



FOURTH IWA SPECIALTY CONFERENCE ON NATURAL ORGANIC MATTER

From Source to Tap and Beyond

Conference Program



- Organized by:**
- ▶ International Water Association
 - ▶ Urban Water Research Center at the University of California, Irvine
 - ▶ National Water Research Institute
 - ▶ Southeast Environmental Research Center, Florida International University
 - ▶ Cranfield Water Science Institute, Cranfield University
 - ▶ University of California Office of the President

July 27-29, 2011 • Hilton Orange County/Costa Mesa

COSTA MESA, CALIFORNIA USA

WELCOME

THANK YOU FOR ATTENDING the *Fourth International Water Association Specialty Conference on Natural Organic Matter: From Source to Tap and Beyond*, the fourth in a series of international conferences devoted to better understanding the dynamics and impacts of natural organic matter (NOM) in drinking water, wastewater, recycled waters, natural waters, and marine systems.

The term “NOM” describes organic material (originating from plants and animals) that has undergone biological and chemical alterations, often giving water a “brownish” look. In wastewater, it is referred to as “effluent organic matter” (EfOM). The challenge with organic matter is that it causes the formation of disinfection byproducts during the treatment process. Disinfectants are used to provide safe drinking water; however, when a chemical oxidant is added to water as a disinfectant, it reacts with any NOM that is present to form disinfection byproducts, which may have adverse human health effects. On the wastewater side, EfOM (which is less characterized than NOM) creates similar challenges with membrane treatment and water reuse. In contrast, in natural systems, NOM is usually referred to as “dissolved organic matter” (DOM) and is known to control a variety of environmental and biogeochemical processes. Its characterization is critical for the better understanding of ecosystem function and carbon cycling.



At the conference, scientists and engineers from around the world will examine the importance of organic matter in drinking water, wastewater, recycled water, and carbon cycling in natural waters, including:

- Control strategies for NOM removal in water treatment processes.
- Advances in membrane processes for water and wastewater treatment.
- The formation of disinfection byproducts.
- Water management and sustainability.
- Wetland and coastal water carbon cycling.
- Impacts on ecological and biogeochemical processes.
- Potential effects of land use and climate change.

The conference will span 3 days and feature over 200 oral and poster presentations given by speakers from over 25 countries, including the United States, Canada, China, The Netherlands, Germany, Australia, Saudi Arabia, and many others. Fifty of those presentations will be given by student speakers.

Coordinating this event required dedication and teamwork, and we would like to take a moment to acknowledge those who were instrumental in making this conference a success.



First and foremost, we would to express our deepest and most sincere appreciation to our conference organizers, whose support was invaluable:

- International Water Association.
- Urban Water Research Center at the University of California Irvine.
- National Water Research Institute.
- Cranfield Water Science Institute, Cranfield University.
- Southeast Environmental Research Center,
Florida International University.
- University of California Office of the President.

We also are grateful for the support of our conference sponsors, who include:

- Ahlstrom Filtration.
- Carollo Engineers.
- Consulate General of Canada.
- Hazen and Sawyer.
- Horiba Scientific.
- National Science Foundation.
- Orange County Water District.
- Trojan Technologies.
- U.S. Environmental Protection Agency.
- University of California Center for Hydrologic Modeling.
- Ushio America, Inc.
- Water Research Foundation.

We also appreciate the outstanding efforts of staff at the National Water Research Institute for their help and enthusiasm in planning, managing, and facilitating all aspects of the symposium. We also extend appreciation to staff at the Orange County Water District for providing a conference tour of the Groundwater Replenishment System, an advanced treatment facility that removes NOM from wastewater using microfiltration and reverse osmosis.

Special thanks are also extended to the many moderators, speakers, and poster presenters whose knowledge and insight were the very foundation of this conference. We would especially like to acknowledge our keynote speakers, who include:



- **Dr. Philip Singer**, Professor Emeritus at the University of North Carolina at Chapel Hill.
- **Dr. Susan D. Richardson**, Research Chemist at the U.S. Environmental Protection Agency, National Exposure Research Laboratory.
- **Priv. Doz. Dr. Philippe Schmitt-Kopplin**, Head of the Department of BioGeoChemistry and Analytics at Helmholtz Zentrum München, German Research Center for Environmental Health.
- **Dr. Norbert Hertkorn** of the Department of BioGeoChemistry and Analytics at Helmholtz Zentrum München, German Research Center for Environmental Health.

We are honored by your participation.

Finally, we would like to once again thank you, our guests, for attending the *Fourth IWA Specialty Conference on Natural Organic Matter*. We hope that you enjoy this event and find it to be a source of inspiration and understanding.

Conference Planning Committee

William J. Cooper, Ph.D.

*Professor and Director, Urban Water Research Center
Department of Civil and Environmental Engineering
University of California, Irvine*

Jeff Mosher

*Executive Director
National Water Research Institute*

Rudolf Jaffé, Ph.D.

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*Professor of Water Sciences
Head, Cranfield Water Science Institute
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FOURTH IWA SPECIALTY CONFERENCE ON NATURAL ORGANIC MATTER

From Source to Tap and Beyond

Conference Program

Tuesday, July 26, 2011

1:00 pm to 5:00 pm

Registration

Hotel Lobby

12:00 noon to 1:00 pm

Registration for Groundwater Replenishment System Tour

Convention Entrance Lobby

1:00 pm to 4:00 pm

Groundwater Replenishment System Tour

Orange County Water District



Groundwater Replenishment System Tour.



The Groundwater Replenishment (GWR) System is a state-of-the-art water purification project jointly funded by the Orange County Water District and Orange County Sanitation

District, both located in Fountain Valley, California. Operational since 2008, the GWR System takes highly treated wastewater and purifies it using an advanced treatment process consisting of microfiltration (MF), reverse osmosis (RO), and ultraviolet light with hydrogen peroxide (UV/AOP). NOM is one of the major focuses of the GWR System. MF and RO are used to eliminate NOM, and then UV/AOP is used as the last barrier prior to groundwater injection. This process can produce up to 70 million gallons per day of high-quality water, meeting the needs of nearly 600,000 residents in north and central Orange County, California.



Photo courtesy of Orange County Water District

Wednesday, July 27, 2011

6:30 am to 5:30 pm	Registration	Banquet Level 2
7:30 am to 9:00 am	Continental Breakfast	Pacific Ballroom
8:30 am to 9:00 am	Welcome and Introduction WILLIAM J. COOPER, PH.D., Professor <i>University of California, Irvine (Irvine, California, USA)</i>	Pacific Ballroom
9:00 am to 9:45 am	Plenary Keynote Address Fifty Years of Research on Dissolved Organic Material and Drinking Water (1960-2010) PHILIP C. SINGER, PH.D., P.E., BCEE, Professor Emeritus, <i>University of North Carolina at Chapel Hill (Chapel Hill, North Carolina, USA)</i>	Pacific Ballroom 
9:45 am to 10:15 am	Networking Break	Pacific Ballroom
10:15 am to 10:45 am	Plenary Keynote Address Environmental Metabolomics: An Integrated Bio-Geo-Analytical Approach to Unravel Natural Organic Matter on a Molecular Level PRIV. DOZ. DR. PHILIPPE SCHMITT-KOPPLIN <i>Head of the Department of BioGeoChemistry and Analytics at Helmholtz Zentrum München German Research Center for Environmental Health (Neuherberg, Germany)</i>	Pacific Ballroom 
10:45 am to 11:15 am	Plenary Keynote Address Natural Organic Matter and Our Current Capacity to Depict Molecular Dissimilarity in Complex Mixtures DR. NORBERT HERTKORN <i>Department of BioGeoChemistry and Analytics at Helmholtz Zentrum München German Research Center for Environmental Health (Neuherberg, Germany)</i>	Pacific Ballroom 
11:15 am to 11:45 am	Networking Break	Pacific Ballroom
11:45 am to 1:00 pm	Lunch	Pacific Ballroom

PROGRAM: WEDNESDAY, JULY 27

Session 1: 1:00 pm to 3:00 pm

	Track A	Track B	Track C	Track D	Track E
	Emerald Bay I	Emerald Bay II	Emerald Bay III	Balboa Bay I	Balboa Bay II
	A1: Treatment and Removal 1	B1: Molecular Characterization 1	C1: Disinfection Byproducts 1	D1: Monitoring 1	E1: Advanced Oxidation 1
	Moderator: Michael Gonsior, Ph.D.	Moderator: S. Leigh McCallister, Ph.D.	Moderator: Ina Kristiana, Ph.D.	Moderator: Prof. Dongsheng Wang	Moderator: Fernando Rosario-Ortiz, Ph.D.
1:00 – 1:30	<p>Dissolved Organic Matter Increase and Its Impact on Water Treatment</p> <p>DR. AUGUSTE L. BRUCHET <i>CIRSEE-Suez Environment (Le Pecq, France)</i></p>	<p>Molecular Weight Size Distribution, Composition, Bio-Availability, and Photo-Reactivity of DOM in the Everglades Ecosystem, Florida</p> <p>KAELIN CRAWLEY, Ph.D. <i>Florida International University (North Miami, Florida, USA)</i></p>	<p>What Does TOC Mean to My Drinking Water Treatment Plant?</p> <p>APRIL M. NABORS <i>Birmingham Water Works Board (Birmingham, Alabama, USA)</i></p>	<p>Online Estimation of Biological Stability in Drinking Water Treatment</p> <p>PETRA ROSS <i>Delft University of Technology (Delft, The Netherlands)</i></p>	<p>Characterization and Monitoring of EfOM through UV/H₂O₂ and Ozonation Processes</p> <p>CARMEN SANS, Ph.D. <i>University of Barcelona (Barcelona, Spain)</i></p>
1:30 – 2:00	<p>Characterizing NOM and Removal Trends during Drinking Water Treatment Using Fluorescence Excitation-Emission Matrices and PARAFAC</p> <p>GARY L. AMY, Ph.D. <i>King Abdullah University of Science and Technology (Thuwal, Saudi Arabia)</i></p>	<p>Optimization of Measurement of Aquatic Humic and Fulvic Acids by a Batch Method Using Experimental Design</p> <p>DIEGO HINCAPIÉ-UPEGUI <i>University of Antioquia (Medellin, Columbia)</i></p>	<p>Use of Physicochemical Changes in NOM to Evaluate THM Formation during Snowmelt, after Wildfires, and in Pre-Ozonation Water Treatment</p> <p>ALEX D. REVCHUK, Ph.D. <i>Water Quality & Treatment Solutions, Inc. (Los Angeles, California, USA)</i></p>	<p>Colored Dissolved Organic Matter as a Tracer of Effluent Plumes</p> <p>NIKOLAY P. NEZLIN, Ph.D. <i>Southern California Coastal Water Research Project (Costa Mesa, California, USA)</i></p>	<p>Spectroscopy and Chromatography Study of Ozonation Effects on Effluent Organic Matter and Transformation of Antibiotics</p> <p>CHEN LIU <i>University of Washington (Seattle, Washington, USA)</i></p>
2:00 – 2:30	<p>Application of Molecular Weight Profile with Peak Fitting to Predict DOM Treatability of Low Specific UV Absorbance Surface Waters</p> <p>CHRIS W.K. CHOW, Ph.D. <i>Australian Water Quality Centre (Adelaide, Australia)</i></p>	<p>DOM Composition and Photoreactivity in Prairie Lakes of the U.S. Great Plains</p> <p>CHRISTOPHER L. OSBURN, Ph.D. <i>North Carolina State University (Raleigh, North Carolina, USA)</i></p>	<p>How NOM Fractionation Can Be Used to Inform Water Treatability</p> <p>PETER JARVIS, Ph.D. <i>Cranfield Water Sciences Institute, Cranfield University (Cranfield, United Kingdom)</i></p>	<p>An ATP-Based Method to Determine Bacterial Regrowth Potential in Drinking Water</p> <p>TANUSH WADHAWAN <i>North Dakota State University (Fargo, North Dakota, USA)</i></p>	<p>Effect of Effluent Organic Matter on the Application of Advanced Oxidation for Wastewater Treatment</p> <p>MEI MEI DONG <i>University of Colorado, Boulder (Boulder, Colorado, USA)</i></p>
2:30 – 3:00	<p>Comparative Study of the Removal of NOM from Different Raw Waters by Ion Exchange</p> <p>PROF. BHEKIE B. MAMBA <i>University of Johannesburg (Johannesburg, South Africa)</i></p>	<p>NOM in South African Waters: Characterization and Method Development for Effective NOM Removal from Water</p> <p>THABO NKAMBULE <i>University of Johannesburg (Johannesburg, South Africa)</i></p>	<p>Comparison of Disinfection Byproducts from Using Chlorine and Chlorine Dioxide in Drinking Water Distribution Systems</p> <p>HRVOJE JURETI, Ph.D. <i>University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture (Zagreb, Croatia)</i></p>	<p>What, Where, When, and How Much? Combining Watershed NOM Source and Reactivity Studies with Real-Time Monitoring</p> <p>TAMARA KRAUS <i>United States Geological Survey (Sacramento, California, USA)</i></p>	<p>Temperature Dependence of the Kinetics Reaction Between Hydroxyl Radical and Organic Matter</p> <p>GARRETT J. MCKAY <i>California State University, Long Beach (Long Beach, California, USA)</i></p>

3:00 pm to 3:30 pm **Networking Break** **Pacific Ballroom**

Session 2: 3:30 pm to 5:00 pm

	Track A	Track B	Track C	Track D	Track E
	Emerald Bay I	Emerald Bay II	Emerald Bay III	Balboa Bay I	Balboa Bay II
	A2: Treatment and Removal 2	B2: Molecular Characterization 2	C2: Disinfection Byproducts 2	D2: Membranes 1	E2: Advanced Oxidation 2
	Moderator: G. Adam Zacheis, Ph.D.	Moderator: Michael Gonsior, Ph.D.	Moderator: Siva R. Sarathy, Ph.D.	Moderator: Jeffrey J. Mosher	Moderator: Miguel Pelaez
3:30 – 4:00	<p>Characterization of DOM Removal by Full-Scale Biological Activated Carbon (BAC) Filters Having Different Ages</p> <p>JENYUK LOHWACHARIN, PH.D. <i>University of Tokyo (Tokyo, Japan)</i></p>	<p>Molecular Composition and Optical Properties of NOM: Correlating Bulk Spectroscopy and Ultrahigh Resolution Mass Spectrometry</p> <p>WILLIAM T. COOPER, PH.D. <i>Florida State University (Tallahassee, Florida, USA)</i></p>	<p>Kinetic Measurements of DBP Formation in Model Systems and Natural Waters Using Membrane Introduction Mass Spectrometry Techniques</p> <p>CAMERON NEWHOOK <i>Vancouver Island University (Nanaimo, British Columbia, Canada)</i></p>	<p>Preventing Membrane Fouling by Osmosis Stress</p> <p>LEDA KATEBIAN <i>University of California, Irvine (Irvine, California, USA)</i></p>	<p>Impact of NOM and Nitrate on the Feasibility of UV/H₂O₂ Treatment for Organic Micropollutant Control</p> <p>BRAM J. MARTIJN <i>PWN Water Supply Company North Holland (Velsersbroek, The Netherlands)</i></p>
4:00 – 4:30	<p>Effect of Biological Activated Carbon Filters on the Removal of Biodegradable NOM and Molecular Weight</p> <p>KERRY E. BLACK <i>University of British Columbia (Vancouver, British Columbia, Canada)</i></p>	<p>Fluorescence-Based Rapid Identification of Different NOM Fractions for Drinking Water Treatment Applications</p> <p>RAMILA H. PEIRIS, PH.D. <i>University of Waterloo (Waterloo, Ontario, Canada)</i></p>	<p>Analysis and Occurrence of Iodinated-Trihalomethanes in UK Drinking Waters</p> <p>SIMON PARSONS, PH.D. <i>Cranfield Water Science Institute, Cranfield University (Cranfield, United Kingdom)</i></p>	<p>Influence of the Organic Carbon to Nitrogen/Phosphorus Ratio on Seawater Reverse Osmosis Membrane Biofouling</p> <p>SIMON (SIQIAN) HUANG <i>University of California, Irvine (Irvine, California, USA)</i></p>	<p>NOM Fractionation to Compare the Effectiveness of Advanced Oxidation Process</p> <p>GRAHAM A. GAGNON, PH.D., P.E. <i>Dalhousie University (Halifax, Nova Scotia, Canada)</i></p>
4:30 – 5:00	<p>Polyaluminium Chloride and Chitosan Composite Coagulant for NOM Removal</p> <p>MEGA NG <i>University of New South Wales (Sydney, Australia)</i></p>	<p>Characterization of DOM in Humic Rich Tributaries of a Drinking Water Reservoir in Saxony Using Ultra-High-Resolution Mass Spectrometry (FTICR/MS) and Excitation Emission Matrix Fluorescence Spectroscopy (EEMF)</p> <p>PETER HERZSPRUNG, PH.D. <i>Helmholtz Centre for Environmental Research – UFZ (Magdeburg, Germany)</i></p>		<p>TEP, an Ubiquitous Constituent of NOM, Is an Important Factor in Membrane Biofouling</p> <p>TOM BERMAN, PH.D. <i>Kinneret Limnological Laboratory, Israel Oceanographic and Limnological Research (Tabgha, Israel)</i></p>	<p>Use of Organic Characterization Techniques to Monitor Advanced Oxidation Processes in Water Reuse and Wastewater Treatment</p> <p>BENJAMIN D. STANFORD, PH.D. <i>Hazen and Sawyer, P.C. (Raleigh, North Carolina, USA)</i></p>

5:30 pm to 7:30 pm Sponsor's Reception Fountain Terrace

Conference Sponsors include:

- Ahlstrom Filtration
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- Horiba Scientific
- National Science Foundation
- Orange County Water District
- Trojan Technologies
- U.S. Environmental Protection Agency
- University of California Center for Hydrologic Modeling
- Ushio America, Inc.
- Water Research Foundation

PROGRAM: THURSDAY, JULY 28

7:30 am to 5:00 pm Registration Banquet Level 2

7:30 am to 9:00 am Continental Breakfast Pacific Ballroom

Session 3: 8:00 am to 10:00 am

	Track A	Track B	Track C	Track D	Track E
	Emerald Bay I	Emerald Bay II	Emerald Bay III	Balboa Bay I	Balboa Bay II
	A3: Treatment and Removal 3	B3: Molecular Characterization 3	C3: Disinfection Byproducts 3	D3: Photochemistry	E3: Treatment & Characterization 1
	Moderator: Chris W.K. Chow, Ph.D.	Moderator: Prof. Bhekhe B. Mamba	Moderator: Kerry E. Black	Moderator: Fernando Rosario-Ortiz, Ph.D.	Moderator: Barbara A. Cottrell
8:00 – 8:30	<p>Characterization and Modeling DOM Removal by Enhanced Coagulation</p> <p>PROF. DONGSHENG WANG <i>State Key Lab of Environmental Aquatic Chemistry, Chinese Academy of Sciences (Beijing, China)</i></p>	<p>Characterizing the DOM in Leaf-Litter Leachates using AF4-UV/Vis-EEM: Is “Source Variability” Evident at the Source?</p> <p>CHAD W. CUSS <i>Trent University (Peterborough, Ontario, Canada)</i></p>	<p>Examining Potential “Red Water” Problems Associated with Replacing Chlorine with Chloramines for Disinfection Byproducts (DBP) Control</p> <p>JASON A. HEBERLING <i>Birmingham Water Works Board (Birmingham, Alabama, USA)</i></p>	<p>Determination of UV Phototransformation of DOM in Treated Drinking Water by 3D Fluorescence</p> <p>AARON D. DOTSON <i>University of Alaska Anchorage (Anchorage, Alaska, USA)</i></p>	<p>Optimization of NOM Reduction for Drinking Water Production</p> <p>JAAKKO O. PELLINEN, P.G. <i>University of Oulu (Oulu, Finland)</i></p>
8:30 – 9:00	<p>Inhibition Effect of Proteineous Substances from Cyanobacterium <i>Microcystis Aeruginosa</i> on Coagulation/Flocculation of Kaolin Suspension</p> <p>JANA ŠAFÁŘIKOVÁ <i>Institute of Hydrodynamics, Academy of Sciences of the Czech Republic (Prague, Czech Republic)</i></p>	<p>Size Exclusion Chromatography with Online ICP-MS: Metal-OM Complexations Explored</p> <p>ERICA R. MCKENZIE <i>University of California, Davis (Davis, California, USA)</i></p>	<p>Formal Modeling of Yields and Speciation of Dihaloacetonitriles Formed in Chlorinated Drinking Water at Varying Bromide Concentrations</p> <p>PAOLO ROCCARO, PH.D. <i>University of Catania (Catania, Italy)</i></p>	<p>Assessment of Photo- and Bio-Reactivity of Dissolved Organic Matter from the Florida Everglades Using Excitation-Emission Metrics Coupled with Parallel Factors Analysis</p> <p>RUDOLF JAFFÉ, PH.D. <i>Florida International University (North Miami, Florida, USA)</i></p>	<p>Removal of NOM Fractions by Two Potable Water Treatment Processes: Micro/Nano Membrane Filtration and Lime Soda Softening</p> <p>CHARLES D. GOSS <i>University of Manitoba (Winnipeg, Manitoba, Canada)</i></p>
9:00 – 9:30	<p>The Response of Typical South African Raw Waters to Enhanced Coagulation</p> <p>SISEKELO P. DLAMINI <i>University of Johannesburg (Johannesburg, South Africa)</i></p>	<p>Characterization of Organic Matter in Alum Treated Drinking Water Using Reverse Phase-High Performance Liquid Chromatography and Ion-Exchange Resins</p> <p>PROF. DONGSHENG WANG <i>State Key Lab of Environmental Aquatic Chemistry, Chinese Academy of Sciences (Beijing, China)</i></p>	<p>Investigation of Pre-Disinfection with Chlorine Dioxide of Aqueous Solutions Containing Fulvic and Humic Acids and Bromide Ions</p> <p>NAVA NARKIS, SC.D. <i>The Technion-Israel Institute of Technology (Haifa, Israel)</i></p>	<p>Photochemical Production of Hydrogen Peroxide in Marine Bathing Waters in Southern California</p> <p>CATHERINE CLARK, PH.D. <i>Chapman University (Orange, California, USA)</i></p>	<p>Effect of NOM Characteristics on the Removal of Pharmaceutically Active and Endocrine Disrupting Compounds by Coagulation</p> <p>SABRINA A. DIEMERT <i>University of Toronto (Toronto, Ontario, Canada)</i></p>
9:30 – 10:00	<p>Evaluation of Enhanced Coagulation Pretreatment to Improve Ozone Oxidation Efficiency in Wastewater</p> <p>ERIC C. WERT, P.E. <i>Southern Nevada Water Authority (Las Vegas, Nevada, USA)</i></p>	<p>Comparison of Two Polarity Measurements of Hydrophobic Organic Matter for the Evaluation of Water Treatment Processes: XAD Resin and PRAM</p> <p>MARC PHILIBERT <i>University of California, Los Angeles (Los Angeles, California, USA)</i></p>	<p>Evaluating the Contribution of NOM Fractions to the Formation of Disinfection Byproducts in Conventional Filtration Plants</p> <p>GRAHAM A. GAGNON, PH.D., P.E. <i>Dalhousie University (Halifax, Nova Scotia, Canada)</i></p>	<p>Photodegradation of Naproxen and Ibuprofen and the Formation of Ecotoxic Photoproducts in Natural Water Samples</p> <p>WENDY C. CORY, PH.D. <i>College of Charleston (Charleston, South Carolina, USA)</i></p>	<p>NOM Present in Biosorbent Peat for Decontamination of Water Containing Metallic Species</p> <p>ANA PAULA DOS SANTOS BATISTA <i>Universidade Federal de Sergipe (Aracaju, Brazil)</i></p>

10:00 am to 10:30 am Networking Break Pacific Ballroom

Session 4: 10:30 am to 12 noon

	Track A	Track B	Track C	Track D	Track E
	Emerald Bay I	Emerald Bay II	Emerald Bay III	Balboa Bay I	Balboa Bay II
	A4: Treatment and Removal 4	B4: Wastewater Topics 1	C4: Disinfection Byproducts 4	D4: Monitoring 2	E4: Treatment & Characterization 2
	<i>Moderator:</i> Eakalak Khan, Ph.D., P.E.	<i>Moderator:</i> Jeffrey J. Mosher	<i>Moderator:</i> Ina Kristiana, Ph.D.	<i>Moderator:</i> Rudolf Jaffé, Ph.D.	<i>Moderator:</i> Jeffrey A. Nason, Ph.D.
10:30 – 11:00	Direct Observation and Modeling of Solid-Phase Macromolecules Concentration Profile in Powdered Activated Carbon Particle NAOYA ANDO, PH.D. <i>METAWATER Co., Ltd (Ichihara-City, Japan)</i>	Characterization and Treatability of Wastewater Organics PAUL WESTERHOFF, PH.D. <i>Arizona State University (Tempe, Arizona, USA)</i>	Characterization of Dissolved Organic Matter in Colorado's Watersheds: The Role of Nutrients and Algae on DBP Formation AMANDA K. HOHNER <i>University of Colorado, Boulder (Boulder, Colorado, USA)</i>	High-Resolution Dynamics of Dissolved and Particulate Organic Carbon in a Mountain Stream Monitored by an <i>In Situ</i> Optical Sensor JI-HYUNG PARK, PH.D. <i>Kangwon National University (Chuncheon, South Korea)</i>	The Effect of Changing NOM Composition, Measured by LC-OCD, on NOM Treatability in Downstream Processes MARCO DIGNUM, PH.D. <i>Waternet (Amsterdam, The Netherlands)</i>
11:00 – 11:30	Evaluating and Designing GAC Treatment Systems for Removing DBP Precursors from Drinking Water KIRK O. NOWACK, PH.D. <i>Malcolm Pirnie, The Water Division of ARCADIS (Wilmington, Delaware, USA)</i>	The Reactivity of EfOM and Effluent-Impacted Waters with Chloramines in Forming NDMA STUART W. KRASNER <i>Metropolitan Water District of Southern California (Los Angeles, California, USA)</i>	Nanosilver in the Glass of Water – A Comprehensive Identification of Disinfection Byproducts and Assessment of Mutagenicity of Disinfected Drinking Water in the Presence of Nanosilver SLAVEN DOBROVI, PH.D. <i>University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture (Zagreb, Croatia)</i>	NOM and Effluent Organic Matter (EfOM) Characterization in the Urban Water Cycle by Excitation-Emission Matrix Fluorescence Spectroscopy MARTHA J.M. WELLS, PH.D. <i>Midway College School of Pharmacy (Paintsville, Kentucky, USA)</i>	NOM in Finnish Surface Waters: Influence on Waterworks Purification Process and on Drinking Water JAAKKO O. PELLINEN, P.G. <i>University of Oulu (Oulu, Finland)</i>
11:30 – 12:00	Comparison of NOM Adsorption Capacities of Super-Powdered Activated Carbon and Powdered Activated Carbon YOSHIHIKO MATSUI, PH.D. <i>Hokkaido University (Sapporo, Japan)</i>	Understanding Dissolved Organic Matter in Wastewater Using an EfOM-Focused PARAFAC Model for Assessment of EfOM Impacts on a Watershed GARY L. AMY, PH.D. <i>King Abdullah University of Science and Technology (Thuwal, Saudi Arabia)</i>	Characterization of DOM and Chlorinated Disinfection Byproducts Formation Potential QIMING XIAN, PH.D. <i>Nanjing University (Nanjing, China)</i>	Tracing Refractory Dissolved Organic Matter Source in a Lake Using Multiple Analytical Tools HANG V.M. NGUYEN <i>Sejong University (Seoul, South Korea)</i>	The Interaction and Correlation Between DBPs and Dissolved Organic Matter in Raw and Treated Drinking Water MENG-HORNG (CHRIS) HSU <i>University of California, Los Angeles (Los Angeles, California, USA)</i>

12:00 noon to 1:30 pm Lunch Pacific Ballroom

Lunch Sponsored by:



University of California
Center for Hydrologic Modeling

PROGRAM: THURSDAY, JULY 28

Session 5: 1:30 pm to 3:00 pm

	Track A	Track B	Track C	Track D	Track E
	Emerald Bay I	Emerald Bay II	Emerald Bay III	Balboa Bay I	Balboa Bay II
	A5: Treatment and Removal 5	B5: Wastewater Topics 2	C5: Environmental Fate and Transport 1	D5: Membranes 2	E5: Catchment 1
	<i>Moderator:</i> Peter Jarvis, Ph.D.	<i>Moderator:</i> Paul Westerhoff, Ph.D.	<i>Moderator:</i> Peter Hernes, Ph.D.	<i>Moderator:</i> Graham J.G. Juby, Ph.D.	<i>Moderator:</i> Dr. Auguste L. Bruchet
1:30 – 2:00	<p>Application of Humate Sustainable Alternative for Remediation of Wastewater and Groundwater</p> <p>EWA LIPCZYNSKA-KOCHANY, PH.D., Sc.D. <i>Environmental Consultant</i> (Mississauga, Ontario, Canada)</p>	<p>Chemistry of Effluent Organic Matter: A Non-Target Approach of Analyzing the Complex DOC in Secondary Treated Effluent</p> <p>MICHAEL GONSIOR, PH.D. <i>Linköping University</i> (Linköping, Sweden)</p>	<p>Environmental Dynamics of Dissolved Organic Matter Associated Black Carbon (DOM-BC) in Freshwater Ecosystems</p> <p>YAN DING <i>Florida International University</i> (North Miami, Florida, USA)</p>	<p>Analyzing the Employed Technologies for Removing Chromophoric Dissolved Organic Matter from the Groundwater in Orange County</p> <p>REZA SOBHANI <i>University of California, Irvine</i> (Irvine, California, USA)</p>	<p>Forested Catchment Wildfire and Post-Fire Management: Implications to NOM Character and Treatability</p> <p>MONICA EMELKO <i>University of Waterloo</i> (Waterloo, Ontario, Canada)</p>
2:00 – 2:30	<p>Assessment of NOM Treatability Using Combined Characterization Techniques</p> <p>CHRIS W.K. CHOW, PH.D. <i>Australian Water Quality Centre</i> (Adelaide, Australia)</p>	<p>Ozonation of a Non-Nitrified Secondary Effluent to Reduce MF Fouling by EfOM</p> <p>FREDRICK W. GERRINGER, D.Env., P.E. <i>Trussell Technologies, Inc.</i> (Pasadena, California, USA)</p>	<p>Isolation of Black Carbon in Marine Bulk Dissolved Organic Carbon Using a Revised Solid Phase ExTracktion Method</p> <p>ALYSHA I. COPPOLA <i>University of California, Irvine</i> (Irvine, California, USA)</p>	<p>Removal of NOM at the Deep Aquifer Treatment System (DATS)</p> <p>CARL W. SPANGENBERG, P.E. <i>Irvine Ranch Water District</i> (Irvine, California, USA)</p>	<p>Natural Purification Mechanism of Forest and River: Poisonous Substance Removal</p> <p>MATSUNORI NARA, Sc.D. <i>Tokyo University of Science</i> (Chino, Japan)</p>
2:30-3:00	<p>Using One Mobile Pilot Plant for TOC and DBP Optimization at Multiple Filter Plants</p> <p>JEFF COCHRAN, PH.D., P.E. <i>Birmingham Water Works Board</i> (Birmingham, Alabama, USA)</p>	<p>Effluent Organic Matter, <i>Microcystis Aeruginosa</i> and Microfiltration Membranes</p> <p>FELICITY A. RODDICK, Sc.D. <i>RMIT University</i> (Melbourne, Australia)</p>	<p>Organic Matter Sources and Transformations along a Headwater Stream – River Reservoir Continuum</p> <p>S. LEIGH MCCALLISTER, PH.D. <i>Virginia Commonwealth University</i> (Richmond, Virginia, USA)</p>	<p>Removal of Highly Colored NOM from Deep Aquifer Groundwater Using Low Rejection PES NF Membranes at the Colored Water Treatment Facility</p> <p>G. ADAM ZACHEIS, PH.D. <i>Carollo Engineers</i> (Fountain Valley, California, USA)</p>	<p>DOM Reactivity in First-Order Streams of Differing Land Use in the York River Estuary, VA</p> <p>YUEHAN LU, PH.D. <i>University of Alabama</i> (Tuscaloosa, Alabama, USA)</p>

3:00 pm to 3:30 pm Networking Break Pacific Ballroom

Session 6: 3:30 pm to 5:00 pm

	Track A	Track B	Track C	Track D	Track E
	Emerald Bay I	Emerald Bay II	Emerald Bay III	Balboa Bay I	Balboa Bay II
	A6: Treatment and Removal 6	B6: Molecular Characterization 4	C6: Catchment 2	D6: Membranes 3	E6: University of California Meeting
	Moderator: Kerry E. Black	Moderator: Chad W. Cuss	Moderator: Fernando Rosario-Ortiz, Ph.D.	Moderator: Gary L. Amy, Ph.D.	Moderator: William J. Cooper, Ph.D.
3:30 – 4:00	Reduction of Broad Spectrum NOM Contamination to Minimize Fouling of Membrane using Electroadsorptive Depth Filter Media RODNEY S. KOMLENIC <i>Ahlstrom Filtration LLC (Mt. Holly Springs, Pennsylvania, USA)</i>	Stabilization Processes of Olive Pomace in Soil: A Laboratory Experiment by Isoelectric Focusing and ¹³ C NMR FRANCESCO ALIANIELLO <i>Agricultural Research Council – Research Centre for Soil/Plant System (CRA-RPS) (Rome, Italy)</i>	Ultrahigh Resolution Mass Spectrometry of Dissolved Organic Nitrogen in Water Treatment Areas WILLIAM T. COOPER, PH.D. <i>Florida State University (Tallahassee, Florida, USA)</i>	Refractory Organic Matter (ROM) Removal in Water Treatment: Power and Limitations of Hybrid Processes PROF. DR. FRITZ H. FRIMMEL <i>Karlsruhe Institute of Technology (Karlsruhe, Germany)</i>	<p style="text-align: center;">Meeting of University of California Faculty to discuss a UC Center for Water, Wastewater, and Water Reuse</p>
4:00 – 4:30	Characterization of Organics in Marcellus Flowback Waters BRIAN A. DEMPSEY, PH.D. <i>Pennsylvania State University (University Park, Pennsylvania, USA)</i>	A Method to Determine Biodegradable Dissolved Organic Nitrogen in Water EAKALAK KHAN, PH.D., P.E. <i>North Dakota State University (Fargo, North Dakota, USA)</i>	Effects of Watershed Disturbance on DOC Characteristics in Headwater Streams RUDOLF JAFFÉ, PH.D. <i>Florida International University (North Miami, Florida, USA)</i>	IEX to Control Natural Organic Matter Fouling in Nanofiltration EMILE R. CORNELISSEN, PH.D. <i>KWR Watercycle Research Institute (Nieuwegein, The Netherlands)</i>	
4:30-5:00	NOM Characterization and Removal by Water Treatment Processes for Drinking Water and Ultra Pure Process Water ALEXANDER F. KEUCKEN, P.E. <i>Vatten & Miljö i Väst AB (Falkenberg, Sweden)</i>	Molecular Characterization of NOM Transformation along Its Passage from the Tributaries of the Kolyma River to the Arctic Ocean Using Fourier Transform Ion Cyclotron Resonance Mass-Spectrometry IRINA PERMINOVA <i>Lomonosov Moscow State University (Moscow, Russia)</i>	Biodegradation of Catchment Source Organic Matter in Riverine Environments MERISSA MARIUS <i>University of Southampton (Southampton, United Kingdom)</i>	NOM Removal and Fouling By a Novel, Combined Adsorption/Microfiltration Process ZHENXIAO (NATHAN) CAI <i>University of Washington (Seattle, Washington, USA)</i>	

5:30 pm to 6:30 pm Reception Catalina Ballroom Foyer

6:30 pm to 9:00 pm Conference Dinner Catalina Ballroom

After Dinner, a Feature Presentation of the Documentary

RUNNING DRY: A CALL TO ACTION

Welcome by Jim Thebaut, Producer (*Redondo Beach, California, USA*)

This dinner will feature the presentation of a documentary called, *Running Dry: A Call to Action*. It was inspired by former U.S. Senator Paul Simon's book *Tapped Out*, and highlights the coming world crisis in water and what we can do about it. The documentary was written, produced, and directed by Jim Thebaut and narrated by actress Jane Seymour.



PROGRAM: FRIDAY, JULY 29

7:30 am to 5:00 pm Registration Banquet Level 2

7:30 am to 9:00 am Continental Breakfast Pacific Ballroom

Session 7: 8:00 am to 10:00 am

	Track A	Track B	Track C	Track D	Track E
	Emerald Bay I	Emerald Bay II	Emerald Bay III	Balboa Bay I	Balboa Bay II
	A7: Treatment and Removal 7	B7: Coastal and Seawater	C7: Disinfection Byproducts 5	D7: Environmental Factors	E7: Advanced Oxidation 3
	Moderator: Paul Westerhoff, Ph.D.	Moderator: Christopher L. Osburn, Ph.D.	Moderator: Stuart W. Krasner	Moderator: Thabo Nkambule	Moderator: Aaron D. Dotson
8:00 – 8:30	<p>Ion Exchange for NOM Removal from a Sulfate Rich Surface Water Incorporating Full Reuse of the Brine</p> <p>LIESBETH B. VERDICKT <i>VMW (Flemish Drinking Water Company) (Brussels, Belgium)</i></p>	<p>Characterization of NOM from Mediterranean Coastal Seawater</p> <p>F. XAVIER SIMON <i>University of Barcelona (Barcelona, Spain)</i></p>	<p>Nitrogenous Disinfection Byproducts Formation Potential from Molecular Weight Fractions of NOM</p> <p>INA KRISTIANA, Ph.D. <i>Curtin Water Quality Research Centre (Perth, Australia)</i></p>		<p>Use of Organic Photosensitizers to Elucidate Mechanisms of Solar Driven Processes on Pesticides</p> <p>DR. ANTONIO ARQUES <i>Universidad Politécnica de Valencia (Alcoy, Spain)</i></p>
8:30 – 9:00	<p>Removal of NOM from Concentrates Produced by an Ultrafiltration System Treating Drinking Water</p> <p>MAURÍCIO COSTA CABRAL DA SILVA <i>International Reference Center of Water Reuse (São Paulo, Brazil)</i></p>	<p>Quantifying Abiotic Organobromine Formation in Seawater During Exposure to Solar Radiation</p> <p>MICHAEL C. DODD, Sc.D. <i>University of Washington (Seattle, Washington, USA)</i></p>	<p>Agricultural Impacts on Stream DOC in a Sacramento Valley Watershed</p> <p>PETER HERNES, Ph.D. <i>University of California, Davis (Davis, California, USA)</i></p>	<p>The Role of Humic Substances in Controlling the Colloidal Stability of Organically Stabilized Gold Nanoparticles in Aqueous Systems</p> <p>JEFFREY A. NASON, Ph.D. <i>Oregon State University (Corvallis, Oregon, USA)</i></p>	<p>Influence of NOM Concentration on Parameter Sensitivity of a Mechanistic Ozone Decomposition Model</p> <p>WIM T.M. AUDENAERT <i>Ghent University (Ghent, Belgium)</i></p>
9:00-9:30	<p>Color Removal from Drinking Water with Ion Exchange: Regeneration with Zero Liquid Discharge</p> <p>PETER SJOERDSMA, BBA <i>Vitens NV (Leeuwarden, The Netherlands)</i></p>	<p>Seasonal Variation of Colored Dissolved Organic Matter in the Nelson River Estuary, Hudson Bay</p> <p>CÉLINE GUÉGUEN, Ph.D. <i>Trent University (Peterborough, Ontario, Canada)</i></p>	<p>Characterization of NOM as Precursors for Nitrosamines: Hydrophobicity, Molecular Weight, and Fluorescence</p> <p>CHENGKUN WANG <i>Tsinghua University (Beijing, China)</i></p>	<p>Dynamics and Characteristics of Dissolved Organic Matter at the Ardebil Lake Watershed, New York</p> <p>PHIL-GOO KANG <i>State University of New York (Syracuse, New York, USA)</i></p>	<p>Removal of NOM with Anion Exchange Resins and Its Impact on H₂O₂/UV Advanced Oxidation</p> <p>MADJID MOHSENI, Ph.D. <i>University of British Columbia (Vancouver, British Columbia, Canada)</i></p>
9:30 – 10:00	<p>Molecular Characteristics and Differences of Effluent Organic Matter Treated by Integrated Fixed Film Activated Sludge (IFAS), Activated Sludge and Dentrification</p> <p>MICHAEL GONSIOR, Ph.D. <i>Linköping University (Linköping, Sweden)</i></p>	<p>Optical Analysis of Chromophoric Dissolved Organic Matter as a Tracer of Organic Matter in the Neuse River Estuary, Eastern North Carolina</p> <p>JENNIFER L. DICKSON BROWN <i>North Carolina State University (Raleigh, North Carolina, USA)</i></p>	<p>Comparison Between Formation Potential of Chloroacetic Acids by Hydrophobic Hydrophilic NOM Fraction with Standards of Fulvic-Humic Acids and Raw Water</p> <p>CARMEN LILIANA DUARTE PINEDA <i>Universidad del los Andes (Bogotá, Columbia)</i></p>	<p>Origin, Signature, and Interaction of Coal Bed Methane Produced Water NOM with Inorganic Solutes</p> <p>KATHARINE G. DAHM <i>Colorado School of Mines (Golden, Colorado, USA)</i></p>	<p>Changes in Biodegradability and Molecular Weight of NOM under UV/H₂O₂ Treatment</p> <p>MOHAMMAD MAHDI BAZRI <i>University of British Columbia (Vancouver, British Columbia, Canada)</i></p>

10:00 am to 10:30 am Networking Break Pacific Ballroom

Session 8: 10:30 am to 12 noon

	Track A	Track B	Track C	Track D	Track E
	Emerald Bay I	Emerald Bay II	Emerald Bay III	Balboa Bay I	Balboa Bay II
	A8: Treatment and Removal 8	B8: Molecular Characterization 5	C8a: Treatment	D8: Membranes 4	E8: Advanced Oxidation 4
	<i>Moderator:</i> Chris W.K. Chow, Ph.D.	<i>Moderator:</i> Priv. Doz. Dr. P. Schmitt-Kopplin	<i>Moderator:</i> Michael C. Dodd, Sc.D.	<i>Moderator:</i> Gary L. Amy, Ph.D.	<i>Moderator:</i> Ewa Lipczynska-Kochany, Ph.D., Sc.D.
10:30 – 11:00	Destruction of Organic Matter in Water Using Ultraviolet Light RANDY COOPER <i>Ultraviolet Sciences, Inc. (San Diego, California, USA)</i>	Ultrahigh Resolution Mass Spectrometry: Characterization of NOM in Seawater NURIA CORTÉS-FRANCISCO <i>Spanish Council for Scientific Research (Barcelona, Spain)</i>	Effects of NOM on the Accumulation of Inorganic Contaminants in Drinking Water Distribution Systems CHING-YU PENG <i>University of Washington (Seattle, Washington, USA)</i>	On Effluent Organic Matter and the Fouling of Low Pressure Filtration Membranes FELICITY A. RODDICK, Sc.D. <i>RMIT University (Melbourne, Australia)</i>	Using Rapid Background Hydroxyl Radical Scavenging Measurement to Understand OH Radical Reactivity of NOM in AOPs ERIC ROSENFELDT, Ph.D., P.E. <i>Hazen and Sawyer (Fairfax, Virginia, USA)</i>
11:00 – 11:30	Advanced Separation Technology Application for NOM Removal from a Freshwater Supply PROF. ANDREA G. CAPODAGLIO <i>University of Pavia (Pavia, Italy)</i>	Transparent Exopolymer Particles (TEP): A Frequently Ignored, But Extremely Active Component of NOM UTA PASSOW, Ph.D. <i>Marine Science Institute University of California, Santa Barbara (Santa Barbara, California, USA)</i>	Extracellular Polymeric Substances and Their Interaction with the Fate and Transport of the Anthropogenic Micropollutants in Activated Sludge Processes LINDA Y. TSENG <i>University of California, Irvine (Irvine, California, USA)</i>	Comparison of Two Fractionation Strategies for Characterization of Effluent Organic Matter (EfOM) and for Diagnosing Causes of Low-Pressure Membrane Fouling BRIAN A. DEMPSEY, Ph.D. <i>Pennsylvania State University (University Park, Pennsylvania, USA)</i>	Role of Biological Activated Carbon on UV/H ₂ O ₂ -Treated Water quality SIVA R. SARATHY, Ph.D. <i>Trojan Technologies (London, Ontario, Canada)</i>
11:30 – 12:00		Molecular Characterization of Organic Compounds in Atmospheric Aerosols ALEXANDER LASKIN, Ph.D. <i>Environmental Molecular Sciences Laboratory, Pacific Northwest National Laboratory (Richland, Washington, USA)</i>	C8b: Special Policy Session for Students Development of Wastewater Law in California JOSHUA L. CLEAVER <i>Thomas Jefferson School of Law (San Diego, California, USA)</i>	Wastewater NOM Composition Following Chemically Enhanced Primary Treatment and Microfiltration GRAHAM J.G. JUBY, Ph.D., P.E. <i>Carollo Engineers, Inc. (Fountain Valley, California, USA)</i>	UV-Based Advanced Oxidation for NOM Degradation and Removal: Impacts on Characteristics, Biodegradability, and DBP Formation Potential MAJDID MOHSENI, Ph.D. <i>University of British Columbia (Vancouver, British Columbia, Canada)</i>

12 noon to 1:30 pm Lunch Pacific Ballroom

Special Luncheon Speaker:

Susan D. Richardson, Ph.D.

Research Chemist, United States Environmental Protection Agency
National Exposure Research Laboratory (Athens, Georgia, USA)

“The Next Generation of Drinking Water Disinfection Byproducts: Occurrence, Formation, and Toxicity”



PROGRAM: FRIDAY, JULY 29

Session 9: 1:30 pm to 3:00 pm

	Track A	Track B	Track C	Track D	Track E
		Emerald Bay II	Emerald Bay III	Balboa Bay I	Balboa Bay II
		B9: Molecular Characterization 6	C9: Environmental Fate and Transport 2	D9: Membranes 5	E9: Extreme Environments
		<i>Moderator:</i> Christopher L. Osburn, Ph.D.	<i>Moderator:</i> Martha J.M. Wells, Ph.D.	<i>Moderator:</i> Jana Safarik	<i>Moderator:</i> Nancy W. Hinman, Ph.D.
1:30 – 2:00		<p>Isolation and Characterization of Biomarkers for Fresh and Marine Waters</p> <p>BARBARA A. COTTRELL <i>University of Toronto, Scarborough (Scarborough, Ontario, Canada)</i></p>	<p>Is Dissolved Organic Matter a Protective Agent Versus Non-Polar Hazardous Organic Pollutants (HOPs) in Drinking Water?</p> <p>MENG-HORNG (CHRIS) HSU, D.ENV. <i>University of California, Los Angeles (Los Angeles, California, USA)</i></p>	<p>Hollow-Fiber Filtration for Water Reclamation: Nanoscale Particles and Membrane Fouling</p> <p>JOSHUA SMERALDI <i>University of California, Irvine (Irvine, California, USA)</i></p>	<p>Characteristics of NOM in Different Yellowstone Hot Springs</p> <p>MICHAEL GONSIOR, PH.D. <i>Linköping University (Linköping, Sweden)</i></p>
2:00 – 2:30		<p>New Approach to the Characterization of NOM and Its Effects on Copper Release in Drinking Water</p> <p>YUAN GAO <i>University of Washington (Seattle, Washington, USA)</i></p>	<p>Involvement of NOM in the Photochemical Fate of Beta-Blockers in Water</p> <p>HAOMIN XU, PH.D. <i>University of California, Irvine (Irvine, California, USA)</i></p>	<p>Natural Organic Fouling in Membrane</p> <p>DR. AHMED AL-AMOUDI <i>Saline Water Conversion Corporation (Jubail, Saudi Arabia)</i></p>	<p>UV Radiation and Dusty Skies Influence the Quality of Dissolved Organic Matter in Alpine Environments</p> <p>NATALIE MLADENOV, PH.D. <i>University of Colorado at Boulder (Boulder, Colorado, USA)</i></p>
2:30-3:00		<p>Characterize NOM in Typical China Water Source Using HPLC-SEC with Continuous Wavelength UV Absorbance Detector</p> <p>DR. MINGQUAN YAN <i>Peking University (Beijing, China)</i></p>			<p>Complexation of Ferric Iron by Soluble Microbial Products of Acidophilic Heterotrophs and the Resulting Effect on Pyrite Oxidation</p> <p>TESFAYOHANES W. YACOB <i>University of Colorado at Boulder (Boulder, Colorado, USA)</i></p>

3:00 pm Conference Adjourns

POSTER PRESENTATIONS

Posters

- Study of Self-Sensitized Degradation of Natural Organic Matter by TiO₂ Photocatalysis in the Visible Region**
GOPAL ACHARI, PH.D., *Professor, University of Calgary (Calgary, Alberta, Canada)*
- Exploring the Possibility of Using Solar-Driven Photo-Fenton Process at Circumneutral Medium in the Presence of Humic Acids**
DR. ANTONIO ARQUES, *Associate Professor, Universidad Politécnica de Valencia (Alcoy, Spain)*
- Characterization of Organic Matter Produced after Solar-Driven Photo-Fenton and TiO₂ Treatment of a Mixture of Pollutants**
DR. ANTONIO ARQUES, *Associate Professor, Universidad Politécnica de Valencia (Alcoy, Spain)*
- Effect of Humic Acids on the Photodegradation of Emerging Pollutants under UVA-vis Irradiation**
DR. ANTONIO ARQUES, *Associate Professor, Universidad Politécnica de Valencia (Alcoy, Spain)*
- Effect of Natural Organic Matter and Ionic Strength on *Bacillus Subtilis* Spore Inactivation in Water Using Photo-Assisted Fenton Reaction**
ERICK R. BANDALA, PH.D., *Associate Professor, Universidad de Las Américas, Puebla (Cholula, Mexico)*
- Using Optical Properties to Compare Dissolved Organic Matter Dynamics in the Florida Everglades, Brazilian Pantanal, and Botswana's Okavango Delta**
KAELIN CAWLEY, PH.D., *Postdoctoral Researcher, Southeast Environmental Research Center, Florida International University (North Miami, Florida, USA)*
- Methyl Substituted Salicylic (2-Hydroxy Benzoic Acid) Acids as Model Compounds for Natural Organic Matter Free Radical Chemistry**
WILLIAM J. COOPER, PH.D., *Professor and Director, Urban Water Research Center, University of California, Irvine (Irvine, California, USA)*
- Removal of Trace Pharmaceuticals and Endocrine Inhibitors Using Disruptor® PAC Technology**
FRANK COUSART, *Technical Manager, Ahlstrom Filtration, LLC (Mt. Holly Springs, Pennsylvania, USA)*
- Microelements or Trace Elements: Which Better Determines Groundwater Quality in Agricultural Areas?**
MARIUSZ GLOWACKI, PH.D., *Opole University (Opole, Poland)*
- Environmental Metabolomics Meets Biogeochemistry: Compositional and Structural Dynamics of Dissolved Organic Matter during Cyanobacterial (*Microcystis aeruginosa*) Bloom in Tai Lake, China**
DR. NORBERT HERTKORN, *Helmholtz Zentrum München, German Research Center for Environmental Health (Neuherberg, Germany)*

Poster Presentations Schedule

Posters can be found on display in the Pacific Ballroom.

Poster Presentation Times:

Wednesday

9:45 am – 10:15 am	Networking Break
11:15 am – 11:45 am	Networking Break
5:30 pm – 6:00 pm	Sponsor's Reception

Thursday

10:00 am - 10:30 am	Networking Break
3:00 pm – 3:30 pm	Networking Break

Friday

10:00 am – 10:30 am	Networking Break
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POSTERS (CONTINUED)

11. **Natural Organic Matter and the Event Horizon of Mass Spectrometry**

DR. NORBERT HERTKORN, *Helmholtz Zentrum München, German Research Center for Environmental Health (Neuherberg, Germany)*

12. **An Integrated NMR and FTCIR Mass Spectroscopic Study to Characterize a New and Major Refractory Component of (Marine) Natural Organic Matter at the Molecular Level: Carboxyl-Rich Alicyclic Molecules (CRAM)**

DR. NORBERT HERTKORN, *Helmholtz Zentrum München, German Research Center for Environmental Health (Neuherberg, Germany)*

13. **Natural Organic Matter Characterization of Highly Acidic Iron-Rich Pore Waters from Mine Pit Lakes Using Ultra-High-Resolution Mass Spectrometry**

PETER HERZSPRUNG, PH.D., *Research Scientist, Helmholtz Centre for Environmental Research – UFZ, Department of Lake Research (Magdeburg, Germany)*



Photo courtesy of Orange County Water District

14. **Photochemical Degradation of Natural Organic Matter Compounds – Itemization by Single Elemental Formula Evaluation Received from Ultra-High-Resolution Mass Spectrometry**

PETER HERZSPRUNG, PH.D., *Research Scientist, Helmholtz Centre for Environmental Research – UFZ, Department of Lake Research (Magdeburg, Germany)*

15. **Variability in Molecular Composition of Dissolved Organic Matter in Distinctly Different Hot Springs, Yellowstone National Park, Wyoming, USA**

NANCY W. HINMAN, PH.D., *Professor, University of Montana (Missoula, Montana, USA)*

16. **Fate of Hydrolyzed Aluminum Species in Humic Acid Coagulation**

DR. CHIH-PIN HUANG, *Distinguished Professor, Institute of Environmental Engineering, National Chiao Tung University (Hsinchu, Taiwan)*

17. **Photo-Induced Generation of Dissolved Organic Matter from Floc in the Shark River Slough of the Florida Coastal Everglades**

RUDOLF JAFFÉ, PH.D., *Professor, Southeast Environmental Research Center, Florida International University (North Miami, Florida, USA)*



18. **Polar Iodinated Disinfection Byproducts in Chlorinated Saline Wastewater Effluents**

STUART W. KRASNER, *Principal Environmental Specialist, Metropolitan Water District of Southern California (La Verne, California, USA)*

19. **Photosensitized Dechlorination of Trace Halogenated Contaminants in the Presence of Natural Organic Matter Using Membrane Introduction Mass Spectrometry as an *In-Situ* Reaction Monitor**

DR. ERIK KROGH, *Co-Director, Applied Environmental Research Laboratories, Vancouver Island University (Nanaimo, British Columbia, Canada)*

20. **Characterization of Dissolved Organic Matter in Landfill Leachate by Fluorescence Spectroscopy**

BULENT MERTOGLU, PH.D., *Associate Professor, Marmara University (Istanbul, Turkey)*

21. **High-Frequency Optical Characterization of Streamwater Dissolved Organic Matter during Storm Events Using Fluorescence Excitation-Emission Matrix Spectroscopy**

Ji-HYUNG PARK, PH.D., *Associate Professor, Kangwon National University (Chuncheon, South Korea)*

22. **The Impact of *Pleurotus Ostreatus* on the Amendments Organic Matter Transformation**

DR. HAB. IZABELLA PISAREK,
Opole University (Opole, Poland)

23. **Evaluation of Disinfection Byproducts Formed from the Chlorination of Lyophilized and Reconstituted Natural Organic Matter Concentrate from a Drinking Water Source**

JONATHAN G. PRESSMAN, PH.D., P.E., *Environmental Engineer, National Risk Management Research Laboratory, United States Environmental Protection Agency (Cincinnati, Ohio, USA)*

24. **Murchison Meteorite, 40 Years after Unprecedented Molecular Diversity of Extraterrestrial Organic Matter**

PRIV. DOZ. DR. PHILIPPE SCHMITT-KOPLIN, *Head of Department, Helmholtz Zentrum München, German Research Center for Environmental Health (Neuherberg, Germany)*

25. **Analysis of the Unresolved Organic Fraction in Atmospheric Aerosols with Ultrahigh-Resolution Mass Spectrometry and Nuclear Magnetic Resonance Spectroscopy: Organosulfates as Photochemical Smog Constituents**

PRIV. DOZ. DR. PHILIPPE SCHMITT-KOPLIN, *Head of Department, Helmholtz Zentrum München, German Research Center for Environmental Health (Neuherberg, Germany)*

26. **The Change of Natural Organic Matter Properties by Pulsed Ultraviolet Treatment**

JINSIK SOHN, *Associate Professor, Kookmin University (Seoul, South Korea)*

27. **Fluorescence Spectroscopic Analysis of Omerli Reservoir Water at Different Ozone Doses**

DR. KOZET YAPSAKLI, *Assistant Professor, Marmara University (Istanbul, Turkey)*



Student Posters

28. **Optical Characterization of Natural Organic Matter in Surface Water and Sediment Porewater in Southern California Wetlands: Comparison of a Restored Salt Marsh to a Natural Treatment Wetland System**

PAIGE AIONA, *Chapman University (Orange, California, USA)*



29. **Substituted Phenolic Compounds as Models for Humic Acid Free Radical Chemistry**

SHAKIBA AYATOLLAHI, *University of California, Irvine (Irvine, California, USA)*

30. **The Effects of pH and Ionic Strength on Removal of THM- and HAN-Precursors Using MIEX Prior to Chlorination**

SARAH COUSINS, *Graduate Research Assistant, University of Arkansas (Fayetteville, Arkansas, USA)*

31. **The Use of Fluorescence Spectroscopy to Compare Dissolved Organic Matter and Water-Soluble Soil Organic Matter within a First-Order Catchment**

RACHEL GABOR, *University of Colorado at Boulder (Boulder, Colorado, USA)*

32. **Applications of Fluorescence Spectroscopy for Monitoring of Treated Wastewater in an Urban Stream**

JAMI GOLDMAN, *United States Geological Survey and Oregon Health and Science University (Portland, Oregon, USA)*

POSTERS (CONTINUED)

33. **Characterization of Organic Matter Using Fluorescence and Absorbance Spectroscopy: The Case Study of a Brazilian Polluted River**
HELOISE GARCIA KNAPIK, *Federal University of Paraná (Curitiba, Brazil)*
34. **Characterization of Natural Organic Matter Removal during Coagulation Using Fluorescence Spectroscopy**
JULIE KORAK, *University of Colorado at Boulder (Boulder, Colorado, USA)*
35. **Adsorption of Cellular Peptides of *Microcystis Aeruginosa* and Two Herbicides onto Granular Activated Carbon**
IVANA KOPECKA, *Institute of Hydrodynamics, Academy of Sciences of the Czech Republic (Prague, Czech Republic)*
36. **Changes in the Characteristics of Leaf Litter Derived Humic Substance and Its Ability to Influence the Pyrene Binding: Comparison for Adsorptive Fractionation and Photodegradation**
BOMI LEE, *Sejong University (Seoul, South Korea)*
37. **Chromophoric Dissolved and Particulate Organic Matter Cycling through a Tidally Influenced Constructed Marsh Ecosystem in Eastern North Carolina**
MOLLY MIKAN, *North Carolina State University (Raleigh, North Carolina, USA)*
38. **Molecular Characterization of Products Formed from the Simulated Cloud Processing of Organic Aerosol**
TRAN B. NGUYEN, *University of California, Irvine (Irvine, California, USA)*
39. **Effects of Ozonation and Ultraviolet Irradiation on the Molecular and Optical Properties of Natural and Effluent Wastewater Dissolved Organic Matter**
ALLISON L. PAUL, *Florida State University (Tallahassee, Florida, USA)*
40. **Influence of Natural Organic Matter in the Photocatalytic Degradation of *Microcystins* and *Cylindrospermopsin* with Visible and Solar Light Activated NF-TiO₂**
MIGUEL PELAEZ, *University of Cincinnati (Cincinnati, Ohio, USA)*
41. **Developing Fluorescence-Based Metrics to Improve Predictions of Trihalomethane (THM) Formation and Enhance the Efficacy of THM-Precursor Removal Strategies**
ASHLEY PIFER, *University of Arkansas (Fayetteville, Arkansas, USA)*



42. **Studies of the Photochemical Fate of Iodinated X-Ray Contrast Media Chemicals in Aqueous Solutions: Effects of Natural Organic Matter**
YIN TUNG,
University of California, Irvine (Irvine, California, USA)
43. **Chemical Aging of Atmospheric Secondary Organic Aerosols by N-Containing Compounds Leading to Colored Dissolved Organic Matter**
KATELYN M. UPDYKE,
University of California, Irvine (Irvine, California, USA)

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International Water Association



International Water Association

The International Water Association (IWA) is a global network of 10,000 water professionals spanning the continuum between research and practice and covering all facets of the water cycle. Through IWA, members collaborate to promote the development and implementation of innovative and effective approaches to water management. More information may be found at www.iwahq.org.

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Urban Water Research Center

The **URBAN WATER** Research Center
at the University of California, Irvine

The Urban Water Research Center at the University of California, Irvine, is a partnership of faculty members and departments who are working together to advance the understanding of the distinct characteristics of the urban water environment in order to promote health, enhance the efficient use of water resources, and protect environmental values. More information may be found at www.uwrc.uci.edu.

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National Water Research Institute

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Founded in 1991, the National Water Research Institute (NWRI) is a 501c3 nonprofit research organization dedicated to promoting the protection, maintenance, and restoration of water supplies and to protecting the freshwater and marine environments through the development of cooperative research work. NWRI funds research projects; facilities workshops and conferences; organizes independent advisory panels; provides graduate fellowships; publishes white papers, technical reports, and outreach material; and hosts the annual Athalie Richardson Irvine Clarke Prize for excellence in water research. To learn more about NWRI, please visit www.NWRI-USA.org.

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ORGANIZERS

Southeast Environmental Research Center, Florida International University



Southeast Environmental Research Center

The Southeast Environmental Research Center at Florida International University, Miami, conducts environmental research with emphasis on aquatic ecosystems in the southeastern U.S. and Caribbean region, promotes academic excellence in the environmental sciences, and

provides an organizational structure for regional environmental initiatives and coordination of interdisciplinary environmental investigations. More information may be found at www.serc.fiu.edu.

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Cranfield Water Science Institute, Cranfield University



The Cranfield Water Science institute is recognized internationally for its research, education, training, and consultancy. Water Science's activities encompass treatment technologies, engineering, irrigation, socioeconomics, and policy, as related to the improvement of water quality and the

protection and enhancement of the natural, human, and industrial environments. For more information, please visit www.cranfield.ac.uk/sas/water/.

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National Science Foundation



The Environmental Engineering and Sustainability cluster at NSF supports engineering research with the goal of reducing adverse effects of solid, liquid, and gaseous discharges into land, fresh and ocean waters, and air that result from human activity and impair the value of those resources in the context of ecological tenets. This cluster focuses on research on innovative biological, chemical, and physical processes used alone or as components of engineered systems to restore the usefulness of polluted land, water, and air resources.

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Orange County Water District



The Orange County Water District (OCWD) manages and protects the large groundwater basin underlying north and central Orange County. OCWD was created by the California State Legislature in 1933 to protect Orange County's rights to Santa Ana River water and to manage the very large groundwater basin, which provides approximately 60 percent of the water needs for 2.4 million residents in its service area. OCWD also operates the Groundwater Replenishment System, the world's largest advanced wastewater purification treatment facility for indirect potable reuse. The mission of OCWD is to provide local water retailers with a reliable, adequate, high-quality water supply at the lowest reasonable cost in an environmentally responsible manner. To learn more about

OCWD, please visit www.ocwd.com.

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University of California Center for Hydrologic Modeling



The goal of the UC Center for Hydrologic Modeling is to harness the hydrological expertise across the UC system to address California's critical water issues. Center participants are developing state-of-the-art simulation models and a water information system to better inform our State's environmental decision makers and water managers. Community engagement, education, and outreach are also critical to the Center's mission.

For more information, please visit www.ucchm.org.

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U.S. Environmental Protection Agency



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Founded in 1966, the Water Research Foundation (formerly known as AwwaRF) is an international, 501c3 nonprofit organization that sponsors research to help water utilities, public health agencies, and other professionals provide safe and affordable drinking water to the public. With more than 950 subscribers in the U.S. and abroad, who provide 80 percent of the nation's drinking water, the Foundation has funded and managed some 1,000 studies valued at more than \$460 million to help utilities provide safe, affordable, and plentiful drinking water. To learn more about the Water Research Foundation, please visit www.WaterRF.org.

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**International
Water Association**

Orange County's Groundwater Authority

Groundwater Recharge Water Quality Habitat Restoration



The Orange County Water District (OCWD) manages the large groundwater basin that provides reliable, high-quality water to 2.4 million residents in north and central Orange County. OCWD is committed to improving Orange County's groundwater quality and reliability in an environmentally and fiscally-responsible manner.



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The goal of the University of California Center for Hydrologic Modeling is to harness the hydrological expertise across the UC system to address California's critical water issues. Center participants are developing state-of-the-art simulation models and a water information system to better inform our State's environmental decision makers and water managers. Community engagement, education and outreach are also critical to the Center's mission.

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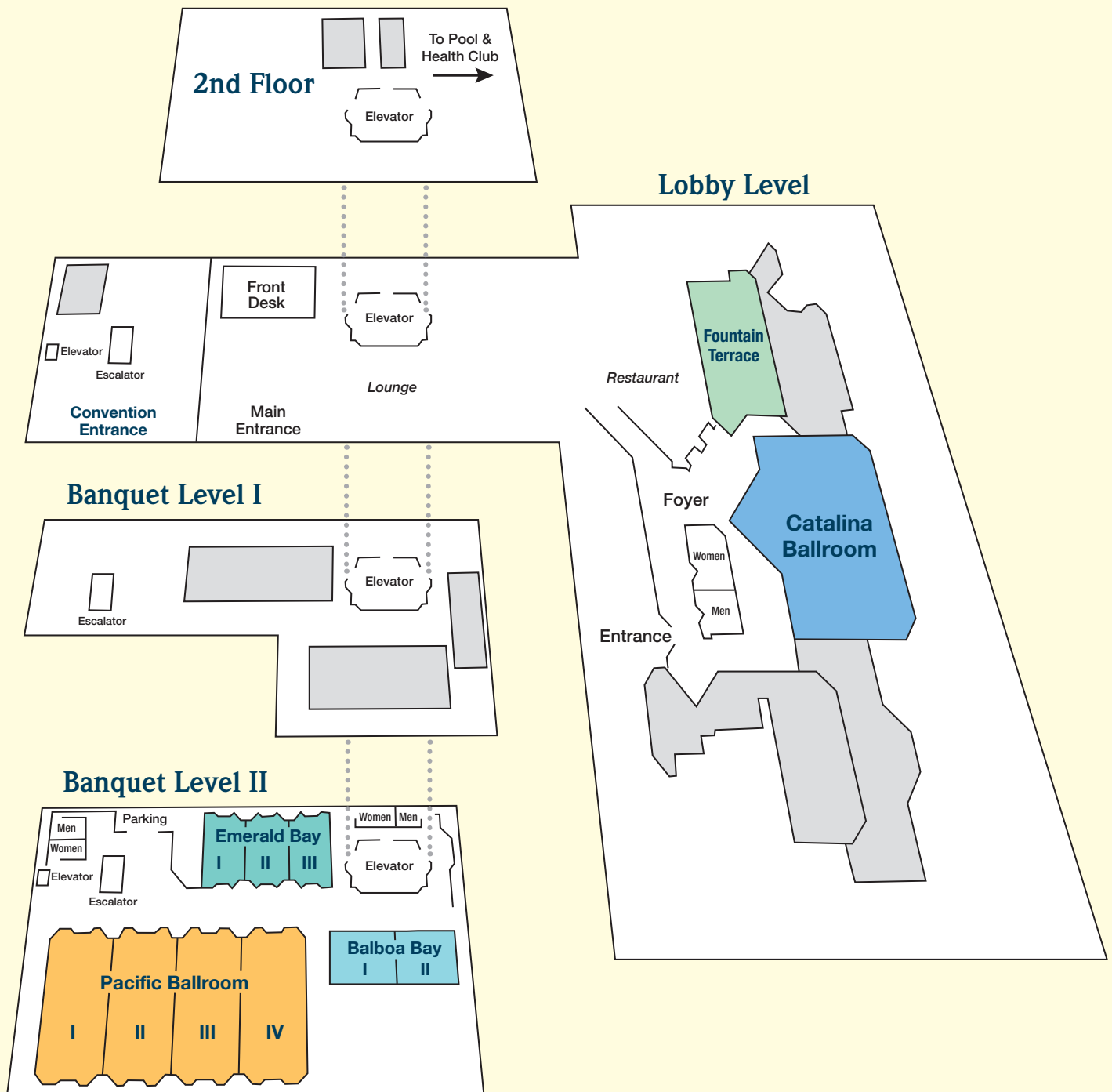
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MAP OF HILTON HOTEL



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PROGRAM AT A GLANCE

Tuesday, July 26	1:00 pm – 5:00 pm	Registration	Hotel Lobby	
	12:00 pm – 1:00 pm	Tour Sign-In and Pick Up	Convention Entrance Lobby	
	1:00 pm – 4:00 pm	Groundwater Replenishment System Tour	Orange County Water District	
Wednesday, July 27	6:30 am – 5:30 pm	Registration	Banquet Level 2	
	7:30 am – 9:00 am	Continental Breakfast	Pacific Ballroom	
	8:30 am – 9:00 am	Welcome and Introduction	Pacific Ballroom	
	9:00 am – 9:45 am	Plenary Keynote Address	Pacific Ballroom	
	9:45 am – 10:15 am	Networking Break	Pacific Ballroom	
	10:15 am – 10:45 am	Plenary Keynote Address	Pacific Ballroom	
	10:45 am – 11:15 am	Plenary Keynote Address	Pacific Ballroom	
	11:15 am – 11:45 am	Networking Break	Pacific Ballroom	
	11:45 am – 1:00 pm	Lunch	Pacific Ballroom	
	1:00 pm – 3:00 pm	Session 1	Tracks A-E	
	3:00 pm – 3:30 pm	Networking Break	Pacific Ballroom	
	3:30 pm – 5:00 pm	Session 2	Tracks A-E	
	5:30 pm – 7:30 pm	Sponsor's Reception	Fountain Terrace	
	Thursday, July 28	7:30 am – 5:00 pm	Registration	Banquet Level 2
		7:30 am – 9:00 am	Continental Breakfast	Pacific Ballroom
8:00 am – 10:00 am		Session 3	Tracks A-E	
10:00 am – 10:30 am		Networking Break	Pacific Ballroom	
10:30 am – 12:00 pm		Session 4	Tracks A-E	
12:00 pm – 1:30 pm		Lunch	Pacific Ballroom	
1:30 pm – 3:00 pm		Session 5	Tracks A-E	
3:00 pm – 3:30 pm		Networking Break	Pacific Ballroom	
3:30 pm – 5:00 pm		Session 6	Tracks A-D	
3:30 pm – 5:00 pm		University of California Meeting	Track E	
5:30 pm – 6:30 pm		Reception	Catalina Ballroom Foyer	
6:30 pm – 9:00 pm		Conference Dinner	Catalina Ballroom	
Friday, July 29	7:30 am – 12:00 pm	Registration	Banquet Level 2	
	7:30 am – 9:00 am	Continental Breakfast	Pacific Ballroom	
	8:00 am – 10:00 am	Session 7	Tracks A-E	
	10:00 am – 10:30 am	Networking Break	Pacific Ballroom	
	10:30 am – 12:00 pm	Session 8	Tracks A-E	
	12:00 pm – 1:30 pm	Lunch with Keynote Speaker	Pacific Ballroom	
	1:30 pm – 3:00 pm	Session 9	Tracks B-E	
	3:00 pm	Conference Adjourns		