target and non-target LC/MS/MS analysis. **D.S. Aga**, L. Angeles

8:35 Integrated Cell Culture-Mass Spectrometry Method for Monitoring Infectious Human Viruses in Environmental Samples. **K. Wigginton**, Y. Ye

9:05 Suspect Screening to Determining Pharmaceutical Fate in Urine-Derived Fertilizers. **W.A. Tarpeh**, D.S. Aga, N. Love, K. Wigginton, D.E. Helbling

9:35 Non-targeted analysis supported by data and cheminformatics delivered via the US-EPA CompTox Chemicals Dashboard. A.J. Williams, A. Chao, T. Cathey, T. Transue, E.M. Ulrich, J. Sobus

10:00 Intermission.

10:15 Structure/reaction directed analysis for environmental metabolites. **M. Yu**, G. Dolios, L. Petrick

10:40 Suspect and Non-Target Screening of Organic Pollutants in Marine Water and Stormwater. **Z. Tian**, K.T. Peter, C. Wu, D. Wark, H. Zhao, H. Mathews, A. Cortina, C. James, E.P. Kolodziej

11:05 Using suspect screening to determine Hurricane Florence's impact on chemicals of concern at a forested water reuse site. **M.L. Hedgespeth**, D. Rashash, D. Shea, M. Strynar, J. Delborne, E.G. Nichols

11:30 Phototransformation of wastewater effluents organic matters: High resolution mass spectrometry characterization. **L. Lushi**, S. Weihua

11:55 Concluding Remarks.

Section F

Sensors for Water Quality Assessment in Resource Limited Environments

Cosponsored by AGRO

E. Brack , C. Gomes, *Organizers*

E. McLamore, M. S. Wiederoder, *Organizers, Presiding*

8:20 Introductory Remarks.

8:25 SENSEE: An open source portfolio tool for sensor comparative studies and technology transfer. **E.S. McLamore**

8:45 Rapid, label-free detection of *Escherichia coli* spp for on-farm water quality assessment based on temperature-sensitive nanobrush actuation. C. Giacobassi, D. Oliveira, C. Pola, N. Cavallaro, E. McLamore, **C.L. Gomes**

9:05 Bacteriophage-based nanoprobe enable rapid and low-cost testing for *Escherichia coli* in drinking water. **M.M. Duong**, H. Zurier, J.M. Goddard, S.R. Nugen

9:25 Simple impedance spectroscopy system for biofilm detection and monitoring. **P. Takhistov**

9:45 Capillary flow dynamics-based sensing modality for direct environmental pathogen monitoring. K.E. Klug, K.A. Reynolds, **J. Yoon**

10:05 Intermission.

10:25 Paper-based gene network detection of heavy metals for in-field water quality testing. C. Bernhards, K. Turner, K. Beabout, J.L. Chavez, S. Walper, **M. Lux**

10:45 Disposable Voltammetric Sensors for Onsite Detection of Arsenic, Selenium, and Cadmium. **C. Sullivan**, D. Lu, E. Brack , C. Drew, **P. Kurup**

11:05 Inexpensive 2D and 3D Printed Sensors for Rapid Instrument-Free Detection of Emerging Contaminants in Water. K. Kirk, A. Finny, **E. Andreescu**

11:25 Characterization of PTE-Nanoparticle Bioconjugates for Rapid and Sensitive Detection of Organophosphates. **J. Breger**, J.C. Claussen, M. Ancona, S. Walper, K. Susumu, M. Stewart, J. Deschamps, E. Oh, I. Medintz

11:45 Printed and laser induced graphene electrochemical sensors for in-field pesticide and fertilizer ion monitoring. J. Hondred, N. Garland, I. Kucherenko, R. Hjort, C.L. Gomes, **J. Claussen**

12:05 Concluding Remarks.

Advances in Analytical Technologies Supporting Environmental Fate, Metabolism, & Residue Analysis, Sponsored by AGRO, Cosponsored by ENVR

Novel Polymeric Materials & Polymer-Based Processes for Energy-Efficient Treatment of Water & Resource Recovery / Energy-Efficient Water Purification & Resource Recovery, Sponsored by PMSE, Cosponsored by ENVR

Future Insights into Syngas Conversion Catalysis: Symposium in honor of Burtron H. Davis, Sponsored by CATL, Cosponsored by ENFL, ENVR, INOR and PHYS

Advances in Catalysis with Ceria & Other Reducible Oxides / Reactions and other metal oxides, Sponsored by CATL, Cosponsored by ENFL, ENVR, INOR and PHYS

TUESDAY AFTERNOON

Section A

Chemistry & Applications of Free Radical-based Technologies for Water Treatment & Purification

Various free radicals-based technologies

Cosponsored by AGRO

Financially supported by Association of Environmental Engineering & Science Professors (AEESP)

D. S. Aga, D. D. Dionysiou, G. Li Puma, D. Minakata, K. E.

O'Shea, *Organizers*

W. Song, *Organizer, Presiding*

N. Blute, D. Minakata, *Presiding*

1:00 Introductory Remarks.

1:05 Performance of UV/free chlorine AOP for removal of 1,4-dioxane in Potable Reuse Applications. **A.N. Pisarenko**, Y. Qu, E. Chen, D. Hokanson, R.R. Trussell, R.S. Trussell, J. Quicho

1:45 Kinetics of chlorine atom reactions in Advanced Oxidation Processes. **L. Ruiz Armenta**, L. Watts, K.P. Ishida, G. Ferraudi, S.P. Mezyk

2:10 Using Advanced Oxidation Processes as treatment barrier to eliminate cyanotoxins from drinking water. M. Kong, X. Duan, **D.D. Dionysiou**

2:35 Algal Toxins in Drinking Water: UV/Cl₂ and UV/H₂O₂ Advanced Oxidation Processes as Treatment Method. **F. Barancheshme**, O. Keen

3:00 Intermission.

3:15 Novel Advanced Oxidation Process by Peracetic Acid and Fe(II). **J. Kim**, T. Zhang, C. Huang

3:40 Pesticides and metal chelates in reverse osmosis concentrate: Removal by radicals formed during ozonation in a pilot-scale ozone-wetland system. **J. King**, W. Mitch

4:05 Photo-Assisted Catalytic Ozonation for the Treatment of Ozone-resistant Water Pollutants. W. Yang, X. Chen, M. Bunian, Y. Lei, **T. Wu**

4:30 Efficient Fenton oxidation of atrazine at circumneutral pH mediated by a complexing agent, picolinic acid. **Z. Yang**, J.J. Pignatello, B. Pan

4:55 Closing Remarks.

Section B

Legacy & Emerging Per- & Polyfluoroalkyl Substances: Identification, Fate, Transport, Exposure, & Removal

Supported by Association of Environmental Engineering & Science Professors (AEESP)

K. Chu, M. Sun, F. Xiao, *Organizers*

J. Liu, *Organizer, Presiding*

1:00 Adsorption behavior and mechanism of emerging perfluoro-2-propoxypropanoic acid (GenX) on activated carbons and resins. **S. Deng**, W. Wang, A. Maimaiti

1:25 Removal of perfluoroalkyl substances (PFASs) in groundwater using activated carbon and ion exchange resin: column test. **C. Zeng**, N. Sharma, A. Hjelmstad, K. Venkatesh, P.K. Westerhoff

1:50 Removal of poly- and perfluoroalkyl substances (PFAS) in aqueous film-forming foam (AFFF) impacted water using ion exchange and non-ionic resins. **Y. Fang**, A. Ellis, Y. Choi, T.H. Boyer, C.P. Higgins, C. Schaefer, T.J. Strathmann

2:15 Biotransformation and persistence of polyfluoroalkyl zwitterionic betaines and amines in aerobic soils. **M. Liu**, G. Munoz, S. Vo Duy, S. Sauve, J. Liu

2:40 Sorption and Desorption Mechanisms of Cationic and Zwitterionic Per- and Polyfluoroalkyl Substances in Natural Soils. **F. Xiao**, B. Jin, S. Golovko, M. Golovko, B. Xing

3:05 Intermission.

3:20 Quantitative measurements of emerging perfluoroether carboxylic acids in surface water using UHPLC-MS/MS. Y. Pan, J. Yao, **J. Dai**

3:45 Ultrahigh-Resolution Fourier-Transform Ion Cyclotron Resonance Mass Spectrometry for Identification of Per- and Polyfluoroalkyl Substances (PFASs). **A.M. McKenna**, N. Pica, H. Chen, J. Blotevogel

4:10 Detection of PFOA by sensitive ToF-SIMS. J. Yao, C. Yang, **X. Yu**

4:35 Occurrence and distribution of selected perfluoroalkyl substances in the surface soils of Vermont. **W. Zhu**, H. Roakes, S. Zemba, **A. Badireddy**

Section C

Nanomaterials & Sustainability

Cosponsored by CEI
S. Ahuja, *Organizer*

1:00 Introductory Remarks.

1:05 Effect of Rhamnolipid on aggregation and deposition of surface stabilized magnetite nanoparticles in environment. **A. Ghosh**, K. Parker, J. Fortner

1:25 Solar Thermal Water Purification Enabled by Photothermal Conversion Using the 1T/2H Phases of MoS₂. **D. Ghim**, Q. Jiang, S. Cao, S. Singamaneni, Y. Jun

1:45 Surface-Enhanced Raman Spectroscopy (SERS) for Characterizing Nanosilver in Textiles. **M.B. Hillyer**, S. Nam, B.D. Condon

2:05 Reduction of Inorganic Fouling in Microwave Induced Membrane Distillation on Carbon Nanotube Immobilized Membrane. **M. Humoud**, s. roy, S. Mitra

2:25 Effect of Surface Coated TiO₂ NPs on Carrot (*Daucus carota*) Development. **Y. Wang**, C. Deng, J.A. Hernández.Viezcás, J. Peralta-Videa, J.L. Gardea-Torresdey

2:45 Intermission.

2:55 Molecular insight into the effects of Cu(II) on sulfamethoxazole and 17 β -estradiol adsorption by carbon nanotubes/CoFe₂O₄ composites. **W. Sun**, S. Li, F. Wang

3:15 Polymer-Nano composite degradation, release, detection, and toxicity of nanomaterials during accelerated aging. **E. Sahle Demessie**, C. Han, E. Varughese

3:35 Do Graphene Oxide Nanostructured Coatings Mitigate Bacterial Adhesion? **S. Romero-Vargas Castrillon**

3:55 Functionalized MOFs based mixed matrix membranes for CO₂ separation. **W. Zheng**

4:15 Multifunctionalized superparamagnetic nanoparticles as an efficient material for removal of rhodamine B from wastewater by adsorption. **M.O. Ojemaye**, A. Okoh

4:35 Precise Control of Graphene Oxide Structure for Electrically Controllable Membranes. **J. Shin**, J. Roh, J. Jang, I. Park, H. Park

4:55 Closing Remarks.

Section D

Biochar & Hydrochar for Energy, Environmental & Agricultural Applications

Cosponsored by AGRO

Financially supported by Association of Environmental Engineering & Science Professors (AEESP) and Frontiers in Energy Research

N. D. Berge, J. L. Goldfarb, A. Shah, *Organizers*

R. Volpe, *Organizer, Presiding*

1:00 Introductory Remarks.

1:05 Effect of Pyrolysis Temperature on Various Acidic and Basic Functional Groups on Hydrochar. N. Saha, D. Xin, P. Chiu, **M. Reza**

1:30 Biochar as a nanosilver support medium for water disinfection. **D. Xin**, S. Lobo, P. Chiu

1:55 Study of char morphology during biomass pyrolysis and gasification via micro-computed tomography. **M. Barr**, Y. Zhang, R. Jervis, R. Volpe

2:20 Intermission.

2:35 Designing activated biochars: Impacts of porosity and particle size on adsorption. **Z. Pollard**, Q. Ha, A. Roshandelpoor, P. Vakili, E. Ryan, J.L. Goldfarb

3:00 Effects of air-oxidation induced changes in biomass chars on their adsorption of contaminants. **Y. Yang**, J.J. Pignatello

3:25 Molecular design approach to understand the reactivity of pyrogenic carbonaceous materials using conjugated microporous polymers. **Z. Li**, J. Mao, W. Chu, W. Xu

3:50 Production of catalytically active activated biochar and the application to environment. **A.G. Karunanayake**, **R. Anderson**

4:15 Closing Remarks.

Section E

Fundamental Chemical Processes Common to Dissolved Organic Matter & Atmospheric Organic Aerosols

N. Borduas, S. A. Nizkorodov, *Organizers, Presiding*

1:00 Introductory Remarks.

1:05 Chemical Aging of Brown Carbon Aerosol Material. **J.P. Abbatt**, R. Hems, E. Schnitzler, A. Trofimova, R. Zhao

1:35 Insights on photochemical degradation of dissolved organic matter from electrospray ionization Fourier transform ion cyclotron resonance mass spectrometry. **C. Gueguen**, S. Islam

2:05 Photochemical studies of atmospheric brown carbon using excitation-emission matrix spectroscopy. **A.W. Harrison**, W.J. De Bruyn

2:25 Aqueous phase reactivity of polyfunctional organic nitrates under atmospheric conditions. **J. Gonzalez Sanchez**, M. Julien, B. Temime-Roussel, S. Ravier, A. Durand, J. Clément, a. Monod

2:45 Intermission.

3:00 Aqueous aerosol chemistry and impacts: Sulfur oxidation, formation of organosulfur compounds and titration of aerosol pH. **V.H. Grassian**

3:30 Photosensitization in the air: bridging fundamental bulk processes with secondary organic aerosol production. **C. George**, R. Gemayel, S. Dumas

4:00 Interfacial characterization of polysaccharide enrichment in sea surface microlayer proxy films. **K.A. Carter-Fenk**, M.E. Fiamingo, H.C. Allen

4:20 Oligomers formation from cross-reactions of carbonyl compounds in the atmosphere: An insight at a molecular level. **M. Mekic**, J. Liu, Y.G. Lazarou, M. Brigante, D. Vione, S. Gligorovski

4:40 Spatial determination of organic matter on sediment particles by scanning electron microscope analysis. **F.M. Dunnivant**, M. Clay

Section F

C. Ellen Gonter Environmental Graduate Student Award Symposium

D. D. Dionysiou, *Organizer*

K. E. O'Shea, *Organizer, Presiding*

1:00 Introductory Remarks.

1:05 Treatment of Domestic Wastewater by Simulated Solar-Light Mediated N- and B-codoped TiO₂ AOP for Reuse: Mechanistic Aspects and Implications of Inorganic Species. **W.H. Abdelraheem**, M. Nadagouda, D.D. Dionysiou

1:30 Defluorination of per- and polyfluoroalkyl substances (PFASs) with hydrated electrons: Structural dependence and implications to PFAS remediation and management. **M.J. Bentel**, Y. Yu, L. Xu, Z. Li, B.M. Wong, Y. Men, J. Liu

1:55 Reductive defluorination of per- and polyfluoroalkyl substances by a dechlorinating microbial community. **Y. Yu**, K. Zhang, Z. Li, C. Ren, J. Liu, Y. Men

2:20 Intermission.

2:35 Iodinating agents of dimethenamid in chloraminated water. **M. Rose**, A. Roberts

3:00 Demonstration and Evaluation of Hybrid Microalgae Aqueous Conversion Systems for Biofuel Production. **Y. Li**, S. Leow, T. Dong, N.J. Nagle, E.P. Knoshaug, L.M. Laurens, P.T. Pienkos, J. Guest, T.J. Strathmann

3:25 Electrochemical cell lysis of gram-positive and gram-negative bacteria: DNA extraction from environmental water samples. **S. Wang**, Y. Zhu, Y. Yang, J. Li, M.R. Hoffmann

3:50 Closing Remarks.

Novel Polymeric Materials & Polymer-Based Processes for Energy-Efficient Treatment of Water & Resource Recovery / Energy-Efficient Water Purification & Resource Recovery, Sponsored by PMSE, Cosponsored by ENVR

Simulating Fumigant Transport & Emissions: The Evolving Role of Modeling in California Regulations, Sponsored by AGRO, Cosponsored by ENVR

Future Insights into Syngas Conversion Catalysis: Symposium in honor of Burtron H. Davis, Sponsored by CATL, Cosponsored by ENFL, ENVR, INOR and PHYS

Next Generation Watershed Modeling of Agrochemicals, Sponsored by AGRO, Cosponsored by ENVR

TUESDAY EVENING

Section A

Artificial Water Channels for Water Purification & Desalination

M. Barboiu, J. Hou, B. Mi, *Organizers*

5:00 - 7:00

Nanofiber Enhanced Forward Osmosis Membrane. S. Langevin, J. Skerrett, M. Logan, **Z. Xia**

Insight into the Importance of Ionic Strength and Membrane Type on Biofouling of BSA and Hemoglobin Binary Solutions. **N.T. Kilmer, Y. Zhang**, E.M. Stennett

Section A

Biochar & Hydrochar for Energy, Environmental & Agricultural Applications

Cosponsored by AGRO

Financially supported by Association of Environmental Engineering & Science Professors (AEESP) and Frontiers in Energy Research

N. D. Berge, J. L. Goldfarb, A. Shah, R. Volpe, *Organizers*

5:00 - 7:00

Contaminant Removal Potential of Charred and Iron-Oxide-Charred Composites Produced from Coffee Waste. **M. Chehbouni**, A. Lam, O. Harvey

Heterogeneous Adsorbents from Clay-Biomass Pyrolysis and CO₂ Activation for Treatment of Heavy Metal Contaminated Water. F. Wang, A. Hubble, L. Gao, **J.L. Goldfarb**

Functionalization of sewage sludge-derived biochar with humus sediment slurry and its use for treatment of crude-oil derived hydrocarbons in a simulated soil. **N.O. Offiong, E. Inam**

Preparation of high carbon content of hydrochar from biomass via hydrothermal carbonization. **S. Sattasathuchana**, B. Kitiyanan, P. Rangsunvigit, P. Khemthong, S. Youngian, K. Faungnawakij

Removal of Pyrene by Biochar Immobilized Cells of Fusant Bacterial Strain F14. **J. Lu**, B. Hou

Adsorptive removal of pharmaceuticals from contaminated water by magnetized biochar. **S.D. Canaday**, A.S. Liyanage, T. Mlsna

Adsorption of malachite green dye from aqueous solution using carbonized *Gliricidia sepium* leaves. **A.A. Giwa**, D.O. Aderibigbe, M.O. Adesina

Section A

Catalysis for Environmental & Energy Applications

A. Orlov, A. Savara, Y. Wang, *Organizers*

5:00 - 7:00

Promoting effect of K^+ ions on HCHO degradation over MnO_2 catalysts studied with in-situ DRIFTS. L. Ye, **H. Huang**, R. Fang

Facile synthesis of amorphous mesoporous manganese oxides for efficient catalytic decomposition of ozone. **H. Huang**, J. Ji, S. Liu, Y. Yu, L. Ye

Deep insights into the relationship between Fe-MOFs' coordination environment and catalytic ozonation performances. **D. Yu**

Reduction of nitrophenol using Fe-doped natural carbon dots. **B. Akhetova**, Z. Salkenova, M.P. Balanay

Electrocatalytic Sulfur Oxidation in Anaerobic Wastewater Effluents. **X. Shao**, W. Tarpeh

Effect of carbon nanomaterials as 2D platforms on the structure and photocatalytic activity of metal organic frameworks. **A. Baimyrza**, A. Malikova, M. Babaa, M.P. Balanay, **W. Lee**

Benzimidazole based ionic liquids coupled with ZnO nanoparticles for the capture of CO₂. **I.m. garcia**, C.A. Huerta-Aguilar, T. Pandiyan

Photocatalytic hydrogen production by strontium titanate-based perovskite doped europium (Sr_{0.97}Eu_{0.02}Zr_{0.1}Ti_{0.9}O₃). **A.F. Lopez Vasquez**, P. Delgado, D. Salas

Nitrate reduction by catalytic hydrogenation: Controlling hydrogen delivery with nano-enabled polymeric hollow fibers. **J. Levi**, S. Guo, S. Kavadiyaa, Y. Yin, A. Atkinson, Z. Holman, C. Zhou, B. Rittmann, M.S. Wong, S. Garcia-Segura, P.K. Westerhoff

Cobalt-iron layered double hydroxide on metal-organic-framework derived cobalt phosphide electrodes for efficient oxygen evolution reaction. **G. Choi**, J. Lim, S. Lim, J. Moon, U. Baek, J. Park

Bioinspired Catalyst for Perchlorate Reduction in Water and Brine. **E. Bi**, C. Ren, J. Liu

Section A

Chemistry & Applications of Free Radical-based Technologies for Water Treatment & Purification

Cosponsored by AGRO

D. S. Aga, D. D. Dionysiou, G. Li Puma, D. Minakata, K. E. O'Shea, W. Song, *Organizers*

5:00 - 7:00

Biochar-mediated oxidation of phenol by persulfate activated with zero-valent iron. T. Nguyen, **S. Oh**

Multiple Pathways for Sulfate Radical Production during Electrolysis at Boron-doped Diamond Electrode. **Y. Shin**, J. Lee

Carbonate radical mediated degradation of bisphenol A in UV/sodium percarbonate system. **J. GAO**, X. Duan, D.D. Dionysiou

Porous Polylactide/Kapok Foams Prepared by Non-solvent-induced Phase Separation Method for Effective Oil Sorbent. **R. Yu**, M. Chen, X. Sun

Rapid removal of tetrabromobisphenol A by α -Fe₂O₃-
x @Graphene@montmorillonite catalyst with oxygen vacancies in
peroxymonosulfate-based system: role of halogen and alcohol radicals. **S. Yang**, P. Wu, D.D. Dionysiou

Adsorption of molybdenum(VI) on solids derived from sludge of water
treatment processes. **J. Lian**, B. Chen, M. Yang, F. Zhou

Utilization of formic acid in several iron catalyzed modified Fenton systems:
The generation of carbon dioxide radical for reductive degradation of
contaminants. **w. jiang**, S. Lyu, D.D. Dionysiou

Structure of Iron Oxides generated in Air-cathode Assisted Iron-
Electrocoagulation for Water Treatment. **A. Kumar**, S. Bandaru, C. van
Genutchen, M. Nahata, D. Hernandez, A. Gadgil

TiO₂ Coated Magnetic Particle for Removal of Organic Pollutants from
Drinking Water. **S. Sultana**, A. Amirbahman, C. Tripp

Pulsed power plasma induced degradation of chloroform and chlorobenzene in
aqueous solution and an insight into their degradation mechanism. **L. PHILIP**

Determination and follow of peroxymonosulfate decomposition by Co₃O₄:
Kinetics and application for the degradation of acetaminophen and diclofenac.
O. Rodriguez, M. Ranasinghe, E.R. Bandala, J.M. Peralta

Formation of Nitrophenolic By-products in Sulfate Radical Based Oxidation
Processes in the Presence of NOM and Nitrite. **J. Lu**, P. Yang

Wet scrubbing process coupled with UV/PMS: a novel and efficient gaseous
VOCs degradation method. **R. Xie**

In situ activation of peroxymonosulfate by natural ore for the remediation of
acetaminophen-contaminated groundwater. **X. Fan**, H. Zhang

Use of MOFs for the elimination and degradation of Naproxen in persulfate
activated systems: application to highly concentrated effluents. **A. Ghauch**, R.
El Asmar, A. Baalbaki

In situ EPR Observation of Radical Electrogeneration, Transformation at
Boron-Doped Diamond and Sustainable Degradation of Plasticizer. **J. Cai**, **G. Zhao**

Unveiling the Important Roles of Coexisting Contaminants on Photochemical Transformations of Pharmaceuticals: Fibrate Drugs as a Case Study. **Y. Zhang**

Effect of chloride on the degradation efficiencies and products of bezafibrate and carbamazepine in UV/persulfate processes. **Y. Liu**, Y. Wu, L. Zhang, L. Feng

Advanced treatment of pre-treated commercial laundry wastewater by adsorption process: Experimental design and cost evaluation. **S. Veli**, A. Arslan, Ç. Gülümser, E. Topkaya, H. Kurtkulak, S. Zeybek, A. Dimoglo

Oxygen-vacancy abundant natural mineral-based ultrafine cobalt oxide catalyst for highly efficient Fenton-like catalysis. **X. Dong, Z. Sun, S. Zheng, D.D. Dionysiou**

Simple iron immobilization on graphene oxide for persulfate activation: Radicals and singlet oxygen mediated oxidation. **Y. Kang**, H. Vu, H. Yoon, D. Oh, Y. Chang, Y. Chang

Facile synthesis of surface-functionalized N,S-doped CQDs embedded 3D ZnO heterostructured nanoflowers for enhanced photocatalytic activity under full spectrum irradiation. **Y. Qu**, W. Qi

Activation of Permanganate by UV Irradiation for Enhanced Oxidation of Micropollutants. **K. Guo**, J. Fang

Section A

Chemistry of Water Reuse Processes toward Water Sustainability

Cosponsored by AGRO

R. Doong, W. Hou, C. Huang, Z. Qiang, V. K. Sharma, *Organizers*

5:00 - 7:00

Study on COD degradation of high salt content radioactive wastewater. **Z. Shi**, H. Zhang, L. Jiang, S. Li, H. Huang

Biological Treatment of copper-containing NMF/MDG organic wastewater from the TFT-LCD Industry. T. Pien, **L. Whang**, P. Liu

Electrocoagulation for the Wastewater Treatment of Chemical Mechanical Polishing: a Kinetic Study of Particle Removal. Y. Liu, **S. Yen**

Reductive degradation of aqueous doxycycline by nZVI. A. Malikova, D. Kondratyuk, M. Babaa, **W. Lee**

Preparation and characterization of hollow porous carbon nanofibers. **Y. Chiang**, S. Lee, Y. Chen

Development of an Ammonium-Selective Adsorbent for Energy-Efficient Wastewater Nutrient Recovery. **B.D. Clark**, W. Tarpeh

Novel disinfection system using recyclable magnetic nanoparticles. **Q. Gao**, A.A. Keller

Assessment of Greywater Treatment Systems for the Removal of Antibiotic Resistant Genes and Bacteria. **M. Henderson**, S.J. Ergas, K. Ghebremichael, Z. Ronen

Capacitive deionization and disinfection of salt water effected by (Cu-Ag)@C electrodes. **H.P. Wang**

Section A

Emerging Contaminants in Wastewater

A. S. Adeleye, P. Cervantes, Y. Huang, *Organizers*

5:00 - 7:00

Review of the use of conventional and emerging technologies for removing pharmaceuticals from wastewater. **Z. Han**, Y. Zhu, Y. Sun, J. Xue, A.S. Adeleye

Determination of Benzotriazole and Analog Compounds by Liquid Chromatography-Mass Spectrometry in Surface Runoff Water Samples from Wilmington Air Park. **J. Wiese**, T. Luncan, A. McGowin

Accumulation of *N*-nitrosodiethanolamine in spinach. **D.I. Nielsen-Franco**, D. Sanchez, J.A. Pedersen

Fate of antibiotic resistance genes and *int1* in soil and fertilizer microcosms at varying levels of copper. C. Echeverria-Palencia, **M. Hernandez-Cira**, **I. Callejas**, K. Jimenez, R. Herrera, **J.A. Jay**

Distributions and degradation of brominated flame retardants (PBDEs) in limed and THP-AD treated wastewater biosolids. T. Motley, **S. Fischer**, N.A. Andrade, B.V. Kjellerup, A. Torrents

Toxicological study on photo-degradation products of environmental ibuprofen: ecological and human health implications. **E. Ellepola**, T. Ogas, R. Gurung, D.N. Turner, S. Maldonado-Torres, R. Tello-Aburto, P. Patidar, M.E. Piyasena, G. Rubasinghege, S. Rogelj

Section A

Fundamental Chemical Processes Common to Dissolved Organic Matter & Atmospheric Organic Aerosols

N. Borduas, S. A. Nizkorodov, *Organizers*

5:00 - 7:00

Carbon isotopic characterization of biological influences on sea spray aerosol chemical speciation. **D.R. Crocker**

Natural organic matter characterization of composition and reactivity from permafrost soils in the sub-Arctic. **K. Gagne**, J.J. Guerard

Characterization of Secondary Organic Aerosol Formation by Aqueous Reactions of Iron (III) with Biomass Burning Volatile Organic Compounds. **H. Chin**, S.A. Nizkorodov, L. Fleming, H.A. Al-Abadleh

Determining the dependence of size fractionation and oxidative aging on hygroscopicity and phase state of sea spray aerosol. **P.R. Tumminello**, K. Mayer, V. Or, A.W. Cooper, V.H. Grassian, K.A. Prather, J.H. Slade

Aqueous-Phase Oxidation Kinetics of Terpene-Derived Acids. **T. Otto**, T. Schaefer, H. Herrmann

Brown Carbon photolysis: Impacts of organic and inorganic components in cloud water proxies. **L. Dolvin**, R. O'Brien, M.L. Ambrose, W. Perrine

Kinetics for the aqueous oxidation of atmospheric phenols with an organic triplet excited state. **L. Ma**, C. Guzman, C. Anastasio

Effects of Transition Metal Ions on the Formation of Aqueous Organosulfur Compounds from Methacrolein and Methyl Vinyl Ketone. **L. Huang**, E. Coddens, V.H. Grassian

Decadal trends in organic carbon volatility fractions across the United States. **A. Christiansen**, J. Davis, A. Carlton

Fog water chemical composition in Namibia during the AEROCLO-sA-2017 campaign. a. Monod, D. Napolitano, **J. Gonzalez Sanchez**, C. Giorio, R. Mushi, G. Maggs-Kölling, B. D'Anna, B. Coulomb, J. Boudenne, S. Piketh, A. namwoonde, F. Burnet, P. Formenti, P. Herckes

Assimilating the effects of natural water compositions, ions, and humic acid on fate and transport of insensitive munition compounds. **T. Schutt**, M.K. Shukla

Dynamic nature of the particle phase for select green leaf volatile derived secondary organic aerosols. **K.B. Fischer**, G. Petrucci

Formation of light absorbing compounds from reactions of carbonyl species under highly acidic aqueous aerosol conditions. **K. Mejia Escobar**, M. Dam, M. Li, T. Truong, R. Alnajjar, J. de Sousa, A. Sandoval, E. Ventura, M. Clemente, S. Somepalle, F. Hussain, A. Shen, R. Spangler, A.L. Van Wyngarden

Development of an Incoherent Broadband Cavity Enhanced Absorption Spectrometer (IBBCEAS) Designed for the Study of Marine Produced HONO. **S.L. Mora Garcia**, M.N. Sullivan, M. Alves, V.H. Grassian

Section A

General Poster Session

J. L. Goldfarb, *Organizer*

5:00 - 7:00

Geochemical profile of residential indoor dust from an industrial city. **I.N. Doyi**

Dose response model for quantifying the infection risk of antibiotic resistant bacteria. S. Chandrasekaran, **S. Jiang**

How to write a great paper and get it accepted by a good environmental journal like Science of the Total Environment (Elsevier): Guide and recommendations. **D. Barcelo**

Sustainable land management enabled by ecosystem services mapping: a case study on agricultural water use in California's central valley. **E. Matios**, J. Burney

Communicating water quality data using the Grammar of Graphics. **B. Trueman**, D. Dunnington, G.A. Gagnon

Isolation of ligninolytic yeasts from sugar cane luggage for lignin degradation. **A. Bautista Guerrero**

Improvement velocity of sedimentation by biogranules in an aerobic batch reactor. **M. Gómez Gallegos**, J. Sanchez-Salas

Environmentally friendly waterless fracturing with supercritical CO₂ foam prepared in produced water: A mechanistic study. **H. Hosseini**, J. Syung Tsau, K. Shafer-Peltier, C. Marshall, Q. Ye, R. Barati

Evaluation and extrapolation of the solubility of CH₄ in CO₂ + H₂O using molecular simulation: CO₂ EOR and sequestration. **H. LEE**, M. Ostadhassan

Can aging be ignored in explaining the loss of PAHs from the soil?. **Y. Ding**, L. Li, H. Huang, S. Qi

Disinfection of water in swimming pools by combined action of UV-light and ozone. A. Semenov, **T. Sakhno**, I. Korotkova, N. Barashkov

Hydrothermal synthesis of fine stabilized superparamagnetic nano-particles manganese ferrite and their application in photocatalytic degradation of methylene blue. **S. Ata**, I. Mirza

Optical properties of chromophoric dissolved organic matter (CDOM) in Pacific Northwest lakes. **C.D. Clark**, K. Juetten, Z. Landram, W.J. De Bruyn

Influence of ultrasonic treatment on hydroxyl radicals formation during chloride-free electrolysis of water contaminated with *E.coli*. **N. Barashkov**, I. Irgibayeva, A. Mantel, T. Sakhno, A. Aldongarov

Increased conductive of PEDOT:PSS by ionic additive for direct-printable piezoresistive sensors on textile substrate. **I. Jin**, J. Jung

Release behavior of mercury during iron ore sintering process. **N. Tsubouchi**, J. Bud, Y. Mochizuki

Enhanced efficiency of green solvent-processed non-fullerene organic solar cells via morphology optimization. **S. Park**, J. Jung, I. Jin, K. Kim, Y. Noh

Additive engineering of low bandgap perovskite from hot-casting process for high efficiency perovskite solar cells. **Y. Noh**, J. Jung

Measuring dissolved-phase polychlorinated biphenyls (PCBs) in the Great Lakes by high-resolution mass spectrometry. **J.J. Pagano**, A.J. Garner, B.J. Crimmins, M. Milligan, P.K. Hopke, T.M. Holsen

Iron speciation and concentration in the Arabian Gulf. **D. Al Wahaib**

Effect of Absorption liquid types on CO₂ capture efficiency of silane coated PP membrane contactor. **S. Kim**, Y. Seo

Identification of acid-lasting particles in sediment of the Yangjae stream flowing through the Seoul metropolitan, South Korea. **Y. Kim**, E. Chung, N.C. Woo

CO₂-philic surfactants for high salinity reservoir applications towards efficient CO₂ sequestration. **A. Gizzatov**, G. Jian, K. Mohammed, A.I. Abdel-Fattah, S.D. Allen

Diethyl(bromodifluoromethyl) phosphonate as a Versatile Reagent for the Difluoromethylation of Bisphenols for their Detection and Identification by Gas Chromatography-Mass Spectrometry. **C.A. Valdez**, R.N. Leif, S. Hok, K.E. Mason

Phosphorous chemistry affecting nutrient runoff in agriculture. **S.D. Fleischman**, S.M. Barrowcliff, L. Magana

Analysis of 16 Bisphenol Analogues in Canadian Indoor House Dust by Gas Chromatography-Tandem Mass Spectrometry. **X. Fan**, C. Kubwabo, G. Katuri, A. Caza, P. Rasmussen

Physico-chemical assessment of Ground and Surface Water within the vicinity of Atenda Abattoir Ogbomoso, Nigeria. O.O. Onawumi, P.I. Egwuatu,, **F.A. Amoo**, A.O. Ibrahim

Organic–inorganic Electron Transport Layer for Enhancing Efficiency and Stability of 2-dimensional Ruddlesden-Popper perovskite solar cells. **K. Kim**, J. Jung, Y. Noh, S. Park, I. Jin

Functionalized three-dimensionally ordered macroporous silica: aldehyde compounds sensing material. P. Seesuan, T. Leepasert, **S. Achiwawanich**

New technology for controlling biofilm formation in water distribution system. Y. LI, **O.V. Ezech**, W. Han, Q. WU, K. KWAN, K. YEUNG

Analysis of Chemical Composition and Odor of Model Thirdhand Smoke (THS). **A. Yamasaki**, **M. Noguchi**

Improvement of water quality based on nanotechnology methods. T. Chhetri, G. Cunningham, R. Kannan, A. Upendran, **Z. Afrasiabi**

Spatiotemporal dynamics of metabolites in residential wastewater revealed through longitudinal sampling and untargeted metabolomics. **E. Evans**, c. dai, S. Isazadeh, K. Longnecker, M. Kido Soule, S. Park, F. Ling, c. ratti, E.B. Kujawinski, E. alm

Monitoring enzymatic activities of agricultural soil after exposure to silver nanoparticles of different sizes and coatings. Y. Xue, P. Mishra, **M. Fukada**, F. Eivazi, Z. Afrasiabi

Application of anaerobic fluidized bed membrane bioreactor (AFMBR) to enrich nitrite/nitrate dependent anaerobic methane oxidation (N-DAMO) microorganism for simultaneous nitrogen and carbon removal. **Y. Wu**, Y. Chen, L. Whang

Implication of nutrient concentrations related to a harmful algae bloom (HAB) and microcystin formation in Caesar Creek Lake, Wilmington, Ohio. **B.J. Foskuhl**, T. Lunan, R. Schaffer, A. McGowin

Use of EPI Suite™ Fugacity Model in assessing environmental fate. **E. Wong**, M. Citra, M. Kawa, C. Coley

Solar induced formation of emulsification in petroleum on water. **C. Brown**, A. Cluen-Brown, M. Giraudier, M.A. Tarr

Measuring sediment black carbon contents using phenanthrene sorption. **Z. Lu**

Evaluating acyl homoserine lactones removal efficiencies of isolated quorum quenching bacteria and their application for biofouling control in membrane bioreactors. **I. Chien**, C. Chu, Y. Ge, J. Chen

Inhibition of Microbially Induced Carbonate Precipitation by soil solution Cu and its effect on the stabilization of soil Cu. **H. Chung**, S. Kim, K. Nam

Assessment of Polyromantic Hydrocarbons and Heavy Metals in the River Rwizi, Mbarara, Uganda. **M. Soanirina**, **J. Bolender**, L. Asia, S. Lebarillier, C. Kiwanuka, P. Doumenq

Electrochemical Studies of Perfluoroacids (PFAs) and Perfluorooctane sulfonate (PFOS). B. Kenney, **B. Workie**, E. Sahle-Demessie

Disinfection of Water Using a Reactive Membrane System with Activated Carbon Fiber Cloth (ACFC). E. Huang, **H. Shi**, B. Wang, J. Liu

Identification of water soluble oil photodegradation products containing N and O atoms. **S.L. Patil**, P.A. Zito, M.A. Tarr

Fabrication of wood fiber-rubber composites with microwave-modified waste rubber powder. **D. Shao**, C. Xia, L. Cai, S.Q. Shi, D. Jiang, S. Rong, J. Wang

Synthesis and characterization of Imines and Schiff bases as organic sensors for the detection of cyanide and aluminum ions. **C.A. Arro**, Y.M. Hijji

Efficiency enhancement of anaerobic digester in microbial fuel cell using bacteria. **S. Chung**, S. Chang, H. Kim, Y. Kim, D. Go, S. Kang, S. Lee, J. Cho, L. Kim

Development and evaluation of consensus meta-model for estimating national concentrations of organic chemicals in surface water. **R.R. Sayre**, P. Saranjampour, K. Isaacs, J. Wambaugh

Quantifying metal contaminants in rodents in Yuma, AZ. **C.J. Checinski**, J.M. Credo, J.C. Ingram, F.A. von Hippel

Removal of phenolic compounds from superficial water and wastewater using a viscous organic phase retained in porous polyethylene. **E.P. Beiguel**, E.A. Hughes, A. Zalts, J. Montserrat

Development of engineered soil surrogates for predicting natural soil behavior. **G. Abdalla**, A. Pandey, B.J. Haywood, S.P. Smith, R.L. Cook, D. Spivak

Concentrations and loadings of anthropogenic contaminants during storm events in the San Diego river and its tributary. **F. Pinongcos**, J. Calderon, N. Mladenov, M.E. Verbyla, A.M. Kinoshita, R. Gersberg, J. Monroe, M. Gil, **E. Mikita**, **A. Kinney**, S. Chao

Photosensitization and production of nitrous acid using marine chromophoric dissolved organic matter. **D. Dang**, M. Alves, V.H. Grassian

Presence and risk assessment of antidepressants in tidal freshwater Potomac River water, sediments, and fish. **L. McAnulty**, T.B. Huff, G.D. Foster

LC-MS/MS Analysis of UV-Filter and Paraben Micropollutants in Potomac River Sediments. **T. Haji**, T.B. Huff, G.D. Foster

Polycyclic Aromatic Hydrocarbons among Childcare Centers in Tampa Bay. N. Vijayakumar, A. Tumpudi, R. Park, M. Badru, **M. Bourgeois**, M. Acheampong, T. Mason, M. Bourgeois, J. Marshall, F.M. Jaward

Improved Light-Harvesting Properties of Quasi-Solid State Dye-sensitized Solar Cell with Gel Electrolyte Containing Zeolite-X and A from Fly Ash. **J. Lim**, G. Choi, S. Lim, J. Moon, U. Baek, J. Park

Section A

Green Chemistry & the Environment

Cosponsored by CEI

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

5:00 - 7:00

Characterizing diffusion in cationic hydrogels for bioremediation applications. **J. Counts**, S. Wolfe, K. Hillyer, M.F. Roll, K.V. Waynant, J. Moberly

Microbially induced carbonate precipitation assisted by poly-L-lysine: ecofriendly approach inspired by nature. **T.H. Nawarathna**, K. Nakashima, S. Kawasaki

Degradation of tetracycline by ferrate(VI): Reaction kinetics and efficiency evaluation. **k. park**, D. Kang, Y. So, I. Kim

Evaluation of Indoor Air Quality of Residential Rooms in Beijing. **F. Liu**

Water filtration with biomass. **A. Mukhopadhyay**, P. Das, S. Mukhopadhyay

Ubiquitous Rapid Biodegradation of Polystyrene by Dark (*Tenebrio obscurus*) and Yellow (*Tenebrio molitor*) Mealworms (Coleoptera: Tenebrionidae). **B. Peng**, Z. Chen, W. Wu, Y. Zhang

Electrochemical regeneration of oxidized Fe(II) thiochelatase based nitric oxide absorbent. **S. Cheon**, J. Han, H. Yoon, S. Kim

Valorization of food waste and waste activated sludge to high value-added optical pure L-lactic acid stimulated by electron control.. **X. Li**

Multifunctional odour control gel for H₂S abatement in dewatered sludge. **K. CHENG**, L.T. Luk, M. Arjona Alonso, W. Han, K. YEUNG

Field study of control-released hydrogel for H₂S suppression in Hong Kong drainage system. **S. Wong**

Study on the competitive reactions during SO₃ removal by NaHSO₃/ Na₂SO₃. **K. He**, Q. Song, Z. Yan, Q. Yao

High fluorescence carbon dots from kappa-carrageenan for environmental sensing and bioimaging. **M.A. Sinoy**

Investigation on weak magnetic field-enhanced adsorption mechanism of pollutants on magnetic biopolymer/graphene composite gel. **J. Ma**, F. Yu

Identifying and overcoming rate-limiting steps of electrochemical stripping for nitrogen recovery from wastewater. **M. Liu**, W. Tarpeh

Study on the reduction of acidic gases generated from solid refuse fuel (SRF) use plant. **S. PARK**, J. Han, W. Eom, Y. Park, **H. KIM**

Enantioselective Behavior of Epoxiconazole Fungicide in Soil and Water mediums and its Enantiomeric Bioactivity against the Targeted Pathogens. **a.E. esmat**

Approach of Electrochemical Synthesis of Ammonia from Water and Nitrogen using Iron under ambient conditions. **S. Jeon**, K. Kim, J. Kim, H. Yoon, J. Han

Functional group-directed self-installing doors in porous graphene. **y. li**, C. Wu

1T'-MoS₂, a promising candidate for sensing NO_x. **L. Yaoyao**, C. Wu

Design and automatic screening of tetra-branched structures for multiple-site acid gas capture. **C. Li**, D. Lu, C. Wu

Determination of heavy metals in the distinct ecological matrix of the biotopes near the “Cavernas del Rio de Camuy” National Park. **J. Torres Ayende**, N.D. Maldonado Pérez, J. Soto Perez

Section A

Legacy & Emerging Per- & Polyfluoroalkyl Substances: Identification, Fate, Transport, Exposure, & Removal

K. Chu, J. Liu, M. Sun, F. Xiao, *Organizers*

5:00 - 7:00

Column Studies of PFAS Adsorption by a Cationic Polymer Modified Organosilica. **C. Hefner**, H.A. Hartmann, E.K. Stebel, P. Edmiston

Development and characterization of organosilica adsorbents tailored for removal of perfluoroalkyl substances from water. **M. Klonowski**, E.K. Stebel, H.A. Hartmann, K. Pike, P. Edmiston

Evaluation of PFAS-Specific Organosilica Adsorbents Using Adsorption Isotherms and Kinetics. **K. Pike**, H.A. Hartmann, M. Klonowski, E.K. Stebel, C. Hefner, P. Edmiston

Enhanced Reductive Defluorination of 6:2 Fluorotelomer Alcohol Using Bio-Electrochemical Systems. **A. Cummings**, R. Tenorio, D. Jiang

Influence of multi-process retention on the transport of perfluorooctanesulfonic acid (PFOS) in the presence of non-aqueous phase liquids (NAPLs). **S. Van Glubt**, N. Yan, Y. Wang, M. Brusseau

Identification of Novel Polyfluoroalkyl Substances and Their Byproducts Using UPLC–TOF–MS. **F. Xiao**

Effect of composting operating parameters on the degradation of PFAS in biodegradable food service products. **F. Hussain**, J. Hazard, J. Velazquez

Comprehensive Retention Model for PFAS Transport in Subsurface Systems. **M.L. Brusseau**

Perfluorinated Compounds in Agricultural Soils Following Years of Biosolids Applications. **G.R. Johnson**

Microbial inhibition of aerobic BTEX biodegradation caused by the influence of fluorinated compounds in aqueous film-forming foams (AFFFs). **K. Tsou**, C.I. Olivares, S. Yi, L. Alvarez-Cohen

Extraction of Per- and Polyfluoroalkyl Pollutants from Water Using Paramagnetic Ionic Liquids. D. Bwambok, **J. Doney**, M. Peralta, J. Woodtle

Delivering an integrated data hub for per- and polyfluoroalkyl (PFAS) chemicals via the US-EPA CompTox Chemicals Dashboard. **A.J. Williams**, C. Grulke, K. Mansouri, G. Patlewicz, A. Richard

Effects of Chloride on Electrochemical Oxidation of Perfluorooctane Sulfonate. **L. Wang**, Y. Wang, J. Lu, Q. Huang

Key Considerations for Accurate Exposures in Toxicological Assessments of Per- and Polyfluoroalkyl Substances. **J.N. Rewerts**, T. Anderson, C. McCarthy, C. Salice, J.A. Field

Removal and Recovery of Perfluoroalkyl Substances in Water by Electrocoagulation. **H. Shi**, R.D. Pierce, Q. Huang

Novel LC-MS/MS procedure for determination of legacy and emerging polyfluoroalkyl substances in environmental water samples. S.A. Oehrle, K. Organtini, K.J. Rosnack, **M.S. Young**

Meeting regulatory limits for pesticide residues in cannabis: Extraction and cleanup strategies for LC-MS/MS and GC-MS/MS analysis. **M.S. Young**, k. tran, K. Organtini, M. Twohig, R. Stevens, C.J. Hudalla

Section A

Nanomaterials & Sustainability

Cosponsored by CEI
S. Ahuja, *Organizer*

5:00 - 7:00

Self-polarized ultrathin nylon-11 nanofiber membrane for enhanced capturing of particulate matters. D. Park, P. Park, **J. Nah**

Physiological and photochemical effects of TiO₂ nanoparticles on tomato plants under different irradiance. J. Ko, **Y.S. Hwang**

Lead adsorption by electrospun PVA/PAA nanofiber membranes in a fixed-bed column. **S. Zhang**

Nanorod zeolitic framework as a luminescent probe for selective detection of carcinogenic hexavalent chromium in aqueous medium. **E. Adotey**, M. Torkmahalleh, M.P. Balanay

Fast synthesis of reduced graphene oxide/carbon nanotubes/iron/silver composites with high catalytic activity for 4-nitrophenol reduction. **X. Tran**, M. Hussain, H. KIM

Prussian blue incorporated polyacrylonitrile nanofibers for rapid removal of radioactive ¹³⁷Cs. **S. Kim**, H. Kim, M. Kim

Long-term fate of zinc oxide nanoparticles in the presence of nano-iron oxide through the natural sediment under different solution chemistry. **m. dibyanshu**, A. Kumar, P. joshi, T. Raychoudhury

Time Resolved Characterization of Metal Ion-Induced Nanocellulose Gelation by Small Angle X-ray Scattering. **H. He**, T. Rosén, C. Zhan, R. Wang, S. Chodankar, L. Yang, B.S. Hsiao

Engineered *Escherichia coli* cell capable of specific binding to metal surface. **K. Nakashima**, Y. Iwata, S. Kawasaki

Syntheses and Catalytic Applications of Ag-Rh Core-Frame Nanocubes and Rh Nanoboxes. **L. Zhang**, Y. Zhang, D. Qin

Surface Chemistry and Phase Transformation of Nanoscale Zero-Valent (nZVI) Iron in Aquatic Media. **A. Liu**

Characterization and permeation properties of Graphene oxide membrane fabricated by various methods for desalination. **S. LEE**, J. Kim, J. Woo, C. Han

Photocatalytic core-shell magnetic ZnO nanostructure. **O.D. Máñez-Navarro**, M.A. Mendez-Rojas, J. Sanchez-Salas, D.X. Flores-Cervantes

Investigation of the main mineral properties driving MnO_x photoreduction. **S. Benkaddour**, A. Schwartzberg, B. Gilbert, J. Pena

Section A

Non-targeted Analysis to Understand Fate & Effects of Pharmaceuticals & Emerging Contaminants in Agriculture & Natural Environments

Cosponsored by AGRO
D. S. Aga, J. B. Sallach, *Organizers*

5:00 - 7:00

Photochemical Dissolution and Degradation of Industrial Crude oil and Natural Seep Oil in Seawater. **K. Snyder**, N. Mladenov, E. Hoh

Simultaneous separation and determination of the chiral fungicide cyproconazole enantiomers by high-performance liquid chromatography. **H. Zongzhe**

Microbial degradation of malachite green in milkfish pond sediments. **B. Chang**, C. Yang, W. Chao, C. Hsieh

Occurrence of emerging contaminants in an urban river of Buenos Aires, Argentina. G. Fitó Friedrichs, **E.P. Beiguel**, A. Zalts, J. Montserrat

Section A

Plastics in Aquatic Environments, Part II: Transport, Fate & Global Impacts

Cosponsored by POLY[‡]

J. A. Glaser, K. Ikehata, R. T. Mathers, S. V. Orski, M. A.

Pasquinelli, *Organizers*

5:00 - 7:00

Heterogenous Oxidative Degradation and Potential Secondary Organic Aerosol Yields of the Toxic Organic UV Filter, Octinoxate, by OH, O₃, and UV Irradiation. **A.W. Cooper**, A. Kawasaki, S. Kruse, J.H. Slade

Degradation of the Toxic Plastic Additive, Bisphenol-A, in the Aerosol Phase Through Heterogeneous and Multiphase OH, O₃, and Photosensitized Reactions. **S. Kruse**, A. Kawasaki, A.W. Cooper, J.H. Slade

Toxicity and pollution generated from decomposed plastic in the ocean. **K. Koizumi**, H. Kimukai, K. Kim, S. Chung, K. Metori, T. Hiaki, M. Nishimura, T. Kusui, **K. Saïdo**

Polymers and anthropogenic particles extracted from oceanic water, beach sediments and fish stomach - A Raman microspectroscopy study. **S. Ghosal**

Organic leaching from micro plastics, potential effects on microbial growth on the aquifer. **S. Choi**

Recycling helps reduce the plastics being dumped in our oceans. Plastics in our oceans endanger marine life. Environmental Engineering is a way to address this problem. **T.V. Clardy**

Challenges in Electronic Platics Waste Management Practices. **E. Sahle Demessie**, B. Mezgebe, T. Richardson, C. Lee, J.A. Glaser

Quantifying and analyzing microfiber pollution in the Lake Michigan watershed. **E. Kostelnik**, J.R. Peller, C.R. Iceman

Safeguarding Water Quality in a Climate of Change

Cosponsored by CEI

J. Arrigo, J. W. Moerman, *Organizers*

5:00 - 7:00

Integrated Water Cycle Science in the Context of Global Change: Interagency Approaches to Water Quality Challenges. **J.W. Moerman**, J. Arrigo, S. Connors, G. Geernaert, W. Higgins

Quality Data Matters: Challenges in Effective Resource Management and Solutions through Quality Assurance. **R. Pisor**, J. Saraceno, T. Treleven, S. Miller

Trends in Water Quality in Relation to Predicted Climate Effects. **K. Ryberg**, J. Chanat, J. Murphy

Evolution and Mechanisms Driving Water Quality Trends across United States Watersheds. **M.E. Newcomer**, N. Bouskill, H. Wainwright, B. Arora, T. Maavara, D. Dwivedi, E. Woodburn, K. Williams, R. Carroll, C. Steefel, S. Hubbard

Predicting drivers of groundwater Cr(VI) contamination in the Central Valley, CA: An integrated multivariate statistical & geospatial approach. **A.M. Lopez**, J. Caers, S.E. Fendorf

Isolation and characterization of microcystin-degrading bacteria from Iowa recreational lakes. **X. Liang**, K. Ikuma

Effects of Chlorine on Hexavalent Chromium Occurrence in Drinking Water via Oxidation of Iron Corrosion Scales. **c. tan**, S. Avasarala, H. Liu

Toledo Waterways Initiative – updating infrastructure to improve water quality. **J. Cousino**, E. Kippenhan

Sensors & Biosensors for Widespread Environmental Monitoring

Cosponsored by AGRO

T. Li, V. V. Rajasekharan, M. Romero-Gomez, P. L. Schorr, W. Zhang, *Organizers*

5:00 - 7:00

Phylogenetic diversity, virulence genes, and antibiotic resistance of *Vibrio parahaemolyticus* in a tropical urban marine estuary in Hawaii. **P. Saingam**, T. Yan

Rapid detection of residual antibiotics in wastewater treatment plants by Surface Enhanced Raman Scattering (SERS) analysis. **Y. Huang**, W.J. Thrift, A.S. Cabuslay, R. Ragan, S. Jiang

Development of flexible electrochromic oxygen sensor operating at room temperature. **H. Son**, S. Hong, Y. Choi

Alpha-(2-hydroxy-5-methylphenylimino)-o-cresol as nano-chemosensor for simultaneous recognition of Al^{3+} and Zn^{2+} : Electrochemical and cell-imaging studies. **E. Tecuapa Flores**, C.A. Huerta-Aguilar, T. Pandiyan

Detection of *E. coli* 16S Ribosomal RNA using Duplex Specific Nuclease-mediated target recycling signal amplification. **H. Gowda**, **A. Shin**, M. Madou, S. Jiang

Sensors for Water Quality Assessment in Resource Limited Environments

Cosponsored by AGRO

E. Brack , C. Gomes, E. McLamore, M. S. Wiederoder, *Organizers*

5:00 - 7:00

Rapid cell-free protein synthesis based biosensing system for the detection of cadmium. **K. Turner**, S. Walper

Smartphone-base paper microfluidic particulometry of norovirus from environmental water samples at single copy level. S. Chung, L.E. Breshears, S. Perea, C.M. Morrison, W.Q. Betancourt, K.A. Reynolds, **J. Yoon**

Modification of the SPADNS method to develop a sensor as a dye sensitized strip in assessing fluoride levels in drinking water. **V.S. Samarasiri**, U.R. Kumarasinghe, A. Cooray

TLF sensor prototypes: Low-cost sensors for detecting biological contaminants in water. **T. Purvis**, R. Wallace, J. Brown

Laser scribed graphene sensors for point of use detection of *Listeria monocytogenes*. **N. Cavallaro**, C.L. Gomes, E.S. McLamore

Graphene-anchored cuprous oxide nanoparticles from waste electric cables for electrochemical sensing. **V. Morgan**, D. Vanegas, E.S. McLamore, I. Velez-Torrez

Section A

Stormwater Treatment & Green Infrastructure: from Research to Practice

R. Ambrose, S. Grant, P. Holden, J. Jay, L. Levin, H. Liu, *Organizers*

5:00 - 7:00

Distribution of heavy metals and nutrients in soil, plant and effluent water in a rain garden. **K. Sung**, C. Kim

Reducing storm water pollution with increased green space planning as part of a community driven neighborhood revitalization project. **E. Kippenhan**, B.W. Miringu, A.M. Smith

Natural treatment systems for urban stormwater runoff: Relationships between soil microbial communities, environmental conditions, accumulated pollutants, and nitrogen cycling. **M. Feraud**, P. Holden

Survey of antibiotic resistant gene and heavy metal co-selection in UC campus stormwater biofilters. **M. Rugh**, W. Hung, M. Feraud, S. Avasarala, J. Jay, P. Holden, H. Liu

Practice versus promise: An assessment of design and maintenance guidance relative to goals for stormwater natural treatment systems. **P. Holden**, M. Feraud, M. Rippy

Perceived Services and Disservices of Natural Treatment Systems for Urban Stormwater. M. Rippy, **S. Grant**

Classic urban land management hastens decomposition in Southern California. **J. Kurylo**, R. Ambrose

Section A

Wastewater-Based Epidemiology: Opportunities, Challenges & Applications to Public Health & Safety

D. A. Burgard, M. Matus, B. Subedi, *Organizers*

5:00 - 7:00

Integration of Antimicrobial Resistant Bacterial Isolate Libraries and Metagenomics Sequencing for Quantitative Antimicrobial Resistance (AMR) Risk Assessment in Cattle Manure. **B. Li**

Validation and application of a LC-MS/MS method for illicit drug determination in wastewater. **M. Kuloglu**, S. Mercan, T. Tekin, Z. Turkmen, F. Asicioglu

Trends in nicotine consumption between 2010 and 2017 in an Australian city using the wastewater-based epidemiology approach. **M. Mackie**, B. Tschärke, J. O'Brien, P. Choi, C. Gartner, K. Thomas, J. Mueller

Uncertainties Treatment for Wastewater-Based Epidemiological Estimation of the Consumption of Illicit and Prescribed Neuropsychiatric Drugs in Two Urban Communities in Kentucky Using Ammonium Normalized Population and Monte Carlo Simulation. T.L. Croft, **R.A. Huffines**, M. Pathak, **B. Subedi**

Biobot Analytics: A novel sampling and analytical method to quantify opioids and their urinary metabolites in wastewater. **K. Foppe**, N. Endo, M. Matus

Water, Health, & Environmental Justice in Marginalized Communities

Cosponsored by CMA

F. de los Reyes, A. Harris, J. Kearns, *Organizers*

5:00 - 7:00

Inner city faith communities as educational hubs via urban water management.
M. Berry DuFour, **E. Kippenhan**, B.W. Miringu

Development of a pathogen flow model for risk-based sanitation safety planning and mapping. **M.E. Verbyla**, **I. Musaazi**, A. Vaidyanathan, L. Mendoza, N. Hofstra, L. Joe, H. Murphy, I. Nansubuga, D. Okaali, J. Ssazi, I. Tumwebaze, J. Rose

Novel Community Engaged System Thinking Approach to Onsite Wastewater Treatment Management for Nutrient Pollution in the Belizean Cayes. **D.A. Delgado**, C. Prouty, M. Trotz

Rapid small-scale column test development for fluoride control using bone-char sorbents. **M. Thompson**, J. Kearns

Water, Health, and Environmental Justice in the Central Valley of California: Geospatial Analysis of Nitrate Contamination and Health Disparities. **A. Tariqi**, C. Naughton

Predicting per/polyfluoroalkyl substance (PFAS) breakthrough in biochar water treatment using fluorescence and UV absorbance as surrogates. **M.T. Aung**, J. Kearns

Nanosensors and decision support models paired on a mobile device for establishing a participatory monitoring program on mercury exposure in rural Colombia. **V. Morgan**, **D. Vanegas**, K. McCourt, J. Crews, E. Kuo, L. Casso-Hartmann, I. Velez-Torrez, G. Kiker, E.S. McLamore

Using Microbial Source Tracking and Antibiotic Resistance for Environmental Justice. **B. Hunter**, L. Rocha Melogno, W. Gerhard, S. Farling, S. Kawadiya, M. Deshusses

Water in the Solid State: Reactions & Interactions with Impurities

Cosponsored by GEOC

Financially supported by Korean Polar Research Institute (KOPRI)

E. Asenath Smith, W. Choi, K. Kim, *Organizers*

5:00 - 7:00

Enhanced Dissociation of Weak Acids in Cryogenic Ice. The Configurational Entropy of Mobile Proton is the Driving Force. **H. Kang**, Y. Park, S. Shin

Existence of IO_2H and the role of ice surface in the formation of I_2 . **Y. Baek**, C.H. Choi, K. Kim, W. Choi

Sulfuric Acid Formations by Sulfurous Acid and Hydrogen Peroxide in Gas Phase and on Ice Surface. **S. Shostak**, Y. Horbatenko, C.H. Choi, K. Kim

Redox chemical reaction between chromate and iodide in frozen solution: Mechanism, kinetics, and environmental implications. **H. CHUNG**, J. Kim, K. Kim

In-situ Chemical characterization of impurities in ice using Cryo-Raman Spectroscopy. **b. kim**, K. Kim

Enhanced redox transformation of inorganic iodine species in ice. **K. Kim**

Mechanisms of Heat Transfer in Ice Containing Organic and Inorganic Matter. **C. Erb**, R. Winter, E. Barnes, R. Lieb-Lappen, E. Asenath Smith

Investigating the effects of an insect antifreeze protein on ice nucleation and crystallization. **E. Ambrogi**, E. Asenath Smith, G.R. Hoch, J. Sreter, K. Jovic, K. Varga, P.W. Baures, J. Tsavalas

Modification and Characterization of Polyol Based Polymers for Ice Recrystallization Inhibition and Thermal Hysteresis Activity. **M. mousazadeh**, J. Tsavalas, P.W. Baures, K. Varga, E. Asenath Smith

Computational study of adhesive properties of bi-material interfaces formed with freshwater ice. **V. Gisladottir**, E. Asenath Smith, G.R. Hoch, M.W. Parker, D.T. O'Connor, R. Haehnel

Fe(II) oxidation in aqueous solution under freezing conditions. **S. Choi**, W. Choi, G. Lee

Effects of pH and Mn(II) concentration on Mn(II) oxidation under freezing condition. **J. Lee**, Y. Won, W. Choi, G. Lee

Future of Biomacromolecules at a Crossroads of Polymer Science & Biology, Sponsored by POLY, Cosponsored by BIOL, CARB, CELL, COLL, ENVR, MEDI, PHYS and PMSE

WEDNESDAY MORNING

Section A

Chemistry & Applications of Free Radical-based Technologies for Water Treatment & Purification

Sulfate radicals- and electrochemical production of radicals-based technologies

Cosponsored by AGRO

Supported by Association of Environmental Engineering & Science Professors (AEESP)

D. S. Aga, D. D. Dionysiou, D. Minakata, K. E. O'Shea, W. Song, *Organizers*

G. Li Puma, *Organizer, Presiding*

K. Doudrick, D. Minakata, *Presiding*

8:00 Comparative evaluation of nitroguanidine removal by UV and oxidants: hydrogen peroxide, persulfate and peroxymonosulfate. **A. Terracciano**, C. Christodoulatos, X. Meng, B. Smolinski, P. Arrienti

8:25 Comparative study for the degradation of theophylline in a pharmaceutical factory effluent using chemically and thermally persulfate activated systems. **A. Ghauch**, S. Al Hakim, A. Baalbaki, O.N. Tantawi

8:50 Advanced oxidation of trimethoprim in water by iron activated persulfate. **H. Zhang**, K.F. Hayes

9:15 Sulfate Radical Generation and its Application for Degradation of Acetanilide Herbicide as A Green Technology. **W. Chu**

9:40 Exploring synergisms essential to combined ultrasound-activated persulfate using *in situ* EPR spin trapping. **W.P. Fagan**, F.A. Villamena, L.K. Weavers

10:05 Intermission.

10:20 Oxidation of organic compounds by peroxymonosulfate catalyzed by a N,O-doped carbonaceous material. **J. Yang**, J.J. Pignatello, Z. Dang

10:45 Reconciling light delivery with photoelectrocatalytic reactors for water treatment. R. Montenegro, J. Morales-Gomero, P.K. Westerhoff, **S. Segura**

11:10 Development of a hybrid electrochemical treatment process: Incorporating electro-filtration and electro-coagulation processes for treatment of high-strength wastewater. **W. Meertens**, M. Choudhury

11:35 Biofouling Control on the Chelator Modified Conductive Substrate with Applying Low Potentials. **M. Lin**, S. Mehraeen, G. Cheng, C. Rusinek, B.P. Chaplin

Section B

Legacy & Emerging Per- & Polyfluoroalkyl Substances: Identification, Fate, Transport, Exposure, & Removal

Supported by Association of Environmental Engineering & Science Professors (AEESP)

K. Chu, J. Liu, M. Sun, F. Xiao, *Organizers*

F. Xiao, *Presiding*

8:00 Introductory Remarks.

8:05 Enhancing photochemical defluorination of per- and polyfluoroalkyl substances (PFASs). **Z. Liu**, M.J. Bentel, Y. Yu, Y. Men, J. Liu

8:30 Breakdown products from perfluorinated alkyl substances (PFAS) degradation in a plasma-based water treatment process. **R. Singh**, S. Fernando, S. Baygi, N. Multari, S. Thagard, T.M. Holsen

8:55 Hydrothermal treatment: A novel method for destruction and defluorination of per- and polyfluoroalkyl substances (PFAS) in aqueous film-forming foam (AFFF). **S. Hao**, B. Wu, Y. Choi, C.P. Higgins, T.J. Strathmann

9:20 Electrochemical Oxidation of Perfluorooctanesulfonate (PFOS) on Different Porous Magnéli Phase Titanium Sub-oxides Anodes. **Y. Wang**, H. Shi, R.D. Pierce, Q. Huang

9:45 Chemical degradation of environmentally persistent fluorochemicals in aqueous film-forming foam (AFFF). **M. Harake**, M.J. Bentel, L. Wang, S. Lin, M. Sun, J. Liu

10:10 Intermission.

10:20 Electrochemical mineralization of perfluorooctanoic acid and perfluorooctane sulfonic acid. **V.F. Pulikkal**, M. Sun

10:45 Leaching of poly- and perfluoroalkyl substances from soil subjected to dry-wet and freeze-thaw cycles. **A. Borthakur**, J. Blotevogel, S. Mahendra, S.K. Mohanty

11:10 Molecular Mechanism of Per- and Polyfluoroalkyl Substances on a Modified Clay. **B. Yan**, G. Munoz, S. Sauve, J. Liu

11:35 Interfacial Partition Coefficients of PFAS at Air-Water Surface in Water-Unsaturated Porous Media. **J. Zhang**, J.N. Rewerts, Z. Yu, C. Schaefer, J.A. Field

Section C

Safeguarding Water Quality in a Climate of Change

Cosponsored by CEI

Financially supported by US Global Change Research Program; Association of Environmental Engineering & Science Professors (AEESP)

J. Arrigo, J. W. Moerman, *Organizers, Presiding*

8:00 Introductory Remarks.

8:05 Water Cycle Research and the US Global Change Research Program. **J. Kaye**, J. Arrigo, J.W. Moerman, J.K. Entin, C. Avery

8:35 Water quality monitoring in the era of the NASA Plankton, Aerosol, Clouds, ocean Ecosystem (PACE) mission. **J. Werdell**, A. Mannino, C. Del Castillo, B. Seegers

8:55 U.S. Geological Survey's next generation water observing system. **L. Sprague**

9:15 Managing agricultural nonpoint sources of contaminants under a changing climate: USDA Agricultural Research Service Perspectives. **R.B. Bryant**, A. Buda, J. Baker, D. Bosch, J. Garbrecht, D. Smith, P. Kleinman, T. Tsegaye

9:35 WHONDRS: a Community Resource for Studying Dynamic River Corridors. **J.C. Stegen**, A. Goldman, E. Graham, V. Garayburu-Caruso, K. Wrighton, T. Johnson, H. Ren, X. Chen, T. Scheibe

9:55 Intermission.

10:15 Influence of redox interfaces on metal(loid) contaminant mobility in shallow alluvial groundwater aquifers. **K. Boye**, N. Kumar, V. Noël, J.R. Bargar, S.E. Fendorf

10:35 Satellite-based monitoring of water quality in the Chesapeake Bay and its watershed. **N. Pahlevan**, A. Mehrabian, B. Smith, N. Pal, S. Balasubramanian, S.S. Uz

10:55 Exploration of climatic impacts on watershed water quality as a control on harmful algal blooms and water sustainability. M.E. Newcomer, **Y. CHENG**

11:15 Modeling Regional Water Quality Impacts of Global Climate Change and Adaptation Strategies. **X. Zhang**, J. Li, S. Waldhoff, C. Jefferson

11:35 Sensitivity analysis of existing water models to effects of climate change. **J. Thomas**, N. Rao

11:55 Closing Remarks.

Section D

Biochar & Hydrochar for Energy, Environmental & Agricultural Applications

Cosponsored by AGRO

Financially supported by Association of Environmental Engineering & Science Professors (AEESP) and Frontiers in Energy Research

N. D. Berge, J. L. Goldfarb, R. Volpe, *Organizers*

A. Shah, *Organizer, Presiding*

8:15 Introductory Remarks.

8:20 Agro-Energy-Environmental Applications of Biochar/Hydrochar. **K. Ro**

8:45 Environmental assessment of pyrolysis and hydrothermal carbonization of anaerobic digestion effluent. J. Vasco Correa, **A. Shah**

9:10 Techno-economic analysis of a combined anaerobic digestion and hydrothermal carbonization system from sewage sludge. L. Huezio, **A. Shah**

9:35 Emerging challenges in the application of biochar to agricultural and wastewater treatment. **D.S. Alessi**, K. von Gunten, V. Gondziola, M. Alam, K. Konhauser

10:00 Intermission.

10:15 Assessing the reversibility of electron storage capacity of biochar by chemical methods. **D. Xin**, M. Xian, P. Chiu

10:40 Real-time microbial sensors to characterize saturated and unsaturated environments. **S.R. Burge**, K.D. Hristovski

11:05 Compaction affects the performance of biochar-augmented biofilter: Mechanism and Implications. **S.K. Mohanty**, H. Le, A. Borthakur, S. Ravi

11:30 Environmental oil recovery using Engineered Douglas fir biochar. **C. Navarathna**, N. Wickramasighe, T. Mlsna

11:55 Closing Remarks.

Section E

Fundamental Chemical Processes Common to Dissolved Organic Matter & Atmospheric Organic Aerosols

N. Borduas, S. A. Nizkorodov, *Organizers, Presiding*

8:00 Introductory Remarks.

8:05 Feedbacks between aerosol microphysics and photochemical aging in an iron containing secondary organic aerosol (SOA) proxy. **U.K. Krieger**, J. Dou, B. Luo, T. Peter, P. Corral Arroyo, P.A. Alpert, M. Ammann

8:35 Exploring the relationship between the conformation of NOM and fluorescence changes caused by the presence of metals. **L.T. Stirchak**, D.J. Donaldson

8:55 Hydroxyl Radicals from Isoprene Hydroxy Hydroperoxide (ISOPOOH) Decomposition Induced by Irons in Water. **T. Fang**, P. Lakey, J. Rivera-Rios, F. Keutsch, M. Shiraiwa

9:15 Insights onto the complex iron oxide-organic-water interface from In Situ Studies using ATR-FTIR, Flow Microcalorimetry, and Surface Complexation Modeling. **H.A. Al-Abadleh**

9:45 Intermission.

10:00 Dust-catalyzed oxidant production and organic transformations in the atmospheric aqueous phase. **S.A. Styler**, M. Abou-Ghanem, A.I. Burnett, C.D. Cote, M. Schmidt, S.R. Schneider, A.L. Aantjes, T.H. Chou, L. Gan, S. Gao, A. Holod, S.M. Jansen van Beek, A.J. Locock, G. Lotfi, M. Lyu, L. Michelat, A.O. Oliynyk

10:30 Challenges with traditional fluorescence quantitation metrics for anthropogenic DOM: a case for re-examining approaches and definitions on unique pools of leachable biosolids organic matter. **S. Fischer**, M. Gonsior, L. Powers, A. Hamilton, J.D. Chorover, M. Ramirez, A. Torrents

10:50 Organic Aerosol Growth via Aqueous Reactions in the Presence of Different Inorganic Aerosols Containing Ammonium Sulfate, Sea Salt, and Airborne Mineral Dust. **M. Jang**, C. Zhou, S. Han, Z. Yu

11:10 Aqueous Photochemistry of Secondary Organic Aerosol in the Presence of Common Inorganic Salts. **A. Klodt**, D. Romonosky, J. Laskin, A. LASKIN, S.A. Nizkorodov

11:30 Assessing the effect of oxidation on the photophysical and photochemical properties of dissolved organic matter. **F.L. Rosario**, F. Leresche, K. Couch

Section F

Artificial Water Channels for Water Purification & Desalination

Supported by Association of Environmental Engineering & Science Professors (AEESP)

J. Hou, B. Mi, *Organizers*

M. Barboiu, *Organizer, Presiding*

M. Kumar, *Presiding*

8:00 Artificial water channel membranes: Design ideas from biological and biomimetic membrane research. **M. Kumar**, W. Song, C. Lang, R. Hickey

8:30 Construction of artificial water channels from organic tubular structures. **J. Hou**

9:00 Highly permeable and selective reverse osmosis membranes incorporating artificial water channels. **M. Di Vincenzo**, A. Tiraferri, M. Barboiu

9:20 Cluster formation of artificial water channels enable high water/salt permselectivity. **W. Song**, H. Joshi, R. Chowdhury, Y. Shen, J. Hou, A. Aksimentiev, M. Kumar

9:40 Intermission.

9:50 Water transport through carbon nanotube porins in lipid membranes. **Y. Li**, A. Noy

10:10 Probing Ion Solvation in Single-Digit Nanopores with First-Principles Simulations. **T. Pham**, C. Zhan, E. Schwegler

10:30 Hydroxyl-pathways for water permeation-new mechanisms for water purification. **L. Huang**, M. Barboiu

10:50 Layer-by-layer assembled graphene oxide membrane with efficient swelling control through water-ethanol mixed system. S. Zheng, **M. Wang**, B. Mi

11:10 Removal of Neutral Pharmaceuticals and PPCPs using Graphene Oxide Membranes: Characterization of Diffusion and Partitioning Coefficient of Micropollutant in Confined Nanochannels. **S. Zheng**, **X. Yang**, **B. Mi**

11:30 Membranes with artificial channels based on poly(styrene-*b*- γ -benzyl-L-glutamate). B. Sutisna, P. Bilalis, V. Musteata, **D. Smilgies**, K. Peinemann, N. Hadjichristidis, **S. Nunes**

Novel Polymeric Materials & Polymer-Based Processes for Energy-Efficient Treatment of Water & Resource Recovery / Nanomaterials for Separations, Sponsored by PMSE, Cosponsored by ENVR

From Antibody-Based to Mass Spectrometry-Based Analysis of Emerging Contaminants in Water: Advances & Future Trends / From Antibody-Based to Mass Spectrometry-Based Analysis of Emerging Contaminants in Water: Advances & Future Trends, Sponsored by ANYL, Cosponsored by ENVR

Future Insights into Syngas Conversion Catalysis: Symposium in honor of Burtron H. Davis, Sponsored by CATL, Cosponsored by ENFL, ENVR, INOR and PHYS

Pollinators in Agroecosystems: Current Science Issues & Risk Assessment Approaches, Sponsored by AGRO, Cosponsored by ENVR

Surfaces & Interfaces in the Environment: Symposium in Honor of Vicki Grassian, Organic-Surface interactions & Organic Aerosols, Sponsored by COLL, Cosponsored by ENVR[‡] and WCC

Geochemistry of the Urban & Lived Environment, Sponsored by GEOC, Cosponsored by ENVR

Future of Biomacromolecules at a Crossroads of Polymer Science & Biology / Delivery Systems, Sponsored by POLY, Cosponsored by BIOL, CARB, CELL, COLL, ENVR, MEDI, PHYS and PMSE[‡]

Advances in Analytical Technologies Supporting Environmental Fate, Metabolism, & Residue Analysis, Sponsored by AGRO, Cosponsored by ENVR

Ecological Considerations of Crop Protection, Sponsored by AGRO, Cosponsored by ENVR

Off-target Transport of Field Applied Agricultural Chemicals: Study Designs, Monitoring, Modelling, & Risk Assessment, Sponsored by AGRO, Cosponsored by ENVR

Pollinators in Agroecosystems: Current Science Issues & Risk Assessment Approaches, Sponsored by AGRO, Cosponsored by ENVR

WEDNESDAY AFTERNOON

Section A

Chemistry & Applications of Free Radical-based Technologies for Water Treatment & Purification

Novel materials application for free radicals-based technologies

Cosponsored by AGRO

Financially supported by Association of Environmental Engineering & Science Professors (AEESP)

D. S. Aga, G. Li Puma, D. Minakata, W. Song, *Organizers*

D. D. Dionysiou, K. E. O'Shea, *Organizers, Presiding*

E. Asenath Smith, *Presiding*

1:30 Catalytic Hydrogel Membrane Reactor for Treating Aqueous Contaminants. **K. Doudrick**, R. Marks

1:55 Photocatalytic degradation of model organic dyes by strontium barium niobate particles synthesized by Solution Combustion Synthesis. **E. Barnes**, S. Lauren, S. Jones, L. Johnson, J. Flowers, E. Zamora, K. Nash

2:20 Spontaneous oxidative degradation of aromatic compounds on iron oxide nanorods/CNF sheet in dark condition. **Y. Park**, C. Kim, S. Kim, W. Choi

2:45 Laser-induced graphene (LIG) membranes for advanced water and wastewater treatment. **C. Thamaraiselvan**, C. Arnusch

3:10 Highly Selective Active Chlorine Generation Electrocatalyzed by Co_3O_4 Nanoparticles: Mechanistic Investigation through *in situ* Electrokinetic and Spectroscopic Analyses. **H. Ha**, K. Jin, S. Park, K. Lee, K. Cho, H. Seo, H. Ahn, Y. Lee, K. Nam

3:35 Intermission.

3:50 Unravelling electrochemical chlorination of ammoniacal water. **K. Cho**, S. Hong

4:15 Solar photocatalytic phenol polymerization and hydrogen generation for flocculation of wastewater impurities. **R.E. Patalano**

4:40 Modulations of Bi₂MoO₆ for Photocatalytic Performance Enhancement under Visible Light Illumination. **Q. Li**

5:05 Degradation of 2,4-dichlorophenol by CNT-activated peroxydisulfate: radical vs. non-radical mechanisms. C. Chen, **Y. Lin**

Section B

Catalysis for Environmental & Energy Applications

Catalysis for energy applications

Cosponsored by CATL

A. Orlov, A. Savara, Y. Wang, *Organizers, Presiding*

1:30 Introductory Remarks.

1:35 Role of H₂S on CO₂ hydrogenation on MoS₂: A kinetic study. **J. Baltrusaitis**, L. Sharma, R. Upadhyay, S. Rangarajan

1:55 Zero Valent Iron Enhances Bioelectrochemical Biogas Upgrading and Hydrogen Sulfide Removal. **C. Dykstra**

2:15 Multipronged approach to enhancing microbial coal-to-methane production from Appalachian Basin coal: Investigating biological amendments and physicochemical coal treatments. **J. Moore**, D. Gulliver

2:35 Efficient head-tail coconversion process for high quality gasoline production via catalytic cracking route. **R. Wang**, Y. Li, G. Jiang, Y. Zhang, A. Duan, Z. Zhao, C. Xu, Y. Wang

2:55 Permeable CNT hollow fiber membrane as a facile strategy for electrocatalytic syngas production from CO₂. **M. Lee**, Y. Kwon, S. Kang

3:15 Intermission.

3:35 Development of Hydrotalcite-based Catalyst for Water Gas Shift Reaction and the Effect of Precursor Type on Catalytic Activity. **S. Kim**, C. Lee, K. Lee

3:55 *In situ* Photochemical Fabrication of CdS/g-C₃N₄ Nanocomposite with High Performance for Hydrogen Evolution under Visible Light. **L. Chen, B. Chen**

4:15 Photobioelectrochemical systems: The blue ocean approach. **L. Coy Aceves**, B. Corona Vázquez, M.A. Mendez-Rojas, M. Cerro-Lopez, J. Sanchez-Salas

4:35 Quantitative determination of intermolecular attraction between amines and graphene using AFM force spectroscopy. **Y. Zhang, B. Chen**

4:55 Concluding Remarks.

Section C

Safeguarding Water Quality in a Climate of Change

Cosponsored by CEI

Financially supported by US Global Change Research Program; Association of Environmental Engineering & Science Professors (AEESP)

J. Arrigo, J. W. Moerman, *Organizers, Presiding*

1:30 Department of Energy and Water Security Grand Challenge. **D. Bauer**

2:00 Energy efficient potable reuse: Lowering organic RO membrane fouling and DBP formation when treating anaerobic secondary effluent. **A. Szczuka**, W. Mitch

2:20 Impacts of Climate Change on Drinking Water Treatment Process: A story of Unusual High Haloacetic Acid Concentrations in Massachusetts Drinking Waters. **X. Ma**, P. Wittbold, Y. Sun, G. Moriarty, J.E. Tobiasson, D.A. Reckhow

2:40 Effects of changing water chemistry on lead minerals: Implications on lead control in drinking water distribution systems. **J. Orta**, S. Avasarala, H. Liu

3:00 Oil & Gas Class II Wells: Proximities to Schools and Water Contamination. **H. Barravecchia**, J. Buonocore, D. Michanowicz

3:20 Intermission.

3:40 Impact of climatic events on water quality and related health outcomes. **J. Jagai**, E. Hilborn, T. Wade

4:00 Protecting groundwater quality from geogenic and emerging contaminants in actively managed aquifers. **S. Fakhreddine**, A. Sherris, A.M. Lopez, A. Wells, R. Holmes, P.S. Nico, C. Babbitt, S.E. Fendorf

4:20 Colloid formation driven by redox processes: impact on groundwater quality in shallow alluvial aquifers. **V. Noel**, N. Kumar, L. Barragan, K. Boye, J.R. Bargar

4:40 Microbial risk from wildfire residues. **R.L. Valenca**, S.K. Mohanty

5:00 Advanced Simulation Capabilities to Explore Pre-and-Post Fire Water Quality after the 2017 Wine Country Fires. **M.E. Newcomer**, J. Underwood, R.W. Harvey, T. Schram, M. Smedt, P. Bliznik, C. Ulrich, D. Seymour, M. Trotta, J. Jasperse, S. Hubbard

5:20 Discussion.

Section D

Biochar & Hydrochar for Energy, Environmental & Agricultural Applications

Cosponsored by AGRO

Financially supported by Association of Environmental Engineering & Science Professors (AEESP) and Frontiers in Energy Research

N. D. Berge, J. L. Goldfarb, A. Shah, *Organizers*

R. Volpe, *Organizer, Presiding*

1:30 Introductory Remarks.

1:35 Adsorption of metals from mining-impacted water onto biochar from different sources. **S.R. Al-Abed**, P. Pinto, M.J. Arambewela, P. Potter, M. Johnson, J. Novak, K. Steve, M. John

2:05 Black carbon-enhanced transformation of chloroacetamide herbicides and safeners by sulfide. **X. Xu**, J. Sivey, W. Xu

2:30 Preparation of novel seaweed biomass-based activated carbon and use for gaseous elemental mercury (Hg^0) removal. Z. Liu, **Y.G. Adewuyi**, H. Chen, S. Shi, Y. Li, D. Liu, Y. Liu

2:55 Preparation and use of CuO_x- and CeO₂- Modified Rice Straw Chars for Gaseous Elemental Mercury (Hg⁰) Removal in the presence and absence of Ultrasound. W. Xu, **Y.G. Adewuyi**, Y. Liu, Y. Wang

3:20 Intermission.

3:35 Ion-selective biochar electrodes for asymmetrical capacitive deionization. **H. Stephanie**, D. Wipf, T. Mlsna

4:00 Biochar combined with polyvalent phage therapy to mitigate antibiotic resistance pathogenic bacteria vertical transfer risk in an undisturbed soil column system. **S. Mingming**, M. Ye, F. Hu

4:25 Assessing flow rate parameters on Capacitive Deionization of NaCl solution using biomass-derived activated carbon electrodes. M. Maniscalco, **R. Volpe**, A. Messineo

4:50 Closing Remarks.

Section E

Fundamental Chemical Processes Common to Dissolved Organic Matter & Atmospheric Organic Aerosols

N. Borduas, S. A. Nizkorodov, *Organizers, Presiding*

1:30 Introductory Remarks.

1:35 Photodesulfurization and other photomineralization reactions involving amino acids. **K.P. McNeill**

2:05 Time-resolved singlet oxygen phosphorescence to measure triplet photochemistry in aquatic environments. **K. Moor**, P.R. Erickson, K.P. McNeill

2:25 Photochemical properties of photosensitizers in tropospheric aqueous solution. **T. Felber**, T. Schaefer, H. Herrmann

2:45 Photooxidants in atmospheric drops and particles: Moving beyond solely OH. **C. Anastasio**, R. Kaur

3:15 Intermission.

3:30 Development the novel chemical probes for examining the triplet-excited state of organic matters. **W. Song**, H. Zhou, S. Yan

4:00 Photochemical processing of organics at the ocean-atmosphere interface. **S. Blair**, K. Kappes, A. Reed Harris, R. Rapf, E. Pangui, M. Cazaunau, J. Doussin, A. Monod, V. Vaida

4:20 Chemical Reactions Involving Triplet Excited States and Other Reactive Species in Secondary Organic Aerosol Produced by Photooxidation of Naphthalene. **V. Baboomian**, R. Gemayel, C. George, D. Fishman, S.A. Nizkorodov

4:40 Photoinduced reactions of Anthraquinone-2-sulfonate as model constituents in tropospheric aqueous aerosol. **T. Schaefer**, J.D. Raff, H. Herrmann

5:00 Photochemical production and reactions of halogen oxidants in organic matter-rich saline waters. K. Zhang, **K. Parker**

Section F

Stormwater Treatment & Green Infrastructure: from Research to Practice

R. Ambrose, S. Grant, P. Holden, J. Jay, L. Levin, H. Liu, *Organizers, Presiding*

1:30 Introductory Remarks.

1:35 Urban stormwater to enhance water supply. **R.G. Luthy**

2:05 Fighting Drought with Stormwater: From Research to Practice. **S. Grant**

2:35 Low-cost polymer-functionalized clay composites for trace organic compound and metal removal during urban stormwater treatment. **J. Ray**, I. Shabtai, M. Teixido, Y. Mishaël, D.L. Sedlak

2:55 Intermission.

3:10 Waste-derived amendments in stormwater biofilters: Do the benefits outweigh the risks?. **S.K. Mohanty**, M. Ghavanloughajar, M.K. Stenstrom

3:30 Biochar-based bioinfiltration for enhanced and prolonged removal of pesticides from stormwater. **A.C. Portmann**, R. Hankawa, S. Fox, C.P. Higgins

3:50 Efficacy of biochar amended bioretention systems for both urban and agricultural stormwater runoff. **M. Rahman**, N. Truong, S.J. Ergas, M. Nachabe

4:10 Enhanced removal of urban stormwater runoff contaminants using biochar and manganese oxide-coated sand geomedia in a sequential biofiltration system. **M. Teixeira**, S. Spahr, R.G. Luthy, D.L. Sedlak

4:30 Concluding Remarks.

Section G

Artificial Water Channels for Water Purification & Desalination

Supported by Association of Environmental Engineering & Science Professors (AEESP)

M. Barboiu, *Organizer*

J. Hou, B. Mi, *Organizers, Presiding*

1:30 Artificial water channels: Deconvolution of natural aquaporins through synthetic design. **M. Barboiu**

2:00 Biomimetic carbon nanotube water treatment systems utilizing electrodynamic interfaces. **B. Hinds**

2:30 Functional and Scalable Carbon Nanomembranes (CNMs) are efficient Nanoconduits for Water Purification. **A. Goelzhaeuser**

3:00 Effective removal of emerging cyanotoxins from water using hybrid photocatalytic channels. T. Noeiaghahi, Y. Oh, J. Park, **S. Chae**

3:20 Combining Water Flux Studies with Fluorescence Techniques to help elucidate the Mechanism of Membrane Biofouling. C. George, **E.M. Stennett**

3:40 Intermission.

3:50 Development of hydrophilic nanofiltration membrane for water purification. **W. Sajomsang**, S. Singto, C. Ratanatawanate, S. Thaiboonrod, P. Gonil

4:10 Highly Efficient Ammonia Recovery from Wastewater using Electrically Conducting Gas-Stripping Membranes. **A. Iddyia**, D. Hou, Z.J. Ren, J.W. Tester, D. Jassby, A. Gross

4:30 Water vapor permeation of inorganic membranes. **K.J. Lawrence**, P.R. Beaumont, J. Velten

4:50 TiO₂@MoS₂ composite for highly efficient water evaporation and water purification by interfacial solar heating. **R. CHEN**, **M. Ye**, **C. Huang**

5:10 Molecular insights into seawater desalination through functionalized nanoporous graphene membranes. **L. Qin**, J.E. Tobiasson, H. Huang

Novel Polymeric Materials & Polymer-Based Processes for Energy-Efficient Treatment of Water & Resource Recovery / Nanomaterials for Separations, Sponsored by PMSE, Cosponsored by ENVR

Sorption & Redox at Mineral-Water Interfaces & the Impact on the Biogeochemical Cycling of Trace & Major Elements / Sorption & Redox at Mineral-Water Interfaces & the Impact on the Biogeochemical Cycling of Trace & Major Elements, Sponsored by GEOC, Cosponsored by ENVR

Innovative Approaches to Managing the Interface Between Pesticide Use & Non-target Species Habitat Protection, Sponsored by AGRO, Cosponsored by ENVR

Surfaces & Interfaces in the Environment: Symposium in Honor of Vicki Grassian / Nano in the Environment & Plenary Lecture, Sponsored by COLL, Cosponsored by ENVR[‡] and WCC

Future of Biomacromolecules at a Crossroads of Polymer Science & Biology / Biomaterials, Sponsored by POLY, Cosponsored by BIOL, CARB, CELL, COLL, ENVR, MEDI, PHYS and PMSE[‡]

THURSDAY MORNING

Section C

Safeguarding Water Quality in a Climate of Change

Cosponsored by CEI

Financially supported by US Global Change Research Program; Association of Environmental Engineering & Science Professors (AEESP)

J. Arrigo, J. W. Moerman, *Organizers, Presiding*

8:00 Introductory Remarks.

8:05 Increasing interagency coordination in river monitoring and data access in the United States. **L. Sprague**

8:35 Exploring the effects of streamflow trends and watershed management on changing water Quality – A national perspective. **J. Murphy**, L. Sprague

8:55 Long-term research assessing water quality and quantity in agricultural landscapes within the Lower Mississippi River Basin. **M.A. Locke**, A. Adviento-Borbe, R. Bingner, R. Lizotte, J. Massey, M. Moore, m. reba, J. Rigby, J. Taylor, P. White, L. Yasarer

9:15 Freshwater Salinization Syndrome: Causes, consequences, and chemical cocktails. **J.G. Galella**, S.S. Kaushal, K.L. Wood, S. Haq, C. Morel, G.E. Likens, M.L. Pace

9:35 Atmospheric rivers and public health: observed links between extreme precipitation events and California's coastal water quality. **R. Aguilera**, A. Gershunov, T. Benmarhnia

9:55 Intermission.

10:10 Coastal Acidification: moving from a global problem to a coastal water-quality issue. **L. Wickes**

10:30 Cistern Health Post Hurricanes Irma and Maria in the US Virgins Islands. **C. Chanes**, D. Morris, S. Latesky

10:50 Climate variability in relation to floodplain erosion and water quality characteristics of the Ikpa River basin, Nigeria. **E. Inam**, R. Ekpenyong, M. Ekpenyong, A.I. Inyangudoh, N.O. Offiong, U. Udotong, S. Shaibu

11:10 Quality Data Matters: Challenges in Effective Resource Management and How DWR is Working to Address This Issue on a State-wide Scale. **R. Pisor**, J. Saraceno

11:30 Safeguarding water quality through local decision making: Lessons from the Resilience Dialogues. **N. Bennett**

11:50 Discussion.

Section E

Fundamental Chemical Processes Common to Dissolved Organic Matter & Atmospheric Organic Aerosols

Financially supported by Association of Environmental Engineering & Science Professors (AEESP)

N. Borduas, S. A. Nizkorodov, *Organizers, Presiding*

8:00 Introductory Remarks.

8:05 Ionic strength effects on the reactive uptake of ozone on organic compounds: Implications for air-sea ozone deposition. **S. Gligorovski**, M. Mekic, M. Brigante, D. Vione

8:35 Relationship between the physicochemical properties of an aerosol particle and the exchange of semi-volatile organic molecules. **y. qin**, J. wang, Y. Lei, J. Ye, S.T. Martin

8:55 Characterizing Wintertime Aerosol Composition and Sulfate Formation, Fairbanks, Alaska. **R. Davey**, J. Campbell, R. Weber, J. Mao

9:15 Exploring Surface Population of Organic Molecules of Aerosol Directly by Nonlinear Light Scattering. Y. Qian, G. Deng, **Y. Rao**

9:45 Intermission.

10:00 Cloudy and clear sky particulate matter chemical composition. **A. Carlton**, A. Christiansen, B. Henderson

10:30 Organic Solvents Facilitate the Cloud Droplet Activation of Water-Insoluble Organic Aerosol. F. Barati, **A. Asa-Awuku**

10:50 Organosulfates from dark reactions of isoprene epoxydiols in cloud and fog water. **S. Petters**, T. Cui, Z. Zhang, A. Gold, V.F. McNeill, J. Surratt, B.J. Turpin

11:10 Measurements of acid and organic partitioning in liquid-liquid phase-separated systems. **B.L. Deming**, P.J. Ziemann

11:30 In situ Quantification of pH in Aerosol Droplets. **P.J. Vikesland**, L.C. Marr, Q. Huang, H. Wei, H. Guo

Section F

Stormwater Treatment & Green Infrastructure: from Research to Practice

R. Ambrose, S. Grant, P. Holden, J. Jay, L. Levin, H. Liu, *Organizers, Presiding*

8:30 Introductory Remarks.

8:35 Fate of Pathogens during Managed Aquifer Recharge. **S. Bradford**, S. Sasidharan, j. Simunek, S. Torkzaban

9:05 Infiltration in Roadside Drainage Ditches. **J. Gulliver**, M. Garcia-Serrana, J. Nieber

9:25 Competing mechanisms affecting transport of copper, zinc and lead in urban stormwater runoff: column experiments. **S. Avasarala**

9:45 Intermission.

10:00 Enhanced removal of hydrophilic organic contaminants from urban stormwater in biochar-amended biofilters. **S. Spahr**, M. Teixido, D.L. Sedlak, R.G. Luthy

10:20 Molecular Characterization of Dissolved Organic Nitrogen Removal with Biosorption Activated Media (BAM) based on Ultrahigh Resolution Mass Spectrometry. **A.M. McKenna**, H. Chen, D. Wen, D. Ordonez, N. Chang

10:40 Impact of biofouling on the retention of stormwater colloidal contaminants in Engineered Infiltration System (EIS). **Y. Zhang**, S. Wu, S. Preheim

11:00 Plant Uptake and Transformation of Stormwater Emerging Organic Contaminants. **G.H. LeFevre**, C.P. Muerdter, M.M. Powers, H. Zhi

11:20 Iron Enhanced Sand Filters for Removing Stormwater Phosphate: Results from Laboratory, Urban, and Agricultural Studies. **A. Erickson**, J.S. Gulliver, P. Weiss

11:40 Concluding Remarks.

Novel Polymeric Materials & Polymer-Based Processes for Energy-Efficient Treatment of Water & Resource Recovery / Gas Separation Membranes, Sponsored by PMSE, Cosponsored by ENVR

Advances in Spray Drift Deposition Characterization & Measurement, Sponsored by AGRO, Cosponsored by ENVR

Chemometric Analysis for Aqueous Sample, Sponsored by ANYL, Cosponsored by COMP and ENVR

THURSDAY AFTERNOON

Section E

Fundamental Chemical Processes Common to Dissolved Organic Matter & Atmospheric Organic Aerosols

N. Borduas, S. A. Nizkorodov, *Organizers, Presiding*

1:00 Introductory Remarks.

1:05 Towards Identifying the Reactive Sites Responsible for Nitrous Acid Formation on Soil Surfaces. R.B. Abney, **J.D. Raff**

1:35 Ozonolysis of various VOCs in the presence of NO and/or OH radicals. **M. Noguchi**, A. Yamasaki

1:55 Incorporation of Organic Matter into Freshwater Aerosol: Emissions from Harmful Algal Blooms and Impacts on Health and Climate. **N.E. Olson**, N. May, J. Birbeck, J. Westrick, K.A. Pratt, A.P. Ault

2:15 Salt fat acid bugs: Effects of solutes on reaction rates in atmospheric and environmental condensed phases. **T.F. Kahan**, J.N. Grossman, A. Stathis, K. Blaha

2:45 Intermission.

3:00 Modulation of aerosol water content of indoor aerosols and impact on partitioning of water soluble species. **P.F. DeCarlo**, A. Avery, E.F. Katz, L. Ampollini, M.S. Waring

3:30 Photochemistry of HONO in Marine Relevant Environments. **M.N. Sullivan**, S.L. Mora Garcia, M. Alves, V.H. Grassian

3:50 Surface Activity and Interfacial Structure of Caryophyllene-Derived Ozonolysis Products. **F. Geiger**, A. Be, A. Bellcross, D. Liu

4:10 Toward a Comprehensive Picture of Heterogeneous Chemistry at Atmospheric Aerosols: The Solvation and Hydrolysis of Glyoxal and Methylglyoxal at the Liquid Water Aerosols Interface. **I. Gladich**, C. Zhu, J.S. Francisco

4:30 Interconnections of atmospheric aqueous-phase chemistry: Past, present and future. **H. Herrmann**, T. Schaefer, A. Tilgner

Section F

Stormwater Treatment & Green Infrastructure: from Research to Practice

R. Ambrose, S. Grant, P. Holden, J. Jay, L. Levin, H. Liu, *Organizers, Presiding*

1:00 Introductory Remarks.

1:05 Biochar-augmented biofilters (BIOCHARge) to improve pollutant removal from stormwater – Can they improve receiving water quality?. **a. boehm**, R.G. Luthy, J. Wolfand, C.P. Higgins, T. Hogue, N. Fitzgerald, B. Kranner, W. Eisenstein, B. Ulrich

1:35 IoT enabled data exchange for stormwater systems. P. Venkateswaran, **N. Venkatasubramanian**

1:55 From the laboratory to the field: Study of a modified denitrifying bioretention system - an innovative green stormwater infrastructure for nitrogen removal. **E.V. Lopez-Ponnada**, T.J. Lynn, S.J. Ergas, J.R. Mihelcic

2:15 Carbon uptake and emissions over urban landscapes in San Diego, California: A potential ecosystem service. **J.T. Le**, A. Mehring, L. Levin

2:35 Intermission.

2:50 Sediment Phosphorus Release in Stormwater Ponds. **V.J. Taguchi**, J.S. Gulliver, J.C. Finlay, B.D. Janke, P. Natarajan, H.G. Stefan

3:10 Enhancing green infrastructure with smart stormwater technology. **E.A. Parker**, S. Grant, A. Sahin, J. Vrugt

3:30 Patterns of Participation in Turf Rebate Programs and the Effect on Dry Weather Runoff. **K. Duong**, S. Grant

3:50 Polychlorinated biphenyls in stormwater sediments: relationships with land use and particle characteristics. **S. Cao**, S.L. Cappozi, B.V. Kjellerup, A.P. Davis

4:10 Concluding Remarks.

Unmanned Aerial Vehicles (aka Drones): Pesticide Spraying & Other Agricultural Applications, Sponsored by AGRO, Cosponsored by ENVR