

Draft Final Program as of May 30, 2014

ENVR

DIVISION OF ENVIRONMENTAL CHEMISTRY

D. Dionysiou, *Program Chair*

Note: Information provided in this report is subject to change. Official Final Program will be posted at www.acs.org/sanfran2014 on June 16, 2014.

SUNDAY MORNING

Section A

San Francisco Marriott Marquis
Foothill D

Great Lakes Restoration Initiative: An Environmental Chemistry Challenge

D. Dionysiou, *Organizer*
J. Pagano, *Organizer, Presiding*
B. Crimmins, M. Milligan, *Presiding*

8:00 Introductory Remarks.

8:05 1. Overview of restoration and protection activities in the Great Lakes region. **S. Hedman**

8:45 2. Terrestrial sources of phosphorus and turbidity to Lake Superior and Lake Michigan can be identified using forest disturbance and landscape metrics. **C. H. Perry**, T. S. Seilheimer, P. L. Zimmerman, K. M. Stueve

9:05 3. Association of enteric bacteria with filamentous nuisance algae *Cladophora* spp. in Lake Erie. **A. Beckinghausen**, A. Martinez, D. Blersch, B. Z. Haznedaroglu

9:25 4. Chemistry of degradation of microcystins using different radicals. X. He, G. Zhang, J. Andersen, K. O'Shea, C. Han, **D. D. Dionysiou**

9:45 Intermission.

10:05 5. Evaluating the direct and indirect photodegradation pathways of two lampricides in tributaries of the Great Lakes. **M. B. McConville**, C. K. Remucal

10:25 6. Screening and identifying pheromone receptor antagonists for invasive species control. **L. A. Kuhn**, N. Liu, A. Scott, S. Gunturu, S. Raschka, M. Huertas, W. Liu

10:45 7. Inference of chemicals that cause biological effects in treated pulp and paper mill effluent using gene expression in caged fathead minnows. **E. J. Perkins**, T. Habib, L. Escalon, D. L. Villeneuve, G. T. Ankley, N. Garcia-Reyero

11:05 8. Reexamining legacy PCB concentrations in Green Bay benthos: The effects of invasive species. **S. Macksasitorn**, J. Janssen,, K. A. Gray

11:25 9. Systems approach to detect and evaluate contaminants of emerging concern in the Great Lakes. **N. Garcia-Reyero**, T. Habib, D. Villeneuve, L. Escalon, G. Ankley, E. Perkins

11:45 Concluding Remarks.

Section B

San Francisco Marriott Marquis
Foothill G1

Reactive Membranes and Surfaces in Water Treatment Applications

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

8:00 Introductory Remarks.

8:05 10. Electrochemical activation of persulfate for oxidation of recalcitrant organic contaminants. **J. M. Barazesh**, T. Hennebel, D. L. Sedlak

8:30 11. Biotic and abiotic mechanisms of hydrogen sulfide control by iron granules in aqueous/sediment systems. **J. Sun**, C. Shang

8:55 12. Effect of cadmium on nitrate reduction by nanoscale zerovalent iron (nZVI) and catalysts doped nZVI. **Y. Su**, Y. Zhang, A. Keller

9:20 Intermission.

9:35 13. Electrochemical mineral scale prevention and removal on electrically conducting carbon nanotube – polyamide reverse osmosis membranes. **W. Duan**, A. Dudchenko, E. Mende, C. Flyer, X. Zhu, D. Jassby

10:00 14. Crumpled graphene oxide nanocomposites for multifunctional water treatment membrane structures. **Y. Jiang**, D. Liu, W. Wang, Y. Nie, W. Li, J. Wu, F. Zhang, P. Biswas, J. D. Fortner

10:25 15. Application of electrospun carbon nanofibers as sorbents: Influence of incorporated carbon nanotubes on material properties and surface reactivity. **K. Peter**, D. M. Cwiertny

10:50 16. Electrochemically mediated desalination. **K. N. Knust**, D. Hlushkou, U. Tallarek, R. M. Crooks

Section C

San Francisco Marriott Marquis
Club Room

Thermodynamics and Kinetics in Treatment Processes, Past, Present, and Future: Symposium in Honor of Professor Chin-Pao Huang

P. Chiu, Z. Qiang, A. Davis, G. Chen, *Organizers*
V. Sharma, R. Doong, *Organizers, Presiding*

8:00 Introductory Remarks.

8:05 17. PV-powered electrochemical wastewater treatment system: Kinetics and mechanisms. **M. R. Hoffmann**

8:35 18. Catalytic reduction of fluoroethene: Kinetics, pathway, and mechanism. Y. Yu, **P. Chiu**

9:00 19. Extrathermodynamic relationships between contaminant removal kinetics and properties of reducing materials. **P. G. Tratnyek**

9:25 20. Advances made in understanding the mechanism of reactions of ferrates in water treatment. **V. K. Sharma**

9:50 Intermission.

10:10 21. Adsorption thermodynamics and kinetics in urban stormwater treatment. **A. P. Davis**

10:30 22. Dendrimer modified magnetic nanoparticles for adsorption of precious metals. C. Yen, **H. Lien**, J. Chung, H. Yeh

10:50 23. Probabilistic approach to modelling struvite precipitation with uncertain equilibrium parameters. **N. Barnes**, A. Bowers

11:10 24. Promise and pitfalls of catalyzed zero-valent iron nanoparticles: Mechanistic investigations into material deactivation and an alternative path forward. Y. Han, **W. Yan**, W. Zhang

Section D

San Francisco Marriott Marquis
Foothill E

Assessing the Implications of Nanotechnology

Transformations and Reactivity

Cosponsored by COLL and GEOC

A. Keller, G. Lowry, *Organizers, Presiding*

8:00 Introductory Remarks.

8:10 25. Thermal decomposition/incineration of nano-enabled products (NEPs): Environmental health and safety implications. G. A. Sotiriou, D. Singh, C. Watson, F. Zhang, W. Wohlleben, **P. Demokritou**

8:30 26. Photodegradation and CNT release from polymer nanocomposites. **R. S. Lankone**, J. Wang, D. Goodwin, J. Ranville, H. Fairbrother

8:50 27. Influence of carbon nanotube loading on the biodegradation of polymer nanocomposites. **D. G. Goodwin Jr.**, I. B. Sosa, T. Devahif, Z. Xia, J. B. Payne, R. S. Go, D. H. Fairbrother, E. J. Bouwer

9:10 28. Heteroaggregation between gold nanoparticles and metal oxide colloids: Effects of colloid type and aquatic chemistry. **J. A. Nason**, **D. J. Pike**

9:30 Intermission.

9:50 29. Release kinetics of deposited multiwalled carbon nanotubes from silica surfaces: QCM-D measurements and modeling. **P. Yi**, K. Chen

10:05 30. Environmental aging nanocomposites and release of nanoparticles. **E. Sahle-Demessie**, A. Zhao

10:20 31. Transformations of silver nanoparticles relevant to product use: Exposure to disinfectants and washing textiles. **D. M. Mitrano**, B. Nowack

10:35 32. Photochemical transformation of carbon based nanomaterials influences their environmental colloidal behavior. **X. Qu**, Y. Hwang, P. J. Alvarez, Q. Li

10:50 Intermission.

11:05 33. Differential photoactivity of aqueous [C₆₀] and [C₇₀] fullerene aggregates. **K. J. Moor**, S. D. Snow, J. Kim

11:20 34. Photoenhanced chlorination of hydroxylated fullerene (Fullerenol) and C₆₀ aggregates (nC₆₀) in water. **J. Wu**, J. D. Fortner

11:35 35. Effects of natural organic matter properties on the dissolution kinetics of zinc oxide nanoparticles. **C. Jiang**, G. R. Aiken, H. Hsu-Kim

11:50 36. Release and impact of copper nanoparticles on a model septic system. **A. A. Taylor**, S. L. Walker

12:05 Concluding Remarks.

San Francisco Marriott Marquis
Foothill G2

Environmental Applications and Implications of Graphene-Based Nanomaterials

Environmental Applications of Graphene

D. Bouchard, M. Hersam, S. Walker, *Organizers*

I. Chowdhury, *Organizer, Presiding*

W. Henderson, *Presiding*

8:00 Introductory Remarks.

8:05 37. Graphene and carbon materials for the future. **R. S. Ruoff**

8:45 38. Engineered crumpled graphene nanocomposites for photocatalytic environmental reduction applications. **Y. Jiang**, W. Wang, Y. Nie, S. An, P. Biswas, J. D. Fortner

9:05 39. Photodegradation of contaminants using Ag@AgCl/rGO assemblages: Photo-corrosion and control. **H. YU**, C. J. Miller, A. Ikeda-Ohno, **T. D. Waite**

9:25 40. Detection and degradation of low level contaminants using hybrid graphene based sensors. **R. Alam**, I. V. Lightcap, P. V. Kamat

9:45 41. Enhanced adsorption of carbon nanocomposites exhausted with 2,4-dichlorophenoxyacetic acid after regeneration by thermal oxidation and microwave irradiation. A. B. Dichiara, J. Benton-Smith, **R. E. Rogers**

10:05 Intermission.

10:20 42. Layer-by-layer assembled graphene oxide membrane for forward osmosis process. **B. Mi**, M. Hu

10:40 43. Molecular and ion adsorption to single layer graphene sheets studied by vibrational sum frequency and second harmonic generation. **F. Geiger**

11:00 44. Factors influencing organic contaminant and natural organic matter sorption onto graphene oxide. **N. Cai**, P. Larese-Casanova

11:20 45. Adsorption of organic contaminants by graphene nanosheets: Comparison with carbon nanotubes and activated carbon. **O. Apul**, Y. Zhou, T. Karanfil

11:40 46. Synthesis of magnetite-nonoxidized graphene composite and application for arsenic removal: Comparison with magnetite-graphene oxide and magnetite-reduced graphene oxide. **Y. Yoon**, M. Zheng, W. Park, W. Yang, J. Kang

12:00 Concluding Remarks.

San Francisco Marriott Marquis
Golden Gate Section C2

Synergism Between Microbiology and Chemistry for Environmental Sustainability

Biodegradation of Recalcitrant Organics

Cosponsored by CEI

R. Goel, *Organizer*

S. Mahendra, *Organizer, Presiding*

8:00 Introductory Remarks.

8:15 47. Microalgae mediated degradation of the herbicide atrazine. **M. Lee**, A. N. Kabra, M. Ji, E. Salama, B. Jeon

8:35 48. Microbially mediated 2,4-dinitroanisole (DNAN) degradation. **J. B. Niedzwiecka**, K. A. Millerick, S. Galloway, M. A. Schlautman, K. T. Finneran

8:55 49. 6:2 Fluorotelomer alcohol (6:2 FTOH) biodegradation by the white-rot fungus, *Phanerochaete chrysosporium*. **N. Tseng**, N. Wang, B. Szostek, S. Mahendra

9:15 50. Characterization of 1,4-dioxane biodegradation by compound-specific isotope analysis. **P. Pornwongthong**, M. Bill, M. Conrad, S. Mahendra

9:35 Intermission.

9:50 51. Mechanistic toxicology of copper in a 1,4-dioxane degrading bacterium. P. Pornwongthong, A. Mulchandani, T. Folker, T. Phan, P. Gedalanga, **S. Mahendra**

10:10 52. Degradation of trichloroethylene by nanoscale zerovalent iron particles and dechlorinating bacteria: A combined approach. **S. C Rajajayavel**, S. Ghoshal, E. Edwards, L. Lomheim

10:30 53. Biotransformation of sulfadiazine by a mixed community enriched from the surface soil in a feedlot. Y. Zhang, D. D. Snow, **X. Li**

San Francisco Marriott Marquis
Golden Gate Section C1

Occurrence, Formation, Health Effects, and Control of Disinfection By-Products (DBPs)

Toxicity and Health Effects of DBPs

Cosponsored by CEI

Financially supported by Water Research Foundation

P. Westerhoff, T. Karanfil, Y. Xie, W. Mitch, *Organizers*

M. J. Plewa, *Presiding*

8:00 Introductory Remarks.

8:10 55. Charting a new path to resolve the adverse health effects of DBPs. **M. J. Plewa**

8:40 56. Toxicity evaluation of synthetic waters based on Br-Cl-I-THMs formation during the chlorine/ammonia process. **S. Allard**, J. Tan, J. W. Charrois, C. Joll, A. Heitz, U. von Gunten

9:00 57. Genotoxic potential of disinfection by-products. **L. Taylor-Edmonds**, R. C. Andrews

9:20 58. Cell cycle alterations induced by haloacetonitrile disinfection byproducts. **Y. Komaki**, B. J. Marinas, M. J. Plewa

9:40 Intermission.

10:00 59. Comparative toxicity of free and combined chlorination with different levels of halide ions. **Y. Komaki**, S. Y. Kimura, Y. Yang, B. J. Marinas, E. D. Wagner, M. J. Plewa

10:20 60. Effect of boiling on halogenated DBPs and their developmental toxicity in real tap water. **X. Zhang**, J. Liu, Y. Li

10:40 61. Characterization of cytotoxicity and oxidative damage induced by halobenzoquinone drinking water disinfection byproducts. **J. Li**, X. Li

11:00 62. Halobenzoquinone disinfection byproducts: Formation, transformation, and toxicity. **X. Li**, Y. Qian, W. Wang, J. Li

11:20 63. Occurrence and toxicity of haloaldehydes in drinking waters: Iodoacetaldehyde as an emerging disinfection byproduct. **C. Postigo**, S. D. Richardson, C. H. Jeong, E. D. Wagner, M. J. Plewa, J. Simmons, D. Barceló

11:40 Discussion.

San Francisco Marriott Marquis
Foothill F

Pyrogenic Carbonaceous Materials as Adsorbents of Inorganic and Organic Compounds:

Fundamentals and Applications

Insight into Interactions of Organic and Inorganic Compounds with PCMs

F. Xiao, J. Pignatello, B. Xing, *Organizers*

U. Ghosh, *Organizer, Presiding*

8:00 Introductory Remarks.

8:05 64. Multidentate ligand-assisted sorption of Cd(II) on pyrogenic carbonaceous materials. **M. Uchimiya**

8:30 65. Formation of exceptionally strong "low-barrier" hydrogen bonds between weak acid adsorbates and carboxyl/hydroxyl groups on pyrogenic carbonaceous surfaces. **J. J. Pignatello**, X. Li, B. Gamiz, Y. Wang, B. Xing, J. Ni, F. Xiao

8:55 66. Adsorption of phenanthrene on multilayer graphene in the presence of surfactant sodium cholate. J. Zhao, **B. Xing**

9:15 67. Comparison of adsorption behavior of organic contaminants between carbon nanomaterials and microporous activated carbon. J. Liangliang, D. Lin, C. Junyi, C. Wei, W. Binyu, **Z. Dongqiang**

9:35 Intermission.

9:55 68. Comparison of adsorption behavior of organic contaminants and heavy metals on thermally treated sediments with high organic carbon content. D. Zhang, **B. Pan**, M. Wu, C. Wang, H. Li, B. Xing

10:15 69. Interaction mechanisms of biochars with aluminum and their alleviation effects in aluminum phytotoxicity. **B. Chen**, L. Qian

10:35 70. Interactions of biochars of varied meso- and micro-porosities with charged and neutral heteroaromatic compounds including a triazine herbicide. **F. Xiao**, J. Pignatello

10:55 71. Redox properties of biomass-derived chars as assessed by combined electrochemical and spectroscopic analyses. **M. Sander**, L. Klüpfel, M. Kleber, M. Keiluweit

11:15 72. Use of pyrogenic carbonaceous materials for the in situ, abiotic destruction of sediment-associated hydrophobic organic compounds with hydrogen sulfide. **W. Xu**, J. J. Pignatello, W. A. Mitch

11:35 73. Carbon nanomaterials-mediated reductive transformation of nitrobenzene and hexachloroethane in sulfide-containing aqueous solutions. **H. Fu**, D. Zhu

11:55 Discussion.

San Francisco Marriott Marquis
Yerba Buena Salon 11

Toxicology of Environmental Pollutants

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

8:00 Introductory Remarks.

8:05 842. *Daphnia magna* toxicity and oil dispersion effectiveness of hyperbranched polyethyleneimine compared to Corexit 9500: Technology status and path forward. **M. Salehi**, Y. Tu, N. Geitner, P. Xie, D. Ladner, S. Powers, A. Boettcher, A. J. Whelton

8:25 843. Metabolomic investigation of zebrafish responses to PAHs and oxy-PAHs. **M. R. Elie**, G. Gonnerman, J. Choi, F. Stevens, R. L. Tanguay

8:45 844. Involvement of ABC transporters in the tolerance of zebrafish to chemical toxicants. **J. Yin**, H. Yin

9:05 845. Toxin metabolism in the invasive brown treesnake (*Boiga irregularis*). **D. A. Goldade**, B. S. Dorr, C. S. Clark

9:25 846. Human biomonitoring of prenatal exposure to triclosan and triclocarban in a multiethnic urban population from Brooklyn, New York. **B. F. Pycke**, L. A. Geer, M. Dalloul, O. Abulafia, A. M. Jenck, R. U. Halden

9:45 Intermission.

10:00 847. Characterization of chemical components in BP crude oil, the role of Benzo[a]pyrene in dispersed oil induced *Caenorhabditis elegans* germ cell apoptosis. J. R. Polli, Y. Zhang, J. A. Henry, **X. Pan**

10:20 848. Photolysis product toxicity and mixture toxicity of triclosan and triclocarban to *Daphnia magna*. **K. Albanese**, Y. Chin, R. Lanno, C. Hadad

10:40 849. Bioaccessibility of polycyclic aromatic hydrocarbons (PAHs) associated with soot, assessed by an in vitro gastrointestinal digestion model with an absorptive sink. **Y. Zhang**, J. J. Pignatello, S. Tao, B. Xing

11:00 850. Oxidation of soot particles with O₃: Changes in redox-cycling activity and composition. **M. Antiñolo**, M. Willis, S. Zhou, J. P. Abbatt

11:20 Concluding Remarks.

Environmental Interfaces in the Atmosphere: From Surface Chemistry To Air Quality, Climate, and Health Effects

Environmental Interfaces in the Atmosphere

Sponsored by COLL, Cosponsored by ENVR

Fundamental Processes of Atmospheric Chemistry

Oxidants and Radical Chemistry

Sponsored by PHYS, Cosponsored by ENVR

SUNDAY AFTERNOON

San Francisco Marriott Marquis
Foothill D

Great Lakes Restoration Initiative: An Environmental Chemistry Challenge

D. Dionysiou, *Organizer*

J. Pagano, *Organizer, Presiding*

B. Crimmins, M. Milligan, *Presiding*

1:30 74. Contaminant concentration of Great Lakes lake trout: Are they affected by changes in growth as a function of the changing food web. **E. W. Murphy**, W. Wellenkamp, J. Johnson, T. M. Holsen, P. K. Hopke, B. S. Crimmins, J. J. Pagano, M. S. Milligan

1:50 75. Proactive environmental monitoring 1: The discovery of emerging contaminants as part of the Great Lakes Fish Monitoring and Surveillance Program. **M. S. Milligan**, B. S. Crimmins, X. Xia, T. M. Holsen, P. K. Hopke, J. J. Pagano

2:10 76. Proactive environmental monitoring 2: A critical evaluation of emerging chemical discovery methodologies in current monitoring programs. **B. Crimmins**, M. Milligan, J. Pagano, P. Hopke, T. Holsen

2:30 77. Synthetic musk fragrances in Chicago and Lake Michigan air. Z. Rodenburg, S. Spak, C. Shanahan, **K. C. Hornbuckle**

2:50 Intermission.

- 3:05 78.** Spatial trends and sources of gaseous and freely dissolved persistent organic pollutants in the Great Lakes basin and modeling the air-water exchange using low density polyethylene passive samplers. **R. Lohmann**, M. Khairy, D. C. Muir
- 3:25 79.** Spatial gradients and air-water exchange of dissolved and gaseous flame retardants in Lake Erie and Lake Ontario. **C. A. McDonough**, R. Lohmann
- 3:45 80.** Transport modeling of PCB airborne emissions from Indiana Harbor and Ship Canal into the local atmosphere. **A. Martinez**, N. Petrich, S. N. Spak, D. Hu, G. R. Carmichael, K. C. Hornbuckle
- 4:05 81.** Discovery of hydroxylated polychlorinated biphenyls (OH-PCBs) in sediment from a Lake Michigan waterway and original commercial Aroclors. **R. F. Marek**, A. Martinez, K. C. Hornbuckle
- 4:25** Concluding Remarks.

Section B

San Francisco Marriott Marquis
Foothill G1

Reactive Membranes and Surfaces in Water Treatment Applications

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

- 1:30** Introductory Remarks.
- 1:35 82.** Hierarchical materials as a design concept for reactive membranes. **V. Tarabara**, C. Crock
- 2:15 83.** Fouling inhibition on electrically conducting carbon nanotube – polyvinyl alcohol composite ultrafiltration membranes. **A. V. Dudchenko**, J. Rolf, K. Russell, N. Rodriguez, W. Duan, D. Jassby
- 2:40 84.** Surface nano-structuring with polymer brush layers for fouling resistant ultrafiltration (UF) membranes. **S. Kim**, Y. Cohen
- 3:05** Intermission.
- 3:20 85.** Mechanisms of organic compound fouling on a sub-stoichiometric titanium dioxide reactive electrochemical membrane. **Y. Jing**, B. P. Chaplin
- 3:45 86.** Graphene-oxide-polyethersulfone (PES) composite membranes: Fabrication and performance. **R. Malaisamy**, E. Igbigin, Y. Liu, K. Jones, V. Morris
- 4:10 87.** Development and scale-up of a hybrid carbon nanotube filter as a reactive substrate in ozone-based advanced oxidation processes. **J. Haase**, C. Redmond, D. Cwiertny
- 4:35 88.** Membranes functionalized with graphene oxide nanosheets to impart antibiofouling and antiviral properties. **Y. Liu**, E. F. Igbigin, R. Malaisamy, V. Morris, K. L. Jones
- 5:00 89.** Novel manganese oxide geomedia for passive treatment of urban stormwater contaminants. **J. Charbonnet**, D. Sedlak, J. Grebel

Section C

San Francisco Marriott Marquis
Club Room

Thermodynamics and Kinetics in Treatment Processes, Past, Present, and Future: Symposium in Honor of Professor Chin-Pao Huang

Water and Wastewater Treatment Technology for Emerging Contaminants

R. Doong, A. Davis, G. Chen, P. Chiu, Z. Qiang, *Organizers*
V. Sharma, *Organizer, Presiding*
B. Deng, J. Wang, *Presiding*

- 1:30 90.** Kinetic modeling of advanced oxidation processes (AOPs). **W. J. Cooper**
- 2:00 91.** Designing nanocomposite membranes for efficient water treatment and reuse. J. Yin, E. Kim, **B. Deng**
- 2:25 92.** Characterization of titanium dioxide nanoparticles in simulated drinking water treatment processes. **G. Wang**, H. Chang, C. Huang, T. Cheng
- 2:50 93.** Strategies to improve triclosan biodegradation in nitrifying activated sludge. D. Lee, **K. Chu**
- 3:15 94.** Synergistic toxic effect of arsenic and environmentally friendly metal oxide nanoparticles. **J. Wang**, J. Hu
- 3:40** Intermission.
- 3:50 95.** Modeling cell integrity and metabolite degradation of cyanobacteria during hydrogen dioxide treatment under simulated sunlight conditions. **T. Lin**, D. Chang, X. Huo, D. You
- 4:10 96.** Accumulation of silver nanoparticles in activated sludge and the corresponding effects. **Z. Sheng**, Y. Liu
- 4:30 97.** Coupling membrane filtration with photocatalysis for enhanced water treatment. **X. Quan**
- 4:50 98.** Degradation of clofibric acid in aqueous solution by UV and UV/O₃ process. **H. Li**, P. Yi, **H. Zhang**
- 5:10 99.** Effective removal of *Microcystis aeruginosa* and its toxin using nanosilicate platelets. **S. Chang**, C. Li, J. Lin, Y. Li, M. Lee

San Francisco Marriott Marquis
Foothill E

Assessing the Implications of Nanotechnology

NP Toxicity and Effects

Cosponsored by COLL and GEOC

A. Keller, *Organizer*

G. Lowry, *Organizer, Presiding*

- 1:30 100.** Mechanisms for nanomaterial toxicity: Linking the molecular to the population and community level environmental response. **R. Klaper**, D. Arndt, J. Bozich, G. Dominguez
- 1:50 101.** Influence of ammonia and macromolecules on the toxicity and adsorption of silver nanoparticles to *Nitrosomonas europaea*. C. Kostigen Mumper, L. Semprini, **T. S. Radniecki**
- 2:10 102.** Toxicological evaluation of electronically sorted single-wall carbon nanotubes (SWCNTs) on the freshwater green algae: *Pseudokirchneriella subcapitata*. **J. G. Clar**, K. J. Ziegler, J. J. Bonzongo
- 2:30 103.** Impacts of engineered nanomaterials on marine phytoplankton across levels of biological organization. **B. J. Cole**, R. Miller, T. Martin, G. Bielmeyer, S. Hanna, E. Muller, R. Nesbit, H. Lenihan, A. Keller, G. Cherr
- 2:50** Intermission.
- 3:10 104.** Physicochemical and morphological characterization of printer-emitted particles (PEPs) and their toxicological potential on the pulmonary system. **S. V. Pirela**, J. D. Sisler, G. Sotiriou, Y. Qian, V. Castranova, D. Bello, P. Demokritou, T. Thomas
- 3:25 105.** Evidence for nanoparticle induced phototoxicity in a soil-grown wildflower. **J. R. Conway**, S. J. Mazer, A. A. Keller
- 3:40 106.** Comparing ionic silver toxicity and resistance to gum arabic and citrate coated silver nanoparticles in silver resistant wastewater bacteria. **C. A. Gwin**, C. K. Gunsch
- 3:55** Intermission.
- 4:10 107.** Surface interactions with compartmentalized cellular phosphates explain rare earth oxide nanoparticle hazard and provide opportunities for safer design. **R. Li**, Z. Ji, D. Dunphy, C. Chang, X. Cai, H. Meng, H. Zhang, B. Sun, X. Wang, J. Dong, S. Lin, M. Wang, Y. Liao, C. Brinker, A. Nel, T. Xia
- 4:25 108.** Oxidative stress responses in sea urchin embryos exposed to copper oxide nanoparticles. **C. Torres**, G. Cherr
- 4:40 109.** Ecological consequences of nano-TiO₂ released into aquatic systems: From a single-ENM system to multi-ENM systems. **T. Tong**, C. Binh, K. Fang, S. A. Thomas, C. M. Wilke, J. J. Kelly, J. Gaillard, K. A. Gray
- 4:55 110.** Toward tailored functional design of multiwalled carbon nanotubes (MWNTs): Electrochemical and antimicrobial activity enhancement via oxidation and selective reduction. **L. M. Gilbertson**, D. G. Goodwin, A. D. Taylor, L. D. Pfefferle, J. B. Zimmerman
- 5:10 111.** Antioxidant behaviors of graphene-based materials. **Y. Qiu**, Z. Wang, A. Owens, I. Kulaots, R. Hurt
- 5:25** Concluding Remarks.

San Francisco Marriott Marquis
Golden Gate Section C3

Environmental Applications and Implications of Graphene-Based Nanomaterials

Environmental Implications of Graphene

I. Chowdhury, M. Hersam, D. Bouchard, *Organizers*

S. Walker, *Organizer, Presiding*

R. Rogers, *Presiding*

- 1:30** Introductory Remarks.
- 1:35 112.** Biology in flatland: Toward the safe design of graphene-based materials. **R. Hurt**, A. Kane
- 2:15 113.** Developing exposure indices of graphene-based nanoparticles by coupling lipid-membrane interactions and in vitro cellular response. **W. M. Henderson**, I. Chowdhury, X. Chang, Q. Teng, D. Bouchard
- 2:35 114.** Chemical analysis of graphene oxide nanomaterials demonstrating toxicity in zebrafish development. **J. N. Wheeler**, M. Kim, W. Heideman, R. E. Peterson, J. A. Pedersen, R. J. Hamers
- 2:55 115.** Phytotoxicity of soluble graphitic nanofibers to various plant species. **D. E. Gorka**, J. Liu
- 3:15 116.** Investigating the toxicity and environmental fate of graphene nanomaterials. **L. M. Guiney**, N. D. Mansukhani, M. C. Duch, I. Chowdhury, D. Bouchard, X. Wang, Z. Ji, A. Nel, M. C. Hersam
- 3:35** Intermission.

- 3:50 117.** Direct and indirect phototransformations of graphene oxide in sunlight. **W. Hou**, I. Chowdhury, D. Goodwin, M. Henderson, H. Fairbrother, D. Bouchard, R. Zepp
- 4:10 118.** Photochemical fate of single-walled carbon nanotubes in the aquatic environment. **S. BeigzadeMilani**, W. Hou, J. L. Bitter, R. G. Zepp, D. Fairbrother, **C. T. Jafvert**
- 4:30 119.** Environmentally relevant conditions impacting graphene oxide transport in aqueous environments. **J. D. Lanphere**, S. Walker
- 4:50 120.** Probing the reactivity of single-walled carbon nanotubes in the aquatic environment: Electron shuttle capacity and ROS generation. **H. Hsieh**, C. T. Jafvert
- 5:10 121.** Photocatalytic degradation of organic compound using visible light driven BiOI-GO nanocomposites. V. Ramalingam, **N. Bernaurdshaw**, V. Reddy
- 5:30** Concluding Remarks.

Section F

San Francisco Marriott Marquis
Golden Gate Section C2

Synergism Between Microbiology and Chemistry for Environmental Sustainability

Innovation in Water and Wastewater Microbiology

Cosponsored by CEI

R. Goel, *Organizer*

S. Mahendra, *Organizer, Presiding*

B. Z. Haznedaroglu, *Presiding*

1:30 Introductory Remarks.

1:45 122. Addressing the waterborne disease challenges of the 21st century with applied biology and chemistry: Opportunistic premise plumbing pathogens. **M. Edwards**, A. J. Pruden, C. Proctor, W. Rhoads, K. Williams, A. Martin, R. Hupp, H. Wang

2:15 123. Demonstrating advanced oxidation/biofiltration to remove emerging contaminants from wastewater: A pilot study. **Y. Lester**, N. G. Love, D. Aga, R. Singh, K. G. Linden

2:35 124. What is the magic? Shift and recovery of the microbial community in a full-scale wastewater treatment plant under a significantly increased flow rate. **Z. Sheng**, Y. Liu

2:55 125. Role of diverse microbial communities in MS2 bacteriophage removal in biosand filters. **H. Wang**, T. Narihiro, A. P. Straub, C. R. Pugh, H. Tamaki, J. F. Moor, I. M. Bradley, Y. Kamagata, W. Liu, T. H. Nguyen

3:15 Intermission.

3:30 126. Removal of nitrate in shallow, open-water unit process wetland cells. **J. T. Jasper**, Z. L. Jones, J. O. Sharp, D. L. Sedlak

3:50 127. Diversity, dynamics, and function of active microbial populations transforming organic micropollutants in activated sludge treatment systems. **J. E. Drewes**, D. Vuono, J. Regnery, J. Munakata-Marr

4:10 128. Solar inactivation mechanisms of *Cryptosporidium parvum* oocyst. Y. Liu, S. Dong, M. S. Kuhlenschmidt, T. Kuhlenschmidt, J. Drnevich, **T. H. Nguyen**

4:30 129. Effectiveness of an antimicrobial coating against MRSA in elderly residence home. **H. LEUNG**, J. KWAN, K. YEUNG

Section G

San Francisco Marriott Marquis
Golden Gate Section C1

Occurrence, Formation, Health Effects, and Control of Disinfection By-Products (DBPs)

Occurrence and Formation of DBPs in Aquatic Environments

Cosponsored by CEI

Financially supported by Water Research Foundation

P. Westerhoff, Y. Xie, W. Mitch, *Organizers*

T. Karanfil, *Organizer, Presiding*

1:30 130. National occurrence of N-nitrosodimethylamine (NDMA): An investigation of 36 Australian drinking water supplies. J. Culbert, D. Liew, **K. Linge**, M. Farré, N. Knight, J. Morran, D. Halliwell, G. Newcombe, J. Charrois

1:50 131. Occurrence and distribution of N-nitrosamines in different season in drinking waters of East China. **Q. Xian**, T. Li, B. Zhang

2:10 132. Case studies on NDMA occurrence and control. **S. W. Krasner**, R. Shirkhani, P. Westerhoff, W. Mitch, U. von Gunten

2:30 133. Occurrence and control of N-nitrosamines and their precursors in drinking water system. **H. Shi**, D. West, Q. Wu, Y. Ma, J. Wang, C. Adams, H. Jiang, T. Eichholz

2:50 Intermission.

- 3:10 134.** Spatial variability of non-regulated DBPs in distribution systems: Impacts on the monitoring strategy. C. Legay, P. Levallois, R. Aranda-Rodriguez, L. Dabeka, **M. Rodriguez**
- 3:30 135.** Role of fossil fuel energy extraction and utilization activities on bromide discharges and their effect on formation of disinfection by-products in downstream drinking water plants. **J. M. VanBriesen**, J. M. Wilson, Y. Wang, Y. Diao, K. Good
- 3:50 136.** Increased formation of brominated disinfection by-products in shale gas wastewater-impacted surface drinking water supplies. **K. M. Parker**, T. Zeng, A. Vengosh, W. A. Mitch
- 4:10 137.** Disinfection by-products formed during the treatment of wastewater including produced waters from oil and gas productions. **M. L. Hladik**, M. J. Focazio

Section H

San Francisco Marriott Marquis
Foothill F

**Pyrogenic Carbonaceous Materials as Adsorbents of Inorganic and Organic Compounds:
Fundamentals and Applications**

Tailoring Biochar for Applications in Pollution Control and Agriculture

Cosponsored by AGRO

J. Pignatello, B. Xing, U. Ghosh, *Organizers*

F. Xiao, *Organizer, Presiding*

- 1:30 138.** Biochar technology for a sustainable environment. **B. Gao**
- 1:55 139.** Sorption of organic contaminants of emerging concern to biochars from a synthetic stormwater matrix in batch and column systems. **B. A. Ulrich**, E. A. Im, D. Werner, C. P. Higgins
- 2:15 140.** Fabrication of activated biochars from avocado pits and their adsorption capacity for oxytetracycline from wastewater. **J. Ford**, M. Berger, **J. L. Goldfarb**
- 2:35 141.** Copper remediation using thermally altered biomass: Effects of feedstock type and pyrolysis temperature. **J. A. Nason**, J. D. Gerould
- 2:55** Intermission.
- 3:10 142.** Sorption of halogenated phenols and pharmaceuticals on biochar. **S. Oh**, Y. Seo, H. Yoon
- 3:30 143.** Sorption of hydrophobic organic compounds to biochars: Mechanistic considerations. **D. Kupryianchyk**, S. Hale, D. Rutherford, A. Zimmerman, O. Harvey, H. Schmidt, C. Rumpel, H. Knicker, G. Cornelissen
- 3:50 144.** Methyl bromide release from activated carbon and the soil/water/carbon interface. **W. A. Hall**, S. S. Walse
- 4:10 145.** Sorption of dibenzo-p-dioxin/dibenzofuran by high surface area carbonaceous geosorbents. **S. Qu**, C. T. Johnston, H. Li, B. Teppen, S. A. Boyd
- 4:30 146.** CO₂ capture using engineered biochar. **A. Creamer**, B. Gao
- 4:50 147.** Chemisorption of perfluorinated compounds on activated carbon initiated by oxidant free radicals. **B. Sun**, J. Ma, D. L. Sedlak
- 5:10 148.** Sorption of lincomycin in manure-derived biochars: Two-phase kinetics. C. Liu, Y. Chuang, H. Li, B. J. Teppen, S. A. Boyd, **W. Zhang**

**Environmental Interfaces in the Atmosphere: From Surface Chemistry To Air Quality, Climate,
and Health Effects**

Environmental Interfaces in the Atmosphere

Sponsored by COLL, Cosponsored by ENVR

Fundamental Processes of Atmospheric Chemistry

Gas-Phase Chemistry

Sponsored by PHYS, Cosponsored by ENVR

Hot Topics: Communicating Risk

Safe or Toxic: How To Interpret and Share What We Know About Consumer Chemicals

Sponsored by CEI, Cosponsored by ENVR

SUNDAY EVENING

**Environmental Interfaces in the Atmosphere: From Surface Chemistry To Air Quality, Climate,
and Health Effects**

Sponsored by COLL, Cosponsored by ENVR

San Francisco Marriott Marquis
Foothill D

Theoretical and Computational Approaches To Environmental Chemistry

S. Eustis, *Organizer, Presiding*
W. Arnold, *Presiding*

8:00 Introductory Remarks.

8:05 149. One electron oxidation potential as a predictor of rate constants of organic pollutants with carbonate radical and triplet excited state organic matter. **W. A. Arnold**

8:25 150. Density functional theoretical study of the hydrodehalogenation of aromatics by nucleophilic aromatic substitution in aqueous solution and on a rough noble metal surface. **D. Sadowsky**, K. McNeill, C. J. Cramer

8:45 151. Quantum chemical estimation of oxidation potentials of environmental organic contaminants in aqueous systems. **J. J. Guerard**, P. R. Tentscher, J. S. Arey

9:05 152. Experimental and computational study of Cd(II) and Pb(II) on gibbsite and kaolinite. **J. D. Kubicki**, H. D. Watts, K. T. Mueller, P. O'Day, M. Small, N. Govind

9:25 153. High-throughput exposure modeling of semi-volatile chemicals in articles of commerce. **C. I. Nicolas**, M. R. Goldsmith, B. K. Ahir, B. A. Wetmore, K. L. Dionisio, K. Mansouri, R. Setzer, R. S. Judson, J. Rabinowitz, J. F. Wambaugh

9:45 Intermission.

10:05 154. Quantum chemical modeling of atmospheric free radical production from vinyl hydroperoxides. **K. T. Kuwata**

10:25 155. Influence of sea ice on sulfur biogeochemistry in the Arctic Ocean. **C. Deal**, M. Jin

10:45 156. In-silico study of ToxCast GPCR assays by quantitative structure-activity relationships (QSARs) modeling. **K. Mansouri**, N. Sipes, C. Nicolas, R. Judson

11:05 158. Redox reactions at the clay mineral-water interface: A new conceptual framework and its implications for contaminant fate. **A. Neumann**, T. L. Olson, W. A. Premaratne, D. E. Latta, W. Li, B. L. Beard, C. M. Johnson, K. M. Rosso, V. Alexandrov, M. M. Scherer

11:25 Concluding Remarks.

San Francisco Marriott Marquis
Foothill G1

Water Challenges and Solutions on the Global Scale

Cosponsored by CEI and MPPG

Financially supported by Global Innovation Imperatives

B. Loganathan, D. Dionysiou, H. Taft, J. De Andrade, *Organizers*

S. Ahuja, K. Hristovski, *Organizers, Presiding*

8:05 Introductory Remarks.

8:10 159. Notable water challenges and solutions in Asia and the United States. **S. Ahuja**

8:35 160. Representative water challenges in India: A study of select hotspots. **S. Bajpai**, D. R. Prasad Raju, V. Saini, N. Alam

9:00 161. Wastewater re-use and management in industrial sector. **A. Adholeya**

9:25 162. Tanneries to cloud forests: Water quality issues and solutions for Chocontá, Cundinamarca, Colombia. **R. M. Webb**, J. Caicedo, E. Aguilar Galeano, L. Sáenz, A. García, M. C. Larsen, F. Gómez

9:50 Intermission.

10:10 163. Raising awareness of water issues: The education connection, the educational potential. **M. A. Benvenuto**

10:35 164. Overcoming the water treatment challenges in small, rural, and impoverished communities in developing countries: Realities and needs. **K. D. Hristovski**

11:00 165. Solar photocatalytic disinfection of water for developing countries. B. R. Cruz-Ortiz, **J. A. Byrne**, P. S. Dunlop, E. Magee, P. Fernández-Ibáñez, M. Polo-Lopez, K. O'Shea, D. D. Dionysiou, J. W. Hamilton

11:25 166. Water and land resources assessment using Landsat satellite data. **S. J. Ryker**, M. C. Larsen

11:50 Concluding Remarks.

San Francisco Marriott Marquis
Club Room

Thermodynamics and Kinetics in Treatment Processes, Past, Present, and Future: Symposium in Honor of Professor Chin-Pao Huang
Kinetics of Reactive Species with Emerging Contaminants

R. Doong, P. Chiu, V. Sharma, A. Davis, G. Chen, *Organizers*
Z. Qiang, *Organizer, Presiding*
H. Lien, *Presiding*

- 8:00 167.** Emerging contaminants in drinking water: Prioritization, sources, and tailored oxidative and sorptive treatment approaches. **C. D. Adams**
- 8:30 168.** Cu(II)-mediated transformation of penicillin and cephalosporin antibiotics revisited: Hydrolysis vs. oxidation. **C. Huang**, J. Chen, P. Sun, X. Zhou, Y. Zhang
- 8:55 169.** Reduction of carbadox and olaquinox mediated by Mn(III) in the presence of oxalic acid. **W. Chen**, C. Liu, S. A. Boyd, B. J. Teppen, H. Li
- 9:20 170.** Oxidative reactivity of goethite in mixtures with secondary oxides and natural organic matter (NOM). **H. Zhang**, S. Taujale
- 9:40 171.** Microwave-assisted hydrothermal synthesis of Ti-MCM-41 and its application on degradation of oxytetracycline. **Y. Peng**, H. Chen, K. Chen
- 10:00** Intermission.
- 10:25 172.** Oxidation and reduction of pentachlorophenol by zerovalent Pd/Fe nanoparticles in water. Y. Su, M. Chen, C. Tso, **Y. Shih**
- 10:45 173.** UV photolysis kinetics of sulfonamides in aqueous solution based on optimized fluence measurement. **Z. Qiang**, J. Lian
- 11:05 174.** Soil remediation of pyrene integrating surfactants and nano Fe and Fe/Ni. **M. Chang**
- 11:25 175.** Chemical structures of dissolved organic matter from various sources as characterized by solid-state NMR: Insights into molecular signatures in relation to point and nonpoint sources. Z. Zhou, **B. Hua**, X. Cao, J. Yang, K. Schmidt-Rohrc, D. Olkd, B. Deng, R. Li, J. Mao
- 11:45 176.** Removal of Cr(VI) ions from aqueous solutions by adsorbents synthesized from drinking water treatment residuals: Isotherm and kinetic studies. C. Kan, M. R. Sumalinog, **M. G. de Luna**

San Francisco Marriott Marquis
Foothill E

Assessing the Implications of Nanotechnology

Metrology

Cosponsored by COLL and GEOC
A. Keller, G. Lowry, *Organizers, Presiding*

- 8:15** Introductory Remarks.
- 8:20 177.** Single particle ICP-MS (SP-ICP-MS) for the detection of metal-based nanoparticles in the environment. **C. Stephan**, A. Hineman
- 8:40 178.** Direct probes of supported lipid bilayers interacting with gold metal nanoparticles. F. Geiger, **J. Troiano**
- 9:00 179.** Single-particle ICP-MS methods development for nanoparticles monitoring and application in drinking water treatment system. **H. Shi**, Y. Dan, X. Liang, C. Stephan
- 9:20 180.** 3D visualization and quantification of gold nanomaterial aggregation via surface enhanced Raman spectroscopy. **M. Y. Chan**, W. Leng, P. J. Vikesland
- 9:40 181.** SP-ICP-MS technique for evaluating the short-time stability of gold and silver nanoparticles in biological matrices. **C. M. Cirtiu**, C. Stephan
- 10:00** Intermission.
- 10:30 182.** Detection of engineered nanoparticles in municipal wastewater biosolids by SP-ICP-MS. **F. Piccapietra**, N. Tufenkji, S. Ghoshal
- 10:50 183.** Multi-instrumental characterization of carbon nanotubes dispersed in aqueous solutions. **X. Chang**, M. Henderson, **D. Bouchard**
- 11:10 184.** Dissolution kinetics of silver nanoparticles in municipal wastewaters by single particle mode ICP-MS. **M. Azodi**, F. Piccapietra, S. Ghoshal

San Francisco Marriott Marquis
Golden Gate Section C3

Engineering Nanomaterials for Energy, Environmental Science and Biomedical Applications
Bioinspired Materials for Biomedical Applications

J. Song, J. Mi, *Organizers, Presiding*

8:10 Introductory Remarks.

8:15 185. Bioinspired polymers for protein drug delivery. **H. D. Maynard**

8:45 186. Nanoscale liposomal CD22DE12-siRNA formulation as a potent RNAi therapeutic against B-cell precursor acute lymphoblastic leukemia. **F. M. Uckun**

9:15 187. Inhibition of free radical induced DNA damage by both single- and multi-wall carbon nanotubes. **B. C. Nelson**

9:45 Intermission.

10:05 188. Spherical nucleic acid (SNA) nanostructures: Enabling tools for biomedical applications. **C. A. Mirkin**

10:50 189. Self-assembled protein cages as nanoreactors for inorganic nanomaterials synthesis. **S. Heilshorn**

11:20 190. Toward using protein/peptide as material building block. **T. Xu**

11:50 Concluding Remarks.

San Francisco Marriott Marquis
Golden Gate Section C2

Synergism Between Microbiology and Chemistry for Environmental Sustainability

Biofuel from Algae-Innovative Approaches

Cosponsored by CEI

R. Goel, *Organizer*

S. Mahendra, *Organizer, Presiding*

K. Chu, *Presiding*

8:35 Introductory Remarks.

8:40 191. Use of ¹³C labeled carbon tetrachloride to demonstrate its transformation to Carbon dioxide in a continuous flow column. **L. Semprini**, M. F. Azizian

9:00 192. Small molecule modulators of lipid production in microalgae and NMR spectroscopy of lipids for biofuel applications. **L. A. Anderson**, A. R. Burch, A. K. Franz

9:20 193. Aerobic biodegradation of 1, 2, 3 - trichloropropane by selected propane-oxidizing bacteria. **B. Wang, K. Chu**

9:40 194. Conversion of organic-waste derived volatile fatty acids into biodiesel through enhanced microbial lipid production: A novel platform technology. **S. M. Vajpeyi**, K. Chandran

10:00 Intermission.

10:30 195. Enhancement of the microalgal growth and fatty acid content under the influence of phytohormones for biodiesel production. **E. Salama**, A. N. Kabra, M. M. abdlkader, B. Jeon

10:50 196. Time-series characterization of nonmodel microalgae at the systems-level for sustainable biofuel production. M. Ghafari, E. Matich, A. Beckinghausen, B. Pfeifer, G. Atilla-Gokcumen, **B. Z. Haznedaroglu**

Haznedaroglu

11:10 197. Hydrocarbon biodegradation in Louisiana coastal marsh sediments following the Deepwater Horizon oil release. **R. M. Atlas**, S. A. Faith, D. M. Stoeckel, A. Minard-Smith, M. J. Benotti, J. R. Thorn

San Francisco Marriott Marquis
Golden Gate Section C1

Occurrence, Formation, Health Effects, and Control of Disinfection By-Products (DBPs)

DBP Precursors

Cosponsored by CEI

Financially supported by Water Research Foundation

T. Karanfil, Y. Xie, W. Mitch, *Organizers*

P. Westerhoff, *Organizer, Presiding*

8:00 198. Emerging precursors of disinfection byproducts. **W. A. Mitch**

8:20 199. Assessing sources of total N-nitrosamine precursors in drinking water systems. **D. A. Meints**, W. Zhang, J. L. Fairey

8:40 200. Veterinary antibiotics as a source of nitrosamine precursors. **S. Leavey**, S. Krasner, I. Suffet
9:00 201. Nitrosamine precursors and wastewater indicators in discharges in the Sacramento-San Joaquin delta. **C. Lee**
9:20 202. Application of a spectrofluorometric technique to measure bulk tertiary and quaternary amines in water: A proxy for NDMA precursors. **G. C. Woods**, E. R. Dickenson
9:40 203. Applying the polarity rapid assessment method to characterize NDMA precursors and to understand their removal mechanism in drinking water treatment. X. Liao, C. Chen, Y. Ouyang, J. Wang, **X. Zhang**, I. Suffet
10:00 Intermission.
10:25 204. Identification of key molecular properties of reactive NDMA precursors using computational chemistry. **T. Bond**, A. Simplerler, M. R. Templeton
10:45 205. Characters and DBP formation of natural organic matter from litter lechates of trees. **X. Yang**, Q. Jian, X. Yang
11:05 206. Impacts of the rim fire on disinfection byproduct precursors in forested watersheds. **J. Wang**, R. Dahlgren, **A. Chow**
11:25 207. Long-term wildfire impacts on THM formation potential. **S. Shams**, M. B. Emelko, U. Silins, K. D. Bladon, M. Stone, C. H. Williams, A. M. Martens
11:45 Discussion.

Section H

San Francisco Marriott Marquis
 Foothill F

Occurrence, Fate, and Removal of Pharmaceutical and Personal Care Products and Endocrine Disrupting Chemicals

Cosponsored by CEI

A. Hernandez, L. Blaney, *Organizers, Presiding*

8:00 Introductory Remarks.

8:05 208. Fate and risk of pesticides, pharmaceuticals, illicit drugs, and personal care products in the Iberian river basins of Ebro and Llobregat: Challenges and solutions using advanced treatment technologies in a European context. **D. Barceló**, P. Verlicchi, M. Petrovic, P. Gago-Ferrero, D. Molins-Delgado, S. Diaz-Cruz, N. Mastroianni, M. Köck-Schulmeyer, C. Postigo, M. Lopez de Alda, S. Perez, A. Ginebreda

8:45 209. Advancing towards universal screening for organic micro-pollutants in waters by combined use of GC and LC coupled to HRMS. **F. Hernandez**, J. V. Sancho, M. Ibañez, T. Portoles

9:05 210. Exploiting monitoring data in environmental exposure modeling and risk assessment of pharmaceuticals. **A. B. Boxall**, R. Williams, V. Keller, J. O. Straub, S. Monteiro

9:25 211. Hydroxylated polybrominated diphenyl ethers in San Francisco Bay sediments and surface waters. **J. F. Kerrigan**, P. Erickson, M. Grandbois, K. McNeill, W. A. Arnold

9:45 Intermission.

10:15 212. Common antibiotics in water and sediment of the Pearl River Estuary, South China. X. Liang, B. Chen, X. Nie, X. Hung, **X. Li**

10:35 213. Occurrence and fate of contaminant of emerging concern in two semi-urbanized catchment basins in Sicily (Italy). **M. Sgroi**, P. Roccaro, T. Anumol, S. A. Snyder, G. V. Korshin, F. G. Vagliasindi

10:55 214. Occurrence and control of perfluoroalkyl acids in drinking water systems. **E. Dickenson**, T. Appleman, C. Higgins

Section I

San Francisco Marriott Marquis
 Golden Gate Section A/B

Environmental Chemistry: 100 Years of Scientific Contribution for a Safer and Sustainable

Environment

Cosponsored by CEI, DAC⁺, MPPG⁺, PRES, and SCHB

Financially supported by Agilent Technologies

S. Al-Abed, D. Dionysiou, *Organizers, Presiding*

8:05 Introductory Remarks.

8:15 347. Environmental improvement. **J. H. Exner**

8:45 348. Water unsustainability. **J. L. Schnoor**

9:15 349. Fifty-years of personal reflection on advances in environmental chemistry and sustainability. **M. R. Hoffmann**

9:45 Centennial Coffee Break & Panel Discussion.

10:30 350. Geochemistry challenges in reliable geologic carbon sequestration. **C. A. Peters**, J. P. Fitts, H. Deng

11:00 351. Green and blue energy production using microbial fuel cell technologies and salinity gradients. **B. E. Logan**

11:30 352. Ten decades of fostering revolution: Safe urban water courtesy of ACS. **D. L. Sedlak**

12:00 Concluding Remarks.

A Lifetime of Contributions To Science, Summer Schools and Our NUCL Division Family:

Symposium in Honor of Frank Kinard

Sponsored by NUCL, Cosponsored by ENVR

Environmental Interfaces in the Atmosphere: From Surface Chemistry To Air Quality, Climate, and Health Effects

Environmental Interfaces in the Atmosphere

Sponsored by COLL, Cosponsored by ENVR

Fundamental Processes of Atmospheric Chemistry

Organic Oxidation and Surface-Atmosphere Interactions

Sponsored by PHYS, Cosponsored by ENVR

IUPAC: Agricultural Biotechnology

Development and Application Advances

Sponsored by AGRO, Cosponsored by AGFD and ENVR

IUPAC: Ecosystem and Human Exposure and Risk Assessment

Agroecosystems: Sustaining Biodiversity and Key Ecosystem Services

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Ecosystem and Human Exposure and Risk Assessment

Use of Ecological Models in Regulatory Risk Assessments

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Emerging Issues and Challenges

Sustainability: A Greener Revolution?

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Environmental Fate and Metabolism

Agrochemicals in Urban Environments

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Environmental Fate and Metabolism

Metabolism and Mitigation of Agricultural Chemicals and Pollutants

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Environmental Fate and Metabolism

Pesticide Efficacy, Translocation, and Metabolism in Plants and Animals

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Environmental Fate and Metabolism

Sampling Methods and Analysis of Agricultural Chemicals and Pollutants

Sponsored by AGRO, Cosponsored by CEI and ENVR

San Francisco Marriott Marquis
Foothill D

Science in the Realm of Environmental Policy: Opportunities and Challenges

Cosponsored by MPPG

C. Pepper, *Organizer*

R. Garant, J. D. Gerlach, *Organizers, Presiding*

1:30 215. Science: The most powerful weapon in the new coal wars? **J. D. Gerlach**

1:45 216. Enticing the American public to pay for renewable energy: Mediating roles of the scientist and environmental vs. policy goals. **J. L. Goldfarb**, D. L. Kriner

2:00 217. Need for symmetrical and integrated scientific knowledge in the realm of environmental policy. **J. Wang**, S. Mortensen, J. Wisk, M. Leggett

2:15 218. Opportunities for science and policy symbiosis for water, land, and energy: Perspectives from Capitol Hill. **L. E. Pence**

2:30 219. Facts vs values: Political choices in environmental policy debates. **C. W. Avery**

2:45 220. Making the scientific case for making the transition from conventional testing to Tox 21 approaches: What types of information do politicians and the public need to hear? **J. R. Fowle**

3:00 221. Mitigation options for nitrogenous greenhouse gas emissions from wastewater treatment plants. **A. C. Brotto**, K. Chandran

3:15 222. Inventory of PCBs in Chicago and opportunities for reduction in emissions and human exposure. **C. E. Shanahan**, S. N. Spak, D. Hu, A. Martinez, K. C. Hornbuckle

3:30 223. Implications of structural conservation during environmental transformations of steroidal pharmaceuticals. **E. P. Kolodziej**, D. M. Cwiertny

3:45 224. Market drivers and policy tools to spur innovations in green chemistry. **K. P. Weber**, M. Spitzer, K. Clansky, J. Jackson, K. Roberts

4:00 225. Communicating science to policymakers. **K. Moss**, R. Garant, K. Weber

4:15 Discussion.

Section B

San Francisco Marriott Marquis
Foothill G1

Water Challenges and Solutions on the Global Scale

Cosponsored by CEI and MPPG

Financially supported by Global Innovation Imperatives

B. Loganathan, S. Ahuja, D. Dionysiou, J. De Andrade, K. Hristovski, *Organizers*

H. Taft, *Organizer, Presiding*

1:30 Introductory Remarks.

1:35 226. Legacy of large urban centers: Todos os Santos Bay case study. **V. Hatje**, G. O. da Rocha, J. B. de Andrade

2:00 227. Energy trends and the water-energy binomium for Brazil. J. P. dos Anjos, G. O. Da Rocha, **J. B. de Andrade**

2:25 228. Sustainable and low cost approach for cleaning metal contaminated water using pyrolyzed banana peels biochars. **B. B. DeMessie**, E. Sahle-Demessie, G. A. Sorial

2:50 229. Solar disinfection of wastewater for reuse in food crop irrigation. **P. F. Ibáñez**, M. P. Lopez, F. Bichai

3:15 Intermission.

3:30 230. Study on treatment of fermentation wastewater by Two-Stage EGSB. **S. Wu**

3:55 231. Removal and recovery of industrial wastewater containing phosphorus by heterogeneous ferrous phosphate crystallization in fluidized bed reactor. **R. Priambodo**, **Y. Huang**

4:20 232. Reducing the Brazil's northeast drought effects in soils through the use of charcoal and biochar amendments. **A. S. Mangrich**, M. E. Doumer, L. P. Romao, M. J. Espinar, A. R. Parera

4:45 Panel Discussion.

5:15 Concluding Remarks.

San Francisco Marriott Marquis
Club Room

Thermodynamics and Kinetics in Treatment Processes, Past, Present, and Future: Symposium in Honor of Professor Chin-Pao Huang
Catalytic and Photo-Chemical Reactions for Environmental Sustainability

R. Doong, G. Chen, Z. Qiang, V. Sharma, *Organizers*
P. Chiu, A. Davis, *Organizers, Presiding*

- 1:30 233.** Fabrication of boron-doped diamond-like carbon (BDDLC) electrode and its applications for the measurements of Hg²⁺, Cu²⁺, and Pb²⁺ ions in aqueous solutions. **Y. Juang, E. Nurhayati, C. Huang, C. Hu, M. Rajkumar**
- 1:55 234.** Membrane technology for renewable energy production using algal biomass and salinity gradient. **Y. Chen**
- 2:20 235.** Influence of pore size characteristics of carbon electrodes on electrosorption of ions in capacitive deionization. **C. Hou, C. Yeh**
- 2:45 236.** Electrochemical impedance spectroscopy investigation of photocatalytic activity of ZnO and W⁶⁺ZnO based modified glassy carbon electrodes. **M. T. Soomro, A. Hameed, I. M. Ismail, M. Aslam**
- 3:10 237.** CO₂ capture technology development in 2013. **B. Dutcher, M. Fan**
- 3:30** Intermission.
- 3:45 238.** Permanganate and hydrous manganese oxide oxidations may have consequences for product water quality. **A. T. Stone, X. Xia**
- 4:15 239.** Recent advances in catalytic-electrochemical and photo-electrochemical reactions for water purification and beyond. **C. Huang**
- 5:05** Concluding Remarks.

San Francisco Marriott Marquis
Foothill E

Assessing the Implications of Nanotechnology

Modeling

Cosponsored by COLL and GEOC
A. Keller, G. Lowry, *Organizers, Presiding*

- 1:30** Introductory Remarks.
- 1:35 240.** Modeling nanosilver transformations in freshwater sediments. **G. V. Lowry, A. L. Dale, E. A. Casman**
- 1:55 241.** Nanomaterial risk screening: A structured decision making (SDM) approach. **C. E. Beaudrie, M. Kandlikar, G. Long, R. Gregory, T. Wilson**
- 2:15 242.** Nanoinformatics platform for assessing the potential environmental distribution and exposure levels of engineered nanomaterials (ENMs). **H. Liu, M. Bilal, A. Lazareva, A. Keller, Y. Cohen**
- 2:35 243.** What are appropriate fate descriptors and modeling approaches to predict environmental concentrations of engineered nanomaterials for risk assessment? **A. Praetorius, M. Scheringer, K. Hungerbuehler**
- 2:55** Intermission.
- 3:25 244.** Modeling metal and metal oxide nanoparticle fate in the James River basin. **A. L. Dale, G. V. Lowry, E. A. Casman**
- 3:45 245.** Parameterizing water quality analysis and simulation program (WASP) for carbon-based nanomaterials. **D. Bouchard, X. Chang, C. Knightes, I. Chowdhury**
- 4:05 246.** Life cycle assessment of nanotechnology: Environmental impacts of nanomaterial production and precious metal recovery from nanowaste. **P. Pati, P. Vikesland, S. McGinnis**
- 4:25 247.** Probabilistic nanoinformatics modeling platform for assessing the potential environmental impact of engineered nanomaterials. **M. Bilal, M. Romero, H. Liu, R. Liu, Y. Cohen**

San Francisco Marriott Marquis
Golden Gate Section C3

**Engineering Nanomaterials for Energy, Environmental Science and Biomedical Applications
Advances in Renewable Energy**

J. Song, J. Mi, *Organizers*
C. Hill, *Presiding*

1:30 Introductory Remarks.

1:35 248. Technical and operational perspective on the DOE Fuels from Sunlight Energy Innovation Hub, the Joint Center for Artificial Photosynthesis. **N. S. Lewis**

2:20 249. Polyoxometalate-based catalysts for solar fuel production. **C. L. Hill**, H. Lv, J. Song, Y. V. Geletii, J. W. Vickers, J. M. Sumliner, D. G. Musaev, P. Kögerler, P. F. Zhuk, J. Bacsá, G. Zhu

2:50 250. Disorder engineering: Turning TiO₂ nanoparticles black. **S. S. Mao**

3:20 Intermission.

3:35 251. Role of fast charge dynamics in heterogeneous catalysis by transient spectroscopy. **T. Cuk**, M. Waegele, X. Chen, D. Herhily

4:05 252. From fundamental understanding to catalyst design: CO and CO₂ hydrogenation. **F. Studt**

4:35 253. Integration of bacteria and semiconductor nanowires for artificial photosynthesis. **C. Liu**, K. Sakimoto, P. Yang

5:05 Concluding Remarks.

San Francisco Marriott Marquis
Golden Gate Section C2

New Advances in the Chemistry and Application of Advanced Oxidation Processes for Removal of Contaminants of Emerging Concern

K. O Shea, S. Canonica, *Organizers*
D. Dionysiou, D. Minakata, G. Li Puma, *Organizers, Presiding*

1:30 Introductory Remarks.

1:35 254. Coupling of experimental and theoretical investigations for discovery of new fate of organic degradation pathways in the aqueous phase advanced oxidation processes. **D. Minakata**, M. D. Rouleau

1:55 255. Pathway prediction for hydroxyl radical initiated degradation of probe molecules of PPCPs and EDCs. F. Zeng, T. Young, **K. Li**

2:15 256. Colorimetric probe-assisted spectrometric detection method of photogenerated reactive oxygen species in TiO₂nanoparticles suspension . **C. Kim**, j. yoon

2:35 Intermission.

2:50 257. Hydroxyl radical formation and efficiency evaluation in ozonation and ozone-based advanced oxidation processes. **Y. Liu**, J. Ma, J. Jiang, C. Luo, X. Huangfu, Z. Guo

3:10 258. Photodegradation of iodinated X-ray contrast media iopamidol by Fe(III)-oxalate system with the composition of H₂O₂. **C. Zhao**, L. E. Arroyo-Mora, A. P. DeCaprio, D. D. Dionysiou, K. E. O'Shea

3:30 259. Electron paramagnetic resonance spectroscopic exploration of radicals' generation in the catalytic wet peroxide oxidation processes. **M. A. Morsy**, A. M. Kawde, M. A. Daous

3:50 260. Receptor-ligand binding assay as a simple preliminary screen for estrogenic activity in AOP treated samples. **S. C. Otto**, S. P. Mezyk

4:10 261. Integrated decomposition of perfluorooctanoic acid by palladium doped nanoscale zerovalent iron and common oxidants. **W. A. Lawal**, H. Choi

San Francisco Marriott Marquis
Golden Gate Section C1

Occurrence, Formation, Health Effects, and Control of Disinfection By-Products (DBPs)

The Role of Oxidants

Cosponsored by CEI

Financially supported by Water Research Foundation

T. Karanfil, W. Mitch, Y. Xie, *Organizers*

P. Westerhoff, *Organizer, Presiding*

1:30 262. Mapping chlorine reactivity patterns of haloacetic acid precursors in inland lakes of the upper Midwest, USA. **T. Zeng**, W. A. Arnold

- 1:50 **263.** Tracking *N*-nitrosodimethylamine formation during water disinfection processes by multi-element isotope fractionation analysis. **S. Spahr**, U. von Gunten, T. B. Hofstetter
 2:10 **264.** Oxidation of *N*-nitrosodimethylamine (NDMA) precursors with chlorine dioxide. **W. Gan, X. Yang**
 2:30 **265.** Effect of pre-oxidation on NDMA precursors. **M. Selbes**, D. Kim, T. Karanfil
 2:50 **266.** Control of C-DBPs and N-DBPs with preoxidation. **W. Chu**, N. Gao, B. Xu, D. Yin
 3:10 Intermission.
 3:30 **267.** Transformation of model nitrogenous organic compounds during chloramination. **F. Li, Z. Deng, L. Ling, C. Shang**
 3:50 **268.** Ozone promotes chloropicrin formation in natural waters by oxidizing amines to nitro compounds. **D. L. McCurry**, W. A. Mitch
 4:10 **269.** Degradation of phenylurea herbicides by chlorine dioxide and formation of disinfection byproducts during subsequent chlor(am)ination. **F. Tian**, B. Xu, T. Zhang, **W. Chu**
 4:30 **270.** Comparison of iodinated trihalomethanes formation from chlorine, chlorine dioxide, and potassium permanganate oxidation processes. **T. Zhang, B. Xu**, L. Lin, Y. Lin, C. Hu, T. Ye, F. Tian

Section H

San Francisco Marriott Marquis
 Foothill F

Occurrence, Fate, and Removal of Pharmaceutical and Personal Care Products and Endocrine Disrupting Chemicals

Cosponsored by CEI

A. Hernandez, L. Blaney, *Organizers, Presiding*

- 1:30 **271.** Identification of degradation products of carbamazepine and iopromide after UV/H₂O₂ advanced oxidation and biodegradation. **D. S. Aga**, K. G. Linden, N. G. Love, R. Singh, Y. Lester, O. S. Keen, S. Baik
 2:10 **272.** Removal of emerging contaminants from water using hydrophobic transition metal microporous and composite adsorbents. **A. J. Hernandez-Maldonado**, W. A. Cabrera-Lafaurie, K. M. Gonzalez-Ramos, F. R. Román
 2:30 **273.** Molecularly imprinted polymer assembled on Fe₃O₄/graphene oxide for clofibrac acid (CA) removal from aqueous solution. **C. Dai**, Y. Liu, X. Zhou
 2:50 **274.** Ferrous activated persulfate oxidation for in situ removal of carbamazepine in groundwater. **X. Zhou**, Q. Zhang, J. Chen
 3:10 Intermission.
 3:30 **275.** Photosensitized degradation of antibiotic in aqueous solution of Suwannee River natural organic matter. **A. S. Batista**, A. S. Teixeira, B. A. Cottrell, W. J. Cooper
 4:00 **276.** Iodinated pharmaceuticals transformation and total organic halogenated (TOX) formation in the presence of NOM and chlorinated oxidants. **E. J. Machek**, E. C. Crafton, N. B. Ackerson, F. Wendel, T. A. Ternes, M. J. Plewa, S. E. Duirk
 4:20 **277.** Emerging pollutants—an overview of occurrence, fate, transport, and treatment. **M. J. Wells**, K. Y. Bell, A. K. Da Silva
 4:40 Discussion.

Environmental Interfaces in the Atmosphere: From Surface Chemistry To Air Quality, Climate, and Health Effects

Environmental Interfaces in the Atmosphere

Sponsored by COLL, Cosponsored by ENVR

Fundamental Processes of Atmospheric Chemistry

Aerosols: From Nucleation To Aging

Sponsored by PHYS, Cosponsored by ENVR

IUPAC: Agricultural Biotechnology

Advances in the Risk Assessment of RNAi-Based Technologies

Sponsored by AGRO, Cosponsored by AGFD and ENVR

IUPAC: Ecosystem and Human Exposure and Risk Assessment

Agroecosystems: Sustaining Biodiversity and Key Ecosystem Services

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Ecosystem and Human Exposure and Risk Assessment

Use of Ecological Models in Regulatory Risk Assessments

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Ecosystem and Human Exposure and Risk Assessment

Use of Ecological Models in Regulatory Risk Assessments

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Emerging Issues and Challenges

Sustainability: A Greener Revolution?

Sponsored by AGRO, Cosponsored by ENVR

IUPAC: Environmental Fate and Metabolism

Agrochemicals in Urban Environments

Sponsored by AGRO, Cosponsored by CEI and ENVR

Undergraduate Research Posters

Environmental Chemistry

Sponsored by CHED, Cosponsored by ENVR and SOCED

MONDAY EVENING

Section A

Moscone Center, North Bldg.

Hall D

Sci-Mix

D. Dionysiou, *Organizer, Presiding*

8:00 - 10:00

545, 546, 547, 552, 553, 556, 557, 559, 560, 567, 569, 575, 577, 580, 582, 585, 586, 590, 592, 593, 594, 597, 598, 599, 600, 601, 602, 603, 605, 607, 608, 610, 612, 614, 615, 618, 630, 631, 639, 641, 643, 657, 660, 666, 673, 675, 676, 678, 679, 680, 681, 686, 688, 689, 691, 693, 694, 697, 700, 701, 703, 706, 707, 708, 709, 712, 714, 719, 730, 731, 733, 735, 736, 738, 744, 748, 750, 752, 753, 754, 760, 761, 762, 765, 779, 780, 785, 789, 790, 792, 794, 800, 801, 803, 804. See subsequent listings.

TUESDAY MORNING

Section A

San Francisco Marriott Marquis

Foothill D

Natural Attenuation of Emerging Contaminants in the Urban Water Cycle

Cosponsored by CEI

F. Rosario, O. Keen, *Organizers*

O. Keen, *Presiding*

8:00 Introductory Remarks.

8:05 279. Natural photosensitizers in constructed unit process wetlands: Spectroscopic characterization, production of reactive species and effect on inactivation of indicator organisms. **J. Wenk**, M. Nguyen, D. L. Sedlak, K. L. Nelson

8:30 280. Photodegradation of carboplatin in aqueous environment. **Y. Lin**, M. Hsieh, A. Y. Lin

8:55 281. Sunlight transformation of 5-Fluorouracil in aqueous environments in the presence of bicarbonate. **Y. Lu**, A. Y. Lin

9:20 Intermission.

9:45 282. Use of bivalves in natural systems for removal of contaminants of emerging concern. **N. S.**

Ismail, C. E. Mueller, R. R. Morgan, R. G. Luthy

10:10 283. Evaluating in situ reduction approaches for the insensitive munition nitroguanidine (NQ). **K.**

Millerick, K. Finneran, J. Niedzwiecka

10:35 284. Perfluorooctane sulfonate (PFOS) and perfluorooctanoate (PFOA) in soil and groundwater around a former fluoropolymer manufacturing facility. **F. Xiao**, M. F. Simcik, T. R. Halbach, J. S. Gulliver

11:00 Concluding Remarks.

San Francisco Marriott Marquis
Foothill G1

Novel Membranes and Membrane Processes for Desalination and Water Treatment

Cosponsored by CEI and POLY

V. Tarabara, *Organizer*

K. Chen, B. Mi, *Organizers, Presiding*

- 8:00 285.** Structure/property measurements of polymer membranes via poromechanics. E. P. Chan, N. K. Nadermann, E. M. Davis, **C. M. Stafford**
- 8:40 286.** Biofouling resistant surface nanostructured reverse osmosis membranes. **K. J. Moses**, Y. Cohen
- 9:00 287.** Synthesis of highperformance forward osmosis membrane with ordered polyacrylonitrile/carbonnanotubes hybrid nanofibers as support. **Y. Li**, X. Zhang, J. Crittenden, **Y. Chen**, H. Cao
- 9:20 288.** UV-crosslinked telechelic disulfonated poly (arylene ether sulfone) oligomers for reverse osmosis membrane applications. **A. Nebipasagil**, B. J. Sundell, O. R. Lane, S. J. Mecham, E. Jang, B. D. Freeman, J. E. McGrath
- 9:40 289.** Graphene oxide (GO) nanosheets enhance water filtration through the polyamide (PA) thin-film nanocomposite (TFN) membranes. **J. Yin**, G. Zhu, **B. Deng**
- 10:00 290.** Tuning an activated carbon nanofiber membrane material for specific sorption in water treatment systems. **T. M. Vadas**, Y. Han, E. Karl, J. McCutcheon
- 10:20 291.** Prevention of dilute polymer solution intrusion into porous substrates by the use of filled supports. **H. Jamieson**, M. Lind
- 10:40 292.** Antimicrobial properties of low-pressure graphene oxide nanocomposite membranes for water purification. **X. Liu**, P. Yang, M. J. Gallagher, H. Fairbrother, K. Chen
- 11:00 293.** Stimuli-responsive ultrafiltration membranes composed of N-isopropylacrylamide (NIPAAm) and cellulose acetate. S. Chede, **I. C. Escobar**
- 11:20 294.** Biofouling control by incorporation of D-tyrosine in a nanocomposite membrane. **C. Yu**, J. Wu, M. Li, Q. Li
- 11:40 295.** Zwitterionic polymer grafted antifouling membranes via "click" chemistry. **Q. Yang**, B. Mi

San Francisco Marriott Marquis
Club Room

Women in Environmental Science and Engineering

Cosponsored by MPPG[‡], PROF, SCHB, and WCC

A. Gu, C. Lee, E. Carraway, J. Hill, R. Brennan, S. Simonich, S. Richardson, *Organizers*

D. Dionysiou, H. Hsu-Kim, J. Goldfarb, I. Escobar, *Organizers, Presiding*

- 8:00** Introductory Remarks.
- 8:05 296.** Modeling DNAPL migration and persistence: Thirty years of progress and future opportunities. **L. M. Abriola**
- 8:35 297.** Research at the interface of environmental chemistry and engineering. **J. A. Field**
- 9:05 298.** "Overlooked" halogenating agents: Reexamining factors influencing rates of organic compound halogenation in aqueous solution. **A. L. Roberts**, J. D. Sivey, S. Lau
- 9:35 299.** Morning, noon, and night: DOM photochemistry and understanding the biogeochemical pulse of river ecosystems. **D. McKnight**
- 10:05** Intermission.
- 10:20 300.** Right place, right time, right people: Great science in the Great Lakes. **D. L. Swackhamer**
- 10:50 301.** Achieving resilience and sustainability in the global urban water sector: A role for environmental chemistry. **N. G. Love**
- 11:20 302.** Complex mixtures, analytical limitations, and risk-based decision-making in natural and engineered environments. **J. M. VanBriesen**
- 11:50 303.** From water quality to nanotechnology to cities: Details and people matter. **K. Gray**

San Francisco Marriott Marquis
Foothill E

Evolving Science and Environmental Impacts of Hydraulic Fracturing

Groundwater and Geochemistry

Cosponsored by CEI and PRES

T. Barton, *Organizer*

D. Drogos, *Organizer, Presiding*

8:00 Introductory Remarks.

8:10 304. Hydraulic fracturing and potential groundwater contamination risk. **N. Jabbari**, A. Aminzadeh, F. de Barros, B. Jafarpour

8:30 305. Hydraulic fracturing and impacts to the water supply: Fact or fiction? **M. Zeko**, E. Vavricka

8:50 306. Fingerprinting sources of salinity in shallow groundwater prior to hydraulic fracturing: Statistical model development and application. **L. K. Lautz**, G. D. Hoke, Z. Lu, D. I. Siegel, K. Christian

9:10 307. Naturally-occurring radioactive materials in solid and liquid wastes associated with unconventional drilling and hydraulic fracturing: A story of parents and daughters. **M. K. Schultz**, A. W. Nelson

9:30 308. Potential legacy pollution arising from naturally occurring radioactive materials (NORM) released during the disposal of wastes generated from unconventional drilling activities. **A. W. Nelson**, M. K. Schultz

9:50 Intermission.

10:10 309. Fate of Ra-226 in flowback water storage impoundment and its leaching behavior from sludge. **T. Zhang**, R. Vidic

10:30 310. Hydraulic fracturing in underground sources of drinking water in the Pavillion gas field. **D. C. DiGiulio**, R. B. Jackson

11:00 311. Approach to identifying sources of gas migration and casing vent flow. **A. E. McGrath**, **T. W. Butler**

11:20 312. Geochemical measures for monitoring and evaluation of potential groundwater quality effects of hydraulic fracturing and shale gas development. **J. A. Connor**, L. Molofsky, T. M. McHugh, A. D. Daus

San Francisco Marriott Marquis
Golden Gate Section C3

Recent Development of Environmental Chemistry in Asia

C. Lin, D. Dionysiou, M. Lam, *Organizers*

R. Luque, E. Uckun Kiran, E. Mubofu, *Organizers, Presiding*

C. Lin, *Presiding*

8:00 Introductory Remarks.

8:05 313. Food waste-based biorefinery development: Valorisation of food waste for sustainable production of chemicals, materials, and fuels. **C. S. Lin**

8:25 314. Designing nanoparticulate photocatalysts for the destruction of recalcitrant organic contaminants in wastewater. **K. Wilson**, T. Ung Thi Dieu, Q. Nguyen, B. Barbero

8:45 315. Variations of aerosol number concentration distribution under different weather conditions in Beijing. **P. Zhao**, Y. Chen

9:05 316. Developing novel biorefineries using food waste as substrate. **E. Uckun Kiran**, A. P. Trzcinski, Y. Liu

9:25 317. From waste to treasure: The case of cashew nut shells. **E. Mubofu**, Y. Makame, M. Kombo

9:45 Intermission.

10:00 318. Differential distribution of PM_{2.5}-associated trace metals in northern and southern megacities of China during a pollution episode. J. Zhang, K. Ho, C. C. Ip, J. Cao, **X. Li**

10:20 319. Effect of fiber properties and protein additive on adsorption and hydrolysis by an endoglucanase. **S. Leu**, H. Li, C. Ko

10:40 . Sonication with light: Simultaneous combination in the synthesis of photocatalysts. **J. C. Colmenares**, A. Magdziarz

11:00 321. Levulinics: Novel sustainable building blocks for renewable formulations. **A. M. Balu**, G. Van Klink, N. Kemeling, J. K. Van der Waal, E. De Jong

11:20 Discussion.

San Francisco Marriott Marquis
Golden Gate Section C2

New Advances in the Chemistry and Application of Advanced Oxidation Processes for Removal of Contaminants of Emerging Concern

G. Li Puma, K. Oshea, D. Dionysiou, *Organizers*
D. Minakata, S. Canonica, *Organizers, Presiding*
M. Mohseni, *Presiding*

8:00 322. Sulfate radical-induced oxidations of aquatic contaminants: Effect of dissolved organic matter on second-order rate constants. **S. Canonica**

8:40 323. Study of the co-adsorption of natural organic matter (NOM) and target micropollutants on photocatalytic TiO₂ spheres. **M. Mohseni**, R. Rezaei

9:00 324. Decoding the role of natural organic matter on OH radical formation in water ozonation and removal of emerging contaminants. **Y. Lin**

9:20 325. Degradation of acetaminophen during UV and UV/H₂O₂ water treatment: Impact of halides and NOM. **X. Yang**, W. Fu

9:40 Intermission.

9:55 326. Phototransformation of pesticides in prairie potholes: Effect of dissolved organic matter in triplet-induced oxidation. **M. Karpuzcu**, W. A. Arnold

10:15 327. Effectiveness of AOPs processes on the removal of contaminants and their oxidation intermediates: The mepanipyrin case. **M. Brienza**, L. Scrano, F. Lelario, T. Trabace, S. A. Bufo

10:35 328. Ozonation of ionic liquid 1-butyl-3-methylimidazolium chloride under basic condition. **Y. Nomura**, H. Nagare, D. Minakata, T. Mizuno, T. Fujiwara, F. Nishimura

10:55 329. Removal of 17 α -Ethinylestradiol by heterogenous Fenton reaction using nano-zerovalent iron. S. Karim, S. Uy, J. Park, **N. Singhal**

San Francisco Marriott Marquis
Golden Gate Section C1

Occurrence, Formation, Health Effects, and Control of Disinfection By-Products (DBPs)

Formation of DBPs

Cosponsored by CEI

Financially supported by Water Research Foundation

T. Karanfil, P. Westerhoff, Y. Xie, *Organizers*
W. Mitch, *Organizer, Presiding*

8:00 330. Formation of DBPs: State of the science. **S. Richardson**

8:20 331. Development of QSAR models for DBP study: A review of advances and resources. **B. Chen**, T. Zhang

8:40 332. Modeling NDMA formation kinetics in wastewater or polymer impacted drinking waters. **P. Westerhoff**, D. Hanigan, J. Zhang, R. Shen, S. Andrews, P. Herckes

9:00 333. Formation of nitrogenous disinfection byproducts by chloramination of various organic matter fractions and aromatic model compounds. **J. Le Roux**, M. Nihemaiti, J. Croué

9:20 334. Formation and speciation of dihaloacetonitriles in chlorinated water: Kinetic and spectroscopic modeling. **P. Roccaro**, H. Chang, F. G. Vagliasindi, G. V. Korshin

9:40 Intermission.

10:00 335. Formation kinetics of trichloronitromethane and dichloroacetonitrile from chloramination of natural organic matters. Y. Chuang, **H. Tung**

10:20 336. Formation and kinetics of dihaloacetonitriles from chlorination of intracellular organic matters from *M. aeruginosa*. **H. Zhai**, J. Zhang, **M. Ji**

10:40 338. Interactions between dissolved organic matter and iodine during chloramination: Examination based on spectroscopic data. **G. V. Korshin**, S. He

11:00 339. Iodinated X-ray contrast media (ICM) as precursors to iodinated disinfection byproduct (DBP) formation as a function of source water, pH, and chlorinated oxidants. **E. J. Machek**, E. C. Crafton, N. B. Ackerson, F. Wendel, T. A. Ternes, M. J. Plewa, S. E. Duirk

11:20 Discussion.

San Francisco Marriott Marquis
Foothill F

Occurrence, Fate, and Removal of Pharmaceutical and Personal Care Products and Endocrine Disrupting Chemicals

Cosponsored by CEI

A. Hernandez, L. Blaney, *Organizers, Presiding*

8:00 Introductory Remarks.

8:05 340. Monitoring for pharmaceuticals and EDCs using advanced analytical and bioanalytical tools. **S. A. Snyder**, A. Jia, B. Dong, S. Wu, T. Anumol, S. Merel, S. Dagnino

8:45 341. Kinetic and mechanistic considerations of the degradation of trimethoprim and ibuprofen by the UV/chlorine process. Y. Xiang, **J. Fang**, Z. Wu, C. Shang, X. Yang

9:05 342. Oxidative transformation of cefazolin by manganese dioxide. **Y. Chen**, A. Y. Lin

9:25 343. Treatment of surface water by O₃ or O₃/H₂O₂ AOP: Cost-benefit of micropollutant elimination vs. formation of oxidation products and by-products. **M. Bourgin**, E. Borowska, J. Helbing, H. Kaiser, J. Hollender, C. S. McArdell, U. von Gunten

9:45 Intermission.

10:05 344. Photodegradation of pharmaceuticals and other contaminants of emerging concern in a novel microcapillary array photoreactor. N. M. Reis, **G. Li Puma**

10:35 345. Occurrence and elimination of fluoroquinolone antibiotics in an advanced water reclamation plant. K. He, S. Snowberger, **L. Blaney**

10:55 346. Sunlight-enhanced removal of pharmaceuticals during chlorination process. **C. Li**, A. Y. Lin

Asia-America Chemical Symposium

Global Stewardship and Chemistry Innovations for Sustainable Agricultural and Food Products

Sponsored by IAC, Cosponsored by AGFD, AGRO, and ENVR

Environmental Radiochemistry

General Interest and Uranium in Soils

Sponsored by NUCL, Cosponsored by ENVR

Fundamental Processes of Atmospheric Chemistry

Aerosols: Water, Viscosity and Chemistry

Sponsored by PHYS, Cosponsored by ENVR

International Collaborations with International Impact: Chemistry for Global Change

GSSPC Symposium

Sponsored by CHED, Cosponsored by ANYL, COLL, ENFL, ENVR, MEDI, MPPG, PHYS, PRES, PROF, and WCC

IUPAC: Agricultural Biotechnology

Advancements in the Development, Characterization, and Regulation of Genetically Modified

Crops

Sponsored by AGRO, Cosponsored by AGFD and ENVR

IUPAC: Ecosystem and Human Exposure and Risk Assessment

Trophic Transfer, Metabolism, and Risks in the Food Web

Sponsored by AGRO, Cosponsored by CEI, ENVR, and SETAC

IUPAC: Emerging Issues and Challenges

Agriculture's Response To Climate Change and Population Growth

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Environmental Fate and Metabolism

Measuring and Modeling Pesticide Fate and Transport

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Environmental Fate and Metabolism

Sediment Partition and Bioavailability

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Formulation and Application

Technologies for Sustainable Crop Protection

Sponsored by AGRO, Cosponsored by ANYL and ENVR

TUESDAY AFTERNOON

Section A

San Francisco Marriott Marquis
Foothill D

C. Ellen Gontter Environmental Chemistry Award Symposium

T. Anderson, *Organizer, Presiding*

1:30 Introductory Remarks.

1:35 **353.** Role of cold climate and freeze-thaw on the survival, transport, and virulence of *Yersinia enterocolitica*. **B. Asadishad**, S. Ghoshal, N. Tufenkji

2:00 **354.** Photocatalytic destruction of cylindrospermopsin: Identification of reaction by-products and unveiling of reaction pathways. **G. Zhang**, D. D. Dionysiou

2:25 **355.** Heteroaggregation reduces antimicrobial activity of silver nanoparticles: Evidence for nanoparticle-cell proximity effects. **K. Huynh**, J. M. McCaffery, K. Chen

2:50 Intermission.

3:05 **356.** Controlled evaluation of silver nanoparticle sulfidation: Reaction mechanism and particle stability. **R. D. Kent**, J. G. Oser, P. J. Vikesland

3:30 **357.** Rhenium speciation and reaction mechanisms for aqueous perchlorate reduction by H₂ with a heterogeneous Re(hoz)₂-Pd/C catalyst. **J. Liu**, J. R. Shapley, C. J. Werth, T. J. Strathmann

3:55 **358.** Photodegradation of veterinary ionophore antibiotics under simulated and natural solar and UV irradiation. **P. Sun**, S. G. Pavlostathis, C. Huang

Section B

San Francisco Marriott Marquis
Foothill G1

Novel Membranes and Membrane Processes for Desalination and Water Treatment

Cosponsored by CEI and POLY

B. Mi, *Organizer*

K. Chen, V. Tarabara, *Organizers, Presiding*

1:30 **359.** Responsive membranes for water treatment. **R. Wickramasinghe**

2:10 **360.** Pervaporative membrane filtration for subsurface irrigation. **T. Bond**, M. N. Sule, L. C. Todman, M. R. Templeton, J. A. Brant

2:30 **361.** Reducing the volume of produced concentrate from inland brackish water desalination plants using a Hybrid Ion Exchange-Reverse Osmosis (HIX-RO) process. **R. C. Smith**, A. K. SenGupta

2:50 **362.** Simultaneous wastewater biotreatment and produced water desalination associated with power generation in microbial osmotic fuel cell (MOFC). **Z. Z. Ismail**, M. A. Ibrahim

3:10 **363.** Experimental and simulation studies of large scale membrane distillation modules. **N. Ghaffour**, A. S. Alsaadi, L. Francis, G. L. Amy

3:30 Intermission.

3:40 **364.** Progress in membrane crystallization for zero liquid discharge in desalination. **C. Quist-Jensen**, F. Macedonio, E. Drioli

4:00 **365.** Novel omniphobic microporous membrane for direct contact membrane distillation. **S. Lin**, S. Nejati, Y. Hu, C. Boo, M. Elimelech

4:20 **366.** Removal and recovery of ammonia from livestock wastewater using hydrophobic gas-permeable membranes. **M. Vanotti**, M. Garcia Gonzalez

4:40 **367.** Pharmaceuticals retention mechanisms by forward osmosis. **F. Kong**, X. Wang, H. Yang, Y. Xie

5:00 **368.** Simultaneous water treatment and energy production via thermoelectric embedded membrane distillation. **Z. Hendren**, P. Barletta, G. Dezzi, N. Baldasaro, R. Venkatasubramanian

San Francisco Marriott Marquis
Club Room

Women in Environmental Science and Engineering

Cosponsored by MPPG⁺, PROF, SCHB, and WCC

J. Hill, E. Carraway, A. Gu, C. Lee, R. Brennan, H. Hsu-Kim, S. Simonich, *Organizers*

D. Dionysiou, S. Richardson, J. Goldfarb, I. Escobar, *Organizers, Presiding*

1:30 Introductory Remarks.

1:35 369. Diversifying our field: Water treatment and environmental nanotechnology as case studies for engaging women and underrepresented minorities in environmental engineering and science. **K. L. Jones**

2:00 370. Clash of policy and paradigm: Antibiotic resistance genes as environmental contaminants. **A. P. Pruden**

2:25 371. Redox chemistry at the Fe mineral-water interface: New insights from isotope games. **M. Scherer**

2:50 372. Advancing contaminant sorption: Unconventional sorbents and unconventional sorbates. **A. MacKay**

3:15 Emerging Leader Awards.

3:30 Intermission.

3:45 373. Trace element toxins in coal ash: New considerations for identifying environmental risks. G. E. Schwartz, **H. Hsu-Kim**, A. Vengosh

4:10 374. From ideal to real: Utilizing a model colon and septic system to elucidate the impacts of bacterial and nanoparticle contamination. **S. L. Walker**, A. Taylor

4:35 375. Women changing research in global desalination. **I. C. Escobar**, T. Harris, V. Craver, M. Abu-Dalo

5:00 376. Pore scaled transport of microorganisms. **T. H. Nguyen**, N. Lu, Y. Liu

Section D

San Francisco Marriott Marquis
Foothill E

Evolving Science and Environmental Impacts of Hydraulic Fracturing

Geochemistry, Treatment and Analysis

Cosponsored by CEI and PRES

T. Barton, *Organizer*

D. Drogos, *Organizer, Presiding*

1:30 377. Groundwater monitoring at the Pavillion, Wyoming natural gas field. **D. B. Stephens**

1:50 378. Hydraulic fracturing, fluid injection, and induced earthquakes. **W. L. Ellsworth**, S. H. Hickman, O. Kaven, A. L. Llenos, A. F. McGarr, J. L. Rubinstein

2:20 379. Analysis of pyridine based cation receptors with efforts towards the bioremediation of hydrofracking wastewater. **S. G. Tadj**

2:40 Intermission.

3:00 380. Control and treatment of flowback and produced waters from hydraulic fracturing. **E. Pinero**

3:20 381. Setting targets and using tools to optimize produced water treatment and recovery systems. **K. Martins**, K. Nichols, T. Wachinski, K. Perez

3:40 382. Water for hydraulic fracturing: Problems and solutions. **V. S. Frenkel**

4:00 383. Analysis of cations in hydraulic fracturing flowback water from the Marcellus Shale using ion chromatography. **C. Fisher**

4:20 384. Environmental and process measurements in fracking operations with a portable gas chromatograph. **J. N. Driscoll**, J. L. Maclachlan

Section E

San Francisco Marriott Marquis
Golden Gate Section C3

Special Symposium in Honor of Professor Richard L. Valentine

D. Cwiertny, P. Vikesland, C. Jafvert, *Organizers, Presiding*

1:30 Introductory Remarks.

1:35 385. SWAT autocalibration techniques in modeling nitrate loading in the Iowa Cedar River Basin. **J. L. Schnoor**, **L. O. Le**

2:15 386. Model of the inhibitory mechanisms of photocatalytically generated reactive oxygen species by natural organic matter. **P. J. Alvarez**, J. Brame, Q. Li

2:55 387. Rate constant for monochloramine hydrolysis (NH₂Cl). Z. Wang, **C. T. Jafvert**

3:15 Intermission.

- 3:30 388.** Computer-based predictions of intermediates and byproducts in the aqueous phase advanced oxidation systems: First-principles studies with kinetic Monte Carlo techniques. **J. Crittenden**, X. Guo, D. Minakata
- 4:10 389.** Photoproduction of carbon monoxide from natural organic matter. **R. G. Zepp**, M. Cyterski, K. Kisselle, A. R. Kozovits, M. M. Bustamante
- 4:50 390.** Cretaceous-Paleogene boundary, perverse osmosis, and cybermussels: A short history of research under the influence of Richard L. Valentine. **C. L. Just**
- 5:10 391.** New insights into Fe(II)-catalyzed recrystallization of goethite (and what it's really like to work with Rich!). **M. Scherer**, W. A. Premaratne, A. Neumann, A. Frierdich, C. M. Johnson, K. M. Rosso

Section F

San Francisco Marriott Marquis
Golden Gate Section C2

New Advances in the Chemistry and Application of Advanced Oxidation Processes for Removal of Contaminants of Emerging Concern

G. Li Puma, D. Minakata, S. Canonica, *Organizers*
D. Dionysiou, K. Oshea, *Organizers, Presiding*
X. Quan, *Presiding*

- 1:30 392.** Carbon nanomaterials membranes (CNMs) and their performance in water and wastewater treatment. **X. Quan**
- 2:10 393.** Phototransformation of benzoyllecgonine with UVC and UVC-H₂O₂ in a novel microcapillary array photoreactor. M. Vaccaro, D. Russo, D. Spasiano, R. Marotta, R. Andreozzi, S. D. Richardson, N. M. Reis, **G. Li Puma**
- 2:30 394.** Sulfate radical based advanced oxidation processes for the treatment of pharmaceutical and personal care products. **X. He**, X. Duan, W. H. Abdelraheem, D. D. Dionysiou
- 2:50 395.** Photodegradation of phenol using multifunctional magnetic/titanium dioxide nanocomposites. A. Herrera-Barros, A. Reyes, **J. A. Colina-Marquez**
- 3:10** Intermission.
- 3:25 396.** Rotating advanced oxidation reactor with composite TiO₂-zeolite sheet: Removal mechanisms of sulfamethazine and its intermediates. **T. Fujiwara**, M. Ito, S. Fukahori
- 3:45 397.** Development of sustainable manganese-based Fenton-type catalyst for removal of organic pollutants from wastewater. D. Maucec, M. Rangus, M. Mazaj, G. Drazic, A. Pintar, **N. Novak Tusar**
- 4:05 398.** Development of new metal-organic-composites as catalysts for heterogeneous electro-Fenton wastewater treatment. **E. Bocos**, F. Moscoso, M. Fernandez, M. Pazos, M. Longo, M. Sanroman
- 4:25 399.** Combination of advanced oxidation process and ion-exchange treatment for better drinking water quality. **S. Echigo**, S. Itoh, T. Ijiri, S. Ishihara, Y. Hisamoto, Y. Nakayama

Section G

San Francisco Marriott Marquis
Golden Gate Section C1

Occurrence, Formation, Health Effects, and Control of Disinfection By-Products (DBPs)

Formation of DBPs

Cosponsored by CEI
Financially supported by Water Research Foundation
T. Karanfil, P. Westerhoff, *Organizers*
W. Mitch, Y. Xie, *Organizers, Presiding*

- 1:30 400.** Catalysis of DBP-precursor halogenation by halides and hypohalous acids. **J. D. Sivey**, D. A. Victor, M. A. Bickley, N. S. Sapienza
- 1:50 401.** Impact of sea-level rise on seawater intrusion and formation of brominated disinfection byproducts during chlorination. **T. H. Boyer**, E. C. Ged, L. H. Motz, P. A. Chadik, J. B. Martin, K. I. Frank
- 2:10 402.** Formation of brominated organic compounds from natural organic matter isolates by sulfate radical-based advanced oxidation processes. **Y. Wang**, T. Zhang, J. Roux, J. Croué
- 2:30 403.** DBPs in swimming pools: Formation, occurrence, and determination. C. Schmalz, **C. Zwiener**
- 2:50** Intermission.
- 3:10 404.** Disinfection by-product profile in swimming pool water and effects of materials of human origin on disinfection by-product formation. **H. Tang**, Y. Xie
- 3:30 405.** Formation of nitrogenous disinfection by-products from algal-impacted surface waters. **I. Kristiana**, D. Liew, K. Linge, C. Joll, J. Charrois
- 3:50 406.** Bromate formation in bromide-containing water by the cobalt-mediated activation of peroxymonosulfate: Roles of sulfate radicals and Co(III). **Z. Li**, Z. Chen, J. Fang, C. Shang
- 4:10 407.** Activated carbon catalyzed nitrosamine formation via amine nitrosation. **J. C. Callura**, C. Huang

San Francisco Marriott Marquis
Foothill F

Occurrence, Fate, and Removal of Pharmaceutical and Personal Care Products and Endocrine Disrupting Chemicals

Cosponsored by CEI

A. Hernandez, L. Blaney, *Organizers, Presiding*

1:30 408. Photochemistry of bisphenols: Rates and pathways of degradation of BPA replacement compounds. **D. E. Latch**, A. J. Hiranaka, M. T. Dvorak

2:00 409. Removal of estrogenic activity from wastewaters. **S. P. Mezyk**

2:20 410. Triclosan inhibition of the ammonia oxidizing bacteria *Nitrosomonas europaea*. J. L. Hughes, **L. Semprini**

2:40 Intermission.

3:00 411. Role for adaptation of the microbial community to transform trace organic chemicals of emerging concern during managed aquifer recharge. **J. E. Drewes**, M. Alidina, D. Li

3:30 412. Impact of low dissolved oxygen wastewater treatment on pharmaceutical removal. **L. B. Stadler**, L. Su, D. S. Aga, N. G. Love

3:50 413. Assessment of slow sand filtration as a technique to polish reclaimed water in terms of micropollutants. **R. Lopez Serna**, L. Wu

4:10 Discussion.

4:40 Concluding Remarks.

Asia-America Chemical Symposium

Global Stewardship and Chemistry Innovations for Sustainable Agricultural and Food Products

Sponsored by IAC, Cosponsored by AGFD, AGRO, and ENVR

Environmental Radiochemistry

Actinide Sorption

Sponsored by NUCL, Cosponsored by ENVR

International Collaborations with International Impact: Chemistry for Global Change

GSSPC Symposium

Sponsored by CHED, Cosponsored by ANYL, COLL, ENFL, ENVR, MEDI, MPPG, PHYS, PRES, PROF, and WCC

IUPAC: Ecosystem and Human Exposure and Risk Assessment

Advances in Exposure Assessment for Characterizing Human and Ecological Risks

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Ecosystem and Human Exposure and Risk Assessment

Trophic Transfer, Metabolism and Risks in the Food Web

Sponsored by AGRO, Cosponsored by CEI, ENVR, and SETAC

IUPAC: Ecosystem and Human Exposure and Risk Assessment

Trophic Transfer, Metabolism, and Risks in the Food Web

Sponsored by AGRO, Cosponsored by CEI, ENVR, and SETAC

IUPAC: Emerging Issues and Challenges

Agriculture's Response To Climate Change and Population Growth

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Environmental Fate and Metabolism

Measuring and Modeling Pesticide Fate and Transport

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IUPAC: Environmental Fate and Metabolism

Measuring and Modeling Pesticide Fate and Transport

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Formulation and Application

Technologies for Sustainable Crop Protection

Sponsored by AGRO, Cosponsored by ANYL and ENVR

IUPAC: Formulation and Application

Technologies for Sustainable Crop Protection

Sponsored by AGRO, Cosponsored by ANYL and ENVR

TUESDAY EVENING

Transport in Polymer Membranes

Sponsored by POLY, Cosponsored by ENVR

WEDNESDAY MORNING

Section A

San Francisco Marriott Marquis

Foothill D

Chemistry of Atmospheric Nitrogen-Containing Compounds

Cosponsored by PHYS

S. Nizkorodov, *Organizer*

A. Laskin, S. Brown, *Organizers, Presiding*

8:00 Introductory Remarks.

8:05 414. What happens when the N₂ bond is broken? An atmospheric perspective. **R. C. Cohen**

8:45 415. Linking NO_x chemistry and aerosol over the last decade in San Joaquin Valley, California. **S. E. Pusede, R. C. Cohen**

9:05 416. Impact of environmental variables on the reduction of nitric acid (HNO₃) by volatile organic compounds emitted by motor vehicles. **Y. Leong, A. P. Rutter, C. V. Gutierrez, H. Wong, M. Junaid, E. Scheuer, J. E. Dibb, R. J. Griffin**

9:25 417. Pressure and temperature dependences of rate coefficients for the reaction OH + NO₂ + M → products. **Y. Liu, S. P. Sander**

9:45 Intermission.

10:00 418. Nitryl chloride (ClNO₂) and its chemistry during the Uintah Basin Winter Ozone Studies. **J. M. Roberts, P. R. Veres, R. McLaren, J. Kercher, J. Thornton, S. B. Brown, P. M. Edwards, C. Young, R. Wild, W. P. Dube, B. Yuan, C. Warneke, J. deGouw, T. Bates, P. Quinn, E. J. Williams, J. Holloway, S. Murphy, R. Zamora**

10:40 419. On the role of organics in regulating ClNO₂ production at atmospheric interfaces. **O. S. Ryder, N. R. Campbell, H. Almashat, T. Bertram**

11:00 420. Atmospheric sources and sinks of amines, amides, and isocyanic acid (HNCO). **N. Borduas, G. da Silva, J. G. Murphy, J. P. Abbatt**

11:20 421. On-road and in-vehicle concentrations of NO₂ and particles on a highway. **H. Yamada, R. Hayashi, K. Tonokura**

Section B

San Francisco Marriott Marquis

Foothill G1

Humic Substances and Its Critical Role in Environmental Chemistry: The Past 50 Years, Present Knowledge and Future Research Opportunities

Character of Humic Substances

I. Suffet, J. Pedersen, *Organizers*

F. Rosario, *Organizer, Presiding*

8:00 Introductory Remarks.

8:05 422. Structural characterization of humic substances. **E. Perdue**

8:35 423. Attachment of pathogenic prion protein to humic substances. **J. A. Pedersen, C. B. Smith, K. H. Jacobson, E. S. Melby**

9:00 424. Determination of the diffusion coefficients of natural organic matter (NOM) fractions from two source materials by pulsed field gradient (PFG) NMR. **C. Johnson-Edler, J. A. Rice**

9:25 Intermission.

- 9:40 425.** Concentration and character of particulate and dissolved organic matter mobilized following a wildfire. **K. M. Cawley**, A. Hohner, F. Rosario-Ortiz
10:05 426. Transport of xenobiotics from sediment to the aqueous phase. **M. Suffet**
10:30 427. Role of humic acids in transport of charge organic compounds as revealed by combination of simple laboratory diffusion techniques. **P. Sedlacek**, J. Smilek, M. Klucakova
10:55 428. Sorption selectivity in natural organic matter studied with NMR spin and relaxation probes. **J. J. Pignatello**, X. Cao, C. Latta, J. Mao, K. Schmidt-Rohr
11:20 429. Molecular composition and fluorescence properties of natural organic matter in a northern peatland: Implications for climate change. **M. M. Tfaily**, J. E. Corbett, J. P. Chanton, P. H. Glaser, K. M. Cawley, R. Jaffé, **W. T. Cooper**
11:45 Discussion.

Section C

San Francisco Marriott Marquis
 Club Room

Heterogeneous Catalysis for Environmental and Energy Applications

Cosponsored by CATL

M. Castaldi, *Organizer*

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

- 8:00 430.** Activation of hydrogen peroxide at neutral pH by zerovalent aluminum in the presence of chloride ion. **H. Lee**, H. Lee, C. Lee
8:20 431. Kinetics and stability of perchlorate reduction using a Re-Pd/C catalyst with immobilized oxorhenium complex under water treatment conditions. **J. Liu**, J. R. Shapley, T. J. Strathmann, C. J. Werth
8:40 432. Catalytic nitrate reduction by Fe₂O₃ supported Pd-Cu bimetallic catalysts. **S. Bae**, S. Jung, W. Lee
9:00 433. WO₃-based tandem photoanode with improved stability and photoelectrochemical efficiency. **H. Qi**, J. Cohen, D. Wang, Z. Chen
9:20 434. Photocatalytic CO₂ reduction by water using Ir oxide cluster coupled to polynuclear ZrOCo unit in mesoporous silica. **W. Kim**, H. Frei
9:40 Intermission.
10:00 435. Silver-inserted hetero-junction photocatalyst for water-splitting under visible light. T. Takashima, **H. Irie**, R. Kobayashi, S. Tanigawa
10:20 436. Facile green synthesis of crystalline polyimide photocatalyst for hydrogen generation from water. S. Chu, C. Wang, C. Chenghai Ma, J. Zhou, **Y. Wang**, Z. Zou
10:40 437. Computational studies of the catalytic reactions of transition metal oxide clusters. **D. A. Dixon**, Z. Fang, M. Chen
11:00 438. Titania supported manganese oxide nanocomposites for solar fuel production. **K. C. Schwartzberg**, K. A. Gray, J. M. Notestein
11:20 439. Alkene chain growth on solid acid catalysts. **M. L. Sarazen**, E. Duskocil, E. Iglesia
11:40 440. Design of Pd-based core-shell structured hydrogenation catalyst with enhanced activity. **Y. Wang**, J. Liu, P. Wang, C. J. Werth, T. J. Strathmann

Section D

San Francisco Marriott Marquis
 Foothill E

Evolving Science and Environmental Impacts of Hydraulic Fracturing

Regulatory: Technical and Policy Issues

Cosponsored by CEI and PRES

T. Barton, *Organizer*

D. Drogos, *Organizer, Presiding*

- 8:00** Introductory Remarks.
8:10 441. Environmental justice issues associated with oil and gas development in California. **K. J. Ferrar**, S. B. Shonkoff, S. Malone, M. Cutler
8:30 442. Filling the data gap: What we know (and don't know) about fracking and acidizing in California. **B. Mordick**
8:50 443. Water and hydraulic fracturing: Building awareness and collaborations between utilities and industry. **A. T. Carpenter**
9:10 444. Hydraulic fracturing: Developing water and oil-and-gas sector partnerships. **J. Whitler**, J. Albert
9:30 Intermission.
9:50 445. Characterizing compounds used in hydraulic fracturing: A necessary step for understanding environmental impacts. **W. T. Stringfellow**, J. K. Domen, M. Camarillo, W. L. Sandelin, R. Tinnacher, P. Jordan, J. Houseworth, J. Birkholzer
10:10 447. Principles and methods of horizontal drilling and hydraulic fracturing. **R. L. Kleinberg**

San Francisco Marriott Marquis
Golden Gate Section C3

Special Symposium in Honor of Professor Richard L. Valentine

D. Cwiertny, P. Vikesland, C. Jafvert, *Organizers, Presiding*

- 8:00 448.** Changes in DBP concentrations across distribution systems. **D. A. Reckhow**
8:40 449. Effects of combined UV and chlorine treatment on the formation mechanisms of disinfection by-products: Cases of trichloronitromethane and chloroform. **C. Huang**, L. Deng, W. Ben
9:00 450. Reaction of carbon nanotubes with chemical disinfectants: Byproduct formation and implications for nanotube environmental fate and toxicity. **E. M. Verdugo**, K. Genskow, Y. Han, C. Krause, T. E. Mattes, R. L. Valentine, D. M. Cwiertny
9:20 451. Investigating the effect of system pressure on Henry's Law constants: Case study of trihalomethanes in water distribution systems. **M. Collins**, J. Zwerneman
9:40 452. Looking at water chlorination in a new light: Contributions of ozone and hydroxyl radical to inactivation of chlorine-resistant microorganisms during solar photolysis of free chlorine. **M. Dodd**, P. Zhou, J. Meschke
10:00 Intermission.
10:10 453. Transient behavior of the corrosion potential of metals exposed to drinking water: Effects of stagnation and flow conditions and their relationship with metal release. **G. V. Korshin**, M. Fabbicino
10:50 454. Linking chloramine decomposition to lead release from tetravalent lead corrosion product PbO₂. **Y. Lin**
11:10 455. Impacts of redox chemical conditions on the occurrence and transformation of hexavalent chromium in drinking water. M. Chebeir, H. Sohn, **H. Liu**
11:30 456. Water plant fluorescence data analytics for coagulation operational decision support. **C. M. Miller**, N. P. Sanchez, M. J. Kennedy
11:50 457. Variation of DBP formation after UV/free chlorine treatment of model compounds. Y. Cui, **J. Fang**, C. Shang, Y. Fu

San Francisco Marriott Marquis
Golden Gate Section C2

New Advances in the Chemistry and Application of Advanced Oxidation Processes for Removal of Contaminants of Emerging Concern

G. Li Puma, D. Minakata, D. Dionysiou, *Organizers*
K. O Shea, S. Canonica, *Organizers, Presiding*
W. Choi, *Presiding*

- 8:00 458.** Homogeneous photochemical oxidation of arsenite under UV and solar irradiation. **W. Choi**, D. Kim, J. Yeo, J. Ryu
8:40 459. Engineering label-free optical biosensors for environmental management of common food and waterborne bacteria. **Y. G. Adewuyi**
9:00 460. Enhanced decomplexation of EDTA from electroplating wastewater using ozonation initiated by the coexisting transition metals. **X. Huang**, X. Li, S. Yuan, L. Teng, B. Pan
9:20 461. Comparison of the efficiency of contaminant degradation by sulfate and hydroxyl radical-based advanced oxidation processes (AOPs) in saline water. **Y. Yang**, J. J. Pignatello, J. Ma, W. A. Mitch
9:40 Intermission.
9:55 462. Effects of ISCO on poly- and perfluoroalkyl compounds in AFFF. **T. A. Bruton**, J. A. Field, F. M. Doyle, D. L. Sedlak
10:15 463. Photocatalytic decomposition of dimethyl phthalate under periodic UV-LED illumination. **Y. Ku**, S. Shiu, W. Hou, H. Wu
10:35 464. Transformation of Bisphenol A, triclosan, and nonylphenol by the Fe-TAML/H₂O₂ system. **Y. B. Onundi**, S. Swift, L. Wright, J. Reynisson, N. Singhal
10:55 465. Transformation of polyfluorinated compounds in natural waters by advanced oxidation processes. **T. Anumol**, S. Dagnino, D. VanDervort, S. A. Snyder

San Francisco Marriott Marquis
Golden Gate Section C1

Occurrence, Formation, Health Effects, and Control of Disinfection By-Products (DBPs)

Treatment Processes for DBP Formation Control

Cosponsored by CEI

Financially supported by Water Research Foundation

T. Karanfil, P. Westerhoff, W. Mitch, *Organizers*

Y. Xie, *Organizer, Presiding*

- 8:00 466.** Balancing the control of regulated and emerging DBPs while meeting other treatment objectives. **S. W. Krasner**
- 8:20 467.** Temporal patterns of NDMA precursors' removal at drinking water treatment plants. **H. uzun, D. Kim, T. Karanfil**
- 8:40 468.** Formation and control of NDMA during wastewater reclamation: The role of advanced treatments. **M. Sgroi, P. Roccaro, S. A. Snyder**
- 9:00 469.** Toxic brominated and iodinated disinfection by-products: A concern for new desalination technologies? **S. D. Richardson, W. Elshorbagy, R. Harren**
- 9:20 470.** Impact of operational parameters on the fate of disinfection by-products during reverse-osmosis membrane filtration. **A. J. Atkinson, K. Doederer, M. José Farré, W. Gernjak, H. S. Weinberg**
- 9:40** Intermission.
- 10:00 471.** Effect of disinfection by-products on antibiotic resistance in the bacterial communities of point-of-use (PoU) drinking water filters. **C. Wu, K. J. Martin, A. Perez-De La Rosa, G. Ryskamp, N. G. Love, T. M. Olson**
- 10:20 472.** Biological treatment of water disinfection byproducts using biotrickling filter under anaerobic conditions. **E. Sahle-Demessie, B. Mezgebe, G. Sorial**
- 10:40 473.** Kinetics of haloacetic acid removal by the combined process of zero-valent iron and biologically active carbon. **X. Wang, S. Tang, H. Yang, Y. F. Xie**
- 11:00 474.** Study on mechanisms of nitrosamine precursor removal by biological activated carbon process. **C. Chen**
- 11:20** Discussion.

San Francisco Marriott Marquis
Foothill F

Real Time Monitoring of Surface Waters for Nutrient and Water Supply Management

H. Pang, J. Gibs, R. Lippincott, T. Marhaba, *Organizers*

P. Schorr, *Organizer, Presiding*

8:00 Introductory Remarks.

8:05 475. FerryMon: Ferry-based, real-time assessments of human and climatically-driven environmental change in the Pamlico Sound Estuarine system, North Carolina, USA. **H. W. Paerl, J. R. Crosswell, B. L. Peierls, N. S. Hall, K. L. Rossignol, A. R. Joyner**

8:35 476. Total Maximum Daily Load WASP model calibration and verification with real time monitoring data. **J. Yagecic, M. Alebus, P. Schorr**

8:55 477. Use of optical measurements for understanding and quantifying biogeochemical processes. **B. Bergamaschi, B. Downing, B. Pellerin, J. Saraceno, J. Fleck, T. Kraus, J. Burau, R. Fujii**

9:25 478. Real time monitoring of Ganges River basin during Kumbh Mela ceremony. **J. Raich-Montiu, F. Edthofer, R. Wurm, A. Weingartner**

9:45 Intermission.

10:00 479. Overview of cleaning techniques for optical sensors and their efficiency on water quality monitoring under real conditions. **J. Raich-Montiu, F. Edthofer, R. Wurm, A. Weingartner**

10:25 480. Fluorous membrane ion-selective electrodes for perfluorinated surfactants: Trace-level detection and in situ monitoring of adsorption PFC and non-PFC membrane detection systems. **R. L. Lippincott, C. Lai**

10:50 481. Real time monitoring for water purveyor operations in New Jersey. **P. Schorr, R. L. Lippincott**

11:10 482. Real time monitoring for specific conductivity as a surrogate for salt and its impact on drinking water. **P. Schorr, J. Yagecic**

Environmental Radiochemistry

Plutonium and Neptunium Chemistry

Sponsored by NUCL, Cosponsored by ENVR

Fundamental Processes of Atmospheric Chemistry

Aerosols: Climate Implications

Sponsored by PHYS, Cosponsored by ENVR

IUPAC: Ecosystem and Human Exposure and Risk Assessment

Advancing Surface and Ground Water Exposure and Risk Assessment by Optimized Monitoring and Modeling

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Emerging Issues and Challenges

Pollinator Health: Risk Assessment and Sustainable Management

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Environmental Fate and Metabolism

Atmospheric Emissions and Mitigation

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Environmental Fate and Metabolism

Fate, Effects, and Risks of Nanopesticides

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Environmental Fate and Metabolism

New Insights in Pesticide-Soil Processes Leading To More Realistic Exposure Assessment

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Environmental Fate and Metabolism

Scientific and Regulatory Aspects of Chirality in Agrochemicals

Sponsored by AGRO, Cosponsored by ANYL, CEI, and ENVR

IUPAC: Formulation and Application

Technologies for Sustainable Crop Protection

Sponsored by AGRO, Cosponsored by ANYL and ENVR

WEDNESDAY AFTERNOON

Section A

San Francisco Marriott Marquis
Foothill D

Chemistry of Atmospheric Nitrogen-Containing Compounds

Cosponsored by PHYS

S. Brown, *Organizer*

A. Laskin, S. Nizkorodov, *Organizers, Presiding*

1:30 Introductory Remarks.

1:35 483. Homogenous and heterogeneous chemistry of nocturnal nitrogen oxides in high biogenic VOC environments: Implications for NO_x removal, halogen activation, and SOA formation. **J. A. Thornton**, B. H. Lee, F. D. Lopez-Hilfiker, C. Mohr, C. Gaston, E. D'Ambro, S. S. Brown, C. Warneke, M. Graus, J. B. Gilman, B. M. Lerner, I. B. Pollack, J. Peischl, T. B. Ryerson, P. R. Veres, J. M. Roberts, P. M. Edwards, K. E. Min, J. S. Holloway, K. C. Aikin, W. P. Dube, J. Liao, A. Welti, A. M. Middlebrook, J. B. Nowak, J. A. Neuman, J. Brioude, S. A. McKeen, M. K. Trainer, J. A. de Gouw

2:15 484. Nighttime production of organic nitrate aerosol by nitrate-radical initiated reactions near Houston, TX. **H. W. Wallace**, Y. Leong, B. K. Cevik, B. L. Leffer, J. H. Flynn, P. L. Laine, D. Anderson, X. Lan, R. W. Talbot, M. Camp, R. J. Griffin

2:35 485. Organic nitrate contribution to the oxidized nitrogen budget at the 2013 Southern Oxidant and Aerosol Study (SOAS). **A. P. Teng**, T. B. Nguyen, J. D. Crouse, J. M. St. Clair, K. Duffey, P. Romer, P. J. Wooldridge, A. Koss, K. Olson, J. B. Gilman, B. M. Lerner, R. J. Wild, B. Ayres, J. L. Fry, S. S. Brown, A. H. Goldstein, J. de Gouw, R. C. Cohen, P. O. Wennberg

2:55 486. Photochemistry in atmospheric condensed phases: Exploring the effects of matrix. **M. L. Hinks**, H. Lignell, S. A. Nizkorodov

3:15 Intermission.

- 3:30 487.** Nitrogen- and sulfur-containing organic compounds in atmospheric particles and cloud water collected during SOAS. **K. A. Pratt**, E. Boone, A. Laskin, J. Laskin, C. Wirth, P. B. Shepson, B. Stirm
- 4:10 488.** Measurements of atmospheric amines and ammonia with a chemical ionization mass spectrometer (CIMS). **S. Lee**, Y. You, M. Sierra-Hernández, J. de Gouw, A. Abigail Koss, K. Baumann, E. Edgerton
- 4:30 489.** Connecting optical properties and organic nitrogen in Po Valley fog water. **L. N. Hawkins**, L. Jahl, M. Facchini, S. Gilardoni, M. Paglione
- 4:50 490.** Influence of flue gas composition on nitrosamine and nitramine formation in amine-based post-combustion CO₂ capture systems. **N. Dai**, W. A. Mitch

Section B

San Francisco Marriott Marquis
Foothill G1

Humic Substances and Its Critical Role in Environmental Chemistry: The Past 50 Years, Present Knowledge and Future Research Opportunities

Photochemistry Effect on Humic Substance

F. Rosario, J. Pedersen, I. Suffet, *Organizers, Presiding*

1:30 Introductory Remarks.

1:35 491. Photochemical insights into the size of humic substances. E. Appiani, **K. McNeill**

2:05 492. Photo-reactivity of natural dissolved organic matter from fresh to marine waters in the Florida Everglades, USA. **S. A. Timko**, C. Romera-Castillo, R. Jaffé, W. J. Cooper

2:30 493. Reactivity of dissolved organic matter towards direct and indirect photochemistry of pollutants and biomolecules. **E. M. Janssen**, P. R. Erickson, K. McNeill

2:55 494. Natural organic matter-sensitized photochemical processes in marine and estuarine waters. **K. M. Parker**, J. J. Pignatello, W. A. Mitch

3:20 Intermission.

3:35 495. Sunlight-driven photochemical bromination and iodination of dissolved organic matter in seawater. **M. Dodd**, J. Mendez-Diaz, K. Shimabuku, J. Ma, Z. Enumah, J. Pignatello, W. Mitch

4:00 496. Assessment of the effects of ozone and UV irradiation on natural and wastewater effluent dissolved organic matter. A. L. Paul, D. M. Osborne, **W. T. Cooper**

4:25 497. Sunlight-induced photochemistry of natural organic matter: Major reactive species. **W. J. Cooper**, B. A. Cottrell, S. A. Timko

4:50 498. Dark formation of isoproturon from its semi-persistent photodegradation product. **C. Yuan**, Y. Chin, L. Weavers

5:15 Discussion.

Section C

San Francisco Marriott Marquis
Club Room

Heterogeneous Catalysis for Environmental and Energy Applications

Cosponsored by CATL

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

1:30 499. Semiconductor electrochemical treatment of domestic wastewater coupled with the production of molecular hydrogen. **M. R. Hoffmann**, C. Cid, Y. Qu, K. Cho

2:00 500. Hexanol/hexanoic acid mixtures in cyclohexane solvent over a supported Palladium nanoparticle catalyst probed by vibrational sum frequency generation. **F. Geiger**

2:20 501. Experimental and modeling studies of the sink release mechanism in the photocatalytic degradation of organic compounds using TiO₂-AC mixtures. A. Rajesh, S. Sarkar, L. Ramu, **R. Ravikrishna**

2:40 502. Unprecedented properties of bimetallic supported photocatalysts: Emerging simple tool for air detoxification. **J. C. Colmenares Quintero**, P. Lisowski

3:00 503. Reactivity and mechanisms of oxygen removal catalysis on metal clusters and metal-acid bifunctional systems. **E. I. Gurbuz**, E. Iglesia

3:20 504. Kinetics and mechanisms of lignin model compound reactions over a supported copper catalyst. Z. Jones, B. R. Goldsmith, **S. L. Scott**, B. Peters

3:40 505. Benign by design mechanochemical preparation of nanomaterials for heterogeneously catalysed processes. **R. Luque**, M. Ojeda, A. Yopez, R. A. Arancon, A. Franco, A. Pineda, A. A. Romero

4:00 Intermission.

4:10 506. Implications of pretreatment and lipid extraction conditions on catalytic upgrading of algae oils to hydrocarbon fuels. **J. S. Kruger**, E. Christensen, R. L. McCormick, P. T. Pienkos

4:30 507. Photocatalytic destruction of water soluble ethers using TtIO₂ and visible/near UV light. **R. D. Barreto**

- 4:50 508.** Nanostructured iron oxides as photoelectrocatalysts for waste-to-energy conversion. **K. E. Greenstein**, C. Lanzl, J. Baltrusaitis, D. Koser, G. F. Parkin, D. M. Cwiertny
5:10 509. Activation of persulfates by carbon nanotubes: Application to oxidation of organic contaminants in water. **H. Lee**, H. Lee, J. Lee, C. Lee

Section D

San Francisco Marriott Marquis
Foothill E

Evolving Science and Environmental Impacts of Hydraulic Fracturing

Regulatory: Technical and Policy Issues

Cosponsored by CEI and PRES

T. Barton, *Organizer*

D. Drogos, *Organizer, Presiding*

- 1:30 510.** California's hydraulic fracturing laws and scientific studies: Science and politics. **M. Nechodom**
2:10 511. How API's shale gas standards and best practices support sustainable shale gas development. **D. Miller**
2:30 512. Fight over water quantity, quality, and rights. **E. Hagström**
2:50 Intermission.
3:10 Panel Discussion.
4:40 Concluding Remarks.

Section E

San Francisco Marriott Marquis
Golden Gate Section C3

Special Symposium in Honor of Professor Richard L. Valentine

D. Cwiertny, P. Vikesland, C. Jafvert, *Organizers, Presiding*

- 1:30 513.** Making the radical seem simple: Mineral-catalyzed activation of oxidants for subsurface remediation. **D. L. Sedlak**, T. A. Bruton, H. Liu
2:10 514. Exploring seasonal dynamics between water chemistry and photochemical transformations of pesticides in natural and reconstructed wetlands. **A. J. McCabe**, W. A. Arnold
2:30 515. Structure effects of organic cation sorption to clays. M. Samaraweera, W. C. Jolin, D. Vasudevan, J. Gascon, **A. A. MacKay**
2:50 516. Solid-state electron transfer between environmentally important semiconducting oxides. **D. E. Latta**, K. M. Kemner, M. M. Scherer, M. I. Boyanov
3:10 517. Novel forward osmosis membrane prepared by layer-by-layer assembly of polyelectrolytes and zeolite nanoparticles. **B. Mi**, Y. Kang, L. Emdadi, D. Liu
3:30 Intermission.
3:40 518. Environmental chemistry research that improves health in developing world settings: Assessment of in-line disinfection of gravity flow water supply systems in Panama and water derived from pumps in Madagascar that contain lead components. **J. R. Mihelcic**, D. B. Akers, K. D. Orner, J. A. Cunningham
4:20 519. Reversible photohydration: An overlooked pathway in emerging pollutant fate? **D. M. Cwiertny**, E. P. Kolodziej
4:40 520. Enhanced biodegradation of 6:2 fluorotelomer alcohol (6:2 FTOH) by defined microbial consortia. M. Kim, N. Wang, **K. Chu**
5:00 521. Susceptibility of groundwater As concentrations to changing geochemical conditions. **M. Schaefer**, X. Guo, Y. Gan, A. Griffin, C. Gorski, Y. Wang, S. Fendorf
5:20 522. Occam's razor and our continuing adventures in chlorination and chloramination. **P. Vikesland**

Section F

San Francisco Marriott Marquis
Golden Gate Section C2

New Advances in the Chemistry and Application of Advanced Oxidation Processes for Removal of Contaminants of Emerging Concern

G. Li Puma, D. Dionysiou, D. Minakata, K. Oshea, S. Canonica, *Organizers*
A. Arques, J. Marugán, J. Sánchez Pérez, *Presiding*

- 1:30 523.** Removal of micropollutants during solar water disinfection processes. **J. Marugan**, R. Timmers, P. Soto, C. Casado, R. van Grieken

- 2:10 524.** Degradation of pesticides and monitoring of their transformation products in low cost raceway ponds by solar photo-Fenton. **J. A. Sánchez Pérez**, I. Carra, C. Sirtori, J. Casas López, A. Agüera, S. Malato
- 2:30 525.** Pilot scale investigation of AOP for the removal of emerging organic contaminants and pathogens. **P. Roccaro**, M. Sgroi, T. Anumol, C. Rock, S. Snyder
- 2:50 526.** Pharmaceutical degradation and byproduct formation in an innovative UV/H₂O₂ advanced oxidation reactor. E. Parry, L. Mahoney, F. Zeng, B. Younis, K. Li, **T. Young**
- 3:10** Intermission.
- 3:25 527.** Mitigating nitrosamine emissions from amine-based post-combustion CO₂ capture systems with ultraviolet-ozone treatment of washwaters. **N. Dai**, W. A. Mitch
- 3:45 528.** Use of soluble organics isolated from urban wastes as auxiliaries for mild photo-Fenton processes. **A. Arques**, A. M. Amat, R. Vicente, M. Mora, R. F. Vercher, J. Gomis
- 4:05 529.** Electrochemical oxidation of emerging organic contaminants in drinking water/wastewater. **Z. Lazarova**
- 4:25 530.** Organic pollution remediation in municipal wastewater reverse osmosis concentrate by synergistic chlorine-enhanced photo-assisted electrochemical oxidation. **G. Hurwitz**, E. M. Hoek

Section G

San Francisco Marriott Marquis
Golden Gate Section C1

Occurrence, Formation, Health Effects, and Control of Disinfection By-Products (DBPs)

Treatment Processes for DBP Formation Control

Cosponsored by CEI

Financially supported by Water Research Foundation

T. Karanfil, P. Westerhoff, W. Mitch, *Organizers*

Y. Xie, *Organizer, Presiding*

- 1:30 531.** Improving assessment of precursors of THMs, HANs, and N-nitrosamines in water treatment processes. **T. D. Do**, J. L. Fairey
- 1:50 532.** Effect of medium-pressure and low-pressure UV irradiation on bromate removal in an Advanced Reduction Process (ARP). **B. Jung**, B. Batchelor, A. Abdel-Wahab
- 2:10 533.** Disinfection by-product formation in the UV/chlorine advanced oxidation process for drinking water treatment. **R. Hofmann**, D. Wang, S. Andrews, J. Bolton
- 2:30** Intermission.
- 2:45 534.** Comparison of DBP formation from the UV/chlorine and UV/H₂O₂ processes at equivalent removal of carbamazepine and atrazine. **D. Kong**, C. Shang, X. Yang, J. Fang
- 3:05 535.** Direct and hydrogen peroxide-assisted UV photolysis of halonitromethanes and haloacetoneitriles. **L. Ling**, J. Fang, C. Shang
- 3:25 536.** Removal of 12 disinfection byproducts from drinking water by the combined use of 20 KHz ultrasound and quartz sand. **W. Yang**, **J. Feng**, Z. Liu, Z. Luo, X. Cui, J. Liu, **M. Huo**
- 3:45** Concluding Remarks.

Section H

San Francisco Marriott Marquis
Foothill F

Analytical Methods for Detecting and Prioritizing Contaminants of Concern

Wastewater and Surface Water

R. U. Halden, J. Field, L. Ferguson, H. Done, S. Richardson, *Organizers*

D. Barcelo, *Organizer, Presiding*

- 1:30** Introductory Remarks.
- 1:35 537.** Waste epidemiology: Taking the chemical pulse of a nation at the sewer by example of the United States. **R. U. Halden**, A. Venkatesan
- 2:20 538.** Excitation emission matrix (EEM) fluorescence spectral separation and detection of refractory wastewater effluent organic matter (EfOM). **M. J. Wells**, J. M. Sáñez, K. Y. Bell
- 2:50 539.** Analysis and occurrence of illicit and abused drugs in sewage sludge. N. Mastroianni, **C. Postigo**, M. L. de Alda, D. Barcelo
- 3:20** Intermission.
- 3:30 540.** Nationwide occurrence survey of nitrosamines and their precursors in source water and drinking water around China. Y. Shu, **C. Chen**, X. Tang, J. Wang, C. Wang, X. Zhang
- 4:00 541.** Electrochemistry-LC-Q-TOF-mass spectrometry to elucidate metabolites of metoprolol in microcosm experiments, wastewater, and surface water. A. Sippel, **C. Zwiener**

4:30 542. Trace analysis of chromium (VI) by ion chromatography tandem mass spectrometry. **V. I. Furdui**, S. Maedler, D. Palmer, F. Sun, T. Switzer, R. J. Tooley
5:00 Panel Discussion.
5:15 Concluding Remarks.

Environmental Radiochemistry

General Topics and Radioanalytical Methods

Sponsored by NUCL, Cosponsored by ENVR

IUPAC: Ecosystem and Human Exposure and Risk Assessment

Advancing Surface and Ground Water Exposure and Risk Assessment by Optimized Monitoring and Modeling

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Emerging Issues and Challenges

Pollinator Health: Risk Assessment and Sustainable Management

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Environmental Fate and Metabolism

Fate, Effects and Risks of Nanopesticides

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Environmental Fate and Metabolism

New Insights in Pesticide-Soil Processes Leading To More Realistic Exposure Assessment

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Environmental Fate and Metabolism

Scientific and Regulatory Aspects of Chirality in Agrochemicals

Sponsored by AGRO, Cosponsored by ANYL, CEI, and ENVR

IUPAC: Formulation and Application

Technologies for Sustainable Crop Protection

Sponsored by AGRO, Cosponsored by ANYL and ENVR

IUPAC: Formulation and Application

Technologies for Sustainable Crop Protection

Sponsored by AGRO, Cosponsored by ANYL and ENVR

WEDNESDAY EVENING

Section A

San Francisco Marriott Marquis
Golden Gate Section A/B

Analytical Methods for Detecting and Prioritizing Contaminants of Concern

D. Barcelo, H. Done, J. Field, L. Ferguson, S. Richardson, R. U. Halden, *Organizers*

6:00 - 8:00

543. Approach for size characterization of engineered nanoparticles in natural waters. **A. A. Galyean**, W. N. Vreeland, J. J. Filliben, R. D. Holbrook, D. C. Ripple, H. S. Weinberg

544. Simultaneous determination of 18 non-BDE halogenated flame retardants in indoor house dust using solid phase extraction and gas chromatography electron capture negative ionization mass spectrometry. **X. Fan**, C. Kubwabo, P. E. Rasmussen

545. Online separation and characterization of metallic nanomaterials in consumer products with capillary electrophoresis/inductively-coupled plasma-mass spectrometry. **H. Qu**, T. Mudalige, S. Linder, I. Quevedo

546. LC-MS/MS method for pyrethroids analysis. **I. Cassias**, E. Chang, S. Wilson, S. Lane, T. Barrera, J. Blount, A. Limson, O. Ajayi

547. Occurrence of carcinogenic N-nitrosamines in nationally representative samples of U.S. sewage sludges. A. K. Venkatesan, B. F. Pycke, **R. U. Halden**

- 548.** Quantitation and identification of PPCP in environmental samples using accurate mass MS/MS technology. **C. Borton**, R. Kern, A. Schreiber
- 549.** Screening and identification of unexpected environmental pollutants in water samples. **A. Schreiber**, R. Kern, C. Borton
- 550.** Fluorescent method for detection of scale inhibitors using a Zn(II)-8-hydroxyquinoline-5-sulphonate complex. **R. M. Alshamrani**, A. Apblett
- 551.** Targeted determination of 1525 micropollutants and transformation products in wastewater by liquid chromatography quadrupole-time-of-flight mass spectrometry with an accurate-mass database. A. A. Bletsou, A. K. Psoma, P. Gago Ferrero, **N. S. Thomaidis**
- 552.** Cypermethrin isomers separation and quantitation with LC-MS/MS. **E. Chang**
- 553.** Comparison of modern LC-MS/MS methods for analysis of emerging organic contaminants in water. **T. Anumol**, S. Merel, S. A. Snyder
- 554.** Novel solid phase microextraction (SPME) fiber based on MAF-5 for the determination of organochlorine pesticides in aqueous samples. **C. Tian**, G. Ouyang, J. Gan
- 555.** Development of a U.S. EPA method for the analysis of select cyanotoxins in drinking water by solid phase extraction and LC/MS/MS. **D. R. Tettenhorst**, J. A. Shoemaker
- 556.** Analysis of electronics waste by GCxGC combined with high-resolution mass spectrometry: Using exact mass information to explore the data. **M. Ubukata**, K. Jobst, E. Reiner, Q. Tao, S. Reichenbach, Z. Wu, **J. Dane**, **R. Cody**
- 557.** PBDE's analysis in leachate from landfills in Mexico using microwave assisted extraction. **L. A. González**, I. C. Gavilán, E. Santos, A. Gavilán
- 558.** Brominated flame retardants analysis in a waste water treatment plant in Mexico. I. C. Gavilán, **L. A. González**, L. R. Tovar, A. Gavilán
- 559.** Determination of fluoroquinolone antibiotics in wastewater by solid-phase extraction high performance liquid chromatography with fluorescence detection. **K. He**, L. Blaney
- 560.** Development of chromatographic methods in an emergency response to West Virginia crude 4-methylcyclohexanemethanol spill. **A. M. Dietrich**, J. Smiley, A. Thomas, Y. Zhao, K. Phetxumphou, M. Ahart, A. Sain, P. Scardina, D. Gallagher
- 561.** Correlated analysis of flame retardants using Raman micro-spectroscopy and scanning electron microscopy: A tool for studying composition, origin, and spatial heterogeneity of flame retardants in dust. **S. Ghosal**, J. Wagner
- 562.** Suitability of current environmental analytical methods for analyzing fracking fluids. **T. Kline**, D. Dobb
- 563.** Active sorptive sampling for bioavailability: The in situ sampler for bioavailability assessment (IS2B). **S. D. Supowit**, I. B. Roll, V. D. Dang, K. J. Kroll, N. D. Denslow, R. U. Halden
- 564.** Nationwide survey of degradation products and human metabolites of triclocarban and triclosan in United States sewage sludge. **B. F. Pycke**, I. B. Roll, B. J. Brownawell, E. T. Furlong, D. W. Kolpin, C. A. Kinney, R. U. Halden
- 565.** Atmospheric pressure ionization mass spectrometry for GC (APGC): An enabling technology for detection of contaminants of concern. **M. S. Young**, L. Mullin, J. C. Shia, J. Burgess
- 566.** Veterinary antibiotic chlortetracycline distribution and mass balance in conventional municipal wastewater treatment plant. **R. Pulicharla**
- 567.** Building a breathprint: Biomarkers of exposure due to the toxicant trichloroethylene. **J. D. White**, R. D. Leib, A. B. Manning-Bog

Section A

San Francisco Marriott Marquis
Golden Gate Section A/B

Assessing the Implications of Nanotechnology

Cosponsored by COLL and GEOC

A. Keller, G. Lowry, *Organizers, Presiding*

6:00 - 8:00

- 568.** Linking the physicochemical properties of modified titania with its biocidal properties. **B. Veronesi**, C. Han, M. Pelaez, H. Choi, D. Betancourt, D. Dionysiou
- 569.** Long-term dissolution and speciation of copper-based nanoparticles in aqueous media: Effect of extracellular polymeric substances, pH, and ionic strength. **A. S. Adeleye**, A. A. Keller
- 570.** AgNP aggregation at environmentally relevant concentrations using SP-ICP-MS. **B. Lee**, H. Kim, S. Na, K. Kim, J. F. Ranville, S. Kim, W. Lee, B. Lee, I. Eom
- 571.** Particle-scale studies of the interactions of engineered nanoparticles with wastewater biomass. **B. A. Asadishad**, S. Ghoshal, N. Tufenkji
- 572.** Application of CMC and EDTA to improve the reactivity of bimetallic palladium/zero-valent iron nanoparticles in seawater. **X. Ma**, D. He, A. M. Jones, D. Waite
- 573.** Simultaneous determination of aqueous concentration and aggregate size of multiwalled carbon nanotubes. **Q. Zaib**, **F. Ahmad**

574. Prospecting nanomaterials in water environment by cloud-point extraction coupled with transmission electron microscopy. **Y. Yang**, K. Hristovski, P. Westerhoff
575. Optimization of single-particle mode ICP-MS analysis of engineered nanoparticles in complex environmental samples. **F. Piccapietra**, N. Tufenkji, S. Ghoshal
576. Modeling the influence of secondary constituents on nanoparticle deposition in porous media. **M. D. Becker**, Y. Wang, K. D. Pennell, L. M. Abriola
577. Characterization of nanoparticle interactions with proteins: Insights into the dynamic biological interface of silver nanoparticles. **K. T. Gerner**, **S. Anderson**, K. E. Wheeler
578. Nanosilver in socks: Antimicrobial activity and characterization. J. Virkutyte, S. R. Al-Abed, **Z. Zhang**
579. Fenton-like zerovalent silver nanoparticle-mediated hydroxyl radical production. **D. He**, T. D. Waite
580. Thermal investigation of an attached phase soil humic acid and its effect on fullerene (nC₆₀) attachment. **C. McNew**, E. J. LeBoeuf
581. Interaction of multiwalled carbon nanotubes (MWNTs) with exopolymeric substances (EPS) produced by sulfate reducing bacteria (SRB). Q. Zaib, W. Abdul Matiin, **F. Ahmad**
582. Interactions of TiO₂ nanoparticles with aquatic media: Enhanced dark and photo-induced catalytic activity due to surface enrichment of Fe(III) species. Y. Li, **W. Yan**
583. Role of 17β-estradiol on the stability of TiO₂ nanomaterials in aquatic environment. **J. Lee**, S. L. Bartelt-Hunt, Y. Li
584. Metal oxide nanomaterials as chemosensitizers in marine organisms. **B. Wu**, B. J. Cole, C. T. Duarte, G. Cherr
585. Applying statistical methodologies to simulate the fate and transport of engineered nanoparticles in the subsurface. **Y. Li**, C. Bai

Section A

San Francisco Marriott Marquis
Golden Gate Section A/B

California Air Monitoring: From Inception To Current Trends in the New Millennium

Cosponsored by MPPG

J. Driscoll, *Organizer*

J. Maclachlan, *Organizer, Presiding*

6:00 - 8:00

586. Chemical speciation and source apportionment of size fractionated aerosols collected in the Central Valley. **G. Allen**, P. B. Kelly, A. Clifford, B. A. Buchholz

587. Monitoring and control of pump & treat systems in gasoline stations. **J. N. Driscoll**, J. L. Maclachlan

Section A

San Francisco Marriott Marquis
Golden Gate Section A/B

Chemistry of Atmospheric Nitrogen-Containing Compounds

Cosponsored by PHYS

S. Brown, *Organizer*

A. Laskin, S. Nizkorodov, *Organizers, Presiding*

6:00 - 8:00

588. Reaction of OH + CH₂=NH (methanimine): A theoretical study. **A. Mohamad**, J. R. Barker

589. Speciation of organic nitrogen compounds in aerosols from Rocky Mountain National Park. **Y. Desyaterik**, K. Benedict, J. L. Collett, B. A. Schichtel

590. Cavity ringdown spectroscopy of chlorine-substituted peroxy radicals: Reaction kinetics with nitric oxide. **M. D. Smarte**, L. G. Dodson, M. Okumura

Section A

San Francisco Marriott Marquis
Golden Gate Section A/B

Engineering Nanomaterials for Energy, Environmental Science and Biomedical Applications

J. Mi, *Organizer*

J. Song, *Organizer, Presiding*

6:00 - 8:00

591. New application of nano zeolites for radioactive wastewater treatment in nuclear power plant accident. **K. Lee**, K. Kim, E. Lee, D. Chung, J. Moon

592. Novel EDTA attached magnetic nanoparticles sorbents for rapid removal of cadmium from aquatic systems. **Y. Huang**, A. A. Keller

593. Synthesis of magnetic vertically-aligned carbon nanotubes using CVD assisted by AAO templates and their potential application. **C. Chang**, C. Mei
594. Quantifying the impact of surface functionalization on optical spectra of cell-internalized gold nanoparticles. **M. A. Jackson**, A. L. Chen, R. A. Drezek
595. Synthesis of innovative ferrite-based recyclable catalyst to degrade water contaminants of emerging concern. **A. H. Al Anazi**, M. N. Nadagouda, C. Han, **D. D. Dionysiou**, S. R. Takkellapati
596. Magnetic nano-sorbent based on cellulose nanocrystals (CNC)/Fe₃O₄ NPs for the selective removal of boron from seawater. **K. A. Mahmoud**, D. Elmasri, A. Abdel-Wahab
597. Multicomponent nanoparticles for remediation of heavy metals. **L. Cumbal**, D. Delgado, C. Bastidas
598. Synthesis of carbon based nanomaterials and their applications in the removal of water contaminants. **S. P. Dubey**, A. D. Dwivedi, I. Kim, M. Sillanpaa, Y. Kwon, C. Lee
599. Aqueous, high concentration dispersions of molybdenum disulfide in biocompatible block copolymers. **N. D. Mansukhani**, L. M. Guiney, P. Kim, D. Alducin, A. Ponce, E. Larios, M. Jose-Yacaman, M. C. Hersam
600. Investigation of nanometer scale silica films as the robust proton conducting, gas impermeable membrane for artificial photosynthesis. **G. Yuan**, H. Frei
601. Identification of physicochemical properties associated with enhanced anionic adsorption of Se via nano- α -Al₂O₃ and nano- α -Fe₂O₃. **A. W. Lounsbury**, J. S. Yamani, J. B. Zimmerman
602. Step forward to the improvement of osmosis membrane bioreactor for sustainable water. **C. Nguyen**, T. Nguyen, S. Chen, W. Chan, H. Ngo, W. Guo
603. Nanoparticle protein corona compared across engineered particle properties and environmentally relevant reaction conditions. **K. E. Wheeler**, K. Gerner, R. Eigneneer, E. Castellanos, M. Nakamoto, A. Lampe
604. Stability of nanoparticulate hydrous ferric oxides (HFOs) inside heterogeneous porous sorbent phases. B. Pan, **H. Zhang**, B. Pan
605. Fabrication and application of mixed matrix TiO₂-PVDF membranes in algal MBR systems. W. Hu, **J. Yin**, Z. Hu, B. Deng
606. Environmental application of triplet-triplet annihilation-based upconversion. **O. Kwon**, J. Kim, J. Kim
607. Novel, chemical free nanotechnology based approach for the inactivation of airborne bacteria using engineered water nanostructures (EWNS). **G. Pyrgiotakis**, J. McDevitt, Y. Gao, M. Eleftheriadou, A. Branco, P. Demokritou, B. Lemos
608. Discovery of a nanoscale polyvanadate, a potent clinical candidate for the treatment of cancer. **J. Mi**, **J. Song**

Section A

San Francisco Marriott Marquis
Golden Gate Section A/B

Environmental Applications and Implications of Graphene-Based Nanomaterials

I. Chowdhury, M. Hersam, S. Walker, *Organizers*

D. Bouchard, *Organizer, Presiding*

6:00 - 8:00

609. Use of graphene-TiO₂ hybrid materials for pollutant abatement. **M. Sangermano**, P. Calza, F. Sordello, M. Cerruti, E. Odorici

610. Graphene oxide-assisted production of carbon nitrides and their photocatalytic activity. **J. Oh**, S. Lee, S. Park

611. MnO₂/graphene composite electrode for capacitive deionization. **A. E. Rashed**, M. I. Ibrahim, A. O. Barakat, A. Abd El-Moneim

612. Synthesis of magnetic carbon nanotubes and its applications to the removal of environmental contaminants. **C. Chang**, H. Hsiao

613. Environmental photochemistry of single-layered graphene oxide in water. **Y. Zhao**, C. T. Jafvert

614. Electrical current stimulated desorption of carbon dioxide adsorbed on graphene. **R. Sevanthi**, A. Jackson, M. Green

Section A

San Francisco Marriott Marquis
Golden Gate Section A/B

Evolving Science and Environmental Impacts of Hydraulic Fracturing

Cosponsored by CEI and PRES

T. Barton, *Organizer*

D. Drogos, *Organizer, Presiding*

6:00 - 8:00

615. Feasibility of utilizing algal biomass for the pretreatment of hydraulic fracturing wastewater. **L. W. Scannell**, X. Ji, R. Xu, B. Z. Haznedaroglu

Section A

San Francisco Marriott Marquis
Golden Gate Section A/B

General Posters

D. Dionysiou, *Organizer, Presiding*

6:00 - 8:00

616. Evaporation mechanisms of HD chemical agent from various substrate materials: Constant contact angle vs. constant contact area mechanism. **H. Jung**
617. Fluoride removal of drinking water on Zr-Mg-Al trimetal oxides. X. Liu, T. YE, M. Li, **F. Wang**
618. Fertilizer use near Spring Lake, Illinois. S. M. Nicioli, K. E. Ribordy, J. H. Boeckler, S. A. Wailand, **J. McConnell**
619. Analysis of zeolite as a prospective candidate for emission control system. **K. Sivakumar**, A. Santhanam, M. Natarajan, D. Velauthapillai
620. Effect of natural organic matter on the activation of persulfate using zerovalent iron. **Y. Kim**, J. Kim, M. Kim, J. Kim, Y. Luo
621. Studies of biobased products and anaerobic digestion per compost environment standard. E. J. Parish, T. Wei, **H. Honda**, S. Lee, J. Li, K. Jhao, C. Yang
622. Activation of persulfate using zerovalent zinc. **Y. Kim**, H. Kwon, S. Woo
623. Development of a wireless sensor network to derive multichannel neural signals for neuroscience study. E. J. Parish, T. Kodama, **W. Huang**, M. Dai, T. Wei, H. Honda
624. PCBs in indoor and outdoor air from urban and rural U.S. homes and schools. **R. F. Marek**, T. Schulz, D. Hu, J. DeWall, P. S. Thorne, K. C. Hornbuckle
625. Chlorine-free electrochemical disinfection of water contaminated with Escherichia coli: Role of electrode materials. **N. Barashkov**, **T. Sakhno**, I. Igribaeva, S. Yergeshbayeva, I. Zvonkina
626. Mechanism of Co(II) and Ni(II) adsorption on the nanosized carbon impregnated alginate beads. **K. Oh-Hun**, J. Woosik, A. N. Kabra, J. Byong-Hun
627. Analysis of total organic carbon and algal degradates from fire-impacted watersheds: Implications for preozonation water treatment. **M. T. Mize**, H. M. Housel, T. M. Young
628. Recovery efficiency of dissolved metal in acid mine drainage. J. Kim, Y. Kim, **J. Hwang**, W. Lim, **M. Lee**
629. Preparation of chitosan/CdS nanoparticles composite films and their photocatalytic degradation activities. **T. Feng**, L. Xu, B. Deng
630. Modeling Arsenic(III) and (V) adsorption on soil: Implications for water treatment and agriculture. **L. T. Alameda**, Y. Zhao, B. A. Manning
631. Nutrient recovery from domestic wastewater using ion exchange and struvite precipitation. **B. K. Mayer**, A. T. Williams, D. H. Zitomer
632. Environmental effects on macroeconomic energy consumption for green marketing. E. J. Parish, T. Kodama, **Y. Shen**, H. Honda, T. Wei, E. Akyildiz, T. Terra, H. Chen, J. Lai, S. Lee, Y. Lee
633. Reductive dechlorination of trichloroethylene in a sulfite-mediated UV photochemical system. H. Farzaneh, **B. Jung**, A. Khodary, A. Abdel-Wahab
634. Photoproducted reactive intermediates in surface waters: Investigation of factors that determine which reactive intermediates are produced. **A. S. Mohamed**, J. D. Thoenke
635. Performance of the MgO-based binder for treating sediments in the accelerated carbonation condition. **K. Hwang**, J. Kim, J. Ahn, I. Hwang
636. Application of life cycle approach to design greener products. E. J. Parish, **S. Hyatt**, Q. K. Dang, Y. Shen, Y. Lau, H. Honda, S. Lee, Y. Lee, H. Chen, J. Lai, T. Wei
637. Surface coating of lead pellets by Fe and Al-phosphates for lead immobilization in shooting ranges. J. Guo, B. Hua, **J. Yang**
638. Rapid colorimetric method for determining production of ferrous from zerovalent nanoiron materials. **K. Phetxumphou**, A. M. Dietrich
639. Aerobic biotransformation of fluorotelomer thioamidosulfonate (Lodyne™) in AFFF. **K. Harding**, E. Houtz, S. Yi, D. Sedlak, L. Alvarez-Cohen
640. Analysis of antibacterial benzisothiazolinone using surface-enhanced Raman spectroscopy. **G. Lee**, S. Yang
641. Activated carbon remediation of 1,2,3-trichloropropane. **J. Mital**
642. Synthesis of Cu/ Cu₂O hollowspheres and its application in remediation of Hg²⁺. **B. Li**, **D. Li**, **S. I. Yang**
643. Disinfection by ozone of a surface water reservoir affected by wildfire runoff. **H. M. Housel**
644. Effects of particle size on the metal extraction with citrate in contaminated soils. **J. Yang**, M. Kwon, S. Lee
645. Photochemical degradation of wastewater derived pollutants in natural and effluent impacted river waters. L. C. Bodhipaksha, **A. A. MacKay**
646. Electro-degradation of RDX by microbial fuel cell. **Y. Lee**, S. Bae, W. Lee
647. Anodic degradation of caffeine on a BDD electrode. **T. Chen**, K. Huang, S. Chen, R. Tsai, Y. Chen
648. Investigating adsorption of nitrophenol and copper on carbon nanotubes via electrochemical analysis. **C. M. Chin**, C. Huang, H. Lee

- 649.** Fast scan voltammetry evaluation of copper complexation with dissolved organic matter and aluminum induced release. **A. R. Tremonti**, T. Siriwardena, S. P. McElmurry, P. Hashemi
- 650.** Ionic aerosols for emissions control. **H. Gokturk**
- 651.** Combined effect of SO₂ and alkali on performance of V₂O₅/TiO₂ catalyst during selective catalytic reduction of NO by NH₃. Q. Li, S. Chen, Z. Liu, **Q. Liu**
- 652.** Photothermal release of CO₂ from capture solutions using nanoparticles. **D. T. Nguyen**, R. Truong, R. Lee, A. P. Esser-Kahn
- 653.** New porous MgO sorbent to capture CO₂ at 473 K. Y. Li, M. Wan, W. Lin, **Y. Wang, J. Zhu**
- 656.** Effect of electrode design in water disinfection by pulsed-electric field. O. Lee, P. Hung, K. Lam, S. Kwan, **Y. Lai**, J. Kwan, K. Yeung
- 657.** Removal of heavy metals, hardness, and viruses from drinking water using electrocoagulation. **J. Heffron**, B. K. Mayer
- 658.** Use of active chlorine for disinfection of water used for irrigation. D. Chianca de Moura, **C. A. Martinez-Huitle, C. K. Costa de Araujo**
- 659.** Role of metal salts on the dissolutions of poly(1-oxotrimethylene) in aqueous composite metal salt solutions. **Y. Eom**, H. Jang, C. Kim, B. Kim
- 660.** Evaluation of energy efficiency for TRO production in brackish/seawater electrolysis: Effect of salinity and current. **Y. Jung**, E. Hong, J. Kang
- 661.** Advanced bimetal catalysts for catalytic oxidation of volatile organic compounds in industrial flue gas. M. Popova, M. Rangus, D. Maucec, M. Mazaj, A. Ristic, **N. Novak Tusar**
- 662.** Monitoring of the quality of the groundwater resources in Goksu and Silifke Delta, Turkey. **E. D. GUNER**, G. SECKIN
- 663.** Bio-reduction of U(VI) and precipitation of U(IV). **S. A. Kushwaha**, C. A. Zhou, A. K. Markus, M. N. Young, B. E. Rittmann
- 664.** Assessment of the effect of cadmium, copper, and lead on soils' properties with reference to cultivated land use in the tropical wet-and dry climate. **E. A. Olubunmi**, O. I. Olumide
- 665.** Acid mine drainage: A novel flocculant for the recovery of microalgal biomass. **E. Salama**, A. N. Kabra, M. Ji, M. M. abdlkader, B. Jeon
- 665.** Effect of groundwater solutes on the performance of nanoscale zero-valent iron particles coated with polyacrylic acid. **I. Hwang**, H. Kim, J. Ahn, C. Kim

Section A

San Francisco Marriott Marquis
Golden Gate Section A/B

Great Lakes Restoration Initiative: An Environmental Chemistry Challenge

J. Pagano, *Organizer*
D. Dionysiou, *Organizer, Presiding*

6:00 - 8:00

- 666.** Feasibility of testing cyanophages as biological control mechanisms against harmful algal bloom forming *Microcystis aeruginosa*. **E. Nuding, J. Swarthout**, P. Reed, B. Z. Haznedaroglu
- 667.** Integration of analytical and biological measurements for assessing the effects of contaminants present at Great Lakes areas of concern. **A. Schroeder**, G. Ankley, J. Berninger, C. LaLone, J. Cavallin, E. Durhan, E. Eid, N. Garcia-Reyero, M. Hughes, K. Jensen, M. Kahl, E. Makynen, E. Perkins, K. Stevens, D. Villeneuve
- 668.** Contaminant monitoring in the Great Lakes by NOAA Mussel Watch: Developing an integrated monitoring approach to link exposure and effects in dreissenid mussels. **A. Jacob**, K. Kimbrough, E. Johnson, E. Davenport, R. Klapper, N. Neureuther

Section A

San Francisco Marriott Marquis
Golden Gate Section A/B

Green Chemistry and the Environment

Cosponsored by CEI, ENFL, and MPPG
R. Luque, *Organizer*
S. Obare, *Organizer, Presiding*

6:00 - 8:00

- 669.** Investigation of the antimicrobial properties of essential oil gel. **Y. Li**, D. Han, K. Hung, W. Han, K. Yeung
- 670.** Isolation of optimal stain for improving biological treatment efficiency of black liquor. **R. Dou, Y. Chen**, X. Ye
- 671.** Application of estimation methods to reduce carbon emission on climate change. E. J. Parish, **T. Yang**, H. Honda, T. Wei, C. Kuo, G. Lo, K. Liao, Y. Li, C. Tang

672. Greener approach toward gadolinium-based contrast agents. T. P. Gazzì, L. A. Basso, D. S. Santos, **P. Machado**
673. Chloramphenicol (CAP) removal from drinking water supplies by chlorination and photocatalytic. **Y. Zhang**, Y. Shao, N. Gao
674. Highly scalable ceramic membranes for microfiltration applications. **G. Ramakrishnan**, G. Dwivedi, S. Sampath, A. Orlov
675. Nitrogen heterocycles as a hydrogen alternative in polymer electrolyte membrane fuel cells. **L. K. Rubin**, E. Deunf, K. T. Clark, S. Gottis, D. Faulkner, C. D. Vulpe, J. B. Kerr, J. Arnold
676. Cradle to gate life cycle analysis of lignin based printed circuit boards as a substitute for brominated flame retardants. **G. Mendis**, J. Youngblood, I. Hua, J. Howarter
678. Innovative benign-by-design methodologies in nanomaterial synthesis for heterogeneously catalyzed processes. **R. Luque**, M. Ojeda, A. Yopez, R. A. Arancon, C. Lastres, A. Franco, M. Marquez, A. A. Romero
679. Sustainable preparation of antimicrobial nanoparticles. **S. O. Obare**, S. Tahmasebi Nick, C. P. Adams
680. Green synthesis, electrochemistry, and catalytic efficiency of well-defined bimetallic nanoparticles. **A. Bolandi**, S. O. Obare
681. Acrolein production using glycerol as a feedstock: A life cycle perspective. **D. Cespi**, F. Passarini, G. Mastragostino, I. Vassura, S. Larocca, A. Iaconi, F. Cavani
682. Study on the humic acid from water by means of coagulation-ultrafiltration. **J. Ma**, W. Shi
683. Elemental sulfur quantification after carbonyl sulfide adsorption on modified oxides. **T. Hlayhel**, D. Chiche, K. Barthelet, G. Costentin
684. Continuous flow preparation of nanomaterials. A. Yopez, A. A. Romero, C. Kappe, R. Luque, **A. M. Balu**

Section A

San Francisco Marriott Marquis
Golden Gate Section A/B

Heterogeneous Catalysis for Environmental and Energy Applications

Cosponsored by CATL

A. Orlov, M. Castaldi, *Organizers*

A. Savara, *Organizer, Presiding*

6:00 - 8:00

686. Photocatalytic degradation of chloramphenicol by SrFeO_{3-x}/g-C₃N₄ heterojunction. **C. Chen**, H. Lin, Y. Dai
687. Developing novel light activated composite nanomaterials based on perovskite structure for energy and environmental applications. **Q. Wu, J. Cen, Y. Zhao**, D. Su, S. Zhao, P. Shen, W. Worner, M. White, A. Orlov
688. Effect of trivalent irons on the photochemical decomposition of aqueous perfluorooctanoic acid (PFOA) by vacuum ultraviolet light. **X. Liang**, L. Qi, **J. Cheng**
689. Optimization of photocatalytic treatment of dye solution by TiO₂/UV photocatalytic process in semi-pilot scale solar photoreactor. **M. K. Bouchareb**, M. Berkani, M. Bouhelassa
690. Catalytic reaction of As(III) with H₂O₂ on TiO₂. **D. Kim**, A. Bokare, M. Koo, W. Choi
691. Green catalyst for the synthesis of biodiesel: Preparation of a recyclable sulfonic acid functionalized carbon catalyst derived from glycerol and starch. **R. E. Borg**, M. Hausman
692. NO_x storage and reduction pathways on zirconia and titania functionalized binary and ternary oxides as NO_x storage and reduction (NSR) systems. Z. Say, M. Tohumeken, **E. Ozensoy**
693. Assessment of plant species composition and soil characteristics in barren areas on Blue Mountain in Palmerton, PA. S. H. Augustine, A. E. Faivre, **L. A. Welch**

Section A

San Francisco Marriott Marquis
Golden Gate Section A/B

Humic Substances and Its Critical Role in Environmental Chemistry: The Past 50 Years, Present Knowledge and Future Research Opportunities

F. Rosario, J. Pedersen, I. Suffet, *Organizers, Presiding*

6:00 - 8:00

694. Influence of the presence of humus in the humification degree of soil contaminated by commercial deltamethrin via fluorescence spectroscopy. **F. Benetti, L. B. Pigatin**, M. M. Kanashiro, R. N. Rodrigues, M. O. Rezende
695. Properties of organic impurities of potable waters in relation to copper (II) cations. **N. Beloconova**, Y. Bozhko

- 697.** Study of dynamics humification of humic acids extracted from agro-industrial organic wastes in vermicomposting process by ^{13}C – nuclear magnetic resonance (^{13}C NMR). **L. B. Pigatin, F. Benetti, R. N. Rodrigues, A. V. Borsato, M. D. Rezende**
- 698.** Comparative study of humic substances with progressive decompositions of soil organic matter through Pyrolysis GC/MS. **X. Song, S. O. Farwell**

Section A

San Francisco Marriott Marquis
Golden Gate Section A/B

Monitoring and Evaluating Environmental Exposures

J. Hill, H. Bean, J. Pleil, *Organizers, Presiding*

6:00 - 8:00

- 699.** Surface water monitoring in agricultural areas of California in 2013. **X. Deng, K. Starner, K. Kelley**
- 700.** Environmental radioactivity distribution in architectural biology: Emission of ionizing radiation from radionuclides in the environment and building materials. **S. Falcinelli, M. Rosi, N. Balucani, F. Vecchiocattivi**
- 701.** Assessment of persistent bioaccumulative organic environmental contaminants in the human liver and abdominal fat tissues of Alzheimer's patients. **M. Yegambaram, B. Manivannan, J. Chen, B. F. Pycke, S. Supowit, I. B. Roll, M. Sierks, R. U. Halden**
- 702.** Organophosphate flame retardants in office air particulate matter and in human placenta. **J. Ding, W. Huang, F. Yang, W. Liu**
- 703.** Identification of environmental contaminants in blood samples of manatees from Florida's coasts. **B. Manivannan, M. Yegambaram, B. F. Pycke, S. Supowit, I. B. Roll, M. deWit, M. T. Walsh, N. D. Denslow, R. U. Halden**

Section A

San Francisco Marriott Marquis
Golden Gate Section A/B

New Advances in the Chemistry and Application of Advanced Oxidation Processes for Removal of Contaminants of Emerging Concern

D. Minakata, K. O Shea, S. Canonica, *Organizers*
D. Dionysiou, G. Li Puma, *Organizers, Presiding*
J. Colina-Marquez, *Presiding*

6:00 - 8:00

- 704.** Naproxen abatement by thermally activated persulfate: Application to hospital effluents. **A. Ghauch, A. Tuqan**
- 705.** Degradation of commercial 17- β estradiol in a pilot-scale solar photocatalytic plant: Estimation of parameters independent on the radiant field. **J. A. Colina-Marquez, F. Machuca-Martinez**
- 706.** In situ soil remediation by electrokinetic-Fenton-like: Application to degradation of different emerging pollutants. **E. Bocos, M. Fernandez, M. Pazos, M. A. Longo, M. Sanromán**
- 707.** Application of air-assisted UV/H₂O₂ advanced oxidation process for mineralization of Monoethanolamine (MEA). **T. Cheng, R. Priambodo, Y. Shih, P. Cheng, Y. Huang**
- 708.** Degradation of pharmaceuticals and metabolites in synthetic human urine by UV, UV/H₂O₂, and UV/S₂O₈²⁻. **R. Zhang, P. Sun, T. H. Boyer, L. Zhao, C. Huang**
- 709.** Monitoring and degradation of 17 α -ethinylestradiol (EE2) in Sapucaí river (MG - Brazil) by Fenton and photo-Fenton reaction. **M. M. Kondo, L. S. Maciel, B. V. Goulart, S. J. Andrade, M. R. Silva, L. Marques, F. S. Silva, A. K. Hurpia, R. E. Santos**
- 710.** Ozone generator based on shielded sliding discharges: A compact reactor with high throughput. **M. A. Malik, K. H. Schoenbach, R. Heller**
- 711.** UV/persulfate advanced oxidation process for degradation of Acid Blue 113 wastewater. **H. Shu, M. Chang, S. Hunag**
- 712.** Degradation and mineralization of pyridine by photo-electro Fenton advanced oxidation process. **R. Priambodo, Y. Huang**
- 713.** Catalytic ozonation not relying on hydroxyl radical oxidation: A selective and competitive reaction process related to metal-carboxylate complexes. **T. Zhang, J. Croue**
- 714.** Degradation of pesticides in water by electrochemical oxidation and UV-irradiation. **Z. Lazarova, G. Hoermann, C. Enzenhofer, Y. Muhren**
- 715.** Degradation of the artificial sweetener sucralose by advanced oxidation technologies. **S. Chen, Z. Sun, J. Guan, D. Fan, P. G. Tratnyek**
- 716.** Photochemical UV-H₂O₂ system for oxidation of organoarsenicals in agricultural wastewater. **A. Adak, K. Mangalgi, K. He, L. Blaney**

717. Reactivity of chlorine radicals with wastewater constituents in support of UV-based AOPs. **K. Couch**, S. P. Mezyk, K. P. Ishida
718. Kinetics of hydroxyl radical reactions with chloramines in wastewater. **B. L. Sjelín**, S. P. Mezyk, K. P. Ishida
719. Oxidation of cylindrospermopsin and its model compound 6-hydroxymethyl uracil by ferrate (VI). **C. Zhao**, V. K. Sharma, D. D. Dionysiou, K. E. O'Shea
720. Removing carcinogenic nitrosamines from water using AOP's. **B. R. Daws**, C. E. Dereski, S. P. Mezyk, J. J. Kiddle
721. Photocatalytic removal of oxytetracycline (OTC) using the persistent luminescence of green phosphors functionalized with Fe-N doped TiO₂. D. Sannino, V. Vaiano, O. Sacco, C. Han, **D. Dionysiou**

Section A

San Francisco Marriott Marquis
Golden Gate Section A/B

Novel Membranes and Membrane Processes for Desalination and Water Treatment

Cosponsored by CEI and POLY

B. Mi, V. Tarabara, *Organizers*

K. Chen, *Organizer, Presiding*

6:00 - 8:00

722. Development and testing of nanostructured porous materials for water treatment. **P. Paola**, P. Avetta, D. Fabbri, G. Magnacca, R. Nisticò, D. Scalarone

723. Thermal reduction behaviors of graphene oxide membranes for water treatment. **D. Wang**, W. Zhao

Section A

San Francisco Marriott Marquis
Golden Gate Section A/B

Occurrence, Fate, and Removal of Pharmaceutical and Personal Care Products and Endocrine

Disrupting Chemicals

Cosponsored by CEI

L. Blaney, *Organizer*

A. Hernandez, *Organizer, Presiding*

6:00 - 8:00

724. Comparative sorption of phthalic acid esters in two kinds of landfill leachates by the carbonaceous sorbents. **B. Gao**, S. Yin, K. Sun

725. Screening of illicit and licit drugs in waters from Colombia making use of liquid chromatography-hybrid quadrupole-time-of-flight mass spectrometry. **A. M. Botero-Coy**, L. Bijlsma, R. Bade, M. Ibañez, M. C. Bustos, R. J. Rincon, A. Moncayo, J. V. Sancho, F. Hernandez

726. SBA-15 adsorbents with zero microporosity for the adsorptive removal of phthalates from aqueous solutions. **K. Ortiz-Martínez**, A. J. Hernández-Maldonado

727. Interactions of tetracycline antibiotics with Fe(II)/Fe(III) ions and impact on their fate in aquatic systems. **H. Wang**, H. Yao, P. Sun, C. Huang

728. Graphene oxide for effective removal of aqueous antibiotics. H. Chen, **B. Gao**

729. Transfer of triclocarban from mother to offspring through gestation and lactation. **H. Enright**, V. Lao, M. Sarachine Falso, B. Buchholz, K. Kulp, G. Bench, M. Malfatti, K. Turteltaub

730. Alternative flame retardants in San Francisco Bay. **R. Sutton**, D. Chen, M. Sedlak

Section A

San Francisco Marriott Marquis
Golden Gate Section A/B

Occurrence, Formation, Health Effects, and Control of Disinfection By-Products (DBPs)

Cosponsored by CEI

Financially supported by Water Research Foundation

P. Westerhoff, Y. Xie, W. Mitch, *Organizers*

T. Karanfil, *Organizer, Presiding*

6:00 - 8:00

731. Formation of bromate during KMnO₄-O₃ system. D. Liang, **J. Zhang**, Y. Zhang, Y. Chen, W. Ke, Y. Shi

732. Formation mechanism of NDMA from ranitidine, TMA, and other tertiary amines during chloramination: A computational study. **Y. Liu**, M. Selbes, C. Zeng, R. Zhong, T. Karanfil

733. Influence of Cl₂ and Cl₂O on the kinetics of phenol and chlorinated phenol chlorination. **S. S. Lau**, A. Roberts

- 734.** Formation and kinetics of TOCl, TOBr and TOI during chlorination and chloramination. X. Zhu, **X. Zhang**
- 735.** Monitoring trihalomethane levels in marine mammal aquaria. **J. Wang, A. Chow**, J. M. Sweeney, J. A. Mazet
- 736.** Optimizing disinfection efficacy: Tradeoff between bacterial inactivation and disinfection byproducts formation. B. Li, T. Ng, **A. Chow**, P. Wong
- 737.** Comparison of fluorescence analysis methods for predicting disinfection by-product formation. **N. M. Peleato**, R. C. Andrews
- 738.** Chloramines species importance in NDMA formation. **M. Selbes**, D. Kim, T. Karanfil
- 739.** Modeling THM and HAA in chlorinated waters: Effect of pH on the speciation coefficients at varying bromide level and SUVA. P. Roccaro, **G. V. Korshin**, D. Cook, C. W. Chow, M. Drikas
- 740.** Developing an on-site monitoring program for controlling trihalomethanes. **G. L. Emmert**, P. S. Simone, Jr, A. W. Brown, J. C. York

Section A

San Francisco Marriott Marquis
Golden Gate Section A/B

**Pyrogenic Carbonaceous Materials as Adsorbents of Inorganic and Organic Compounds:
Fundamentals and Applications**

B. Xing, J. Pignatello, U. Ghosh, *Organizers*
F. Xiao, *Organizer, Presiding*

6:00 - 8:00

- 741.** Thin-layer AC placement for sequestering DDT contaminated sediment facilitated by bioturbation. **D. Lin**, Y. Cho, D. Werner, J. Tommerdahl, R. G. Luthy
- 742.** Field and molecular-scale evaluation of bonemeal biochar as a remediation amendment for Zn in smelter affected soils. **D. Peak**, A. R. Betts, J. G. Hamilton, R. E. Farrell
- 743.** Mesoporous carbon and boron doped mesoporous carbon as effective supports for liquid phase catalytic hydrodechlorination of 2,4-dichlorophenol. Z. Juan, S. Yun, X. Zhaoyi, **Z. Shourong**, Z. Dongqiang
- 744.** Production, characterization, and sorption ability of biomass derived hydrochars. **J. Fang**, B. Gao
- 745.** Destabilization of graphene oxide in reducing aqueous solutions containing sulfide. **F. Heyun**, Q. Xiaolei, Z. Dongqiang
- 746.** Fate of micropollutants during nutrient removal using novel adsorbents for dilute wastewater streams. **Y. Tong**, B. K. Mayer, P. J. McNamara

Section A

San Francisco Marriott Marquis
Golden Gate Section A/B

Reactive Membranes and Surfaces in Water Treatment Applications

B. Chaplin, K. Jones, *Organizers*
D. Jassby, *Organizer, Presiding*

6:00 - 8:00

- 747.** Adsorption of arsenic on magnetite and zero-valent iron corrosion products. **L. Sehgal**, B. Manning
- 748.** Development of low-pressure graphene oxide nanocomposite membranes for pretreatment removal of heavy metals. **M. Gallagher**, X. Liu, P. Yang, K. Chen, H. Fairbrother

Section A

San Francisco Marriott Marquis
Golden Gate Section A/B

Recent Development of Environmental Chemistry in Asia

C. Lin, D. Dionysiou, M. Lam, R. Luque, *Organizers*
E. Uckun Kiran, E. Mubofu, *Organizers, Presiding*

C. Lin, *Presiding*

6:00 - 8:00

- 749.** Color of Fe, Cu, Mn-oxide/hydroxide precipitate with pH in acid mine drainage. **J. Kim**, H. Byun, Y. Kim, C. Lee, G. Jeong

San Francisco Marriott Marquis
Golden Gate Section A/B

Special Symposium in Honor of Professor Richard L. Valentine

C. Jafvert, P. Vikesland, *Organizers*
D. Cwiertny, *Organizer, Presiding*

6:00 - 8:00

750. Separation of dissolved and nanoparticulate metals with SEC-ICP-MS. **P. Paydary**, P. L. Casanova

751. Significance of redox condition on the degradation of MTBE and TBA. **A. Athey**, T. M. Young

San Francisco Marriott Marquis
Golden Gate Section A/B

Synergism Between Microbiology and Chemistry for Environmental Sustainability

Cosponsored by CEI

S. Mahendra, *Organizer*

R. Goel, *Organizer, Presiding*

6:00 - 8:00

752. Role of triclocarban and triclosan on the functional health and proliferation of antibiotic resistance genes in anaerobic digestion. D. E. Carey, D. H. Zitomer, **P. J. McNamara**

753. Deactivation of antibiotic resistance genes with ozone and hydrogen peroxide. **K. K. Shimabuku**, P. Peiran Zhou, M. C. Dodd

754. Effects of macro- and micronutrients on neutral lipid accumulation in oleaginous microalgae. **M. Ghafari**, B. Rashidi, B. Z. Haznedaroglu

755. Optimizing vegetated treatment wetlands for the transformation of trace organic compounds. **S. E. Beardsley**, Z. L. Jones, J. O. Sharp, D. L. Sedlak

756. Effect of organic micropollutant (OMP) spiking on the microbial populations of both aerobic and anaerobic membrane bioreactors (MBRs). **M. J. Harb**, C. Wei, G. Amy, P. Hong

757. Toxic metals exert co-selective pressure for oxytetracycline resistance in unsaturated, manure and biosolids amended soil columns. **A. A. Flores**, J. A. Jay

758. Inactivation of *E. coli* and MS2 coliphage by persulfates in combination with carbon nanotubes. **H. Kim**, H. Lee, C. Lee

759. Aspects of human rotavirus inactivation mechanisms as examined by quantitative PCR: Roles of solar irradiation and temperature. **O. C. Romero-Maraccini**, J. L. Shisler, T. Nguyen

San Francisco Marriott Marquis
Golden Gate Section A/B

Theoretical and Computational Approaches To Environmental Chemistry

S. Eustis, *Organizer, Presiding*

6:00 - 8:00

760. Theoretical study on the kinetics of the reaction HO+OCIO. **L. Yang**, J. R. Barker

761. Autocalibration and uncertainty of precipitation in SWAT model development for nitrogen loading into river streams. **L. O. Le**, J. L. Schnoor

San Francisco Marriott Marquis
Golden Gate Section A/B

Thermodynamics and Kinetics in Treatment Processes, Past, Present, and Future: Symposium in Honor of Professor Chin-Pao Huang

A. Davis, V. Sharma, Z. Qiang, P. Chiu, G. Chen, *Organizers*

R. Doong, *Organizer, Presiding*

6:00 - 8:00

762. Feasibility of using chemical oxidation for remediation of PAHs contaminated sediments. C. Chen, N. Binh, C. Chen, C. Hung, **C. Dong**

763. Thermodynamics and silver ion (Ag⁺) release kinetics of silver nanoparticles in engineered and natural aqueous environments. **C. Zhang**, Z. Hu

764. Catalytic ozonation of Crystal Violet in aqueous solution with Fe-activated carbon catalyst. **H. Zhang**, H. Gao, J. Wu, S. Yao
765. Fast-effective persulfate decoloration of polyazo direct dye Sirius®Red F3B activated with Fe⁰ aggregate. **C. Weng**, F. Ding, N. Liu, Y. Lin
766. One-pot synthesized nanoscale zerovalent iron/activated carbon nanocomposite degrades trichloroethylene in water. Y. Su, Y. Cheng, **Y. Shih**
767. Carboxylic ligand-enhanced degradation of polychlorinated compounds with zerovalent iron. **C. Tso**, D. Lin, J. Syu, Y. Shih
768. Dechlorination of chlorinated aromatic hydrocarbons by Pt/Fe immobilized on reduced graphene oxides. **D. Li**, R. Doong
769. Effect of water chemistry on the sedimentation of two commercial nanoparticles in water. **C. Shiung**, C. Tso, **Y. Shih**
770. Effect of electrolytes on the aggregation of three kinds of ZnO nanoparticles in water. Y. Peng, **C. Tso**, C. Shiung, **Y. Shih**
771. Photoelectrocatalytic degradation of sulfamethoxazole by TiO₂/Ti photoanode. **C. Tso**, Y. Su, Y. Shih
772. Adsorption of Indium (III) ions from aqueous solution using chitosan-coated bentonite beads. **I. Chen**, **M. Wan**, M. C. Calagui, D. B. Senoro
773. Removal of Reactive Yellow 145 from simulated dye wastewater by *Theobroma cacao* pod-derived adsorbents. M. de Luna, R. O. Arazo, M. R. Sumalinog II, S. Lee, **M. Lu**
774. Zinc removal from synthetic wastewater by homogeneous crystallization in FBHC. N. N. Mahasti, Y. Shih, **Y. Huang**
775. Removal of caffeine and ketoprofen by metal oxides-coated sands. B. He, **J. Hu**
776. Ab initio molecular modeling of SN₁ and SN₂ reactions during initial oxidation of ibuprofen by hydroxyl radical in water. **M. Sung**, G. Liu, C. Huang, H. Kuo
777. Effect of electrode material and separator on the Ce(IV) electro-regeneration in real spent Cr-etching solutions. **K. Huang**, T. Chen, S. Chen, Y. Chen, R. Tsai
778. Preparation of TiO₂ nanotube arrays/Ti electrode by anodic oxidation method for the degradation of dye in aqueous solutions. Y. Liu, **C. Liu**, C. Huang, C. Hu
779. Using visible-light-responsive TiO₂ catalyst for inactivation of the bacterial: Mechanism and kinetics. **Y. Lin**, J. Tzeng, C. Weng
780. Electrochemically assisted Fenton process using Fe²⁺/HOCl system for the treatment of landfill leachate. **Z. Ye**, Z. Wang, H. Zhang
781. Self-assembled graphene-silicon composite material for environmental application. **C. Lin**, R. Doong
782. Synthesis of microparticles embedded with carbon nanotubes via floating catalyst chemical vapor deposition and their environmental application. **W. Den**, N. Grisdanurak
783. Improvement of phytomediation on the treatment effectiveness of heavy metals with energy sunflower plants with calcium peroxide and phytohormones. **T. Yeh**, C. Wu, K. Lee
784. Application of in-line high shear mixing process in the oxidative-adsorptive desulfurization of diesel fuel. **M. Wan**, R. A. Dayrit, M. G. de Luna
785. Release of silver nanoparticle from nanocomposite membranes in water treatment processes. **J. C. Lin**, R. Ling, J. Qian, H. Yang, C. Huang
786. Performance evaluation of bioretention columns with submerged anoxic zones. H. Guo, L. Lee, **S. Ong**, J. Hu
787. Industrial wastewater coagulation using ferrate and manganese oxide derived from groundwater works sludge. **C. Kan**, H. Reano, M. Dalida
788. Recovery of Cu(II) by chemical reduction process using sodium dithionite: Effect of pH and ligands. **J. Yu**, P. Wang, Y. Liang, C. Li
789. Pilot-scale investigation on the tertiary treatment process of municipal wastewater with nutrient recovery. **S. Zheng**
790. Fabrication of Cu decorated TiO₂ nanorods for the enhanced photodegradation of bisphenol A under ultraviolet-and visible-light irradiation. L. Chiang, **R. Doong**
791. Adsorption and precipitation of fluoride at calcite nanoparticle surface: A spectroscopic study. S. Budyanto, **J. Liu**

Section A

San Francisco Marriott Marquis
Golden Gate Section A/B

Toxicology of Environmental Pollutants

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

6:00 - 8:00

792. Development of a Tenax model to predict bioavailability of pyrethroids in sediment. **S. A. Nutile**, A. D. Harwood, P. F. Landrum, M. J. Lydy

793. Manufactured ZnO nanoparticles induced germ cell apoptosis in *Caenorhabditis elegans*, in comparison with ionic Zn effects. B. O'Donnell, J. R. Polli, R. A. Kobet, B. Zhang, **X. Pan**

Section A

San Francisco Marriott Marquis
Golden Gate Section A/B

Water Challenges and Solutions on the Global Scale

Cosponsored by CEI and MPPG

Financially supported by Global Innovation Imperatives

D. Dionysiou, H. Taft, J. De Andrade, K. Hristovski, S. Ahuja, *Organizers*

B. Loganathan, *Organizer, Presiding*

6:00 - 8:00

794. Pharmaceutical and personal care products residues in wastewater treatment plant samples from Kentucky and Georgia, USA. H. Mowery, D. Benningfield, P. Shangwu, K. Sajwan, **B. G. Loganathan**

795. Regional distribution of styrene oligomer generated from polystyrene degradation along the coastlines of Korea and Japan. B. Kwon, S. Chung, A. Okabe, **K. Koizumi**, S. Togawa, Y. Kamaya, N. Ogawa, Y. Kodera, **K. Saïdo**

796. Spatial and temporal assessment of the trophic state of the lagoon Bateias in Vitória da Conquista, Bahia-Brazil. **O. F. Lopes**, R. M. de Jesus, F. A. Rocha, J. Oliveira, A. L. campos, G. S. da Silva, I. O. Fernandes, E. F. Rêgo, M. P. Pitanga, L. D. Nascimento, V. P. dos Santos

797. Biotransformation of Cationic Red X-GRL by activated sludge under anaerobic condition. **B. Qiu**, X. Xu, H. Guo, **D. Sun**

798. Inhibitory effect of high NH₄⁺-N concentration on EGSB reactor treating fresh leachate from MSW incineration plants. **Z. Liu**

799. Water-related disease and poudre de succession: Inheriting bad good intentions. **B. Sharbel**

Section A

San Francisco Marriott Marquis
Golden Gate Section A/B

Women in Environmental Science and Engineering

Cosponsored by MPPG, PROF, SCHB, and WCC

C. Lee, H. Hsu-Kim, I. Escobar, J. Hill, R. Brennan, S. Simonich, S. Richardson, *Organizers*

D. Dionysiou, A. Gu, J. Goldfarb, E. Carraway, *Organizers, Presiding*

6:00 - 8:00

800. Identification and toxicity of polycyclic aromatic hydrocarbon (PAH) transformation products in bioremediated soils. **L. Chibwe**, J. Nakamura, M. D. Aitken, E. Hoh, S. L. Simonich

801. Optical analysis of chromophoric dissolved organic matter (CDOM) photodegradation in Southern California coastal waters. **J. C. Bowen**, C. D. Clark

802. Environmental sustainability in undergraduate engineering education. **I. Hua**, L. F. Hua

803. Sulfamethazine adsorption isotherms and kinetics with hypercrosslinked polymer MN250 in simulated groundwater. **M. Grimmitt**

804. Impact of membrane fouling by organic matter on the fate of disinfection by-products (DBPs) during nanofiltration. **A. Atkinson**, H. Weinberg, M. J. Farre, W. Gernjak

THURSDAY MORNING

Section A

San Francisco Marriott Marquis
Foothill D

Chemistry of Atmospheric Nitrogen-Containing Compounds

Cosponsored by PHYS

S. Nizkorodov, *Organizer*

A. Laskin, S. Brown, *Organizers, Presiding*

8:00 Introductory Remarks.

8:05 805. Quantifying the ionic reaction channels in the secondary organic aerosol formation from glyoxal. A. Maxut, **B. Nozière**, S. Rossignol, C. George, E. Waxman, A. Laskin, J. Slowik, J. Dommen, A. Prevot, U. Baltensperger, R. Volkamer

8:45 806. Analysis of brown carbon in aerosols and the aqueous phase. **P. K. Aiona**, A. Laskin, J. Laskin, H. Lee, S. A. Nizkorodov

9:05 807. Photo-bleaching of atmospheric brown carbon via direct photolysis and photo-oxidation in the aqueous phase. **R. Zhao**, A. K. Lee, J. P. Abbatt

9:25 808. After the cloud: Brown aerosol production by aldehyde – amine – ammonium sulfate reactions in evaporating water droplets. **M. M. Galloway**, T. C. Kress, N. Sedehi, J. Bartolomucci, S. Wood, M. H. Powelson, D. O. De Haan
9:45 Intermission.
10:00 809. New insights into the mechanism of nitrous acid uptake and release on boundary layer soil surfaces. M. A. Donaldson, **J. D. Raff**
10:40 810. Effects of temperature and relative humidity on the formation of secondary organic aerosol from amine precursors. **D. J. Price**, D. R. Cocker
11:00 811. Nitrate anion surface behaviour and photolysis in frozen aqueous solutions containing nitrate and halide ions. **A. C. Hong**, J. Donaldson
11:20 Concluding Remarks.

Section B

San Francisco Marriott Marquis
Foothill G1

Humic Substances and Its Critical Role in Environmental Chemistry: The Past 50 Years, Present Knowledge and Future Research Opportunities **Redox Chemistry of Humic Substances and Metals; Complexation**

F. Rosario, J. Pedersen, I. Suffet, *Organizers, Presiding*

8:00 Introductory Remarks.
8:05 812. Humic substances redox redux: From molecular scale electron transfer to global biogeochemical cycles. **M. Sander**, L. Klüpfel, M. Aeschbacher
8:35 813. Iron oxide nanoparticle aggregation and reactivity in the presence of humic substances. **A. M. Stemig**, J. L. Tensfeldt, W. A. Arnold, R. L. Penn
9:00 814. Influence of natural organic matter in the biogeochemistry of iron and associated generation of oxidative species. **C. J. Miller**, A. L. Rose, D. Waite
9:25 Intermission.
9:40 815. Use of electrochemical methods and substituted nitrobenzene chemical probes to measure H₂S-DOM electron donating capacity. **G. C. Wallace**, M. Sander, W. A. Arnold
10:05 816. Redox transformations of Fe in the presence of pre-photolysed SRFA solutions. **S. Garg**, C. Jiang, T. D. Waite
10:30 817. Iron oxide – organic matter coprecipitates and controls on copper fate and transport in wetlands. **T. M. Vadas**, N. Seda, F. Koenigsmark
10:55 818. In situ examination of interactions of rare earth ions with humic substances. G. V. Korshin, M. Fabbricino, **Y. Chen**
11:20 819. In situ characterization of effects of ionic strength on the chromophores of humic species and their interactions with hardness cations. **Y. Gao**, G. O. Korshin
11:45 Discussion.

Section C

San Francisco Marriott Marquis
Club Room

Heterogeneous Catalysis for Environmental and Energy Applications

Cosponsored by CATL

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

8:00 820. First-principle and cluster expansion analysis of oxygen induced chain-like reconstruction of the Pt(111) surface. **L. Herder**, Z. Chen, W. Schneider
8:20 821. Sites and mechanisms for NO_x transformations in Cu-SSZ-13. T. Anggara, C. Paolucci, **W. F. Schneider**
8:40 822. Insights on the active phase and mechanism for NO oxidation on MnO_x-CeO₂. **A. M. Karim**, D. Mei, J. Szanyi, J. Kwak, G. Qi, W. Li, D. Tran, L. Pederson
9:00 823. Palladium doped perovskite-based NO oxidation catalysts: The role of Pd and B-sites for NO_x adsorption behavior. Z. Say, M. Dogac, C. H. Kim, W. Li, E. I. Vovk, **E. Ozensoy**
9:20 824. Understanding the interface and stabilization of late transition metal nanoparticles to early transition metal oxide supports. **M. E. Strayer**, J. M. Binz, M. Tanase, R. Sharma, R. M. Rioux, T. E. Mallouk
9:40 825. Understanding ammonia selective catalytic reduction kinetics over Cu-SSZ-13 from motion of the Cu ions. **F. Gao**, E. D. Walter, M. Kollar, Y. Wang, J. Szanyi, C. H. Peden
10:00 Intermission.
10:20 826. Catalytic dry reforming of methane over Co-Ce/ZrO₂ catalysts. A. Paksoy, C. Yassi, B. Selen Caglayan, **A. Aksoylu**
10:40 827. Pd catalysts for total oxidation of methane: Support effects. **J. B. Miller**, M. Malatpure

- 11:00 828.** Using controlled adsorption to prepare improved supported metal catalysts for dry reforming of methane. J. Ewbank, C. Kenvin, F. Diallo, L. Kovarik, **C. Sievers**
11:20 829. Catalysis by modified oxides. **H. Metiu**
11:40 830. Biomimetic catalysts for selective methane oxidation. Z. Cheng, V. Havran Mueller, E. Lee, **C. S. Lo**

Section D

San Francisco Marriott Marquis
 Foothill E

Green Chemistry and the Environment

Cosponsored by CEI, ENFL, and MPPG

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

8:00 Introductory Remarks.

8:05 831. Sustainable organic synthesis in continuous flow environments. **C. O. Kappe**

8:45 832. General process for the green and sustainable production of N-alkylimidazoles in flow. **R. Jones**, L. Kocsis, M. Fekete, F. Darvas

9:10 833. Multicomponent flow approach for the efficient and more sustainable preparation of aminothiazole derivatives. **B. R. Vaddula**, S. Yalla, M. A. Gonzalez

9:35 Intermission.

9:45 834. Biodiesel production via transesterification in a mixed carbon dioxide-methanol system with a heterogeneous catalyst. **L. Soh**, C. Chen, J. Zimmerman, E. Beckman

10:05 835. Intensification of the enzymatic hydrolysis of cellulose using high frequency ultrasound and Taguchi optimization. **Y. G. Adewuyi**

10:25 836. Lipase immobilization toward the development of sustainable processes. **R. O. de Souza**, L. S. Miranda

10:45 837. From biomass to gasoline through a carbohydrate-based refinery-friendly bio-oil. **N. Batalha**, M. B. Almeida, R. O. de Souza, N. M. Carvalho, L. S. Miranda, **M. M. Pereira**

11:05 838. Active site dynamics in metal/hydrotalcite-catalyzed lignin depolymerization. **J. S. Kruger**, M. J. Bidy, G. T. Beckham

11:25 839. Synthetic and mechanistic study of organic reactions in the aqueous media. **T. Sela**, A. Vigalok

11:45 840. Development of an evaluation tool: Greenness Index. **Y. Shen**, C. Lo, D. Nagaraj, R. Farinato, P. Somasundaran

12:05 841. Enhancing synthetic efficiency through exploration of new reactivities. **C. Li**

Section E

San Francisco Marriott Marquis
 Golden Gate Section C3

New Advances in the Chemistry and Application of Advanced Oxidation Processes for Removal of Contaminants of Emerging Concern

G. Li Puma, D. Minakata, D. Dionysiou, K. Oshea, S. Canonica, *Organizers*

H. Destailats, P. Roccaro, V. Hequet, *Presiding*

8:00 851. Pollutant emissions from portable air cleaners relying on photocatalytic oxidation (PCO), non-thermal plasma and microbial thermal inactivation. **H. Destailats**, S. Cohn, M. Sleiman

8:40 852. Indoor air purification by photocatalytic oxidation: Fate of contaminants released in the gas phase and key parameter optimization for the improvement of the process efficiency and safety. **C. Raillard**, **H. Destailats**, **V. Hequet**, M. Sleiman, O. Debono, F. Batault, L. Olivier, F. Thevenet, L. Le coq, N. Locoge

9:00 853. Mineralization of N-Methyl-2-Pyrrolidone (NMP) in synthetic and real wastewater by UV/peroxydisulfate/air advanced oxidation process. **P. Cheng**, R. Priambodo, Y. Shih, Y. Huang

9:20 854. Efficient total dehalogenation of aliphatic and aromatic halogenated compounds by the sulfite/UV process. **X. Li**, B. Pan, J. Ma

9:40 Intermission.

9:55 855. Sulfate radical remediation of antibiotics and estrogenic steroids in DOM-containing wastewaters. **T. Reutershan**, S. P. Mezyk

10:15 856. Performance of combined persulfate - calcium peroxide dual oxidant system on the degradation of methyl-naphthalene. **Y. Qian**, X. Zhou, Y. Zhang

10:35 857. Efficient peroxydisulfate activation not relying on sulfate radical generation for water pollutant degradation. **T. Zhang**, Y. Chen, Y. Wang, J. Le Roux, Y. Yang, J. Croue

10:55 858. Degradation and mineralization of Reactive Black 5 azodye by nano-iron catalyzed peroxymonosulfate advanced oxidation process. **H. Shu**, M. Chang, H. Hsu

San Francisco Marriott Marquis
Golden Gate Section C2

Monitoring and Evaluating Environmental Exposures

Scientific Case Studies Incorporating Statistical Approaches To Evaluate and Predict from Large and Fuzzy Datasets

H. Bean, J. Pleil, *Organizers*
J. Hill, *Organizer, Presiding*

8:00 860. Evaluation of freely-dissolved PCB concentrations at a contaminated sediment superfund site. **J. Apell**, P. Gschwend

8:20 861. Hydroxylated polychlorinated biphenyls in human sera from adolescents and their mothers living in East Chicago, IN and Columbus Junction, IA. **W. Koh**, P. S. Thorne, K. C. Hornbuckle

8:40 862. Concentrations and variation in levels of perfluorooctane sulfonate (PFOS) and perfluorooctane acid (PFOA) in office dust. **O. S. Olatunji**, O. S. Fatoki, B. O. Opeolu, B. J. Ximba

9:00 863. Generation mechanism of secondary organic aerosols (SOAs) and aldehydes from ozone-initiated reactions in test chambers, close to typical room conditions. **S. Mentese**, J. Gunschera, T. Salthammer

9:20 Intermission.

9:35 864. Associations among exposure to microbial, organic, and inorganic indoor/outdoor air pollution and respiratory problems in different towns of Canakkale, Turkey. **S. Mentese**, M. T. Otkun, C. Bakar, N. A. Mirici, S. Cevizci, D. Tasdibi, E. Palaz, O. Cotuker

9:55 865. Engineering label-free optical biosensors for environmental management of common food and waterborne bacteria. **H. K. Hunt**, E. C. O'Brien, E. N. Grayek, M. E. Anderson

10:15 866. Murine lung exposure to bacterial antigens leads to predictive breathprints. **H. D. Bean**, J. E. Hill, J. Zhu, J. Jimenez-Diaz

10:35 867. Combining data visualization and statistical approaches for interpreting measurements and meta-data: Integrating heatmaps, variable clustering, and mixed regression models. **M. A. Stiegel**, J. R. Sobus, M. C. Madden, J. D. Pleil

10:55 868. Nationwide occurrence, release inventories, and prioritization of emerging contaminants in U.S. sewage sludges: Results from the National Sewage Sludge Repository of Arizona State University. **A. K. Venkatesan**, R. U. Halden

San Francisco Marriott Marquis
Golden Gate Section C1

Analytical Methods for Detecting and Prioritizing Contaminants of Concern

Contaminants and Human Risk Factors

H. Done, J. Field, D. Barcelo, L. Ferguson, S. Richardson, *Organizers*
R. U. Halden, *Organizer, Presiding*

8:00 Introductory Remarks.

8:05 869. Identification of metabolites produced during oxidative metabolism of PBDEs by human liver microsomes and cytochrome P450s. **D. S. Aga**, J. R. Olson, M. S. Gross, B. P. McGarrigle

8:35 870. Screening and quantification of multiresidue pesticides in surface water. M. B. Almeida, T. B. Madeira, A. H. Iglesias, F. C. Paula, **S. L. Nixdorf**

9:05 871. Non-enzymatic conjugation of glutathione with halobenzoquinones. **W. Wang**, Y. Qian, X. Li

9:35 872. Environmental impact assessment of Seghill landfill: An approach for monitoring leachate contamination of ground and surface water. **O. A. Fadina**, M. Cooke

10:05 Intermission.

10:15 873. Analysis of cyanotoxins in water by LC/MS/MS and ELISA. **Y. C. Guo**, M. D. Prescott, A. K. Lee

10:45 874. Communal assessment of drugs of abuse and identification of their transformation products by online SPE-LC-HRMS. **N. V. Heuett**, C. E. Ramirez, S. Batchu, P. Gardinali

11:15 875. Detection and identification of anaerobic biotransformation products of polyfluorochemicals in aqueous film-forming foams. **S. Yi**, E. F. Houtz, K. C. Harding, J. A. Field, D. L. Sedlak, L. Alvarez-Cohen

11:45 Panel Discussion.

11:55 Concluding Remarks.

IUPAC: Ecosystem and Human Exposure and Risk Assessment

Global Approaches To Assessment of Bystander and Agricultural Worker Exposure and Risk

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Ecosystem and Human Exposure and Risk Assessment

Implementing a Risk Paradigm for Pesticide Use Decisions in the Real World

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Emerging Issues and Challenges

Global Food Production and Food Security

Sponsored by AGRO, Cosponsored by AGFD, CEI, and ENVR

IUPAC: Environmental Fate and Metabolism

Handling of Mixtures in the Environment and Ecological Implications

Sponsored by AGRO, Cosponsored by CEI and ENVR

IUPAC: Environmental Fate and Metabolism

Improved and Novel Methods To Estimate Pesticide Degradation Patterns and Rates

Sponsored by AGRO, Cosponsored by CEI and ENVR

THURSDAY AFTERNOON

Section A

San Francisco Marriott Marquis
Foothill D

Humic Substances and Its Critical Role in Environmental Chemistry: The Past 50 Years, Present Knowledge and Future Research Opportunities

Microbial Interaction with Humic Substances and Water/Waste/Reuse Treatment

F. Rosario, J. Pedersen, I. Suffet, *Organizers, Presiding*

1:30 876. Interaction of protein with humic acid. **W. Tan**, Y. Li, W. Norde, L. Koopal

2:00 877. Solid-phase humin-assisted microbial dehalogenation of aromatic compounds under anaerobic conditions. **A. Katayama**, C. Zhang

2:25 878. Fluorescence spectroscopy as an indicator for cyanobacteria organic matter release by oxidation processes. **J. A. Korak**, E. C. Wert, F. L. Rosario-Ortiz

2:50 Intermission.

3:00 880. Impact of climate change on the photochemistry and bioavailability of coastal water systems in Southern California. **J. C. Bowen**, C. D. Clark

3:25 881. Impact of chemical oxidation on the hydrophobicity of dissolved organic matter. **T. Zeng**, W. A. Mitch, C. J. Wilson

3:50 882. Aluminum-humic colloid formation during pre-coagulation for membrane water treatment: Mechanisms and impacts. **Z. Wang**, B. Teychene, T. E. Abbott Chalew, G. S. Ajmani, T. Zhou, H. Huang, X. Wu

4:15 883. Addressing the high concentration of humic substances in source water: Conventional process, MIEEX and ozone-activated carbon adsorption. P. Lin, **X. Zhang**, J. Wang, Y. Zeng, S. Liu, C. Chen

4:40 884. Application of electro dialysis pretreatment to enable direct analysis of dissolved organic nitrogen (DON) in water. **B. Chen**, A. Zhu

5:05 Concluding Remarks.

Section B

San Francisco Marriott Marquis
Foothill G1

Green Chemistry and the Environment

Cosponsored by CEI and ENFL

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

1:00 Introductory Remarks.

1:05 885. Sustainable catalytic transformations using magnetically retrievable nano-catalysts. **R. S. Varma**, M. B. Gawande, R. Zboril

1:45 885. Aqueous chemistries in organic reactions. **C. Len**

2:15 886. Mechanistic study of the photocatalytic degradation of phenol: Impact of structural properties of sustainable mixed oxide materials in the degradation process. S. Rasalingam, **R. T. Koodali**

2:35 887. Reuse of industrial lead-contaminated soil in urban applications. **C. D. Holder**, S. R. Al-Abed, P. X. Pinto

- 2:55 **888.** Greener oxidation of alcohols and carbohydrates. **M. Husnen**
 3:15 Intermission.
 3:25 **889.** Hierarchical metal-oxide nanostructures for environmental remediation. **R. R. Ozer**
 3:45 **890.** Low-energy recycling of ionic liquids from silica-supported ionogel electrolytes using spontaneous water-driven separation. **A. I. Horowitz**, Y. Wang, M. J. Panzer
 4:05 **891.** Green synthesis of iron nanoparticles using grapefruit (*Citrus paradisi* L.) peel extracts for treatment of different synthetic dyes. **B. Kumar**, L. Cumbal, A. Debut
 4:25 **892.** In situ transesterification of wet activated sludge in subcritical conditions. **L. P. Tran Nguyen**, Y. Ju
 4:45 **893.** Reductive dechlorination of PCE by nano-mackinawite with cobalamin at high pH. **S. Kim**, W. Lee
 5:05 Concluding Remarks.

Section C

San Francisco Marriott Marquis
 Club Room

New Advances in the Chemistry and Application of Advanced Oxidation Processes for Removal of Contaminants of Emerging Concern

G. Li Puma, D. Minakata, D. Dionysiou, K. Oshea, S. Canonica, *Organizers*
 A. Ghauch, J. Colina-Marquez, S. Mezyk, *Presiding*

- 1:30 **894.** Quantitative removal of antibiotics from wastewaters using advanced oxidation processes. **S. P. Mezyk**, S. C. Otto, K. Zimmerman, V. Kheen, J. R. Peller
 2:10 **895.** Transformation of β -lactam antibiotics during water treatment with ferrate(VI): Reaction kinetics, transformation products, and changes of antibacterial activity. **Y. Lee**, A. Karlesa, J. Park
 2:30 **896.** On the removal of ranitidine by iron-waste activated persulfate in aqueous systems. **A. Ghauch**, S. Naim, R. Diab
 2:50 **897.** Transformation of ranitidine during water treatments with chlorine, ozone, UV, and UV/H₂O₂: Kinetics and effects on NDMA formation potential. Z. R. Hidayat, **D. Jeon**, J. Kim, **Y. Lee**
 3:10 Intermission.
 3:25 **898.** Comparative evaluation of the removal characteristic of ibuprofen between UV/H₂O₂ and UV/S₂O₈²⁻ processes in wastewater effluent. **M. Kwon**, S. Kim, T. Hwang, J. Kang
 3:45 **899.** Heterogeneous photocatalytic degradation of the chemotherapeutic agent in aqueous environment by UV/TiO₂. **W. W. Lai**, A. Y. Lin
 4:05 **901.** Biomimetic transformation of carbamazepine by peroxide activated using Fe^{III}-TAML. **S. Uy**, L. Wright, N. Singhal

Section D

San Francisco Marriott Marquis
 Foothill E

Analytical Methods for Detecting and Prioritizing Contaminants of Concern Novel MS Techniques

J. Field, H. Done, R. U. Halden, D. Barcelo, *Organizers*
 S. Richardson, L. Ferguson, *Organizers, Presiding*

- 1:30 Introductory Remarks.
 1:35 **902.** Comprehensive 2D liquid chromatography coupled with high-resolution mass spectrometry: Application to analysis of polar organic contaminants in the aquatic environment. B. Vogler, G. J. Getzinger, **L. Ferguson**
 2:20 **903.** Development of a LC-HRMS workflow for suspect and non-target screening of contaminants of emerging concern in environmental water samples. A. A. Bletsou, P. Gago Ferrero, A. K. Psoma, R. Aalizadeh, **N. S. Thomaidis**
 2:50 **904.** Determination of acrylamide in environmental and drinking waters by large-volume injection-hydrophilic-interaction liquid chromatography and tandem mass spectrometry. **W. J. Backe**, V. Yingling, T. Johnson
 3:20 Intermission.
 3:35 **905.** High resolution mass spectrometry screening methodology for identifying emerging contaminants of concern and degradation products in wastewater treated with an innovative advanced oxidation reactor. **E. Parry**, T. M. Young
 4:05 **906.** Characterization of products and radical reaction efficiencies of advanced oxidation process treatment of beta-lactam antibiotics. **A. Gilmore**, J. P. Schwans, S. P. Mezyk
 4:35 **907.** Detection and identification of strategic water contaminants through untargeted analysis by time of flight mass spectrometry. **S. Merel**, T. Anumol, S. Snyder

5:05 Panel Discussion.

5:25 Concluding Remarks.

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