

Division of Environmental Chemistry

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Antimicrobial Agents and Sustainability

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| 5 | Development of an online solid-phase extraction liquid chromatography tandem-mass spectrometry (LC-MS/MS) method for the determination of the antibacterial triclocarban and its analogs in biological samples. Nils Schebb |
| 6 | Triclosan and Methyl-Triclosan dissipation in soils after biosolid application. Nuria Lozano |
| 7 | Comparative proteomic study to assess triclosan toxicity to green microalgae <i>Chlamydomonas reinhardtii</i> . Halambage Deepthike |
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488	Study of relationship between surface hydroxyl site and liquid-phase photocatalytic activity of titanium dioxide. Wenjuan Zhang
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191	Effects of phosphate doping on the bioreduction of iron oxide. Edward O'Loughlin
192	New insights in the electron transfer pathway of dissimilatory Mn(IV) reduction by <i>Shewanella oneidensis</i> . Hui Lin
193	Characterization of a trans-outermembrane icosaheme complex for electron exchange between bacteria and their environment. Julea Butt

Session V

<u>Paper</u>	<u>Title/Author</u>
224	Photochemistry of dissolved organic material and its role in aquatic ecosystems. Diane McKnight
225	Effect of borohydride reduction on the optical properties and ultra-high resolution mass spectra of humic substances. Neil Blough
226	Tracing fluorescent whitening agents in stream water. Katherine Walton-Day
227	Correlations between the degradation of pharmaceuticals and personal care products and changes of the absorbance spectra of wastewater and surface water in ozonation. Gregory Korshin
228	Oxidation of organic contaminants occurring on zero valent metals. Wonyong Choi
229	Pyrite driven ROS formation in simulated lung fluid: Implications for coal workers' Pneumoconiosis. Andrea Harrington
230	Degradation kinetics of trichloroethylene in heterogeneous pyrite Fenton reaction. Hyeongsu Che
231	Hydroxyl radicals form in natural sediments: Effects on sedimentary organic matter. Annelie Skoog

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<u>Paper</u>	<u>Title/Author</u>
258	Photochemical production of superoxide and hydrogen peroxide from natural organic matter. T. David Waite
259	Kinetics of oxidation of manganese(II) by superoxide in natural waters. Bettina Voelker
260	Free radical induced oxidative and reductive degradation of pharmaceutically active compounds (PhACs). Weihua Song
261	Nitro reduction by zero-valent iron: Reactivity vs. particle size, structure, and polymer coatings. James Nurmi
262	Abiotic dechlorination of cis-dichloroethylene (cis-DCE) and vinyl chloride (VC) by reduced iron minerals. Young-Soo Han
263	<i>Ab initio</i> simulation study on the reaction of chloroethylenes with iron (Fe) and iron sulfide mackinawite (FeS). Dong-Hee Lim
264	Reaction behavior of nanoscale magnetite and nitrate ions in simulated groundwater. Gordon Yang
265	Iron coordination and its role in the production of reactive oxidants from hydrogen peroxide. David Sedlak

Session VII

<u>Paper</u>	<u>Title/Author</u>
502	Role of coupled redox transformations in the mobilization and sequestration of arsenic. Janet Hering
503	Arsenic redox transformation by the humic substance model quinone AQDS. Andreas Kappler
504	Role of structural aluminum on ferrihydrite reduction: Implication for reductive dissolution of arsenic. Yoko Masue-Slowey
505	Redox transformation of arsenic by Fe(II)-activated goethite (α -FeOOH). Thomas Borch
506	Reduction of uranium(VI) by iron(II) species and minerals: Reactivity and uranium(IV) products. Maxim Boyanov
507	Facultative anoxygenic photosynthesis by cyanobacteria driven by arsenite. Felisa Wolfe-Simon
508	Kinetics of U(VI) reduction by nanoscale zero-valent iron. Baolin Deng
509	Roles of Pb(III) intermediates and hydroxyl radicals in the formation of PbO ₂ in Pb(II) oxidation by chlorine. Haizhou Liu

Session VIII

Paper Title/Author

- 534 Role of one and two electron transfer reactions in forming thermodynamically unstable intermediates as barriers in multi-electron redox reactions. George Luther
- 535 Assessment of the voltammetric evidence for $\text{FeS}_{(\text{aq})}$ in sulfidic waters. George Helz
- 536 Investigation of the kinetics of Cr(VI) reduction in the presence of cationic polysulfides. Aaron Ting
- 537 Surface charge of aggregated iron-oxide nanoparticles in mining-influenced waters. James Ranville
- 538 Redox chemistry of sulfur in an aquifer underneath an industrial site and its incidence on metal solubility. Alain Bourg
- 539 Influence of organic-matter fractionation by natural iron nanoparticles on copper speciation and aquatic copper toxicity. Kathleen Smith
- 540 Rates and mechanisms of lead(IV) oxide formation and dissolution. Yanjiao Xie
- 541 Structure and association of bioimmobilized uranium in sediments. Jonathan Sharp

Poster Session

Paper Title/Author

- 402 Potentiometric detection of iron nanoparticles. Zhenqing Shi
- 403 Dechlorination of trichloroethylene and 2,4-dichlorophenol by Fe/TiO₂ nanocomposite materials under anoxic conditions. Ruey-an Doong
- 404 Study on the extracellular electron transport in the dissimilatory metal oxides reduction. Haoran Li
- 405 Bifunctional composites Fe(0)/D201 for effective elimination of Arsenite through simultaneous oxidation and adsorption. Weiming Zhang
- 406 Iron and manganese species distribution in the Black Sea: Importance of complexed forms in the redox zone structure formation. Svetlana Pakhomova
- 407 Quantifying the effect of dissimilatory iron reduction on bulk electrical properties: Does iron reduction increase electrical conductivity. Aaron Regberg
- 408 Preparation and reactivity assessment of polymer-supported nanoscale zerovalent iron for nitrate removal. Zhengmao Jiang
- 409 Uraninite reoxidation by Fe(III)-(Hydr)oxides: Thermodynamic and kinetic considerations. Montarat Issarangkun
- 410 Influence of sorption on reactions of dichloroacetamide herbicide safeners with iron oxide-associated Fe(II). John Sivey
- 411 Electrochemical production, fate and transport, and relative toxicity of dioxins and furans: A case study from Midland, Michigan. Kaylene Ritter
- 412 Polymerization studies of metallic solutions. Jacob Cavazos
- 413 Effects of hydrology and macrophytes on iron cycling in an intertidal Georgia salt marsh. Colin Dean
- 414 Rates and mechanisms of iron(II) sulfides oxidation by dissolved oxygen. Yuqiang Bi
- 415 Arsenic partitioning in redox gradients: TXRF study of diffusion-limited columns with controlled boundary conditions. Pablo Pasten
- 416 [Withdrawn]

- 417 Quantum mechanical prediction of contaminant reactivity in groundwater: An example for hexamethylphosphoramide (HMPA). Jens Blotevogel
- 418 Quantum-chemical simulation of the formation of As (IV) during the oxidation of arsenite. Gregory Korshin
- 419 Acid mine drainage at two sites in Floyd County, Kentucky. Paul Thompson
- 420 [Withdrawn]
- 421 [Withdrawn]
- 422 Occurrence and fate of human-used macrolide antibiotics in a small Mediterranean river (Arc River, Southern France). Serge Chiron
- 423 Influence of redox conditions on DDE dechlorination in Palos Verdes Shelf, CA sediments. Sujie Qin
- 424 Cathodic Fenton degradation of 4,6-dinitro-o-cresol with nano-magnetite. Xia Zeng
- 425 Mossbauer study of Fe(II) sorbed on clay minerals. Michael Schaefer
- 426 Influence of magnetite stoichiometry on rates of microbial iron respiration. Timothy Pasakarnis
- 427 Photo-Fenton reaction at neutral pH. Bettina Voelker
- 428 Effects of fluorescence quenching by iron and zinc on the colored dissolved organic matter pool in an urban watershed. Jami Goldman
- 429 [Withdrawn]
- 430 Characteristics and reactivity of atmospherically stable nanoscale zero-valent iron particles. Hong-Seok Kim
- 431 Use of organic redox mediators in the electrochemical characterization of the redox properties of natural organic matter and mineral phases. Michael Aeschbacher
- 432 Magnetite redox properties: Implications for biogeochemical reactivity. Christopher Gorski
- 433 Photochemical phenol oxidation by humic substances. Kelli Golanoski
- 434 Effect of phenols on the photochemical production of hydrogen peroxide from Suwannee River Fulvic Acid. Yi Zhang
- 435 Coupled arsenotrophy in a photosynthetic hot spring biofilm from Mono Lake, California. Shelley Hoefft
- 436 Oxidation of elemental mercury by Fenton reagent. Tao Liu
- 437 Bioreduction of poorly crystalline Fe(III)/Al(III)-hydroxide coprecipitates. Yu Ting Liu

Atmospheric Chemistry of Persistent Organic Pollutants

Oral Session

Paper Title/Author

- 97 Harmonic fitting of atmospheric POPs' concentrations measured near the Great Lakes over the last 17 years. Ronald Hites
- 98 Theoretical mechanism for the production of HONO and NH₄NO₃ from gas phase homogeneous reaction of nitrogen dioxide. Baoquan Zhang
- 99 Passive sampling of atmospheric POPs using polyethylene samplers. Rainer Lohmann
- 100 Endocrine disruptors in the Puget Sound. Steffan Iverson
- 101 Atmospheric precursors and pathways to highly persistent perfluorinated acids. Scott Mabury
- 102 Atmospheric lifetime and global distribution and fate of DDT. Gerhard Lammel

- 103 Correlation study between airborne polycyclic aromatic hydrocarbons (PAHs) and soil borne PAHs in El Paso, TX. Chika Yamaguchi
- 104 Organochlorine pesticides and PAHs in the atmosphere and surface water of the North Atlantic and Arctic Ocean. Rainer Lohmann

Fate and Transport of Pollutants in the Built Environment: Atmospheric Chemistry Moves Indoors

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| 133 | Reactions at interfaces as significant drivers of indoor chemistry. Barbara Finlayson-Pitts |
| 134 | Formation of carcinogenic and irritant secondary pollutants from chemical aging of secondhand smoke. Mohamad Sleiman |
| 135 | Reactions of ozone with human skin lipids: Sources of carbonyls, dicarbonyls, and hydroxycarbonyls in indoor air. Armin Wisthaler |
| 136 | Influence of humans on the oxidative capacity of indoor environments. Charles Weschler |
| 137 | Terpenoid emissions from vegetation and their contribution to secondary aerosol formation: Observations from forests, urban areas, and smog chambers, and implications for the indoor environment. Allen Goldstein |
| 138 | Secondary organic aerosol in the Earth's atmosphere. Joost de Gouw |
| 139 | Reaction kinetics of ozone with four terpenes on glass, polyvinylchloride and paint surfaces. Glenn Morrison |
| 140 | Reaction products of indoor chemistry. Ray Wells |

Session II

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| 157 | Ultrafine particle concentrations and exposures in Northern California houses. William Nazaroff |
| 158 | Surfaces and particles in indoor and outdoor environments: From heterogeneous chemistry to occupational health hazards. Vicki Grassian |
| 159 | Multi-tool formaldehyde measurement in simulated and real atmosphere for indoor air monitoring. Christian George |
| 160 | Squalene and cholesterol in indoor dust: Implications for indoor chemistry. Charles Weschler |
| 161 | Indoor air purification/deodorization by TiO ₂ photocatalysis: fundamentals, potentialities and problems. Pierre Pichat |
| 162 | Molecular studies of chemical reactions relevant to remediating indoor air pollution. Franz Geiger |
| 163 | Photocatalytic oxidation of indoor VOCs at ppb levels : Kinetics of by-products formation. O. Debono |
| 164 | Nitrate radical chemistry of the indoor environment: Gas-phase and surfaces. Jason Ham |
| 165 | Experimental confirmation of the homogeneous hydrolysis of NO ₂ under atmospheric conditions: A new source of HONO and secondary inorganic aerosol-NH ₄ NO ₃ . Baoquan Zhang |

Poster Session

- | <u>Paper</u> | <u>Title/Author</u> |
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| 460 | Study of adsorption phenomena in photocatalytic reaction of several indoor VOCs. Cecile Raillard |
| 461 | Understanding photocatalytic oxidation mechanisms of indoor VOCs using a QSAR approach. Cecile Raillard |
| 462 | [Withdrawn] |

Nanotechnology: Enabling Sustainable Solutions for Potable Water

Session I

<u>Paper</u>	<u>Title/Author</u>
166	Development and characterization of photocatalysts for water purification. Wonyong Choi
167	Photocatalytic degradation of the x-ray contrast agent diatrizoate by nanophase TiO ₂ : Kinetics and mechanisms. Matthew Sugihara
168	Controlling bromate formation following UV-TiO ₂ oxidation in brackish water. Ryan Brookman
169	Enhanced photocatalytic solar disinfection (ENPHOSODIS) of Escherichia coli using nitrogen and fluorine co-doped titanium dioxide. Dionysios Dionysiou
170	Virus inactivation is mediated by reactive oxygen species in photosensitized fullerol nanoparticle suspensions. Shankar Chellam
171	Fine-tuning ligand-promoted oxygen atom transfer system for perchlorate reduction. Yunxia Zhang
172	Heavy metal removal by metal oxide nanoparticles in batch studies. Karen Engates
173	Characterization of Re speciation and its influence on stability and activity of the Pd-Re catalysts for perchlorate treatment. Jong Kwon Choe
174	Water remediation using organosilica-based materials and nanoparticle composites that swell in the presence of organic contaminants. Paul Edmiston
175	Nanoparticle deposition under the influence of electrostatic repulsive conditions, surface roughness, and arbitrary flow direction. Kirk Nelson
176	Polymer supported hybrid nanosorbent to mitigate global arsenic crisis. Arup SenGupta

Session II

<u>Paper</u>	<u>Title/Author</u>
203	Effectiveness of nanoscale zerovalent iron (NZVI) to reduce contaminant mass emission from a NAPL source zone in an intermediate-scale aquifer system. Tanapon Phenrat
204	[Withdrawn]
205	Sorption and interference batch studies of selenite (SeO ₃ ²⁻) and Selenate (SeO ₄ ²⁻) to engineered nano-Jacobsite in aqueous solutions. Christina Gonzalez
206	Elucidation of nitrate reduction mechanisms on a Pd/In bimetallic catalyst using isotope labeled nitrogen species. Rui Zhang
207	How nC _{60(aq)} production method affects nanoparticle physiochemical properties. Chad Vecitis
208	Water-soluble C ₆₀ derivatives as novel photocatalyst: Photochemical properties. Jaesang Lee
209	Water-soluble C ₆₀ derivative as novel photocatalyst: Biocidal properties. Min Cho
210	Antimicrobial mechanisms of single-walled carbon nanotubes (SWNTs). Chad Vecitis
211	Single-walled carbon nanotube (SWNT) composite membranes for reduction of biofouling in water treatment. Meagan Mauter
212	Activity, selectivity and anti-fouling tests of Pd/carbon nanofiber (Pd/CNF) catalysts for nitrite hydrogenation. Danmeng Shuai

- 213 *Escherichia coli* inactivation mechanism by zero-valent iron nanoparticles and ferrous iron. Jeyong Yoon
- 214 Paper filters impregnated with silver nanoparticles for the removal of bacterial pathogens. Theresa Dankovich

Sustainable Waste Management: Issues and Challenges

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| 177 | Development of a carbon footprint model for landfill disposal of solid waste. Morton Barlaz |
| 178 | Hydrothermal carbonization of municipal solid waste for carbon sequestration and energy generation. Nicole Berge |
| 179 | Vacuum assisted steam autoclaving as a front-end technology for converting waste to bioenergy. Kevin Holtman |
| 180 | Assessing the quality of PET bottles isolated from MSW by a novel, vacuum-assisted steam autoclaving technology. William Orts |
| 181 | Effect of substrate concentration on methane fermentation of cattle dung. Jianzheng Li |
| 182 | Bioreactor landfills: chemical engineering and fermentation engineering perspectives. Don Augenstein |
| 183 | [Withdrawn] |
| 184 | Performance of enhanced aerobic landfill bioreactor under air flow and liquid addition. Ramin Yazdani |
| 185 | Waste plastic bags/films in landfill: A key contributor to leachate fluoroscency and a suspectable contamination indicator. Li-Ming Shao |

Session II

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| 215 | Role of end-of-life management on sustainable building material selection. Timothy Townsend |
| 216 | Trace element leaching from recycled pavement materials stabilized with fly ash. Craig Benson |
| 217 | Counting solid waste. David Tonjes |
| 218 | Complete removal of inks from substrates assisted by intricate environmental benign neutral Deinking chemistry. Hou T Ng |
| 219 | Incineration technology for MSW disposal in Japan: development and experience. Katsuya Kawamoto |
| 220 | Production and management of municipal solid waste incineration residues in China: Challenges toward the new pollution control standards. Pin-Jing He |
| 221 | Evaluation of test methods for assessing the environmental risks from road marking glass beads. Brajesh Dubey |
| 222 | Sustainable development of oil shale processing: Synthesis and environmental challenges of oil shale wastes based geopolymers. Uuve Kirso |
| 223 | Engineered bioreactor landfills as energy technology: Comparison with alternatives. Andrew Wang |

Influence of Natural Organic Matter on the Fate and Transport of Metals, Colloids and Nanoparticles in the Aquatic Systems

Session I

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| 194 | Challenges in the study of the interactions of metals with dissolved organic matter. George Aiken |
| 195 | Bacterial mercury methylation and the role of natural dissolved organic matter. David Krabbenhoft |
| 196 | Rate of formation and dissolution of mercury sulfide nanoparticles: Dual role of natural organic matter. Aaron Slowey |
| 197 | Effects of natural organic matter on methylmercury production by pure cultures of <i>Desulfovibrio desulfuricans</i> ND-132. Scott Brooks |

- 198 Identification of metacinnabar in mixed mercury, sulfide, and dissolved organic solutions through chromatographic concentration and EXAFS. Chase Gerbig
- 199 Species specific enriched stable isotopic spikes elucidate binding differences between mercury species in forest soils. Brian Jackson
- 200 Decrease in net mercury methylation following an iron amendment to tidal wetland sediments. Patrick Ulrich
- 201 Dissolved methylmercury concentrations in two headwater streams: Influence of geochemical factors on differences between results from distillation/ethylation and thiourea-catalyzed SPE. Robert Hudson
- 202 Using transmission x-ray microscopy, XAS, and [micro]-XRF to study Hg accumulation and transformation in *Spartina foliosa* and *Medicago sativa*. Joy Andrews

Session II

Paper Title/Author

- 232 The influence of dissolved natural organic matter on the photochemical cycling of mercury. Douglas Latch
- 233 Thiol complexation of methylmercury enhances indirect photodemethylation by singlet oxygen. Heileen Hsu-Kim
- 234 The effects of humic acid and cations on photocatalytic activity and aqueous transport of fullerene-based nanoparticles (FNPs). Soryong Chae
- 235 Effect of natural organic matter on the light-initiated transformation of fullerenes. Lingjun (Lynn) Kong
- 236 Aggregation of C₆₀ fullerene water suspension in the presence of structurally different dissolved matters. Baoshan Xing
- 237 Mass spectrometry of non-colloidal fullerenes in waters containing natural organic matter. William Hockaday
- 238 New insights in Mo(VI) speciation in sulfidic waters: Importance of natural organic matter. Anthony Chappaz
- 239 Differential absorbance spectroscopy in the analysis of metal complexation to dissolved organic matter. Deborah Dryer
- 240 Metal complexation with dissolved organic matter in soil and groundwater remediation. Daniel Tsang

Session III

Paper Title/Author

- 266 Atomic-scale characterization of the effect of fulvic acid on heavy metal uptake at the muscovite (001)-solution interface. Sang Soo Lee
- 267 Metal ion partitioning and speciation at complex natural organic matter-mineral interfaces. Yingge Wang
- 268 Surface and organic speciation of Europium(III) in the α -Al₂O₃ - humic acid system: Macroscopic and spectroscopic investigations. Pascal Reiller
- 269 Chromium(III) and cadmium binding to natural organic matter from surface water and landfill leachate. Armand Masion
- 270 Role(s) of siderophores and other natural organic ligands in Fe acquisition from hematite by an aerobic soil microorganism. Patricia Maurice
- 271 Chemical weathering processes in the Rio Negro Basin (Brazil): Insights from colloidal organic matter and iron speciation. Marc Benedetti
- 272 Iron-bridged complexation of arsenite with dissolved organic matter. Yong Cai
- 273 Influence of dissolved organic carbon molecular weight and structure on copper complexation. Shawn McElmurry
- 274 Uptake of fullerene (nano-C₆₀) by *Lumbriculus variegatus*. Jiafan Wang

Session IV

<u>Paper</u>	<u>Title/Author</u>
510	Mechanistic insights to the influence of adsorbed organic macromolecules on nanoparticle reactivity, toxicity, and mobility in porous media. Gregory Lowry
511	Stability and aggregation of metal oxide nanoparticles in natural aqueous matrices. Arturo Keller
512	Evaluating the stability of nano-sized hematite in the presence of dicarboxylic acids. John Lenhart
513	Influence of natural organic matter on the dissolution and bioavailability of silver nanoparticles. Jie Gao
514	Role of natural organic matter of different composition on quantum dots stability and transformations. Vera Slaveykova
515	Growth and aggregation of ZnS nanoparticles during coprecipitation with aquatic humic substances. Heileen Hsu-Kim
516	Natural organic matter enhanced mobility of nano zero-valent iron. Richard Johnson
517	Transport of engineered iron oxide nanoparticles in porous media in water: Effects of pH and natural organic matter. Wei Wang

Session V

<u>Paper</u>	<u>Title/Author</u>
542	Effects of natural and contaminant dissolved organic carbon upon microbial transport through aquifer sediments. Ronald Harvey
543	Effect of organic loading on the transport of <i>Cryptosporidium parvum</i> oocysts and oocysts sized microspheres through three mineralogically different granular porous media. Arvind Mohanram
544	Interactions between natural organic matter and gold nanoparticles with different capping agents. Dylan Stankus
545	Influence of natural organic matter on the adhesion of Au nanoparticles-coated polystyrene latex beads to mica using 'colloid' probe atomic force microscopy. Arturo Keller
546	Deposition and aggregation kinetics of rotavirus in the presence of divalent cations and natural organic matter. Leonardo Gutierrez
547	Role of divalent cations on deposition kinetics of <i>Cryptosporidium parvum</i> oocysts onto natural organic matter surfaces. Dao Janjaroen
548	Surfactant effects on pathogen attachment at the hematite (α -Fe ₂ O ₃)-water interface. Xiaodong Gao
549	Engineering polymeric nanoparticle coatings for decreased toxicological impacts of nanoscale zero-valent iron. Kelvin Gregory
550	Sorption of genetically modified insecticidal Cry1Ab protein to soil organic matter. Michael Sander

Poster Session

<u>Paper</u>	<u>Title/Author</u>
463	Probing pathogenic prion protein interactions with humic acid and mineral surfaces using the quartz crystal microbalance with dissipation. Kurt Jacobson
464	Influence of natural organic matter on the stability of Bacteriophage MS2. Steven Mylon
465	Effects of humic acid on the fate of heavy metals and TPHs in a wetland microcosm planted with <i>Phragmites communis</i> . Kijune Sung
466	Investigation of the protonation behavior of natural organic matter from the Rio Negro region by in situ spectroscopic methods. Gregory Korshin

- 467 Role of morphology and natural organic matter in the aggregation kinetics of ZnO nanoparticles. Dongxu Zhou
- 468 Photoactivated behavior of metal oxide nanoparticles in natural waters. Samuel Bennett
- 469 Effects of Fe³⁺ injection rate, cooling and drying method on particle size, morphology, and mineral phase of iron oxide nanoparticles. Jessica Ray
- 470 Influence of nano-particles on partition of hydrophobic pollutants in aquatic systems. Endalkachew Sahle-Demessie
- 471 Effect of *Daphnia magna* on the aggregation of citrate-stabilized Au nanoparticles in hard water. Byung-Tae Lee
- 472 Effect of natural organic matter on transport and distribution of *Cryptosporidium Parvum* oocysts in subsurface environment: A real time microscopic study in micromodel. Yuanyuan Liu
- 473 Environmental selenium availability is directly related to mercury retention and inversely related to methylmercury bioaccumulation in freshwater fish. Nicholas Ralston
- 474 Surfactants interaction with soil organic matter: Estimation of long-term effects on pesticides and trace metals availability. Maria del Carmen Hernandez-Soriano
- 475 Copper speciation in highway stormwater runoff. Jeffrey Nason
- 476 Initial stages of biofilm formation on different substrata in the Flint River. Anselm Omoike
- 477 Stability of manufactured nanoparticles in natural systems. Alexandre Gelabert
- 478 Examination of NOM physicochemical properties on nanomaterial transport in porous media. Eugene LeBoeuf
- 479 Enhanced mobility of nano-titanium dioxide by natural organic matter. Xuejiao Yang
- 480 Purification of Silver nanoparticles using diafiltration membranes and its applications for testing the fate, transport and toxicity of silver. Amro El Badawy
- 481 Effect of organic matter on zinc oxide nanoparticle aqueous interactions. Erica McKenzie
- 482 Neptunium(V) complexation with Suwannee River humic acid: Determination of the conditional stability constant. Patricia Moran
- 483 Hematite nanoparticles: Size and reactivity with respect to Pb adsorption and siderophore-promoted dissolution. Lauren Barton

Energy Sustainability of the Water Infrastructure Using Microbial Fuel Cell Based Technologies

Session I

Paper Title/Author

- 241 Energy efficient production of caustic soda from wastewater using bioelectrochemical systems. Korneel Rabaey
- 241.5 Extracellular electron transfer in microbial fuel cells. Yuri Gorby
- 242 Understanding and optimizing the biofilm anode of microbial electrochemical cells. Cesar Torres
- 243 Laboratory and field tests using microbial electrolysis cells for hydrogen production from agricultural and domestic wastewaters. Bruce Logan
- 244 Development of non-platinum based cathodes for hydrogen production in microbial electrolysis cells. Hong Liu
- 245 Microbial fuel cell cathodes with poly(dimethylsiloxane) diffusion layers constructed around stainless steel mesh current collectors. Fang Zhang
- 246 Structure-property relationship of polymeric cathode binders in microbial fuel cells. Tomonori Saito

- 247 Treatment of carbon fiber brush anodes for improving power generation in air-cathode microbial fuel cells. Yujie Feng
- 248 Progress in development of a microbial fuel cell system for treating municipal wastewater. Sten Wallin
- 249 [Withdrawn]

Session II

- | <u>Paper</u> | <u>Title/Author</u> |
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| 275 | Give and take of <i>Geobacter</i> microbe-electrode interactions. Derek Lovley |
| 276 | Electrochemical modeling of the anode reducing ability of <i>Geobacter sulfurreducens</i> . Leonard Tender |
| 277 | Investigations of mechanisms of extracellular electron transfer in anode biofilms of <i>Geobacter sulfurreducens</i> . Nikhil Malvankar |
| 278 | Periplasmic hydrogenases role for extracellular electron transfer. Feng Zhao |
| 279 | Are all electron shuttles created equal? Daniel Bond |
| 280 | Investigations into the extracellular electron transfer mechanisms of <i>Geobacter</i> and <i>Shewanella</i> species. Wesley Sanders |
| 281 | What influences <i>Pseudomonas aeruginosa</i> current production in bioelectrochemical systems? Lars Angenent |
| 282 | Understanding electrochemical power extraction from <i>Shewanella oneidensis</i> at the single cell level. Jinsong Hu |

Session III

- | <u>Paper</u> | <u>Title/Author</u> |
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| 518 | Community analysis and long-term performance of microbial fuel cells fed individual fermentation endproducts. Patrick Kiely |
| 519 | Miniature microbial fuel cells with air-exposed anodes. Bradley Ringeisen |
| 520 | Microfabricated microbial fuel cell array for screening of electrochemically active microbes. Huijie Hou |
| 521 | Anode potential regulates microbial competition between anode-respiring bacteria and methanogens in the biofilm anode. Hyung-Sool Lee |
| 522 | Multi-Anode/Cathode Granular Activated Carbon Microbial Fuel Cells (MAC-GACMFC): A cost effective design for high power generation from wastewater treatment. Baikun Li |
| 523 | Microliter-scale microbial fuel cells for on-chip bioelectricity generation. Fang Qian |
| 524 | Coupled system optimization and economic analysis for the design of microbial fuel cells treating wastewater. Matthew Silver |
| 525 | From an Air-Cathode Microbial Fuel Cell (MFC) to an Air-Cathode Microbial Desalination Cell (MDC). Maha Mehanna |
| 526 | Total nitrogen removal in a single-chamber, plug-flow microbial fuel cell. Juan Pablo Pavissich |

Session IV

- | <u>Paper</u> | <u>Title/Author</u> |
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| 551 | Evaluation of MFC performances for the treatment of an urban wastewater: Comparison to aerobic treatment and direct electrolysis of biomass. Benjamin Erable |
| 552 | Ionic liquid pretreatment of lignocellulosic materials for enhanced sustainable biogas and electricity generation. Hongqiang Hu |
| 553 | [Withdrawn] |
| 554 | Bioelectrochemical perchlorate reduction in a microbial fuel cell. Caitlyn Butler |

- 555 [Withdrawn]
- 556 Hydrogen generation with hydrogenophilic dechlorinating bacteria in bioelectrochemical systems. Federico Aulenta
- 557 Water recycle and energy production in future biorefineries using MFC/MEC systems. Abhijeet Borole
- 558 Bioelectrochemical production of methane by a hydrogenophilic methanogenic culture. Marianna Villano

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Paper Title/Author

- 441 Electricity generation using iron-reducing, haloalkaliphilic bacteria. Varun Paul
- 442 Highly conductive textile electrodes for microbial fuel cells. Xing Xie
- 443 OmcZ, a mobile, extracellular, c-type cytochrome that accumulates at the anode in current-producing biofilms of *Geobacter sulfurreducens*. Kengo Inoue
- 444 Various strategies to enhance electrical power production of a microbial fuel cell running on swine liquid manure. Daniel Yves Martin
- 445 Air-cathode microbial fuel cell array for electrochemically active microbe screening. Huijie Hou
- 446 Determination of the internal energy of wastewater. Elizabeth Henderson
- 447 Comparison of C, Pt/C, Pd/C as cathodic oxygen reduction catalysts in microbial fuel cells. Xinxin Shi
- 448 Solar power assisted biohydrogen evolution in microbial electrolysis cells. Mi-Jin Choi
- 449 Increase of current generation using Three Electrodes Microbial Fuel Cell (TE-MFC): Floating-Type MFC (FT-MFC) combined with sediment MFC (SMFC). In Seop Chang
- 450 Effect of temperature on the performance of air-cathode single chamber microbial fuel cells (MFCs). Shaoan Cheng
- 451 Stimulating the anaerobic degradation of aromatic hydrocarbons in contaminated sediments by providing an electrode as the electron acceptor. Tian Zhang
- 452 Impact of oxygen crossover on layered electrode assembly, air cathode MFCs. Caitlyn Butler
- 453 Electricity production in single-chamber microbial fuel cells using carbon source mixtures and evaluation of anodic biofilms. Tunc Catal
- 454 Bio-augmentation of anodic consortia with electrochemically active strain to improve the performance of microbial fuel cell. Veer Raghavulu S
- 455 Carbon nanofiber modified air cathodes for improving electricity production in microbial fuel cells. Zhiyong Ren
- 456 Power generation by microbial fuel cells from sunlight. Sarah Strycharz
- 457 Glycerol utilization and performance of microbial fuel cells. Jeremy Chignell
- 458 A novel electrochemically active bacterium phylogenetically related to *Arcobacter butzleri* isolated from a microbial fuel cell. Andrew Free
- 459 [Withdrawn]

Sustainable Processes for Drinking Water and Wastewater Treatment

Session I

<u>Paper</u>	<u>Title/Author</u>
250	Impact of water chemistry on the removal of arsenic from drinking water by electrocoagulation. Wei Wan
251	Disinfection of drinking water using solar UV: A low cost system applicable in developing countries. Eric Gentil Mbonimpa
252	Water treatment using ceramic filters amended with activated carbon. Joanne Smieja
253	Inorganic contaminants in scales formed in drinking water distribution systems: Examination of occurrence and release. Ching-Yu Peng
254	Polymer templated porous TiO ₂ monoliths doped with gadolinium(III) and their photocatalytic efficiency toward water purification. David Rogow
255	Removal of polar pharmaceuticals from treated drinking water by commercial faucet-style water filters. Seungyun Baik
256	Desalination and sustainability of drinking water distribution systems: effects of blending of desalinated and conventionally treated surface water on iron corrosion and release. Haizhou Liu
257	Implementation of biosand filters in the village of Estanque de Leon a sustainable option. Field case study.. Montserrat Rabago Smith

Session II

<u>Paper</u>	<u>Title/Author</u>
283	Reactivity of effluent organic matter towards hydroxyl radical as a function of molecular weight and its effects on the application of advanced oxidation. Mei Mei Dong
284	Development of a novel hybrid UAFB-anoxic-aerobic MBR for energy production and nutrients removal from domestic wastewater. Dawen Gao
285	Electro-enzymatic removal of nitrate from wastewater. YoungJe Yoo
286	Comparative evaluation on fate and treatability of estrogenic contaminants in conventional wastewater treatment plants. Peter Ruiz-Haas
287	Incomplete rejection of low molecular weight compounds in reverse osmosis systems and their potential impacts on potable water quality. David Sedlak
288	The treatment of hydrogen sulfide contaminated sour water with potassium permanganate. Matthew Doyle
289	Pharmaceutical compounds in our water supply: Advanced oxidation processes to remove antibiotics from water. Hanz Santoke
290	Rapid and selective removal of perchlorate from water using ion exchange resin/glass fiber composites. James Langer

Session III

<u>Paper</u>	<u>Title/Author</u>
527	Perchlorate degradation using divalent titanium: Equilibrium, kinetic and spectrophotometric study with modeling. Sunghyuk Park
528	Bicarbonate-form anion exchange: Efficacy for water treatment and innovative regeneration techniques. Christopher Rokicki
529	Electrocoagulation pretreatment for microfiltration: A sustainable combination to enhance water quality and reduce fouling in integrated membrane systems. Shankar Chellam
530	Waste byproduct materials for removal of phosphorus from organic-rich surface water. Treavor Boyer

- 531 [Withdrawn]
- 532 Bio-based arsenic sorbent. Sarah Miller
- 533 Effect of solar disinfection on viral constituents. Krista Wigginton

Poster Session

Paper Title/Author

- 492 Retention of viruses in biosand filters amended with iron oxides. Sheila Markazi
- 493 Application of sustainable organic mulch for the bioremediation of trichloroethylene. Zongsu Wei
- 494 Simultaneous removal of chromium and arsenate by Fe(II) from contaminated groundwater. Xiaohong Guan

Division of Environmental Chemistry

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General Papers

Chemistry of AOP Radicals During Water and Wastewater Treatment

Drinking Water Chemistry: Disease Prevention and Health Promotion

Emerging Applications in Membrane Science and Technology

Environmental Applications and Implications of Nanotechnology

Environmental Health Volatiles and Aerosols: Novel Direct Measurement Methods Relevant to Lung Disease

Heterogeneous Catalysis for Environmental and Sustainable Energy Applications

Mining Waste: Geochemistry, Treatment, and Beneficial Reuse

Black Carbon as Geosorbent and Beyond: Contaminant Sorption, Soil Fertilization, and Carbon-Negative Strategy

Molecular Tools for Assessing Exposure to Environmental Pathogens

Symposium on Surface and Interfacial Phenomenon in Environmental Processes

Sustaining Water Quality

General Papers

Pub #	Presentation Title/Authors
208	Withdrawn.
209	Imprinted polymers for the removal of hydrophilic arsenic complexes from water. Rukshan T. Perera, Dr. Anja Mueller
210	Withdrawn.
211	Levels of selected heavy metals in New Jersey sanitary biosolids that are used as fertilizer. Dr. Tsanangurayi Tongesayi PhD, Ms Patricia Dasilva Undergraduate, Ms Katharine Dilger Undergraduate, Mr Tristan Hollingsworth Undergraduate
212	Investigation on the enhanced stability of CO ₂ hydrate in Ulleung-basin sediment suspension. Kyoungjin Lee, Prof. Woojin Lee PhD
213	Withdrawn.
214	Preparation of carbon and sulfur doped TiO ₂ by sol-gel method for drinking water treatment under visible light. Changseok Han, Miguel Pelaez, Dr. Vlassis Likodimos, Dr. Athanassios G. Kontos, Dr. Polycarpos Falaras, Dr. Dionysios D. Dionysiou
215	New instrument for biogeochemical monitoring: AIS Micro-Observatory. Dr. Don B. Nuzzio PhD
216	Effects of air pollutants on the environmental health risk assessment of Gyeongju and Pohang in South Korea. Prof. Jong-Hyun Jung, Prof Byung-Hyun Shon, Prof Kyung-seun Yoo

General Papers (cont.)

- 217 Real-time simultaneous measurement of diesel vehicle exhaust with laser ionization mass spectroscopy. Dr/ Hiroyuki Yamada
- 218 Enhanced solubilization and biodegradation of hexane by nonionic surfactant. Zongsu Wei, Christopher M Hessler, Prof. George Sorial PhD, Prof. Youngwoo (Young) Seo PhD
- 219 Size estimation and kinetics of formation for nanoparticles of sulfide with copper and zinc. Robert Braczyk, Stephen M. Theberge PhD
- 220 Enhanced crystallinity of a carbon nanotube-based biosensor for monitoring microcystin-LR. Changseok Han, Amos Doepke, Wondong Cho, Dr. Armah D. de la Cruz, Dr. William R. Heineman, Dr. H. Brian Halsall, Dr. Vesselin N. Shanov, Dr. Mark J. Schulz, Dr. Vlassis Likodimos, Dr. Polycarpus Falaras, Dr. Dionysios D. Dionysiou
- 221 Surface characterization of fouled PVDF based hollow fiber membranes used in drinking water treatment. Dr. John E. Tobiason PhD, PE, BCEE, Anh Nguyen
- 222 Characteristics and applications of controlled release permanganate gel for groundwater remediation. Pamela R. Olson, Prof Eung Seok Lee, Dr. Utku Solpuker, Prof Frank W. Schwartz, Yongje Kim
- 223 Influence of bacterial extracellular polymeric substances (EPS) on biosorption of natural organic matter in water distribution system. Zhikang Wang, Zheng Xue, Dr. Youngwoo (Young) Seo PhD
- 224 Withdrawn.
- 225 Determination of organochlorine pesticides and polychlorinated biphenyls in sediment slurry using GC-ECD and GC-EI-MS after the hollow fibre-liquid phase microextraction. Dr Titus A.M Msagati PhD
- 226 Withdrawn.
- 227 Inactivation of *E. coli* endotoxin by soft-hydrothermal processing. Dr. Toru Miyamoto PhD, Prof. Noriyuki Kasai DVM PhD, Dr. Shinya Okano DVM PhD

Chemistry of AOP Radicals During Water and Wastewater Treatment

Session I

- | Pub # | Presentation Title/Authors |
|-------|--|
| 1 | Evaluation of the reactivity of hydroxyl radical towards effluent organic matter. F. L. Rosario-Ortiz , M. Dong, S. Mezyk |
| 2 | Removing estrogenic steroids from waters by advanced oxidative and reductive chemistry. E. M. Abud , K. L. Swancutt, K. A. Rickman, S. P. Mezyk |
| 3 | Supported bismuth catalysts for degradation of organic contaminants. J. Virkutyte , R. S. Varma |
| 4 | Ionizing radiation techniques for hydroxyl radical efficiency determinations of organic contaminant mixtures in treated wastewater matrices. J. R. Peller , S. P. Mezyk |
| 5 | Effect of photocatalytic degradation and adsorption processes on the removal of phenolic compounds from agro-industrial effluent. K. Baransi, Y. Dubowski, I. Sabbah |
| 6 | Advanced oxidation processes for the removal of antidepressant compounds from water: Photochemical fate studies. H. Santoke , W. Song, W. J. Cooper |
| 7 | Reductive dechlorination of carbon tetrachloride in modified Fenton reaction by Fe(II) chelated with cross-linked chitosan. Y. Lee, S. Bae , W. Lee |
| 8 | Degradation of phenolic compounds and antibiotics in the presence of free radicals. X. He , M. Yalılı Kılıç, K. Kestioğlu, S. Mezyk, D. D. Dionysiou |

Chemistry of AOP Radicals During Water and Wastewater Treatment (cont.)

Session II

Pub #	Presentation Title/Authors
24	Absolute kinetics and reaction efficiencies of hydroxyl radical-induced degradation of methyl isothiocyanate (MITC) in different quality waters. S. P. Mezyk , K. L. Swancutt, M. K. Dail, K. P. Ishida
25	Degradation of DNOC with nano-magnetite and cathodic Fenton generation of hydrogen peroxide. A. T. Lemley , X. Zeng, K. Hanna
26	Effects of hydroxyl radical mediated oxidation on <i>N</i> -acylhomoserine lactones used in microbial signaling: Rates, products, and effects on signaling activity. J. L. Ferry, R. L. Frey , A. W. Decho
27	Linear free energy relationship (LFER) for the aqueous phase hydroxyl radical (HO•) reactions with ionized species: Experimental and theoretical studies. D. Minakata , J. C. Crittenden
28	Withdrawn
29	Characterization of performance and wear mechanism of diamond electrodes used for electrochemical oxidation of TCE. B. P. Chaplin , J. Farrell, J. Carlisle, H. Zeng
30	Removing contaminant pharmaceuticals from waters using sulfate radicals. K. A. Rickman , G. McKay, S. P. Mezyk
31	Effects of pH, phosphate, chloride, bromide, carbonate, Fe(II) and natural organic matter on the yield of HO from a modified Udenfriend process: A multifactorial study. J. M. Burns , J. L. Ferry, T. J. Shaw
32	Effect of copper on zerovalent iron-based oxidation for the degradation of trichloroethylene. K. Choi , W. Lee

Poster Session

Pub #	Presentation Title/Authors
237	Degradation of Reactive Red 195 azo dye by advanced oxidation processes. G. Genc
238	Treatment of statin pharmaceuticals by advanced oxidation processes: Kinetic considerations and destruction mechanism. W. J. Cooper , B. Razavi, W. Song
239	Removal of musk ketone and musk xylene from reclaimed wastewater using radical reactions. C. M. Hirsch , S. P. Mezyk
240	Radical chemistry of chloramine in waters intended for reuse. G. McKay , S. P. Mezyk

Surface and Interfacial Phenomena in Environmental Processes (Cosponsored by COLL and GEOC)

Surface Characterization Techniques and Surface-Involved Reactions

Pub #	Presentation Title/Authors
9	First-principles investigation of catalytic reduction of nitrogen oxides for environmental applications. W. F. Schneider , D. McCalman
10	Withdrawn
11	Nonionic surfactant interaction with biofilm in surfactant enhanced biofiltration systems. V. R. Sendamangalam , W. Zongsu, G. Sorial, Y. Seo
12	Deposition of inorganic minerals at the water-metal interface: Role of surface conditioning by anti-deposition polymers. H. Li , R. Vidic
13	Unexpected role of activated carbon in promoting transformation of secondary amines to <i>N</i> -nitrosamines. C. Huang
14	Revision of oxidative catalytic reaction mechanism of hematite nanoparticles and related size-effects. I. Chernyshova , S. Ponnurangam, P. Somasundaran

Surface and Interfacial Phenomena in Environmental Processes (cont.)

- 15 Interactions between metal oxides and the impact on the redox transformation of organic contaminants. **H. Zhang**, S. Taujale, F. J. Murrillo, P. Bick
- 16 Uranyl at fused silica/aqueous interfaces studied by resonantly enhanced second harmonic generation and the Eisenthal chi(3) method. **F. M. Geiger**

Session II

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| 33 | Evaluating prediction uncertainty in reactive transport models of uranium in groundwater. G. P. Curtis , M. Ye, M. Kohler, P. Fox, J. Davis |
| 34 | Uranium attenuation in subsurface systems under NH ₃ gas induced alkaline conditions. N. P. Qafoku , J. E. Szecsody, M. J. Truex, L. Zhong |
| 35 | Removal of low levels of As, Se, Cu and Cr from waste ion exchange brine by <i>in situ</i> ferric hydroxide precipitation. J. E. Tobiason , Y. Larsen, M. Pham |
| 36 | Multifactorial modeling of the effects of precipitating agents and common ions on Fe(II) oxidation in the presence of natural organic matter. J. L. Ferry , J. M. Burns, T. J. Shaw |
| 37 | CO ₂ -H ₂ O-PbS interfacial reactions: Implications for CO ₂ leakage from geologic sequestration. K. O'Malley, Y. Jun |
| 38 | Sequestration of ⁹⁹ Tc by goethite. W. UM , R. Serne, N. P. Qafoku, J. H. Westsik |
| 39 | Initial concentration effect: Inherent limitations of classical adsorption theories. G. Pan |

Session III

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| 69 | Influence of surface chemistry on the behavior of multi-walled carbon nanotubes in aquatic environments. H. Fairbrother , B. Smith, K. Wepasnick, W. P. Ball |
| 70 | Effects of oxide nanoparticles on bacterial surface biomolecules. W. Jiang , R. W. Vachet, B. Xing |
| 71 | Influence of geochemical variables on nanoscale zerovalent iron (nZVI) longevity: Implications of particle aging for treatment applications. Y. Xie , D. M. Cwiertny |
| 72 | Aggregation kinetics of fullerene-single-walled carbon nanotube hybrids. N. Aich , N. B. Saleh |
| 73 | Adsorption of organic compounds by engineered carbon nanoparticles. K. Yang, B. Xing |
| 74 | Adsorption of benzene and phenanthrene on carbonaceous geosorbents. Y. Ran |
| 75 | Partition of endosulfan and chlorpyrifos onto soil organic matter. M. K. Tiwari , S. Guha |
| 76 | Sorption properties of tylosin on soil minerals. Q. Zhang , C. Yang , W. Huang, Z. Dang |

Poster Session

- | Pub # | Presentation Title/Authors |
|-------|---|
| 279 | Spectroscopic and microscopic studies of weathering and decay in historic magnesian limestone. R. A. Walker , K. F. Giles, A. F. Lee, K. Wilson |
| 280 | Withdrawn |
| 281 | Novel environmentally friendly approach to paint strippers based in interfacial mechanistic studies. J. H. Wynne , K. E. Watson, J. G. Lundin, J. P. Yesinowski |
| 282 | Photochemistry of adsorbed nitrate on aluminum oxide particle surfaces. G. R. Rubasinghege , V. H. Grassian |
| 283 | Episodic hydrogeochemical controls on lead and arsenic mobility at a former fertilizer manufacturing facility, New Jersey. J. L. deLemos , B. C. Bostick, W. D. Brady, G. O. Cadwalader, J. E. Vidumsky, M. F. DeFlaun |

Surface and Interfacial Phenomena in Environmental Processes (cont.)

- 284 Reactions involving dissolved Al and SiO₂: A comparison between amorphous silica and crystalline quartz. H. Van Atta, R. S. Maxwell, S. A. Carroll, **J. R. Houston**
- 285 Polymer-based zirconium phosphate nanoparticles for lead retention: Effect of polymeric functional groups. Q. Zhang, **B. Pan**, W. Zhang, L. Lv, Q. Zhang
- 286 Abiotic transformation of hormones exposed to Fe(III)-montmorillonite and nitrite. **K. Xia**, K. Verma

Sustaining Water Quality (Cosponsored by ANYL, Financially supported by Gloval Innovation Imperatives and Dionex Corporation)

Status and Trends

- | Pub # | Presentation Title/Authors |
|-------|--|
| 17 | Water quality status and trends in the United States. M. C. Larsen , P. A. Hamilton, D. N. Myers |
| 18 | Withdrawn |
| 19 | Rivers in Africa are in jeopardy and there is need for rivers' restoration. S. O. Wandiga |
| 20 | Quantitative structure activity relationships (QSAR) for determining the mobility and toxicity of quaternary ammonium compounds. U. Tezel, S. G. Pavlostathis |
| 21 | Understanding temporal trends in the chemistry of halides and dissolved organic matter. K. M. Walker , T. Boyer, C. Overdevest |
| 22 | Monitoring from source to tap: The new paradigm for ensuring water security and quality. D. Kroll |
| 23 | Beyond water sustainability. S. Ahuja |

Monitoring Various Contaminants

- | Pub # | Presentation Title/Authors |
|-------|--|
| 40 | Forensic water quality investigations: Identifying pollution sources and polluters. S. Ahuja , L. B. Cahoon, R. H. Cutting |
| 41 | Septic systems in the coastal environment: Multiple water quality problems in multiple areas. M. A. Mallin |
| 42 | Analytical chemical measurements to improve non-point pollution assessment in Indiana's Lake Michigan Watershed. J. R. Peller , E. Argyilan |
| 43 | Kinetics and mechanism of the sensitized photodegradation of trimethoprim in aqueous environment. W. Song, H. Xu, W. J. Cooper |
| 44 | Factors controlling the regional distribution of Vanadium in California groundwater. M. T. Wright , K. Belitz |
| 45 | Measuring redox potential <i>in situ</i> using a fiber optic sensor. W. Chudyk , C. Sotolongo, E. Mueller |
| 46 | Interaction between mercury and marine organic matter. A. B. Schartup , R. P. Mason |
| 47 | Atmospheric mercury deposition in Bermuda. S. Gichuki , M. Andersson, R. Mason, A. Peters |
| 48 | Streamwater dissolved nitrate trends in the Mississippi-Atchafalaya River Basin using windowed regressions on time, discharge, and season. B. T. Aulenbach , R. M. Hirsch |
| 49 | Removing chemical contaminants from water using radical reactions. S. P. Mezyk |

Remediation of Various Contaminants

- | Pub # | Presentation Title/Authors |
|-------|--|
| 50 | Withdrawn. |
| 51 | Withdrawn. |
| 52 | Arsenic sorption dynamics on composite iron matrix for efficient arsenic water filter design. A. Hussam , S. Ahamed |

Sustaining Water Quality (cont.)

- 53 First community based sustainable arsenic removal system in Cambodia. **D. Uy**, V. Huy, A. K. SenGupta
- 54 Arsenic removal from drinking water and ion exchange brine using polysaccharide-bridged iron-based nanoparticles. Q. Liang, B. An, **D. Zhao**
- 55 Evaluation of environmentally sustainable strategies to address challenges associated with water quality and water shortage. **T. F. Marhaba**, R. Duvil
- 56 Discovery of metal binding peptides in the blood of the blue mussel, *Mytilus edulis* and their potential role as a biomarker for metal contamination. **R. S. Manmode**, C. Malepati, D. K. Ryan
- 57 Horseradish peroxidase mediated stabilization of 2,4-dichlorophenol in a model SOM-free soil. **M. Paloma**, A. Bhandari
- 58 Mechanistic studies on the interaction of cactus mucilage with arsenic. **D. I. Fox**, T. Pichler, D. H. Yeh, N. A. Alcantar
- 59 Transforming arsenic crisis into an economic enterprise: Example from Indian villages. **S. Sarkar**, A. Gupta, A. K. SenGupta

Poster Session

- | Pub # | Presentation Title/Authors |
|-------|---|
| 287 | New ocean contamination derived from marine debris plastics. F. Shionoya , H. Sato, Y. Kodera, S. Chung, O. Abe, N. Ogawa, Q. Che, K. Miyashita, T. Kusui, K. Saido |
| 288 | Molecular detection and quantification of swine fecal contamination in the northeast Cape Fear River and Black River. A. Arfken , M. I. Haltom, M. A. Mallin, L. Cahoon, B. Song |
| 289 | Withdrawn |
| 290 | Effect of heavy metals on mineral surfaces and bacterial attachment. H. Zhang , M. Olson |
| 291 | Withdrawn |
| 292 | Biogeochemical factors affecting mercury speciation in Long Island Sound. A. B. Schartup , P. Balcom, R. P. Mason, A. Hutchins |
| 293 | Withdrawn |
| 294 | Impact of CSO on water quality in urban streams. J. Bushey , A. Aragon-Jose, C. Perkins, M. Mendes, G. Ulatowski |
| 295 | Statistical analysis of water chemistry parameters, land use patterns, and geology in the Kayaderosseras Creek watershed. J. A. Halstead , S. Kliman, D. de la Puente-Ranea, A. Cock-Esteb, A. Chaucer, K. Connolly, K. Marsella, C. W. Berheide |
| 296 | Withdrawn |
| 297 | Influence of biofilm formation on pathogen removal in the riverbank filtration system. E. Boff , Y. Seo |

Environmental Applications and Implications of Nanotechnology (*Financially supported by Q-Sense, Division of Biolin Scientific*)

Environmental Applications

- | Pub # | Presentation Title/Authors |
|-------|---|
| 60 | Photocatalytic nanoparticles for water and surface disinfection. J. Kim |
| 61 | Virus inactivation by photocatalytic nanoparticles. M. V. Liga , H. R. Jafry, C. Yu, E. L. Bryant, A. R. Barron, V. L. Colvin, Q. Li |
| 62 | Role of filter surfaces in the removal of water contaminants by silver nanoparticles. S. A. Hooker , E. Mansfield, M. Stewart |

Environmental Applications and Implications of Nanotechnology (cont.)

- 63 Reactive activated carbon impregnated with Fe/Pd nanoparticles: Innovative material development and PCB cleanup strategy. **H. Choi**, S. R. Al-Abed
- 64 Label-free, ultrasensitive and selective detection of Trinitrotoluene (TNT) using NLO properties of L-Cysteine modified gold nanoparticle. **S. S. Dasary**, D. Senapati, A. Singh, A. Yerramilli, H. Yu, P. C. Ray
- 65 Carbon nanotubes promote hydroxyl radical formation during ozonation. R. L. Oulton, M. Nalbandian, **D. M. Cwiertny**
- 66 Converting visible light into UVC: Lanthanide upconversion nano-phosphors for light-activated biocidal surfaces. **E. L. Cates**, M. Cho, J. Kim
- 67 Selective reduction of nitrate to dinitrogen in water utilizing photocatalytic nanocomposites. **K. W. Doudrick**, P. Westerhoff
- 68 Carbon nanotube-based nanobiosensor for detection of pathogen DNA in the environment. **C. Gao**, Y. Liu, X. Li, A. Gu

Fate and Transport

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|--------------|---|
| 77 | Integrated approach toward understanding the environmental fate, transport, toxicity and occupational health hazards of metal and metal oxide nanoparticles. V. H. Grassian |
| 78 | Investigation of health relevant physical and chemical properties of select engineered carbon nanomaterials . M. Lu , R. E. Agnew, M. E. Birch |
| 79 | UV-induced surface modifications of silver nanoparticles in atmospheric and aqueous conditions. J. M. Gorham , R. I. MacCuspie, D. H. Fairbrother, R. D. Holbrook |
| 80 | Evaluation of nano copper removal and toxicity in wastewaters. J. Smeraldi , G. Rajagopalan, T. Hosseini, L. Khatib, B. H. Olson, D. Rosso |
| 81 | Impacts of water chemistry on nanoparticle stability and bioavailability for freshwater bacteria and algae. V. C. Reyes, C. Marambio-Jones, M. Li, E. M. Hoek, S. Mahendra |
| 82 | Microscopic recognition of engineered nanomaterials using Kelvin probe force microscopy. Q. Yu , C. Na |
| 83 | Environmental transformation of ¹⁴ C-labeled multi-walled carbon nanotubes. L. Zhang , Q. Huang |
| 84 | Influence of oxygen-containing functional groups and graphenic carbon on Zn[II] sorption by multiwall carbon nanotubes: Application of Two-Site Langmuir model. H. Cho , J. Yang, W. P. Ball |
| 85 | Sorption of engineered nanomaterials to soils. K. D. Hristovski , E. Mousset, H. Luque, P. K. Westerhoff, J. D. Posner |

Fate and Transport – Session II

- | Pub # | Presentation Title/Authors |
|--------------|---|
| 101 | Aggregation of titanium dioxide nanoparticles: The role of environmentally-relevant surface coatings. R. D. Holbrook , K. K. Vu |
| 102 | Aggregation and sedimentation of titanium dioxide nanoparticles in aqueous environment: Effects of crystallinity and morphology. X. Liu , G. Chen, C. Su |
| 103 | Transport and retention of TiO ₂ nanoparticles in saturated porous media: Role of ionic strength, valence, and humic acid. G. Chen , X. Liu, C. Su |
| 104 | Aggregation kinetics of silver nanoparticles in monovalent and divalent electrolyte solutions: Implications for environmental fate and transport. K. Huynh , K. Chen |
| 105 | Transport of MWCNTs in porous media and their effect on Ni(II) transport. J. Yang , J. L. Bitter, H. Fairbrother, W. P. Ball |
| 106 | Coated nanoparticle transport: Does the underlying particle play a role?. E. M. Hotze , S. Lin, S. Chae, M. R. Wiesner, G. V. Lowry |

Environmental Applications and Implications of Nanotechnology (cont.)

- 107 Gold nanoparticle interactions with humic acid: Role of nanoparticle core size effects. **V. L. Pallem**, H. A. Stretz, M. J. Wells, X. Ma, D. Bouchard
- 108 Effect of attached-phase NOM and solution chemistry on the deposition rate of nC60. **C. P. McNew**, E. J. LeBoeuf, Y. Li
- 109 Filtration of anisotropic and hybrid nanomaterials. **N. B. Saleh**, N. Afrooz, N. Aich, I. A. Khan
- 110 Aggregation and transport of carboxymethyl cellulose-modified zerovalent iron nanoparticles in porous media. T. Raychoudhury, N. Tufenkji, **S. Ghoshal**
- 111 Stabilization and size control of zerovalent iron nanoparticles using carboxyl- and phosphate-functionalized compounds. **L. F. Greenlee**

Biological Interactions—Session I

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| 130 | Sulfidation eliminates bactericidal effects of silver nanoparticles to <i>Escherichia coli</i> . Z. Li , B. C. Reinsch, R. Ma, K. B. Gregory, G. V. Lowry |
| 131 | Role of nanoparticle geometry on nano-bio interaction: A quest to separate physics from chemistry. A. Afrooz , Q. Zaib, A. W. Decho, N. B. Saleh |
| 132 | Is NMs uptake by algae possible? Evidence of titanium dioxide nanomaterials uptake by the cyanobacteria <i>Anabaena variabilis</i> . C. Cherchi , A. Z. Gu |
| 133 | Antimicrobial effect of silver nanoparticles on bacterial biofilms. H. Park , E. Bae, J. Yi, J. Yoon |
| 134 | Synthesis, properties, and antimicrobial activities of manganese oxide nanoparticles. A. Rutz, Y. Jun |
| 135 | Ohshima's soft particle analysis for estimating thickness of lipopolysaccharide and peptidoglycan on bacteria cell walls. T. Phenrat , A. Karamalidis, R. D. Tilton, G. V. Lowry |
| 136 | Interaction of nanoparticles with biofilms. E. Sahle-Demessie , H. Tadesse |
| 137 | Uptake and transport of quantum dots by protozoa in the presence and absence of bacteria. S. G. Berk , J. T. Payne, M. J. Wells |
| 138 | MS2 coliphage inactivation by nanoparticulate zero-valent iron and ferrous ion. J. Kim , C. Lee, D. C. Love, D. L. Sedlak, K. L. Nelson, J. Yoon |
| 139 | Toxicity mechanism of carbon nanomaterials. N. Gou , A. Onnis-Hayden , A. Z. Gu |

Biological Interactions—Session II

- | Pub # | Presentation Title/Authors |
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| 157 | Aggregation behavior of carbon-based nanomaterials in aquatic environments: Implications for transport and bacterial cytotoxicity. M. Elimelech |
| 158 | Palladium nanoparticle formation by <i>Citrobacter</i> : Effective catalysts for diatrizoate removal. T. Hennebel , S. De Corte, D. Van der Lelie, J. Fitts, N. Boon, W. Verstraete |
| 159 | Production of Au(0)-nanoparticles by <i>Shewanella oneidensis</i> after fast biosorption and slow reduction of Au(III). S. De Corte , T. Hennebel, S. Verschuere, C. Cuvelier, W. Verstraete, N. Boon |
| 160 | Bioaccumulation of $^{14}\text{C}_{60}$ by the earthworm <i>Eisenia foetida</i> . D. Li , C. Chen, D. R. Johnson, P. J. Alvarez |
| 161 | New nanotoxicity assessment index links multidimensional toxicogenomics to regulatory ecotoxicology. N. Gou , A. Onnis-Hayden , A. Z. Gu |
| 162 | Copper oxide nanoparticles (CuO NPs) induce oxidative DNA damage in plants. D. H. Atha, H. Wang, E. Petersen, A. Dillon, B. Xing, P. Jaruga, M. Dizdaroglu, B. C. Nelson |
| 163 | Influence of phenotypic variation of bacteria on the toxicity of titanium dioxide. C. Hessler , Y. Seo |

Environmental Applications and Implications of Nanotechnology (cont.)

- 164 Effects of surface charge on the partitioning of gold nanorods in saline estuarine mesocosms. **J. L. Ferry**, R. L. Frey, J. M. Burns, T. J. Shaw, C. J. Murphy, P. Sisco, A. W. Decho, G. T. Chandler, P. Pennington, M. Fulton
- 165 Effect of titanium dioxide nanomaterials on nitrogen fixation rate and on N-storage dynamics of the blue-green algae *Anabaena variabilis*. **C. Cherchi**, A. Z. Gu

Fate and Transport—Session III

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| 184 | Oxidation of carbon nanotubes: Influence on interparticle forces and release rates. H. Fairbrother , K. Wepasnick, B. Smith, M. Bevan, S. Eichmann |
| 185 | Systematic change in chirality affects aggregation kinetics of single-walled carbon nanotubes. I. A. Khan , P. L. Ferguson, T. Sabo-Attwood, N. B. Saleh |
| 186 | Influence of solution chemistry on the deposition kinetics of oxidized multi-walled carbon nanotubes on silica surfaces. P. Yi , K. Wepasnick, B. Smith, H. Fairbrother, K. Chen |
| 187 | Phase distribution of ¹⁴ C-labeled multi-walled carbon nanotubes in aqueous systems containing model solids. L. Zhang, Q. Huang |
| 188 | Alkyne-assisted carbon nanotube synthesis improves growth rate, yield, and quality while reducing costs and environmental impacts. D. L. Plata , E. R. Meshot, C. M. Reddy, A. Hart, P. M. Gschwend |
| 189 | Occurrence and fate of engineered nanomaterials in wastewater treatment plants. M. A. Kiser , P. K. Westerhoff, H. Ryu, T. Benn |
| 190 | Characterization of drinking water for naturally occurring and synthetic nanoparticles. E. A. Abdalla , G. Gagnon |
| 191 | Effects of natural organic matter on stability, transport and deposition of engineered nanoparticles in porous media. E. Sahle-Demessie , Z. Li, G. Sorial |
| 192 | Water-nanoparticle interactions: Effects of solution chemistry on <i>n</i> -Ag in aquatic systems. J. McLaughlin , T. H. Boyer, K. Powers, J. J. Bonzongo |
| 193 | Impact of sunlight and humic acid on the aggregation kinetics of nC ₆₀ . X. Qu , Y. Hwang, Q. Li |

Biological Interactions—Session III

- | Pub # | Presentation Title/Authors |
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| 298 | Photochemistry and photophysics of semiconductor quantum dots: Effects of quantum confinement, defect states, doping, shape and morphology. M. R. Hoffmann |
| 299 | Withdrawn. |
| 300 | Organic nanoparticles of metalloporphyrins as efficient catalysts for the selective oxidation of olefins under ambient conditions. A. Aggarwal , C. M. Drain |
| 301 | Effect of cations on the reduction of pentachlorophenol by zerovalent bimetallic nanoparticles. Y. Su, M. Chen, Y. Shih |
| 302 | Nanocomposites for removal of pollutants. A. K. Das , D. Norton, J. Dinglasan, N. Loukine, D. Anderson |
| 303 | Application of nano-zerovalent iron (NZVI) for adsorption of antimony in shooting range soils: Characterization and Sb adsorption properties of NZVI. D. Amarasiriwardena , P. Dorjee, B. Xing |
| 304 | Mercury removal from aqueous effluents using zerovalent iron: Effect of particle size and implications for wastewater treatment. J. Vernon , J. Bonzongo |
| 305 | Iron oxide coated multiwall carbon nanotubes for the removal of arsenic from water. S. Addo Ntim , S. Mitra |
| 306 | Development of silica-gel-supported polyethylenimine sorbent for CO ₂ capture. Z. Zhang , X. Ma, C. Song, Y. Wang |

Environmental Applications and Implications of Nanotechnology (cont.)

General Papers

Pub #	Presentation Title/Authors
326	Chemical reduction of hexabromocyclododecane by zerovalent iron nanoparticles. C. Tso , Y. Shih, C. Lin
327	Removal of atrazine and trimethoprim by iron oxide nanoparticle-impregnated mesoporous carbon. Y. Kim
328	Spectroscopic investigations of arsenic redox transformations by nanoscale zero-valent iron (nZVI). W. Yan , M. A. Ramos, X. Li, B. E. Koel, W. Zhang
329	Transport of polysaccharide-stabilized iron nanoparticles in porous media: Effect of surface and solution chemistry. M. Zhang , D. Zhao
330	Withdrawn
331	Effect of natural organic matter on the stability and mobility of polymer-coated iron nanoparticles. B. Jung , B. E. Sleep, D. M. O'Carroll
332	Development of carbon-based "molecular basket" sorbent for CO ₂ capture from flue gas. D. Wang , C. Shalaby, X. Ma, C. Song
333	Stability and mobility of metal oxide nanoparticles in porous media . C. Contreras , J. George, K. Paredes, H. J. Shipley
334	Gold nanoparticle-based selective and ultrasensitive detection of iodide by SERS. S. S. Dasary , D. Senapati, A. Singh, T. Arbnesi, H. Yu, P. C. Ray
335	Utilization of polymer cross-linkers to improve the thermal stability of "molecular-basket" sorbents. E. P. Fillerup , X. Wang, X. Ma, C. Song

Poster Session

Pub #	Presentation Title/Authors
248	Withdrawn
249	Dissolution-accompanied aggregation kinetics of silver nanoparticles. X. Li , J. J. Lenhart, H. W. Walker
250	Effect of humic acid on the stability of TiO ₂ and ZnO nanoparticles in water. Y. Tseng, Y. Shih , S. Wu
251	Fate and transport of zinc oxide nanoparticles in porous media in the presence of naturally occurring organic ligands. E. H. Jones , C. Su
252	Effects of abiotic factors on silver nanoparticle uptake into <i>Escherichia coli</i> : Humic acid and salinity. E. Bae, H. Park , J. Yoon, J. Yi
253	Elimination of the toxicity of single-walled carbon nanotubes on a model aquatic organism through the manipulation of suspension preparation methods. S. Yoon , K. J. Ziegler, J. J. Bonzongo
254	Withdrawn
255	Influence of stabilized magnetite nanoparticles on bacterial survival and growth in natural waters. K. F. Starr, Y. Feng, Q. Liang, D. Zhao
256	Stabilization of nanoscale zerovalent iron (nZVI) with green tea. B. Jung , B. E. Sleep, D. M. O'Carroll
257	Aqueous suspension methods of carbon-based nanomaterials and biological effects on model aquatic organisms. V. Llana , J. Gao, J. McLaughlin, K. Ziegler, J. J. Bonzongo
258	Withdrawn
259	Withdrawn
260	Effect of water chemistry on disinfection performance of silver nanoparticles. H. Zhang , V. O. Craver

Environmental Applications and Implications of Nanotechnology (cont.)

- 261 Inhibition and gene expression of *Nitrosomonas europaea* cells exposed to silver nanoparticles in various aqueous chemistries. **T. S. Radniecki**, D. Stankus, J. Nason, L. Semprini
- 262 Development of fumed-silica-supported nanostructured sorbent for CO₂ capture. **E. Peduzzi**, X. Ma, C. Song
- 263 Separation and quantification of *E. coli* O157:H7 using magnetic bead-quantum dot nanoparticles. **A. Son**, G. Kim
- 264 Temperature stability in quartz crystal microbalance studies. **G. Coimbatore**, M. Smith, A. Hoffarth, A. Gibson, G. Austin, S. Presley, G. P. Cobb
- 265 Withdrawn

Heterogeneous Catalysis for Environmental and Sustainable Energy Applications (Cosponsored by CATL)

General Environmental Catalysis

- | Pub # | Presentation Title/Authors |
|-------|---|
| 86 | Applications of photocatalysis and photovoltaic electrocatalysis for energy and environmental sustainability. M. R. Hoffmann |
| 87 | Scanning tunneling microscopy/spectroscopy study of the water-gas-shift reaction on iron oxide supported gold nanoparticles. K. Rim , D. Eom, J. Raitano, S. Chan, M. Flytzani-Stephanopoulos, G. W. Flynn |
| 88 | Model biomass conversion reactions on oxide surface: Ethylene glycol on CeO ₂ (111). T. Chen , F. C. Calaza, S. H. Overbury, D. R. Mullins |
| 89 | Hierarchical porous catalysts tailored for biodiesel production. J. Dacquin , A. F. Lee, K. Wilson |
| 90 | Catalyst deactivation and regeneration studies reforming ethanol/gasoline blends containing sulfur. A. Simson , M. Castaldi, R. Farrauto |
| 91 | Controlling the surface dispersion of BaO domains on NO _x storage materials <i>via</i> TiO ₂ anchoring sites. E. Ozensoy , S. Andonova, G. Senturk |
| 92 | Computational design of multifunctional catalysts for efficient carbon dioxide and methane utilization. B. J. Sherman, N. A. Fine, C. S. Lo |

General Environmental Catalysis

- | Pub # | Presentation Title/Authors |
|-------|--|
| 112 | Heterogeneous catalysis for sustainable energy. S. Perathoner , G. Centi, P. Lanzafame |
| 113 | Dispersed calcium oxide as a reversible CO ₂ sorbent at intermediate temperatures for sorption enhanced H ₂ -production. P. Gruene , R. J. Farrauto, M. J. Castaldi |
| 114 | Design of nanostructured Au/Fe ₃ O ₄ catalysts with high stability and activity for hydrogen production. S. Goergen , B. Ricks, P. Wu, M. Flytzani-Stephanopoulos |
| 115 | Preferential oxidation of CO on Pt: Regimes of operation. F. Barrai , M. J. Castaldi |
| 116 | Surface oxygen promoted reactions of methanol over gold supported on ZnO and CeO ₂ "nano-shapes". M. B. Boucher , N. Yi, B. Zugic, R. Si, H. Saltsburg, M. Flytzani-Stephanopoulos |
| 117 | Autothermal reforming of JP8: Catalyst aging and impacts of sulfur on catalyst activity. N. Klinghoffer , M. J. Castaldi |
| 118 | Catalytic decarboxylation of butyric acid to propane. B. Zugic , M. Flytzani-Stephanopoulos |
| 119 | Facile approaches for controlled assembly of viral-templated palladium nanocatalysts for dichromate reduction. C. Yang , A. K. Manocchi, B. Lee, H. Yi |

Heterogeneous Catalysis for Environmental and Sustainable Energy Applications (cont.)

Photocatalysis

Pub #	Presentation Title/Authors
140	Effect of molecular structure on the photocatalytic oxidation of multi-component gas-phase mixtures. M. E. Zorn , S. O. Hay, M. A. Anderson
141	Visible light photoreduction of CO ₂ using CdSe/Pt/TiO ₂ heterostructured catalysts. C. Wang , R. Thompson, J. Baltrus, C. Matranga
412	Photocatalytic destruction of methyl <i>t</i> -butyl ether (MTBE) and 1,4-dioxane and other water soluble ethers using visible light. R. D. Barreto , D. Wood
143	Withdrawn
144	Environmental photocatalysis: Exploring nanometer and sub-nanometer particles to enhance the activity. A. Orlov , S. Zhao, G. Ramakrishnan, P. Shen, W. Han
145	Highly efficient nanocrystalline visible light-activated TiO ₂ films by modified sol-gel methods for sustainable "green" applications. M. Pelaez , P. Falaras, V. Likodimos, A. G. Kontos, A. A. de la Cruz, D. D. Dionysiou
146	146. Hybrid adsorption-photocatalysis of organic pollutants with bifunctional TiO ₂ /AC composite under solar light: Prospective applications in water treatment and reclamation. T. Lim , P. Yap, M. Lim, S. Madhavi
147	Absorption spectra of visible-light-active TiO ₂ specimens in the visible spectral domain. A. Emeline , V. N. Kuznetsov, V. K. Ryabchuk, N. Serpone
148	Degradation C.I. Direct Yellow 9 by heterogeneous oxidation processes using UV irradiation and ultrasound. Z. Eren , N. H. Inceb, F. N. Acarc
149	Quantification of photoreactivity in nanostructured TiO ₂ using EPR spin trap methods. S. S. Watson , I. Tseng, B. Pellegrin

Poster Session

Pub #	Presentation Title/Authors
267	Withdrawn
268	Hierarchical nanoporous solid base catalysts for biofuels. J. Woodford , A. F. Lee, K. Wilson, J. Dacquin
269	Withdrawn
270	Catalytic reduction of nitric oxide with hydrogen by Pd/PVP in water. K. Kelley , J. R. Shapley
271	Simultaneous observation of gas phase and surface species in photocatalytic reactions: The next generation of DRIFTS applications. G. Ramakrishnan, S. Zhao , A. Orlov
272	Heterogeneous perchlorate reduction by a Mo-Pd/C catalyst. Y. Zhang , J. R. Shapley
273	Preparation of characterization of highly active Ni catalyst supported on γ -Al ₂ O ₃ for the steam reforming of glycerol. Y. Choi , N. Kim, J. Baek, J. Yi
274	Novel applications of sub-nanometer noble metal particles for photocatalysis. S. Zhao, G. Ramakrishnan, P. Shen , W. Han, A. Orlov
275	Withdrawn
276	Rare earth oxysulfides as sulfur-tolerant catalysts for the high-temperature water-gas shift reaction. I. Valsamakis , M. Flytzani-Stephanopoulos

Drinking Water Chemistry, Disease Prevention and Health Promotion (Financially supported by Association of Environmental Engineering and Science Professors)

Oral Session

Pub #	Presentation Title/Authors
93	Nutritional and off-flavor aspects of metals in drinking water. A. M. Dietrich , P. Omur-Ozbek
94	Drinking more water: An effective strategy for the prevention and treatment of obesity? B. M. Davy , E. A. Dennis, V. E. Hedrick, P. A. Estabrooks, A. M. Dietrich
95	Effect of water chemistry on the release of lead and other contaminants from lead corrosion products to drinking water. E. Kim, J. E. Herrera
96	Bromate formation during drinking water treatment using a hybrid ceramic membrane filtration – ozonation. M. Moslemi , S. H. Davies, S. J. Masten
97	Metallic flavor perception and the effects of cancer therapies. S. Mirlohi , A. M. Dietrich, S. E. Duncan, G. J. Lesser
98	Emotional and sensory response to iron in water using facial recognition and sensory evaluation methods. S. E. Duncan , L. S. Hightower, S. L. Fong
99	Susceptibility of biofilm to disinfectants in the presence of disinfectant-demanding substrate. Z. Xue , Z. Wang, Y. Seo
100	Impacts of heating on disinfection byproducts in municipal drinking water systems. D. A. Reckhow , B. Liu

Poster Session

Pub #	Presentation Title/Authors
241	Monitoring of biofilm by conducting polymer based sensor. T. Kim , J. Kang, K. Shin, J. Jang, J. Yoon, J. Choi
242	Mechanistic insights into the inactivation of influenza viruses by antimicrobial hydrophobic polycationic coatings. B. B. Hsu , A. M. Klibanov
243	Withdrawn
244	MST by using qRT-PCR to appraise the potential exposure to waterborne pathogens. M. O. Ryan , C. N. Haas
245	Inactivation of microorganisms by Fenton's reagent. J. Y. Kim , C. Lee, D. L. Sedlak, K. L. Nelson, J. Yoon

Mining Waste: Geochemistry, Treatment, and Beneficial Reuse

Oral Session

Pub #	Presentation Title/Authors
120	Oxic and anoxic tailings slurry aging studies at the Hope Bay Project, Nunavut. T. Wildeman , C. Bucknam, K. Murphey
121	Use of acid mine drainage in management of flowback water from Marcellus shale hydrofracturing. E. Barbot , M. Li, M. Henrikson, J. Peng, K. Gregory, R. D. Vidic
122	Use of mine water as alternative makeup water in cooling systems: Issues with excessive mineral scaling. H. Li , D. Dzombak, R. Vidic
123	Modified humidity cell testing program for the prediction of acid rock drainage. S. P. Sunkavalli , E. M. Trujillo, P. Evans, D. Garcia, S. Kaiser
124	Remedial technologies for mine wastes: An ITRC web-based guidance. P. Eger , C. Baysinger, S. Hill
125	Silver mining, ore beneficiation and recycling, and land reclamation. J. R. Ellis
126	Electrode-based remediation of U(VI)-contaminated acidic subsurfaces. J. Peng , K. B. Gregory
127	Utilization of a sustainable resource to remediate high-strength mine-impacted water from a local abandoned mine: Crab-shell column study. J. A. Grembi , B. A. Sick, R. A. Brennan

Mining Waste: Geochemistry, Treatment, and Beneficial Reuse (cont.)

- 138 Activated iron solids treatment of mine drainage: A heterogeneous ferrous iron oxidation process. **J. M. Dietz**
- 129 Heavy metal removal from mine impacted water using chitin. **P. X. Pinto**, S. Al-Abed, D. Reisman

Poster Session

- | Pub # | Presentation Title/Authors |
|--------------|---|
| 277 | Geochemical distribution of trace element concentrations in the vicinity of Boroo Gold Mine, Mongolia. E. INAM , S. Khantotong, K. Kim, B. Tumendemberel, S. Erdenetsetseg, T. Puntsag |
| 278 | Remediation of manganese-bearing mine-impacted water using crab-shell chitin: Isolating the abiotic mechanisms of sorption and precipitation. M. Robinson-Lora, R. A. Brennan |

C. Ellen Gonter Environmental Chemistry Awards Symposium

Oral Session

- | Pub # | Presentation Title/Authors |
|--------------|--|
| 150 | Toxic metal sensing through pH changes using a novel hybrid sorbent material. P. K. Chatterjee , A. K. SenGupta |
| 151 | Reduction rate constants for nitroaromatic compounds estimated from one-electron reduction potentials. K. L. Phillips , P. C. Chiu, S. I. Sandler |
| 152 | Monitoring of ¹⁴ C-estradiol to determine the role of abiotic processes in the removal of estrogens during wastewater treatment. R. Marfil-Vega , M. T. Suidan, M. A. Mills |
| 153 | Chlorine monoxide (Cl ₂ O) and molecular chlorine (Cl ₂) as active chlorinating agents in reaction of dimethenamid with aqueous free chlorine. J. D. Sivey , C. E. McCullough, A. L. Roberts |
| 154 | Fate of PCB congeners in an industrial harbor of Lake Michigan. A. Martinez , K. Wang, K. C. Hornbuckle |
| 155 | Factors affecting stereoselective biotransformation of chiral polychlorinated biphenyls (PCBs) by cytochrome P-450 enzymes. Z. Lu , C. S. Wong |
| 156 | Mechanisms of interaction between humic acid and hydrophobic CdSe quantum dots facilitating the partitioning into aqueous phase. D. G. Navarro , D. S. Aga, S. Banerjee, D. F. Watson |

Black Carbon as Geosorbent and Beyond: Contaminant Sorption, Soil Fertilization, and Carbon-Negative Strategy (Cosponsored by GEOC)

Probing Black Carbon Structure, Reactivity, and Sorptivity—Session I

- | Pub # | Presentation Title/Authors |
|--------------|---|
| 166 | Complexity of aromatic carbon in biomass-derived black carbon (biochar): Implications for molecular structure and sorptive interactions. M. Keiluweit , P. S. Nico, M. G. Johnson, M. Kleber |
| 167 | Characterization of charcoal using advanced solid-state NMR. J. Mao , J. J. Pignatello, J. Lehmann, M. Chappell |
| 168 | Concentration dependency of PAH sorption in sediment-water systems: Enhanced sorption at low sorbate levels or physical occlusion? D. T. Kuo , P. M. Gschwend |
| 169 | Sorption of bisphenol A, 17 α -ethinyl estradiol and phenanthrene by biochars obtained by thermal and hydrothermal methods. K. Sun , K. S. Ro, M. Guo, B. Xing |
| 170 | Sorption properties of 1,3,5-trichlorobenzene on geosorbents. C. Yang , W. Huang, Z. Dang |

Black Carbon as Geosorbent and Beyond: Contaminant Sorption, Soil Fertilization, and Carbon-Negative Strategy (cont.)

- 171 Unexpected adsorption behavior of a polar ionizable compound (sulfamethazine) on black carbon (biochar). **J. J. Pignatello**, M. Teixido-Planes, M. Granados, J. L. Peccia

Probing Black Carbon Structure, Reactivity, and Sorptivity—Session II

- | Pub # | Presentation Title/Authors |
|--------------|--|
| 194 | Deciphering the chemical properties of pyrogenic carbon: Exposing a range of biochars to a range of characterization methods. A. R. Zimmerman , G. N. Kasozi, A. Mukherjee |
| 195 | Sorption of pyrene to biologically, chemically and physically altered black carbons with and without soil. S. Hale , H. Arp, M. Elmquist, T. Henriksen, T. Hartnik, J. Lehmann, K. Hanley, G. Cornelissen |
| 196 | Greenhouse gas sink or health risk? Assessing the fate of polycyclic aromatic hydrocarbons (PAHs) in biochar within the plant-soil system. S. Rangecroft , T. DeLuca, B. Emmett, D. Jones |
| 197 | Comparison of nonpolar organic compounds and divalent metallic ions sorption with carbonaceous materials. H. Cho , J. Yang, W. P. Ball |
| 198 | Metal interactions at the biochar-water interface: Energetics and composition-sorption relationship elucidated by flow adsorption micro-calorimetry. O. R. Harvey , B. E. Herbert, R. D. Rhue, L. Kuo |
| 199 | Black carbon mediates reductive dehalogenation and nitro reduction reactions. S. Oh , J. Son, P. C. Chiu |
| 200 | Black-carbon mediated destruction of nitroglycerin and RDX by hydrogen sulfide: Relevance to <i>in situ</i> remediation. W. Xu , K. Dana, W. Mitch |

Utilization of Black Carbon Products in Agriculture, Environmental Remediation, and Other Applications

- | Pub # | Presentation Title/Authors |
|--------------|--|
| 307 | <i>In situ</i> sequestration of organics, metals, and carbon in contaminated sediments. U. Ghosh |
| 308 | Modeling the mass transfer of hydrophobic organic pollutants in sediment after amendment with activated carbon. D. Werner , S. E. Hale |
| 309 | Simultaneous removal of mercury(II) and PCBs by polysulfide-rubber(PSR)-coated activated carbon. E. Kim , R. G. Luthy |
| 310 | Charcoal production: The state of the art. M. J. Antal, Jr |
| 311 | Oil shale semicoke as a carbon source: Sorbent capacity, reactivity and entrained compounds as functions of pyrolysis temperature and shale origin. J. L. Goldfarb , B. Datangel, I. Kulaots |
| 312 | Evaluation of chitosan coated granular activated carbon for treatment of perchlorate-contaminated munitions wastewater. V. M. Boddu , S. W. Maloney, D. S. Viswanath, T. K. Ghosh, S. M. Uchimiya |
| 313 | Aqueous nanodispersions of hydrothermal carbon for environmentally friendly and sustainable combustion processes. J. Texter , R. Crombez, M. Titrici, F. Perez-Caballero, M. Antonietti |

Fate and Function of Black Carbon in Soil and Sediment

- | Pub # | Presentation Title/Authors |
|--------------|---|
| 336 | Rapid screening of biochar products for soil functional attributes. S. P. Sohi , A. Cross, M. Borlinghaus |
| 337 | Impacts of biochar additions on soil microbial processes and nitrogen cycling. K. A. Spokas |
| 338 | Biochar: Mother Nature's nanotechnology. R. S. Stein , H. S. McLaughlin |
| 339 | Pyrogenic matter dynamics in the soil: Characterization, stabilization processes, C budget and effects on soil properties. S. Abiven , M. Schneider, N. Singh, B. Maestrini, M. Schmidt |
| 340 | Biomass plant fly ash as a source of black carbon for amending agricultural soils. A. F. Carpenter |
| 341 | Interactions of engineered soot to natural organic matter and extracellular polymeric substances: Resulting surface modification and field application. J. Lohwacharin , K. Oguma, S. Takizawa |

Black Carbon as Geosorbent and Beyond: Contaminant Sorption, Soil Fertilization, and Carbon-Negative Strategy (cont.)

342 Withdrawn

Poster Session

Pub #	Presentation Title/Authors
228	Role of black carbon on the sorption of dioxins and furans in sediments from Newark Bay, New Jersey. M. K. Lambert , C. Friedman, J. Sullivan, R. Lohmann
229	Reduction of Cr(VI) by chars derived from cellulose and lignin. S. Wang , Y. Chang, J. Lee
230	Remediation of heavy metal contaminated soil with activated carbon. D. Rehrah
231	Comparison of volatile chlorinated organic chemical sorption to black carbon and black shale. S. Choung , R. M. Allen-King
232	Simple index for assessing the potential environmental stability of plant-derived biochars. O. R. Harvey
233	Biochar soil amendment: Impact of soil types on heavy metal sorption-desorption behaviors and repeated nutrient leaching. M. Uchimiya , I. M. Lima, K. T. Klasson, L. H. Wartelle
234	Characterization of solvent-extractable PAHs isolated from biochar produced from wood and grass over a range of pyrolysis temperatures. F. G. Prah, M. Keiluweit , M. A. Sparrow, M. Kleber
235	Reactive activated carbon impregnated with iron nanoparticles as a new environmental risk management option for contaminated sites. H. Choi , S. R. Al-Abed
236	Black carbon and sorption of PAHs in natural fire-impacted sediments from Oriole Lake (CA). J. Sullivan , R. Lohmann , K. Bollinger, J. King, M. Cantwell, T. Caprio

Emerging Applications in Membrane Science and Technology

Innovations in Materials Development and Gas Separations

Pub #	Presentation Title/Authors
172	Acceleration of materials design of hydrogen separation membrane alloys. R. Hu , M. Gao, & Dogan, B. Howard, B. Morreale
173	On tailoring the size and charge selectivity of thin film composite nanofiltration membranes based on PAN-g-PEO comb copolymers. N. Lovell , A. Mayes
174	Organic membranes from painted latex films. J. Texter
175	Functional nanotube membranes for hydrophobicity-based separations by initiated chemical vapor deposition (iCVD). A. Asatekin , K. K. Gleason
176	Influence of fermentation by-products on the isolation of ethanol from fermentation broths using pervaporation. S. Chovau , B. Van der Bruggen, A. J. Straathof, S. Gaykawad
177	Ionic liquid membranes for CO ₂ separation. C. R. Myers , D. R. Luebke, K. J. Champagne, D. Sorescu, C. Tang, W. Shi
178	Solubility and diffusivity of small molecules in thermally rearranged ortho-functional polyimides for gas separations. Z. P. Smith , D. Sanders, C. Ribeiro, B. D. Freeman, D. Paul
179	Perfluorocyclobutyl (PFCB) polymers: Basolite [®] Z1200 Mixed-Matrix Membranes (MMMs) for gas separation applications. G. D. Kalaw , K. J. Balkus, I. H. Musselman, J. P. Ferraris
180	Carbon dioxide sorption properties of octahedral molecular sieves with manganese based framework composition. L. Espinal , C. R. Snyder, C. Chiu, L. A. Bendersky, W. Wong-Ng, M. L. Green, A. E. Espinal, H. F. Garces, S. L. Suib

Emerging Applications in Membrane Science and Technology (cont.)

- 181 Hollow fiber membranes for carbon dioxide separation from flue gas and landfill gas: Experimental and modeling studies. J. R. Du, G. J. Francisco, P. Kundu, A. Chakma, **X. Feng**
- 182 Pre-combustion fuel decarbonization with high temperature H₂ separation membranes. **E. Engwall**, J. Saukaitis, A. Del Paggio
- 183 Grafting monomers for improved protein resistance with high throughput atmospheric plasma. **M. Gu**, J. C. Kilduff, G. Belfort

Session in Honor of Benny D. Freeman

- | Pub # | Presentation Title/Authors |
|--------------|---|
| 201 | Hollow fiber membrane spinning. G. Lipscomb |
| 202 | Temperature effects on solubility-selective membranes. X. Wang , T. C. Merkel, B. D. Freeman, I. C. Sanchez |
| 203 | Polymer membrane design with high internal free volume for gas separation. H. Park , Y. Cho |
| 204 | Separation of aromatic/aliphatic mixtures by pervaporation using ortho-functionalized polyimide membranes. C. P. Ribeiro , B. D. Freeman |
| 205 | Understand the real upper bound for CO ₂ /CH ₄ separation. H. Lin , A. Serbanescu-Martin, M. Zhou, T. Merkel |
| 206 | Understanding the effect of ion exchange on water and salt transport properties of a highly-charged sulfonated pentablock copolymer. G. M. Geise , B. D. Freeman, D. R. Paul |
| 207 | Advances in polymer membranes for water purification. B. D. Freeman |

Advances in Membrane Materials and Liquid Separations

- | Pub # | Presentation Title/Authors |
|--------------|--|
| 314 | Preparation of biofouling-resistant RO membranes by the attachment of ceragenins. M. Hibbs , S. Altman, L. McGrath, H. Jones, Y. Feng, P. Savage |
| 315 | Development of copper and silver charged polypropylene feed spacers for biofouling control. R. Hausman , T. Gullinkala, I. Escobar |
| 316 | Quantitative emerging materials characterization techniques to anticipate membrane biofouling. A. M. Zaky |
| 317 | N-isopropylacrylamide (NIPAAm) modified ultrafiltration membranes. C. Gorey , I. Escobar, G. Bothun |
| 318 | Adsorptive fouling resistance of carbon nanotube blended polyethersulfone membranes. E. Celik, H. Choi |
| 319 | Study of nanoparticle rejection using a tailor-made ultrafiltration polysulfone membrane. S. Hakim Elahi , I. C. Escobar |
| 320 | Grafting binary monomers and solvent effects for improved protein resistance. Y. S. Ho , M. Gu, C. Kilduff, G. Belfort |
| 321 | Hydrophilization of thin film composite membrane support layers for engineered osmosis applications. J. McCutcheon , J. Arena, N. Bui |
| 322 | Surface functionalization of polybenzimidazole membranes to increase hydrophilicity and charge. B. Digman, I. C. Escobar , R. Hausman, M. Coleman, T. Chung |
| 323 | Chiral signatures in passive samplers support a better understanding of transformation of contaminants in water. V. D. Dang , C. M. Lee |
| 324 | Withdrawn |
| 325 | Reversible cation exchange-membrane (RCIX-MEM) process for scaling free, energy efficient desalination of seawater. S. Sarkar , A. K. SenGupta |

Emerging Applications in Membrane Science and Technology (cont.)

Poster Session

Pub #	Presentation Title/Authors
246	Fouling-tolerant membrane surface engineering for water purification and desalination applications. Y. Cho , H. Park, J. Shim
247	Theoretical study for the integration of the Pd-based water gas shift membrane reactors into the IGCC plants. R. Koc , N. K. Kazantzis, Y. H. Ma

Environmental Health Volatiles and Aerosols: Novel Direct Measurement Methods Relevant to Lung Disease

Oral Session

Pub #	Presentation Title/Authors
343	Rapid detection of tobramycin impacts on <i>Pseudomonas aeruginosa</i> volatile organic compound production by SESI-MS. Y. Kuo , J. Hill
344	Volatile signature of <i>P. aeruginosa</i> adaptation to the cystic fibrosis lung. H. D. Bean , Y. Kuo, J. Zhu, J. E. Hill
345	Next-generation DNA sequencing reveals viral diversity in biosolids. K. J. Bibby , E. J. Viau, J. Peccia
346	Airport air: What are we breathing? R. L. Vander Wal , V. M. Bryg, C. Hunag
347	Preliminary investigation of traffic emissions in the vicinity of an inner city elementary school. B. Albrinck, M. Lu , J. Hu, C. Chaiwatpongsakorn, V. K. Nemalapuri, H. Wei
348	Quantitative estimates of the volatility of ambient organic aerosol. C. D. Cappa , J. L. Jimenez
349	Organic aerosol composition using a combined thermal desorption aerosol gas chromatograph (TAG) - high resolution time-of-flight aerosol mass spectrometer (HR-ToF-AMS). B. Williams, A. Lambe , J. Jayne, D. Worsnop, N. L. Ng, M. Canagaratna, L. Williams, J. Kimmel, D. Sueper, N. Kreisberg, S. Herring, D. Worton, A. Goldstein

Poster Session

Pub #	Presentation Title/Authors
266	Chemistry in the earth's atmosphere: Investigating ester formation in secondary organic aerosols by mass spectrometry. J. Delius , L. Müller, M. Reinnig, T. Hoffmann