



# SCCAVS Newsletter

September 2010

The Science & Technology Society

## Special points of interest:

- Science Educator's Workshop Award Recipient Chosen for 2010
- FIELD TRIP: Mount Wilson Observatory
- Solar Power Technology Speaker/Dinner at UCI October 6, 2010
- Elmer Carvey Scholarship Winner Announced
- Innovations in Trace Chemical Sensing at Syagen

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## Speaker/Dinner at UCI Center for Solar Energy October 6th

### James Garner

Photovoltaic solar power has become one of the fastest growing industries. Costs continue to fall and are beginning to rival those of conventional power sources. At the same time, global economic and environmental trends are making fossil fuels increasingly problematic. This is driving a lot of innovation in science and technology – particularly in AVS fields related to surface chemistry and vacuum processes.

During her presentation, Dr. Lori Greene will survey the various photovoltaic cell types, production processes, and their

cost/performance challenges. She will also highlight the most promising new science and technologies for meeting these challenges. Special focus will be given to the ongoing research activities at UC Irvine.

This event includes a short tour of the UCI Center for Solar Energy laboratories as well as the university's 1 MW rooftop photovoltaic installation. For more information on the Center for Solar Energy, please visit: <http://cfse.ps.uci.edu/>

**OUR HOST/SPEAKER**  
Dr. Greene is the Director of Research Development and

Outreach for the UC Irvine Center for Solar Energy. She received her Ph.D. in Materials Chemistry from UC Berkeley; her dissertation research focused on using nanomaterials for next-generation solar cells. Her seminal paper on this subject was published in the premier journal "Nature Materials" and has become one of its most cited. Prior to working at UC Irvine, she worked at the National Renewable Energy Laboratory (NREL) in Golden, Colorado, where she gained a broad knowledge of the technology and opportunities of photovoltaics.

*Email announcement to follow.*

## Elmer Carvey Scholarship Recipient Announced

### Jeff Lince

We are pleased to announce that our Elmer Carvey Scholarship winner for 2010 is Robert Sanderson, a Junior at UC Riverside. Besides demonstrating excellent scholarship, he has worked since his Freshman year doing high-level research in surface science with Prof. Jory Yarmoff in the Department of Physics & Astronomy. He has helped to develop Low Energy Electron Enhanced Etching (LE4) of silicon surfaces, which is a promising technique for dry processing of semiconductor materials in which electrons are used in place of the ions present in most plasma reactors. Sanderson designed and constructed a complex vacuum system for LE4. In addition, he is working on a project involving the use of an ultrahigh vacuum system to pro-

duce nanomaterials by sputtering a thin metal film with argon ions. His ultimate goal is to obtain a Ph.D. in Physics, concentrating in Surface Science. In addition to his studies and research, he has been involved in a myriad of extramural activities, including peer mentoring in the Honors program and playing clarinet in the UCR Highlander Band.



**This year's Elmer Carvey Scholarship winner, Robert Sanderson of UCR**

The Elmer Carvey Scholarship is given out once per year to a student at a public four-year university in California (i.e. CSU or UC) who is planning a career in a vacuum-related technology, including surface and thin film science, nanotechnology, and the development of new materials (see <http://sccavs.org/about.htm>). The award is \$1500, and is applied toward tuition.

Thank you to our sponsors:

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## Support Your Local Chapter

Ad Sponsorship starts at just \$75 per quarter for a business card sized advertisement, and a discount rate of \$250 for the entire year (4 issues) is available.

Larger format advertisements now accepted. For pricing on 1/4 page and 1/2 page ads please contact Corinne Freeman with questions. Our next issue will go out in December 2010.

[Corinne@sccavs.org](mailto:Corinne@sccavs.org)



## 21st Annual Science Educator's Workshop Winner Announced for 2010

Corinne Freeman

Congratulations to Ms. Melanie Fine of Coachella Valley Unified School District for being selected as this year's Southern California educator to attend the annual Science Educator's Workshop at AVS 57th National Symposium and Exhibition.

Ms. Fine teaches Chemistry, AP Chemistry, and Physics in grades 10-12 at Coachella Valley High School in Thermal, CA. Receiving her BA in Chemistry from Cornell University and continuing her education at Chapman University, she received her secondary single-subject teaching credential in 2009. Her teaching background spans more than 2 decades and 2 coasts, teaching at LA Unified, then in NYC, then back to the West Coast at the Desert Sands Unified School District. Ms. Fine is an AMGEN fellow and NSTA 2009-2010 distinguished educator. We are lucky to have her represent Southern California at this year's SEW.



The 21st Annual Science Educator's Workshop will be held in Albuquerque, New Mexico during the AVS 57th National Symposium on October 18th and 19th, 2010.

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Upcoming Events:

**Solar Power  
International 2010**  
October 12-14  
Los Angeles, CA

[http://  
www.solarpowerinternational.com/sepa2010/  
public/enter.aspx](http://www.solarpowerinternational.com/sepa2010/public/enter.aspx)

**AVS 57th Interna-  
tional Symposium &  
Exhibition**  
October 17-22  
Albuquerque, NM

[http://www2.avs.org/  
symposium/](http://www2.avs.org/symposium/)



*Local Chapter Events*

## Mount Wilson Observatory



Founded in 1904 by George Ellery Hale

### **Mt. Wilson Observatory Field Trip Planned for October 30th**

*Larry Oberlander*

By popular request, we are repeating a field trip to Mount Wilson Observatory. This trip will be even better than last because Mt. Wilson has added new attractions. The tour will be held on October 30 at 11AM. It will be a general tour but also including some specifics of interest to vacuum users. The tour will include: Museum overview, a solar telescope, the 60 and 100 inch telescopes, the mirror coating room and an explanation of the vacuum coating process applied to observatory mirrors, and the purpose and operation of the CHARA array which is one of the recently opened observatories. After the tour you are welcome to enjoy your own picnic lunch at Skyline Park Pavilion or the recently opened Cosmic Café'. The cost is \$5 per person. Children under 12 are free. Bringing children under 6 is not recommended. Please look for additional details in an upcoming field trip Announcement also to be posted on our web site [www.sccavs.org](http://www.sccavs.org) or email [info@sccavs.org](mailto:info@sccavs.org) to get on our initial interest list.

## Innovation in Trace Chemical Sensing at Syagen

*James Garner*

Innovation and entrepreneurship in vacuum technology are alive and well at Syagen in the City of Tustin. Their president, Dr. Jack Syage, gave us a fascinating tour and presentation at the SCCAVS dinner meeting on June 9. His company has developed highly effective sensors for airport bomb detectors and organic mass spectrometers by extending vacuum technologies in ionization, quadrupole ion traps, and time-of-flight mass filters. These innovations have greatly improved sensitivity and selectivity.

In many ways, small businesses like Syagen are well suited for such innovation. However, Dr. Syage emphasized the necessity for strategic focus and risk management. A great new technology by itself is usually not enough to ensure market adoption. Sometimes SBIR money must actually be turned down in order to stay focused



**From Left to Right: James Garner, former SCCAVS Chair, Jack Syage, President of Syagen, and Larry Oberlander, current SCCAVS Chair, at the Innovations in Trace Chemical Sensing speaker dinner and plant tour July 9, 2010.**

on company priorities. Alliances and licensing with larger, more established companies are important ways to get critical resources and market leverage.

During the current lean economic times, the SCCAVS is proud to sponsor such events

and promote the kind of innovation and entrepreneurship that continues to build our economy. Please send your comments and suggestions for future programs to:

[info@sccavs.com](mailto:info@sccavs.com)