



Science and Technology
of Materials, Interfaces, and Processing

Southern California Chapter

Holiday 2015

Quarterly Newsletter

Special points of interest:

- SCCAVS Equipment Exhibition and short course program announced for 2016
- Science Educators Workshop at AVS 52
- CalTech/JCAP Field Trip
- Open Invitation to Next Chapter Planning Meeting
- Pics from SCCAVS '15

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CalTech/JCAP Field Trip

By Jeff Lince

On Tuesday, November 10th, 2015 the SCCAVS sponsored a pizza dinner at CalTech's Joint Center for Artificial Photosynthesis (JCAP) followed by presentation and tour. JCAP's mission is to create the scientific foundation for a scalable technology that converts carbon dioxide, water, and sunlight into renewable transportation fuels.

Established by the U.S. Department of Energy in 2010 as an Energy Innovation Hub, JCAP is the nation's largest research program dedicated to the advancement of artificial solar-fuels generation science and technology. The program's first phase focused on solar H₂ generation, which was completed in September 2015. JCAP has begun a 5-year renewal phase with a new research focus on solar carbon dioxide reduction to fuels.

Led by the California Institute of Technology, JCAP has an integral partnership with the Lawrence Berkeley National Laboratory. Additionally, JCAP draws on the expertise and capabilities of key collaborators from the University of California campuses at Irvine (UCI) and San Diego (UCSD), and the SLAC National Accelerator Laboratory.

Our distinguished speakers were Dr. Xenia Amashukeli, Deputy Director, Dr. John

Gregoire, Research Thrust Coordinator, and Dr. Manuel Soriaga, Principal Investigator and Visiting Associate in Chemistry at the California Institute of Technology.

JCAP is developing processes that cost-effectively convert sunlight into burnable fuel. It is one of DOE's largest programs, with a renewal budget of \$75M for five years. JCAP has produced full-system hydrogen-generating solar-fuel prototypes that meet all of the requirements set out in its original 5-year goal.

The lectures described JCAP's achievements in materials-science and implementation technologies. We then had a personal tour guided by Dr.'s Gregoire and Soriaga to visit their laboratories and see the equipment that produced these remarkable results.

JCAP has invested in state-of-the-art instrumentation and the development of unique experimental capabilities. The researchers have access to various spectrometers, microscopy set-ups, photoelectrochemical screening and analysis systems, product separation and analysis instrumentation, surface characterization X-ray equipment, surface science experimentation, high-throughput synthesis and characterization pipeline, thin-film fabrication and characterization equipment, and prototype testing set-ups.

They demonstrated that this is indeed a potentially large application for surface, interfaces and thin films that should be of interest to everyone connected to the AVS and related technology communities.

For more information visit:
<http://solarfuelshub.org/about/>



Dr. John Gregoire of JCAP
More Pics on Page 3



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Science Educator's Workshop Held at AVS 62

By Corinne D'Ambrosio

Each year, AVS has conducted a two-day in-service workshop on low-pressure experiments and modeling for middle and high school science teachers from the United States and Canada since 1990. The SCCAVS sponsors a number of local teachers each year to attend the workshop from schools here in Southern California. The last workshop was held from October 19-20th at the San Jose Convention Center in San Jose, CA during the AVS 62nd International Symposium & Equipment Exhibition.

This past Fall the Southern California Chapter of the AVS chose two teachers to attend the SEW at San Jose. The first was Mariah Fontijn of Culver City High School. She teaches AP Chemistry and Chemistry Honors to grades 10-12. The second teacher chosen was Roger Wynn of Mountain Empire High School in Pine Valley. He teaches Earth Sciences and Chemistry to grades 9-12.

Roger described the AVS as a "great conference" and expressed his appreciation for the opportunity to learn about low pressure technology. Mariah said that she learned a great deal at the SEW and it inspired her to continue in STEM education. The teachers also had the opportunity to speak with exhibitors during a guided tour of the exhibit floor at AVS 62, and then took a field trip to tour Intel's headquarters nearby in Santa Clara (See pics below and on page 4)

If you know of a teacher in Southern California that would be a good candidate for next year's Science Educator's Workshop, please encourage them to apply online at <http://www.avs.org/Education-Outreach/Science-Educators-Workshop>

Mariah Fontijn of Culver City High School learning about vacuum pumping (Middle center)



Roger Wynn conducting a low pressure experiment at SEW (second from right)

SOUTHERN CALIFORNIA
CHAPTER OF THE AVS :
THE SCIENCE &
TECHNOLOGY OF
MATERIALS,
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We're on the web!
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Upcoming Events

NCCAVS 37th Annual
Equipment Exhibition
Holiday Inn
San Jose
February 24, 2016
11AM-7PM

www.nccavs.org



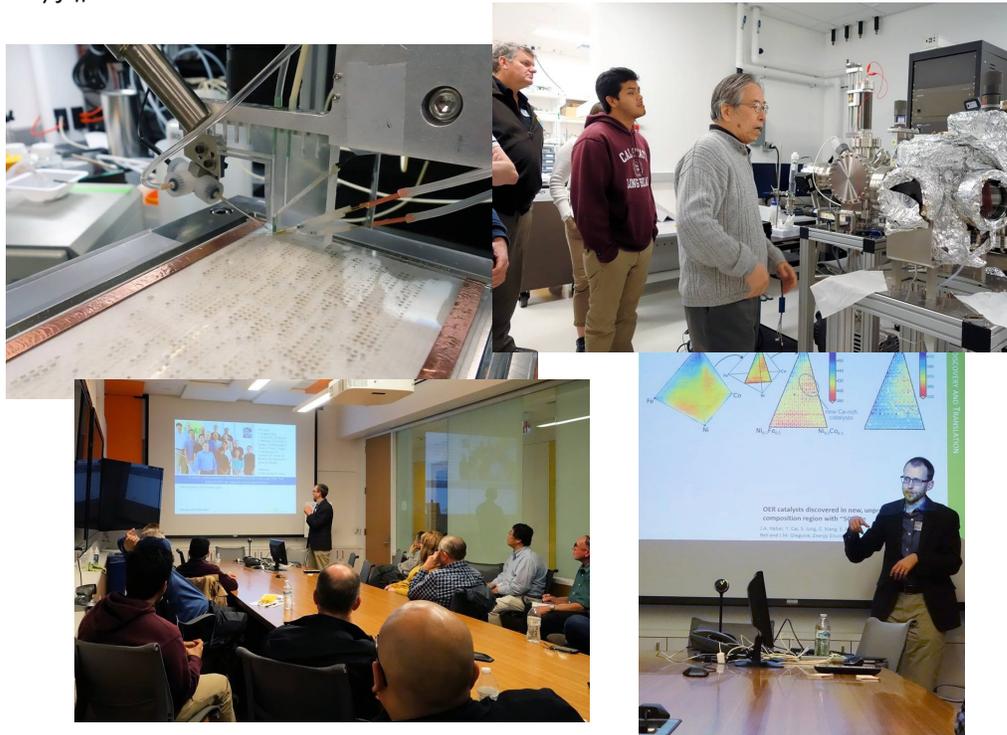
ICMCTF '16
Town & Country Hotel
San Diego, CA
April 25-29, 2016

[http://www2.avs.org/
conferences/icmctf/](http://www2.avs.org/conferences/icmctf/)

Chapter Activities

CalTech / JCAP Field Trip (Cont'd from page 1)

By Jeff Lince



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Science Educators Workshop (Cont'd from page 2)



SEW participants at AVS 62 in San Jose tour Intel to learn about vacuum technology's role in semiconductor chip manufacturing



Learn more about the Science Educator's Workshop by watching this video on YouTube:

<https://youtu.be/gLO8niCM0a4>



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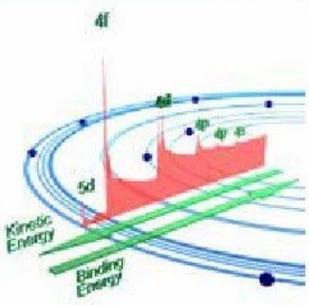


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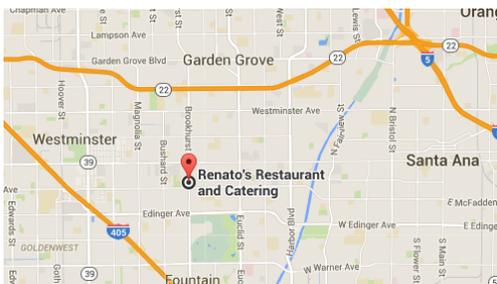
Chapter Activities

OPEN MEETING January 26, 2016

YOU'RE INVITED! The Southern California Chapter of the American Vacuum Society conducts monthly or bi-monthly meetings (depending on scheduling) in order to plan events of interest to the vacuum technology community. Our next meeting will be held at 6pm on Tuesday, January 26, 2016 at Renato's Italian Restaurant in Westminster, CA. This first meeting of the New Year is OPEN to both AVS members and non-members alike, in an effort to brainstorm and learn more about the community we serve. Planning committee members are from industry, academia, government, and equipment sales and marketing.

Attending our monthly executive board meeting provides an opportunity both to contribute to and make new connections with the Southern California technical community. Our discussions focus on developing activities such as speaker meetings, technical workshops, science fairs, newsletter, field trips and the annual symposium and equipment exhibition.

The Southern California Chapter of AVS (SCCAVS) is dedicated to serving the Southern California technical community through technical symposia, educational outreach, and other programs that provide topical information to members and non-members in our region. Our areas of interest include vacuum science and vacuum-related technologies, including surface and thin film science, nanotechnology, the understanding of materials properties, and the development of new materials. **RSVP REQUIRED to chair@sccavs.org by January 15, 2016.**



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SCCAVS 2015 Equipment Exhibition & Short Course Program Report

By Corinne D'Ambrosio

The SCCAVS 2015 Equipment Exhibition, Short Course Program, and Student Poster Session was held at the Holiday Inn Buena Park on Tuesday, September 29th (short courses from the 28th-30th). The Exhibition drew over 30 exhibitors, and hosted attendees from academia, industry, and national labs. LACO Technologies presented a free workshop on Helium Leak Detection, and three days of short courses covering Applied Vacuum Technology, Sputter Deposition, Partial Pressure Analysis, Vacuum System Design, and Atomic Layer Deposition were large draws for students from all over the Western United States. See page 7 for information on the 2016 program.



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**2015 Equipment Exhibition,
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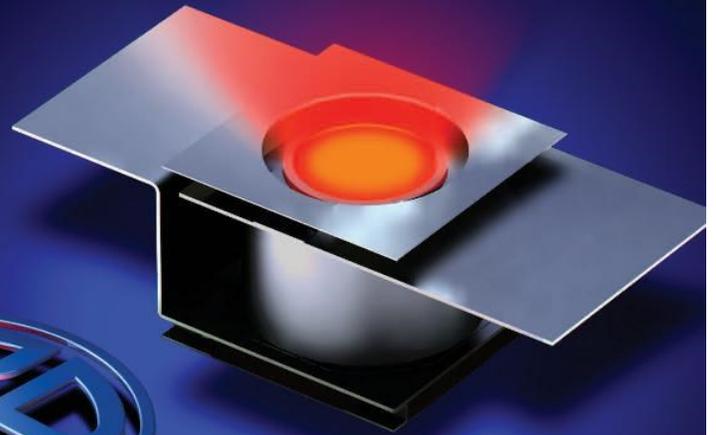
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**2016 SCCAVS Equipment Exhibition, Short Course Program,
and Student Poster Session—DATES ANNOUNCED**

The annual **SCCAVS Symposium** will once again be held at The Holiday Inn Hotel & Convention Center - Buena Park (7000 Beach Blvd., Buena Park, CA 90620), from **Monday, October 3rd – Wed October 5th, 2016.**

Monday, October 3—Wednesday, October 5, 2015

Short Course Program

8:00AM—5:00PM

Tuesday, October 4, 2015

Equipment Exhibition & Student Poster Session

12:00—6:00PM

EXHIBITORS!!! Booth Registration will begin in early 2016. Booth cost is \$525, and includes skirted table, 2 chairs, and lunch for up to two (2) booth staff. Additional sponsorship opportunities are available at the \$100 and \$500 levels.

Please email chair@sccavs.org if you would like to be on our booth registration early notification list.

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\$375-Quarter Page Ad (4 1/4" W x 5 1/2" H)

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Sun	Mon	Tue	Wed	Thu	Fri	Sat
	21	22	23	24	25 CHRISTMAS	26
27	28	29	30	31		 2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26 OPEN MEETING 	27	28	29	30



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