SoCal
SETAC News

Society of Environmental Toxicology and Chemistry
Southern California Chapter

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FEATURE ARTICLE

What's hot at SIO: Microfibers: the newly re-discovered old pollutant

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The Deheyn lab at Scripps Institution of Oceanography deals with ecotoxicity research and how to evaluate the ecological impact of contaminants on ecosystems. Over the years, however, research on the types of contaminants has progressed from metals, PAHs, PCBs, and pesticides, to nanoparticles, pharmaceuticals, and other emerging chemicals of concern, and more recently to solid plastics. Indeed, extensive attention is drawn to microplastics because of their clear visual impact, affecting a variety of organisms and shorelines. Within microplastics, one usually considers microfibers "yet another type of plastic". Microfibers, however, are much less studied although probably more abundant and damaging than microplastics. Microfibers are small (<5microns) pieces of synthetic materials such as nylon, polyester, and spandex. Clearly, these microfibers originate from clothing material, and thus are generated during the washing/drying process of our synthetic garments. It is acknowledged that our synthetic clothing shed microfibers, which are "small piece of plastics", with high surface to volume ratio, and molecular charges, making them reactive, and with the ability to interact with biological systems, but also to adsorb other contaminants. In other words, microfibers are not just a different kind of microplastics.

Microfibers are clearly "emerging" contaminants… or at least what is emerging is the knowledge of their pervasive occurrence. Although generated for decades by our regular habits (washing clothes), much of the research on microfibers is fairly recent, and limited. Because they are so small and mainly not monitored, everything is still to learn about microfibers. The dynamic in's and out's of microfibers, where they are generated, where they end up, and through which avenues (atmospheric input, river outflows) are still unknown… however, it is known that microfibers are found literally everywhere. We breath them, we drink them (a recent study refers to >90% of drinking water in the US, bottled or from water fountain, contains microfibers), and we might also eat them! The bottom line is that microfibers are all around us, in all media form, and are therefore an integrative part of our ecosystem. Although their impact on human biology needs to be tackled, a first series of steps would also to be able to characterize their distribution in the environment (open vs coastal ocean, atmosphere, rivers) and the mechanisms by which these microfibers distribute in our ecosystems. The Deheyn lab is fully involved in all these particular aspects and excited to share updates about this emerging concern as we gather more data in the future.

President's Corner

Chris Stransky, Wood E&I

It is with great honor to have this opportunity to once again fill this role and coveted spot in our Chapter newsletter for the next year. I was fortunate to start my involvement with SoCal SETAC by attending the very first annual meeting in 1993 soon after the Chapter was launched by Barry Snyder and Dr. Ann dePeyster. Needless to say there have been many changes since those early days before smart phones and Power Point. The one thing that hasn't changed however is what I see as the greatest benefit of involvement with the Chapter – a real sense of community no matter where you work or what you study, and the ability to be engaged with and surrounded by so many smart, ambitious, and enthusiastic individuals.

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FEATURE ARTICLE (continued)

Deheyn lab recently led trips to the Artic to study microfibers

The Deheyn lab is involved in the mapping of microfibers over large geographical areas, in the toxicity evaluation of microfibers, and on their degradation aspects, while also working with material scientists and industry to develop new materials that would not shed from our clothing and/or degrade fully in the environment.

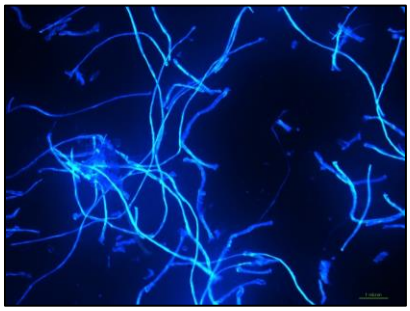
As for the geographical mapping, we have and still are currently collecting seawater samples from all along the East and West coasts, from across the Pacific, as well as from the Arctic and North Pole. This widespread collecting effort involves multiple collaborators, from NGOs, independent foundations, and other individuals that are highly motivated to make a difference. For the toxicity aspect, we are performing lab experiments testing the basics aspects, such as accumulation rates and distribution in tissues, if accumulation inside the cell is indeed the case As for solutions related to microfibers, we are currently working with one of the main fiber-making companies for clothing fabric and testing alternative chemical formulations that will result in full fiber degradation over time.

This effort has no geographical boundaries, no ecosystem boundaries, no professional expertise boundaries, making it a large global effort. As it should be.

Stay tuned for data to come soon…

Dimitri Deheyn

Deheyn lab member samples water in the Artic to search for the presence of microfibers



Microfibers found in Artic water samples

Andy Gray, UC Riverside, Shares why *Sediment Dynamics Rule!* at the Fall 2018 Dinner Meeting in Fullerton

Erika Holland

We had a great turn out for our fall 2018 dinner meeting at the Old Spaghetti Factory as we met and talked over a nice plate of pasta. After dinner Andy Gray, Assistant Professor at UC Riverside, spoke to the group about his work and interests in sedimentation in large scale watersheds. He walked the group through the idea that sediment really is the master variable in a watershed. Where fine sediment (≤ 63 µm) makes up about 90% of sediment

Gray delivers an overview of sediment dynamics

movement and this is an incredible amount of surface area available for pollutant transport. This is a major area of his research, where his group aims to understand watershed systems well enough to say something about sediment sources. Yet a challenge is that there is currently a lack of data for movement over long time periods, which is necessary to really address watershed sedimentation. This talk was a timely conversation for SoCal SETAC as, Gray pointed out, sediment can act as a source and sink for pollutants in a watershed and in its own right can be considered a water quality issue. Thanks for the informative talk Andy and we look forward to hearing more about your work in Southern California's unique watersheds.

Gray and several SoCal members have a lively chat after Gray's talk

PRESIDENT'S CORNER (continued)

Indeed this led to the real start and growth of my career in the field. The connections cascaded from there resulting in so many treasured long term and new relationships. When approached by Keith to support him as VP I was thrilled at the request, but I will admit a little hesitation given the big responsibility. However, this hesitation quickly evaporated given my knowledge of the awesome members on the Board for support and the tremendous momentum, organization, and overall progression the Chapter has. Misty Mercier thankfully promised to remain our beloved Secretary and she now has the support from Co-Secretary Alvina Mehinto who both keep the entire Chapter rolling and organized. Violet Renick has also thankfully agreed to stay on to lead the important behind the scenes role as webmaster – check it out, she has done just an amazing job! Denise Li has taken on a brand new much needed role as Outreach Coordinator for the Chapter, and Joe Freas remains in charge of the books, keeping track of all these important details as our Treasurer. Along with the rest of the Board Members, this made the decision easy for me. Thank you Keith and the rest of the Board at that time for your vote of confidence. I am so excited to be back in this seat with such great support from so many friends and colleagues.

My very first task was identifying a VP for my critical right-hand support and our next President. Over lunch at our annual meeting at Loyola Marymount without hesitation Dr. Erika Holland was unanimously nominated by our Officers and Board and agreed to take it on despite her full plate of teaching, research, and mentorship. Being surrounded with no place to hide might have added a little pressure too, ha, but I don't think so knowing, like myself, the great support she will have. I am so thankful she agreed as her energy and enthusiasm will be a huge gift to the Chapter as we continue the successful path already in place. She is now responsible for our quarterly newsletter so please don't hesitate sending her your ideas and photos to share. On our Board continuing from last year we also have Wendy Hovel, Scott Coffin, and Erika Holland (as VP now of course), in addition to our newest board members elected in June: Nick Hayman, Jun Zhu, Amro Hamdoun, Mary Woo, Karin Wisenbaker Nicol Parker, and Mary Woo. Dimitri Deheyn, a prior Board Member, was also recently nominated as a member at large to continue supporting our Chapter.

We have an exciting line up for the year starting with our Dinner Meeting that was just held on October 10th in Fullerton with guest speaker Dr. Andrew Gray discussing watershed-scale management, sediment dynamics, and their roles in managing aquatic system health (*Sediment Dynamics Rule!*). Check out a recap and a few pictures in this newsletter (page 2). Next up, led by Mary Woo, we will have a Chapter-sponsored educational booth at an annual Science Carnival hosted by CSU Channel Island Nov. 3rd at Rio Vista Middle School in Oxnard. Come on by to volunteer or just say hi. Immediately after is the National SETAC Meeting in Sacramento this year (Nov. 4-8) where we look forward to having great representation from southern California and seeing you there. Please see the list of presentations from SoCal provided by Misty in this newsletter. Also, please be sure to come join us for a Chapter get together on Tuesday evening at the Empress Tavern on Tuesday the 6th from 7:00 PM to whenever at your hearts content.

We are also now planning for our annual meeting at the world renowned and beautiful Scripps Institution of Oceanography. Please save the date of May 6-7, 2019. Keith is leading this effort and will be providing more updates as we go.

Finally, I am so proud of all of the students that submitted proposals for our student grant awards, what amazing research and proposals by all! A huge congratulations to our graduate winner Nikki Andrzejczyk, and our three undergraduate winners Erica Choe, Joseph Porges and Martin Yau (see page 7).

With so much activity we have plenty of opportunities to be involved so don't be shy. Feel free to contact any of the Officers or Board Members anytime with your thoughts and questions. We look forward to hearing from you and seeing you in person at our many events

Join Us at the CSU Channel Island

SCIENCE FAIR

Nov. 3rd 2018

Led by Mary Woo, Faculty in the Environmental Sciences Department of CSUCI

Held at Rio Vista Middle School in Oxnard

MEET THE BOARD

Keith Maruya

Southern California Coastal Water Research Project Authority (SCCWRP)

Keith with a dorado while fishing in San Diego

Past-President Dr. Keith Maruya became a SETAC member as grad student at UC Berkeley in the early 1990s. He has been to every North America meeting since, except for 2 or 3. As much for the science, Keith values SETAC for the relationships he has developed over the years. In order to give back after nearly 40-years on the job, he became the SoCal chapter V.P. in 2016, and has since really enjoyed his time on the Board and working with the community.

Before coming to SCCWRP in 2005, Keith worked for 10 years at the Skidaway Institute of Oceanography in Savannah, GA. Arriving as a postdoc, he accepted a faculty position in 1997 and was promoted to Associate Professor a few years later. At Skidaway, Keith honed his skills as an environmental chemist investigating some of the most contaminated Superfund sites around. He also developed a love of salt marsh ecosystems during his time in the "low country" of coastal GA, SC and FL (except for the sand gnats and some other regional undesirables).

Just the facts

Current Job: Principal Scientist, SCCWRP

Education: B.S. Chemical Engineering, USC (1983); M.S. Civil Engineering, USC (1986); Ph.D. Environmental Engineering Science, UC Berkeley (1995)

Past Jobs: Skidaway Institute of Oceanography (1995-2005); TRW (1983-90); Hughes Aircraft Co. (1979-83)

Residence: Carson

Family: Grant (son); Nikki (daughter)

Hobbies: fishing, hiking, traveling, guitar, food & drink

At SCCWRP, Keith directs research on the impacts of chemical contaminants on aquatic systems. He leads an initiative to modernize water quality monitoring and assessment by incorporating bioanalytical tools and non-targeted mass spectrometry to address new and unknown contaminants, i.e. CECs. He is quick to point out his philosophy that every member's contribution is equally important to the overall success of the Department.

For leisure, Keith looks forward to spending time on the water, fishing or messing with his boat, a 1995 Aquasport Explorer. He loves chasing SoCal gamefish on the beaches, in the bays, and offshore, but also saves his pennies to travel the globe for new fishing adventures.

Keith is also an avid sports fan, with hockey (Go Kings Go!), basketball and soccer getting most of his attention. His nephew, Taylor Maruya, is co-Captain of the Army men's hockey team for the 2018-19 season. As a USC alum, he still gets misty eyed hearing *Conquest* after a victory.

As a 3rd generation Japanese-American, Keith is proud to be a native southern Californian, and is keenly aware of how history shapes his outlook on life. As WWII internees, his parents and grandparents inspired and instilled a sense of perseverance that Keith hopes to pass onto his kids: Grant, a student at UC Santa Cruz and electronics music composer; and Nikki, a senior at the University of Puget Sound.

MEET THE BOARD - Keith Maruya (continued)

When his time at SCCWRP is over, Keith plans to consult part-time (all jobs considered!), volunteer as a docent, travel, get his boat running (finally), and of course, wet a line.

Keith with Grant and Nikki at Crater Lake, 2018.

WELCOME NEW SETAC BOARD MEMBERS

Amro Hamdoun, UCSD SIO

Nicholas Hayman, SPAWAR

Nicol Parker, UCSB

Karin Wisenbaker, Aquatic Bioassay and Consulting Laboratories

Mary Woo, CSUCI

Jun Zhu, LARWQCB

Save the date for the SoCal SETAC Annual Meeting at Scripps Seaside Forum. May 6-7th 2019.

STUDENT CORNER

Meet the Board, Scott Coffin

Scott has been a student board member since July 2017. He will be graduating with his Ph.D. this winter. Congratulations Scott!

Having been raised in Wyoming, I often dreamt of pristine beaches with blue, sparkling waves and white sand, like in movies. Throughout my youth, these idyllic visions painted my father's stories of his life as a sailor on the ocean. I too sought to explore this marine utopia. Upon graduating from the University of Wyoming, I excitedly found work as an international trip leader where I learned to surf, SCUBA dive and sea-kayak in coastal regions including Costa Rica, Peru, and Belize. Hungry to continue tropical life, I moved to Puerto Rico to study Spanish at the university and surf daily.

While in Latin America, I noticed a startling amount of plastic litter on beaches and in the ocean. I soon learned that this was not an isolated problem, as social media started to cover the plastic marine debris problem and the growing "Great Pacific Garbage Patch." Devastated by my shattered conceptions of the health of the World's oceans, I felt compelled to make a difference. I joined Dr. Daniel Schlenk's eco-toxicology lab at the University of California, Riverside in Fall, 2014. My work focuses on the endocrine-disrupting effects of plastic-associated compounds on marine life that are exposed to plastic either through dermal exposure to leachates or through ingestion.

Like many nascent scientific investigations, there are many misconceptions within the microplastics field. Learning that the plastic problem is not simply isolated to the "Texas-sized islands of trash," I focused my research on areas closer to the source, such as rivers and estuaries. Another misconception is that most of the marine plastic is made of large pieces that could easily be "cleaned up," when in reality, the vast majority are less than 5mm in width, making their removal from the ocean difficult without damaging marine life. Another myth is that the plastic problem in the U.S. is caused chiefly by negligent individuals and could be easily fixed if we all just recycle our waste. Since China banned waste imports in 2018, recycling rates in the United States have decreased from the already low rate of about 9%. As the country with the largest generation of waste, handling our waste in a sustainable manner is imperative. A successful method to "close the loop" incentivizes plastic manufacturers to be responsible for their product's end-life, a concept known as "Extended Producer Responsibility" (EPR). Implementation of EPR laws and bans on single-use plastic are real solutions to this growing problem.

Based on my expertise, I was responsible for inviting speakers for the session on microplastics at the 2018 Annual Meeting. It was inspiring to meet such talented and passionate scientists working to dispel myths and shine light on this complex, growing field. I also admired the above and beyond efforts given by the students at Loyola Marymount University to make the conference go smoothly.

I plan to graduate with my Ph.D. in December 2018 and am increasingly passionate about my work to help the environment. I'm honored to have served as a Student Representative of the SoCal SETAC chapter and am so inspired by the engagement and dedication of this caring community of scientists.

SoCal SETAC Student Research Awards

Erika Holland

We received another round of impressive research proposals for the annual 2018 SoCal SETAC Student Research Grant application for both undergraduates and graduate students. After careful consideration the review panel of three environmental toxicologists and chemists selected the work of Nikki Andrzejczyk, UC Riverside, titled *Development of a noninvasive biomarker of exposure and effect of PAHs through whole transcriptome sequencing of dermal mucus rom diluted bitumen-exposed lake trout and fathead minnow* for graduate student funding.

Nikki conducting research at the experimental Lakes in Canada

The panel also reviewed a strong group of proposals from undergraduate students involved in toxicological research in Southern California. After careful deliberation they decided to award three first place awards (in alphabetical order) to Erica Choe, Loyola Marymount, for her work on the *Analysis of PAHs Present in LMU's Artificial Turf Field,* Joseph Porges, CSU Long Beach, for his work on *Polyaromatic hydrocarbons and their oxygenated metabolites target ion channels in zebrafish (Danio rerio)* and Martin Yau, CSU Long Beach, for his work *Investigating Organobisthiophosphates as Cholinesterase Inhibitors: Balancing Application as Potential Therapeutics While Minimizing Pharmaceutical Pollution.*

Erica Choe, Joseph Porges and Martin Yau

The group of reviewers and the entire SoCal SETAC organization are excited to see what local students are accomplishing. On behalf of the SoCal community I would like to thank each of the students that submitted their proposals for consideration. We look forward to hearing from you as you move forward with your research.

Stay Tuned for more information about our awardees in the next newsletter!

Nikki Andrzejczyk (Left) and Joseph Porges (Right) celebrate their research awards with the SoCal SETAC community at the Fullerton Old Spaghetti Factory fall dinner meeting.

CALENDAR OF EVENTS

November

November 4-8
SETAC North America 39th Annual Meeting | ***Sacramento, CA***

February, 2019

February 4-6
Esri Water GIS Conference | *Nashville, TN*

February 5-10
8th Young Environmental Scientist (YES) Meeting | *Ghent, BE*

February 12-14
45th Annual P3S Conference | Riverside, CA

March, 2019

March 17-19
2019 WateReuse California Annual Conference | *Garden Grove, CA*

March 31-April 4
ACS Annual Meeting | *Orlando, FL*

April, 2019

April 9-12
CWEA Annual Conference 2019 | *Palm Springs, CA*

May, 2019

May 3
Southern California Academy of Sciences 2019 Annual Meeting | *Northridge, CA*

May 19-22
20th International Symposium on Pollutant Responses in Marine Organisms | Charleston, SC

June, 2019

June 26-29
Association for Environmental Studies and Sciences Conference 2018 | *Orlando, FL*

SETAC North America 39th Annual Meeting List of SoCal SETAC Presentations

***student presenters**

Monday November 5, 2018			**POSTER**		
Session Time	Room	Presenter	Affiliation	ID #	Presentation Title
Poster Display 8:00am–6:30pm Poster Social 5:00pm–6:30 pm	*Advances in the Toxicological Assessment of PAHs*				
	Exhibit Hall	Victoria McGruer*	University of California Riverside	MP187	Exploring Mechanisms of Cardiotoxicity in Crude Oil Exposed Fish
	Advances in Passive Sampling Methods: Research to Application				
	Exhibit Hall	Jason Conder	GeoSyntec Consultants	MP227	Ex Situ Chemical Availability Recontamination Grab Observation (ESCARGO) For Rapid Assessment of Sediment Amendments
	Advances in Sediment Quality Assessment for Regulation and Management				
	Exhibit Hall	Peter Arth	Nautilus Environmental	MP245	Site-Specific Sediment Criteria: A framework for using bioassays as a tool for risk assessments
PLATFORM					
Time	Room	Presenter	Affiliation	ID #	Presentation Title
8:00 -9:15 AM	*Advances in Sediment Quality Assessment for Regulation and Management Session moderated by Steven Bay, Wesley Mehler, Tamara Sorell, Lisa Nowell, Jay Gan, Jing You*				
8:20 AM	203	Jay Gan	University of California Riverside	10	Effect of Aging on Bioavailability of Legacy Contaminants in Sediment
	Water: Bringing Science and Engineering Together to Address Impacts of Climate Change on Water Supply and Water Quality				
3:20 PM	Hall D	Jay Gan	University of California Riverside	166	A Tiered Framework to Evaluating Risks of Emerging Contaminants from Water Reuse in Agroecosystems
Tuesday November 6, 2018			**POSTER**		
Session Time	Room	Presenter	Affiliation	ID #	Presentation Title
Poster Display 8:00am–6:30pm *Poster Social 5:00pm–6:30 pm*	*Incorporating Effect-Based Molecular Assays in Environmental Monitoring and Risk Assessment moderated by Alvine Mehinto, Nancy Denslow, Christopher Martyniuk*				
	Exhibit Hall	Gary Harraka*	University of California Riverside	*TP126*	Evaluating the Effectiveness of Advanced Oxidation Processes at Reducing AhR, ER, and p53 activity via In vitro Cell Bioassays
		Nicolette Schuko*	California State University of Long Beach	TP127	Pollutant-Induced Changes in Ca2+ Channels Alter DREAM Mediated Gene Transcription
	Aquatic Toxicology, Ecology and Stress				
	Exhibit Hall	Marian de Ola-Barile*	California State University of Long Beach	TP213	A Look at Bacteria, Metals, and Polycyclic Aromatic Hydrocarbons in Reach 3 of the Los Angeles River
		Varenka Lorenzi	California State University of Long Beach	227	Cigarette butt litter: A threat hiding in marine sediment
		J. Zhang	University of California Riverside	244	Long-term ecological effects on infauna communities of wastewater effluent from wastewater treatment processes in Southern California
		Nikki Andrzejczyk*	University of California Riverside	250	Quantifying gemfibrozil disinfection byproducts in southern California sediments and using transcriptomics to assess biological effects

	Identifying Unknown Causes of Toxicity: Proven and Innovative Methods				
	Exhibit Hall	Darrin Greenstein	Southern California Coastal Water Res.	TP112	Optimization of Sediment Toxicity Identification Evaluation Study Designs to Account for Spatial and Temporal Variability
	Exhibit Hall	Steven Bay	Southern California Coastal Water Res.	TP117	Variability in Sediment Toxicity and TIE Response: An Underappreciated Contributor to Unknown Toxicity in California Bays
PLATFORM					
Session Time	Room	Presenter	Affiliation	ID #	Presentation Title
10:00-11:15 AM	*Human Health and Ecological Risk Assessment of Poly and Perfluoroalkyl Substances (PFASs) Session moderated by Jason Conder, Juliane Brown, Carrie McDonough, Yvette Lowney*				
	Integrating Big Data Into the Bigger Picture Session Moderated by Kristin Bridges, Erin Ussery, Justin Greer				
2:00 PM	Hall E	Justin Greer	University of California Riverside	313	Multi-level effects of chemical oil dispersant and CEWAF exposures in developing mahi-mahi embryos
Wednesday November 7, 2018		**POSTER**			
Session Time	Room	Presenter	Affiliation	ID #	Presentation Title
Poster Display 8:00am–6:30pm Poster Social 5:00pm–6:30 pm	*Unique Laboratory and Field-Based Methods to Address Complex Environmental Issues*				
	Exhibit Hall	Kara Wiggin*	California State University of Long Beach	WP062	Identification of Microplastics Sized 3-500µm in Highly Urbanized Aquatic Environments
	Assessing Contaminant Effects on Early Life Stages of Marine Organisms				
	Exhibit Hall	Kady Lyons	California State University of Long Beach	WP134	Physiological consequences of environmental contamination in an elasmobranch with matrotrophic histotrophy, the Round Stingray
PLATFORM					
Session Time	Room	Presenter	Affiliation	ID #	Presentation Title
	Environment Exposure to Microplastics and Affiliated Toxic Chemicals				
10:40 AM	Hall E	Scott Coffin*	University of California Riverside	436	Analytical and in vitro Estimates of Estrogenicity from Simulated Digests of Plastic Items
	Mico and Nanoplastic Methods for Environmental Media				
1:00 PM	Hall E	Win Cowger*	University of California Riverside	517	Are Microplastic Measurements Comparable and Do They Reflect Reality?
	Screening and Prioritization Methods for Characterizing Risk of Contaminants in the Environment				
1:20 PM	313	Gunther Rosen	SPAWAR System Center Pacific	487	In situ evaluation of using clean dredged material as an alternative to clean sand for enhanced monitored natural recovery

	Developments in Water Quality Monitoring and Analytical Methods in Support of Water Reuse – Part 2				
1:20 PM	314	Echelle Burns*	California State University of Long Beach	495	Not My Fish: Using acoustic telemetry toexplain contaminant variation in sentinel speciesalong the OCSD outfall
Thursday November 8th, 2018			**Poster**		
Session Time	Room	Presenter	Affiliation	ID #	Presentation Title
Poster Display 8:00am–6:30pm	*Non-Conventional Exposure Routes and Transport Media of Consumer Product Chemicals to Improve Environmental Policy*				
	Exhibit Hall	Bowen Du	Southern California Coastal Water Research Project	RP123	Non-Target HRMS for Tracking Sources of Human Contamination to Stormwater Conveyances
Thursday November 8th, 2018			**PLATFORM**		
Session Time	Room	Presenter	Affiliation	ID #	Presentation Title
1:00-4:00	*Assessment and Monitoring of Risks to Aquatic Environments from Short-Term (Episodic) Contaminant Exposures Moderated by Stuart Simpson, Jerome Diamond and Molly Colvin*				
3:20 PM	CC306	Molly Colvin	SPAWAR Systems Center Pacific	642	Preliminary Evaluation of Improved Toxicity Testing Methods for Episodic Discharges
3:40 PM	CC306	Chris Stransky	Wood E&I	643	A Multiple Line of Evidence Approach to Assess Stormwater Impacts from the Scripps Institution of Oceanography to Receiving Waters in San Diego, CA
4:00 PM	CC306	Nick Hayman	SPAWAR Systems Center Pacific	644	Using integrative passive sampling devices to obtain more meaningful and cost-effective data on metal-associated impacts from stormwater runoff

SoCal Social at the 39th National SETAC Meeting

Join us at Empress Tavern
Located at 1013 K Street Sacramento
Tuesday November 6th at 7PM

EMPRESS
TAVERN

SOCAL SETAC OFFICERS AND BOARD MEMBERS

SoCal SETAC 2018–2019 Officers

Past President	**Keith Maruya,** Southern California Coastal Water Research Project keithm@sccwrp.org
President	**Chris Stransky,** Wood Environment & Infrastructure chris.stransky@woodplc.com
Vice President	**Erika Holland,** California State University, Long Beach erika.holland@csulb.edu
Treasurer	**Joe Freas,** Aquatic Bioassay and Consulting Laboratories Inc. Joe@aquaticbioassay.com
Co-Secretary	**Misty Mercier,** Physis Environmental Laboratories, Inc. mistymercier@physislabs.com
Co-Secretary	**Alvina Mehinto,** Southern California Coastal Water Research Project alvinam@sccwrp.org
Webmaster	**Violet Renick,** Orange County Sanitation District VRenick@OCSD.COM
Outreach Coordinator	**Denise Li,** City of Los Angeles denise.li@lacity.org

SoCal SETAC 2018–2020 Board Members

Board Member (2017–2019) Private	**Wendy Rose Hovel,** Anchor QEA whovel@anchorqea.com
Board Member (2017–2019) Student	**Scott Coffin,** University of California, Riverside scoff003@ucr.edu
Board Member (2018–2020) Public	**Jun Zhu,** Los Angeles Regional Water Board jun.zhu@waterboards.ca.gov
Board Member (2018–2020) Academic	**Amro Hamdoun,** University of California, San Diego - Scripps Institution of Oceanography ahamdoun@ucsd.edu
Board Member (2018–2020) Private	**Karin Wisenbaker,** Aquatic Bioassay and Consulting Laboratories Inc. karin@aquaticbioassay.com
Board Member (2018–2020) Student	**Nicol Parker,** University of California Santa Barbara nparker@bren.ucsb.edu
Board Member (2018–2020) Public	**Nicholas Hayman,** SPAWAR Systems Center Pacific (SSC Pacific) nicholas.hayman@spawar.navy.mil
Board Member (2018–2020) Academic	**Mary Woo,** California State University Channel Islands mary.woo@csuci.edu