



# Science and Technology of Materials, Interfaces, and Processing Southern California Chapter

Summer 2021

Quarterly Newsletter

### Special points of interest:

- *Solar Lenses in Space* FREE Webinar 6/29/21 11 AM PDT
- *Clean-Critical Fastener & Seal Solutions*
- *SCCAVS Expo Keynote Speakers*
- *Job Postings*

### Contact Us:

Corinne D'Ambrosio, Chair

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

Jeffrey Lince, Treasurer

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

Jim Garner, Secretary

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

### Members at Large:

Tom Anderson

Greg Mills

Todd Ohaks

Fred Praudisch

Rick Seboldt

Richard Stamberg

Matt Tharpe

General Inquiries:

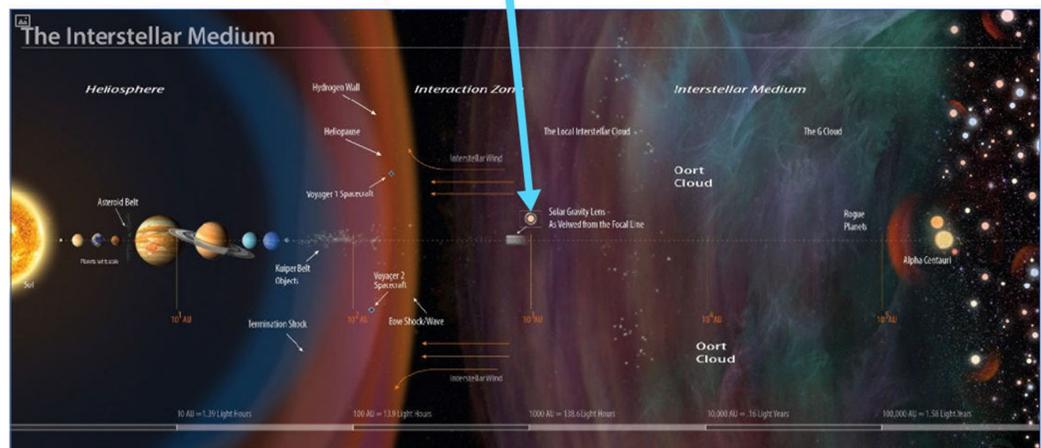
[info@sccavs.org](mailto:info@sccavs.org)

## Presentation on "Solar Lenses in Space: The Search for Habitable Planets" - Sponsored by the SCCAVS

The Southern California Chapter of the AVS invites you to a lecture on a "The Search for Habitable Planets via the Solar Gravitational Lens" June 29, 2020, at 11 AM PDT. The presentation will be given by Dr. Henry Helvajian of The Aerospace Corporation. It will be presented as a FREE Zoom Webinar.

As of June 2021, NASA has confirmed the discovery of 4401 exoplanets. Methods used are the minute dimming of the light during transit, measuring their stars' wobble, by micro-lensing, and by imaging. In the latter case, the "image" appears only as a single pixel; kilometer-sized telescopes would be required to develop multipixel images. However, it is possible to measure a multipixel (e.g. 200 x 200) image of an exoplanet, 100 LY distant, by harnessing the gravitational lensing properties of our Sun to give a magnification of a hundred billion times. The location of the solar gravitational lens is, unfortunately, not near but at ~550AU (14 times further from the Sun than Pluto). In collaboration with NASA/JPL, UCLA and Xplore, The Aerospace Corporation has embarked on an investigation to develop the mission architecture and operating procedures for sending a 1-m aperture coronagraph imager to 550 AU and beyond. It is not a single satellite, but a cluster of nanosatellites that achieve hyper velocity speeds (150km/s) by solar sailing.

### The Solar Gravitational Lens: A Nanosatellite Constellation in Interstellar Space



Dr. Helvajian is a senior scientist in the Physical Sciences Laboratories at The Aerospace Corporation. In addition to his work to develop solar lens technology, his research includes controlled transformations in materials by laser and ultrasound excitation; diagnostics development for process control in additive manufacturing; and HIVE, a space architecture that addresses resiliency.

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## Job Opportunities

### Thin Films Process Engineer (Sylmar, CA)

#### MINIMUM QUALIFICATIONS:

- The successful candidate must possess a Bachelor's degree (B. S.) in Engineering, Physics, chemistry or related technical discipline.
- Five (5) minimum of engineering experience in vacuum deposition.
- Ability to read drawings.
- Provide technical support with new project design, troubleshoot production problems, debug production metalizing.
- Creation of technical reports, standard work instructions, process specifications.
- Ability to analyze data, launch and sustain SPCs, perform 6-sigma process capability (Minitab a plus).
- Ability to lead team projects focused on meeting business strategic goals.

[View Full Job Posting HERE](#)

### Principal Coating Engineer (Murrieta, CA)

#### MINIMUM QUALIFICATIONS:

- The successful candidate must possess at minimum a M.S. degree, Ph.D. preferred, in engineering or related discipline, preferably in physics, optics, electrical or mechanical engineering.
- 20 years minimum thin film coating engineering experience, preferably at an aerospace company.

[View Full Job Posting HERE](#)

SOUTHERN CALIFORNIA  
CHAPTER OF THE AVS:  
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Mailing Address:  
Southern California Chapter AVS  
616 Hartford Avenue  
Huntington Beach, CA 92648

info@sccavs.org

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**Upcoming Events**

SCCAVS Short Course  
Program & Equipment  
Exhibition

Holiday Inn  
Buena Park, CA  
September 27-29, 2021

[MORE INFO HERE](#)



ALD 2021  
June 27-30th, 2021  
Online/Virtual  
Conference

<https://ald2021.avs.org/>



**Advertorial**

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Continued on Page 4



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## Solar Lenses in Space (Continued from Page 1)

In the early 1990s his research interest expanded into applications of MicroElectroMechanical Systems (MEMS) to space systems, satellite miniaturization and low fluence laser material processing. Helvajian has received certifications of recognition from NASA, ASME, MRS, SPIE, JLPS and European-MRS, and is a SPIE fellow. He holds 27 patents.

Helvajian was national co-chair of SPIE's Photonics West LASE Conference for eight years and is the current chair of the SPIE Laser 3D Manufacturing Conference. He has chaired conferences for the MRS, OSA and LIA societies. In helping to start the nanosatellite revolution 25 years ago, he has also chaired conferences sponsored by NASA and CANEUS. Helvajian has edited four books and authored more than 100 papers and book chapters.

Helvajian earned bachelor's and master's degrees in electrical engineering (EE) from Stanford University, and his Ph.D. in EE/ electrophysics at the University of Southern California. He was a National Academy of Sciences postdoctoral scholar at the Naval Research Laboratory.



To Register [CLICK HERE](#)

For additional information, please contact [chair@sccavs.org](mailto:chair@sccavs.org)

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## FREE Keynote Speaker Presentations at SCCAVS Exhibition September 28, 2021

The SCCAVS is pleased to present two keynote presentations at our 2021 **LIVE equipment exhibition**, September 28, 2021 at the Holiday Inn Hotel and Convention Center in Buena Park, CA. The talks will focus on Advanced Vacuum Technology, from the importance to the Thin Film Photovoltaic Industry, to cutting edge work in Commercial Fusion Power (and MORE!) Our planned speakers are:

**Timothy Gessert** is the Managing Member of Gessert Consulting, LLC (Conifer, Colorado, USA), and a former/retired Principal Scientist at the National Renewable Energy Laboratory. Tim received degrees in physics from University of Wisconsin - River Falls (B.Sc, 1982), Colorado School of Mines (M.Sc, 1984), and University of Wales - College of Cardiff (Ph.D, 1996). His 35+ years of research includes synthesis and characterization for photovoltaic and other thin films including GaAs, InP, Si, CuInGaSe<sub>2</sub>, CdTe, and transparent conducting oxides (TCOs). Interests also include mentoring graduate students from institutions such as Colorado School of Mines, Colorado State University, University of Toledo, Vanderbilt University, and University of Illinois at Chicago. Tim has collaboratively published over 230 papers, 6 book chapters, and has over 30 awarded or pending U.S. patents.

**Alan Van Drie** is a Lead Scientist, heading the vacuum group at TAE Technologies. In 2000 he earned a PhD in experimental Plasma Physics from University of California Irvine, studying thermonuclear fusion in staged Z-pinch. Clean alternative fusion energy has interested him since his freshman year in college and he has been fortunate to be working on his passion for the last 25 years. Dr. Van Drie has co-authored a number of publications, holds numerous patents, and is an executive committee member on the AVS Vacuum Technology Division. He has broad interest in experimental physics, UHV, large vacuum systems, and vacuum modeling.

For more information on the SCCAVS Equipment Exhibition & Short Course Program [CLICK HERE](#)



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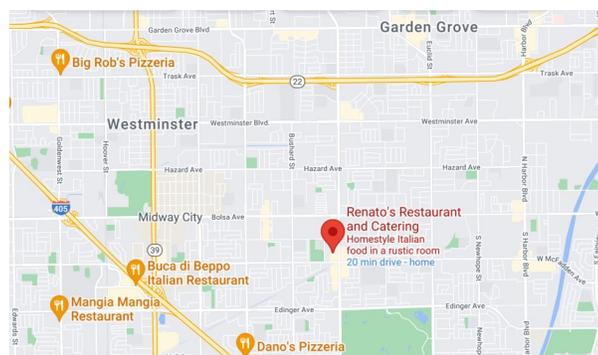


## Chapter Planning Committee Dinner

Join your local Chapter representatives for our first IN-PERSON planning committee meeting to be held at Renato's Restaurant located at 15383 Brookhurst St. in Westminster, CA 92683 on Tuesday, August 17th, 2021 at 6:00pm. We will be discussing:

- ◆ Upcoming Webinar Topics
- ◆ 2021 SCCAVS Expo Planning & Sponsorship
- ◆ Science Educator's Workshop at AVS 67 (Charlotte, NC October 24-29, 2021)
- ◆ Open Discussion

There is no cost to attend but you must RSVP by August 6th in order to reserve your seat. RSVP to [chair@sccavs.org](mailto:chair@sccavs.org) with your name, affiliation, and number in party.



## June/July 2021

Sun	Mon	Tue	Wed	Thu	Fri	Sat
20	21	22	23	24 ☉ Full Moon	25	26
27	28	29 <i>Solar Lenses Webinar 11AM PDT</i>	30	1	2	3
4 		6	7	8	9 ● New Moon	10
11		13 <i>SCCAVS Committee Meeting (ZOOM) 11 AM*</i>	14	15	16	17
18	19	20	21	22	23 ☉ Full Moon	24
25	26	27	28	29	30	31

\*Our next Planning Committee Meeting will be LIVE @ Renato's in Westminster on August 17, 2021 at 6pm

