



The Orange County Section of the American Chemical Society

**October Dinner Meeting
Thursday, October 18th, 2018**

The Doubletree Club Hotel
7 Hutton Centre Drive, Santa Ana
Phone: 714-751-2400

Social: 5:30PM
Dinner: 6:00PM
Presentation: 7:20PM

Chemistry for National Defense

**Mark Hanning-Lee
Consultant, Design West Technologies, Tustin**

Reservations

Please email OCACS@sbcglobal.net ASAP but no later than **12 noon on Tuesday, October 16, 2018**. Indicate if you will be attending the dinner and program or the program only, and list the names of all attendees. Dinner cost is \$30 for members and member's significant others; \$35 for non-members or those without reservations. Cash or check at the door, or mail a check in advance to OCACS, P.O. Box 211, Placentia CA 90871. **The first five students who register for a meeting will receive a \$10 discount on their dinner.**

There is no charge for attending the program only. However, voluntary donations will be accepted to help defray meeting costs.

Note: OCACS pays the hotel on the basis of the number of dinner reservations made. Your RSVP for dinner is a commitment to pay for dinner. Space may be limited.

Directions

Take the Costa Mesa Freeway (55), exit at MacArthur Blvd. and go west (towards South Coast Plaza). Turn left on to MacArthur Place. The DoubleTree Club Hotel is straight ahead on the left. (Do not turn right at MacArthur Place to the DoubleTree Hotel, which is easily mistaken for the DoubleTree Club Hotel.) Park in front of the hotel, or follow the signs. If the parking lot is full, ask the valet staff where to park.

Abstract

Chemistry is used to defend the nation by protecting civilians and warfighters from toxic materials. The talk will present methods and results from chemical and biological defense (CBD). The speaker has spent about ten years in industry developing instruments to detect toxic materials and another ten years testing CBD equipment at a national proving ground. Detection techniques include mass spectrometry and carbon nanotube sensors. Military CBD uses military detectors, protective components / suits / shelters, and decontamination. The toxic materials of most interest include toxic industrial chemicals, chemical warfare agents, and some biological warfare agents. Customers include the US Department of Defense, Department of Homeland Security, water treatment agencies, and first responders. Results from earlier physical chemistry research will also be summarized.

Biography

Dr. Mark Hanning-Lee has over twenty-five years' experience in testing, research, detection of hazardous materials at very low levels, and software development. Mark earned a BA from the University of Cambridge, UK, in Natural Sciences. He graduated with a PhD in gas kinetics from the University of Oxford, UK, performing kinetic and thermodynamic measurements and modeling.

Postdoctoral experience includes research on materials science in the Jet Propulsion Laboratory and stratospheric chemistry research at the Aerospace Corporation. With his advisor, he co-founded Syagen Technology to deploy mass spectrometry and photoionization for homeland security and laboratory use. Mark holds three patents and developed instrument software. He later supported the CBMS II and other trace detectors at Hamilton Sundstrand.

From 2006 through 2016, Mark served Jacobs Dugway Team as a Project Scientist III at Dugway Proving Ground, Utah. For the West Desert Test Center, he provided technical leadership for sixteen tests to support chemical and biological defense. Results were modeled, and procedures were systematically documented. He developed a procedure to choose compounds for testing needs. Mark wrote six Test Operations Procedures to guide Army testing; each TOP is on the NIST Web site. He contributed to preparing Dugway Proving Ground for ISO/IEC 17025 accreditation. Mark has written or coauthored over 100 documents.

Since Dugway, Mark has supported detector testing and filter manufacturing at Design West Technologies and reviewed SBIR proposals for EPA. He has supported the California Science and Engineering Fair and other science fairs.