

## Calendar of Events

See [www.asmwest.com](http://www.asmwest.com) for updates

### SEPTEMBER

*LA/South Bay Joint Chapter General Meeting*

**Tuesday, September 20: John Ogren, "Radioisotope Thermoelectric Generators", Cirivello's, 5:30 pm**

*Orange Coast Chapter General Meeting*

**Wednesday, September 21: – Lanhong Xu, Cytec Inc., "Advanced Polymer Materials", Duck Club, 5 Riparian View, Irvine, 6 pm.**

*San Fernando Chapter General Meeting*

**Thursday, September 22: CSUN - University Student Union (Ventura Room), Northridge, CA, 6:30 pm – Executive Board Meeting, 7:00 pm – Social/Dinner, 7:15 pm – Presentation "Electron Beam Additive Manufacturing", John A. Halchak, Pratt & Whitney Rocketdyne**

*LA/South Bay Joint Chapter Special Event*

**Angels Baseball (vs. A's) 7:05 pm, Angels Stadium**

### OCTOBER

*LA/South Bay/ Orange Coast Joint Chapter General Meeting*

**Tuesday, October 11: Chris Berndt, ASM President-Elect, 5:30 pm, Truxton's American Bistro, 8611 Truxton Avenue, Los Angeles, CA 90045 (Westchester area, between La Tijera and Manchester)**

*San Fernando Chapter General Meeting*

**October 27, 2011: Saverio D'Agostino, Jet Propulsion Laboratory, "Failure of a Stainless Steel Brazed Heat Exchanger as a result of Sigma Phase Formation", Marie Callender's - Garden Room, 6:30pm (executive board meeting), 7:00pm (social/dinner), 8:00pm (presentation)**

### NOVEMBER

*Orange Coast Chapter Special Event*

**November 14, 2011: Symposium on Biomaterials, Medical Devices and Tools: Challenges with Design, Fabrication and Testing, UC Irvine**

*LA/South Bay Joint Chapter General Meeting*

**Plant Tour, Lisi Hi-Shear, Torrance (Details TBD)**

## Calendar of Events (Cont.)

### NOVEMBER (CONT.)

*San Fernando Chapter General Meeting*

**November 17, 2011: CSUN – University Student Union (Balboa Room), 18111 Nordhoff St., Northridge, CA 91330, 6:30pm – Executive Board Meeting, 7:00pm – Social/Dinner, 7:15 – Presentations (Aileen Shin, Chris Crawford).**

*Orange Coast Chapter General Meeting*

**Wednesday, November 30: Duck Club, 6 pm, 5 Riparian View, Irvine.**

### JUNE 2012

**Summer Party, Monday, June 5, SAVE THE DATE contact Dick Berryman 626-812-1907 or [Richard.berryman@ngc.com](mailto:Richard.berryman@ngc.com)**




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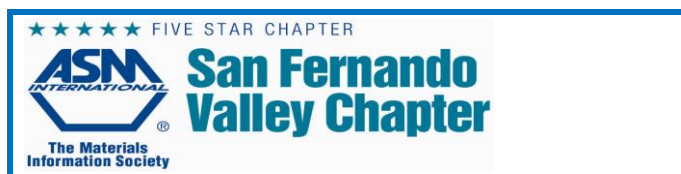


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ASM International San Fernando Valley Chapter  
 Presents

## September 2011 Meeting

### Electron Beam Additive Manufacturing

John A. Halchak

Pratt & Whitney Rocketdyne

**Speaker Bio:** John Halchak joined Rocketdyne (now Pratt & Whitney Rocketdyne) in 1962, when it was a division of North American Aviation. For over 49 years, John has worked on materials and processes applications for every major program in Rocketdyne, including such programs as Atlas, Gemini, Saturn V, Apollo, Delta I & II, Minuteman III, Peacekeeper 4th stage, Aerospike, Space Shuttle Main Engine, Waterjets, Space Station, NASP, and RS68-Delta IV. He was the materials engineering leader in the world's first successful application of titanium alloys for high-performance liquid hydrogen pumps. He also led the successful effort in the early 1990's to eliminate the use of ozone depleting solvents from rocket engine production at Rocketdyne. He was the director of the Materials & Processes department of Rocketdyne for 13 years, and is presently a Pratt & Whitney Senior Fellow. He is a Penn State graduate in metallurgical engineering, a 50+ year member of the ASM, an ASM Fellow, a registered professional engineer, and a recipient of the NASA Apollo Achievement Award, the Astronaut Achievement Award (the "Silver Snoopy"), the San Fernando Valley Engineers' Council 2006 Distinguished Engineering Achievement Award, and the Penn State David Ford McFarland Alumni Achievement Award.

**Abstract:** True net shape consolidation of powder metal (PM) by hot isostatic pressing (HIP) provides opportunities for many cost, performance and life benefits over conventional fabrication processes for large rocket engine structures. Various forms of selectively net-shape PM have been around for thirty years or so. However, it is only recently that major applications have been pursued for rocket engine hardware fabricated in the United States. The method employs sacrificial metallic tooling (HIP capsule and shaped inserts), which is removed from the part after HIP consolidation of the powder, by selective acid dissolution. Full exploitation of net-shape PM requires innovative approaches in both component design and materials and processing details. The benefits include: uniform and homogeneous microstructure with no porosity, irrespective of component shape and size; elimination of welds and the associated quality and life limitations; removal of traditional producibility constraints

on design freedom, such as forgeability and machinability, and scale-up to very large, monolithic parts, limited only by the size of existing HIP furnaces. Net-shape PM HIP also enables fabrication of complex configurations providing additional, unique functionalities. The progress made in these areas will be described. Then critical aspects of the technology that still require significant further development and maturation will be discussed from the perspective of an engine systems builder and end-user of the technology.

Interested in being a speaker or serving as an Executive Committee Officer? Please contact us for more information.

### San Fernando Valley Chapter Event Details

WHO:	John A. Halchak Pratt & Whitney Rocketdyne
WHAT:	Electron Beam Additive Manufacturing
WHERE:	Ventura Room, University Student Union SOL Center (2nd floor), CSUN 18111 Nordhoff St. Northridge, CA 91330 (Parking: G3 or G4 Lots – off Zelzah Ave., \$6) <a href="http://www.csun.edu/maps/cm1.html">http://www.csun.edu/maps/cm1.html</a> <a href="http://usu.csun.edu/about/hoursmaps.php">http://usu.csun.edu/about/hoursmaps.php</a>
TIME:	6:30 pm – Executive Board Meeting 7:00 pm – Dinner 7:15 pm – Presentation
WHEN:	Thursday, September 22, 2011
COST:	No charge; Refreshments (Sandwiches, drinks) will be provided
More info:	Hans Shin, <a href="mailto:hshin@pacifictesting.com">hshin@pacifictesting.com</a>

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**ASM Los Angeles Chapter**

**METALLURGY FOR THE NON-METALLURGIST  
ASM Course 0135**

The chapter will be offering this Continuing Education Course starting Wednesday evening, September 7, 2011 at **Bodycote Thermal Processing, 9921 Romandel Avenue, Santa Fe Springs CA 90670 (note location change).**

The course carries 3 CEU Official Credits. The educational materials have prepared by ASM and approved by the International Council on Continuing Education.

The course instructors will be two outstanding experienced metallurgical engineers from local industry:

Dr. Michael Hahn.....Northrop Grumman  
Dr. Michael O'Brien.....Aerospace Corporation

Tuition is \$1575. Tuition covers 15 lessons, a large notebook full of useful information and membership for one year in ASM. As an alternative, the contents of the big notebook can be obtained on a compact disc. Details of the class schedule are up to the students. Usually, they choose to have two lessons per session; this means the class meets 8 times and is completed before the big holidays.

The course includes 15 take-home tests and a Final Exam. The Final Exam is taken on-line. Many instructions are given to take the test this way.

Interested persons should discuss this course with their supervisors. For more information and to enroll in the course, contact: Dr. John R. Ogren [drjogren@aol.com](mailto:drjogren@aol.com) or 424-835-4137 or 310-918-3028

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**Angels Baseball!**

Friday, September 23, 2011  
Big Bang Friday (Fireworks following the game)  
30 tickets available in Section V416, above home plate  
Los Angeles Angels (of Anaheim) vs Oakland Athletics – 7:05PM  
Tickets are available for \$5 each, limit two per person. Please contact Dick Berryman at 626-812-1907, 714-614-7143, 626-812-2838, or [Richard.berryman@ngc.com](mailto:Richard.berryman@ngc.com)

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Is your information (mailing address, phone number, e-mail) current with ASM International?

You can contact ASM to update their records at ASM International at 800-336-5152 or [cust-srv@asminternational.org](mailto:cust-srv@asminternational.org), or you may e-mail [Michael.t.hahn@ngc.com](mailto:Michael.t.hahn@ngc.com)

\*\*\*\*\*



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## Orange Coast Chapter 2011-2012

<http://www.asmorangeoast.com>

**September 21<sup>st</sup>** – Lanhong Xu from Cytec Inc., speaking on advanced polymer materials @ Duck Club in Irvine.

**October 11<sup>th</sup>** - Joint meeting w/ LA Chapter @ Truxton's American Bistro.

**November 14<sup>th</sup>** – One day symposium @ UCI on Biomaterials, Medical Devices and Tools: Challenges with Design, Fabrication and Testing.

**Tentative Keynote Speaker from Edwards Lifesciences Inc.**

***Confirmed Speakers:***

Dr. Shrivastava from EV3 Inc., Irvine, CA

“Engineering Solutions to Treat Cerebro-Vascular Aneurysms and Ischemic Stroke”

Dr. Selvaduray from SJSU, San Jose, CA

“Surfaces and the Bulk – Are they Identical?”

Dr. Stiglich from Ultramet, Pacoima, CA

“Medical Materials, Devices by Chemical Vapor Deposition”

Dr. Xie from Advanced Bionics, LLC., Valencia, CA

“Laser Hermetic Welding of Implantable Medical Devices”

Dr. Liu from UCR, Riverside, CA

“Challenges in Orthopedic Biomaterials”

***Student Poster Competition:***

2 poster contestants will receive \$500 each to go to any 2012 ASM conference.

**For more information on the symposium and poster competition, please see our new website: [www.asmorangeoast.com](http://www.asmorangeoast.com)**

### **Schedule of September Meeting:**

**6:00 Dinner & Social Hour**

**6:30 Welcoming Remarks**

**6:40 Invited Speaker**

**Where: Irvine Duck Club  
5 Riparian View  
Irvine, CA**

**Coast: ASM members-free! (Including Dinner)**

**Non-Members- please contact.**

*Please R.S.V.P. to*

[asmorangeoast@gmail.com](mailto:asmorangeoast@gmail.com)

**Please be advised that the entrance to Duck Club is from Campus at Campus & University.**

**ASM-OC is looking for sponsors for September, January, February, March, April, and May monthly meetings. The sponsorship fee is \$100 per meeting. The company logo will be advertised on the website and newsletter for sponsorship. A table will also be provided for display of company information at the monthly meeting.**

### **Incoming Executive Committee**

Chair: Khinlay Maung ([kmaung@uci.edu](mailto:kmaung@uci.edu))

Vice Chair: Ethel Poire ([epoire@ep-labs.com](mailto:epoire@ep-labs.com))

Treasurer: Joe Breslin ([joe.breslin@buehler.com](mailto:joe.breslin@buehler.com))

Secretary: Joe Horwath ([jhorwathe@gmail.com](mailto:jhorwathe@gmail.com))

Industrial Relations: Scott Poveromo ([spoverom@uci.edu](mailto:spoverom@uci.edu))

Communications: Tim Montalbano ([tmontalb@uci.edu](mailto:tmontalb@uci.edu))



## ASM International Los Angeles and South Bay Chapters

# September 2011

## Joint Meeting

### Radioisotope Thermoelectric Generators

**Abstract** All spacecraft require some source of energy in order to power the various electrical subsystems present on every spacecraft. Electrochemical batteries (dry cells) were used on early units. Solar panels replaced dry cells and are, in fact, the most prominent feature seen in pictures of the International Space Station. However, missions to the so-called outer planets send satellites far away from the sun and require solar arrays of truly enormous size

Radioisotope Thermoelectric Generators (RTGs) are essential for such missions. In these units, electrical energy is generated by use of the familiar "Thermocouple Effect", or more properly, the Seebeck Effect. In this effect, two different materials are joined at two locations (two junctions) held at two different temperatures. A current exists in the materials, hence a source of electric energy. The effect was discovered in the 1830's.

For satellites, the two temperatures are:

- Outside of the satellite (Cold junction)
- A capsule containing highly radioactive plutonium (hot junction)

A major challenge was to design a capsule that would maintain structural integrity under all normal and credible abort environments, in other words, prevent the radioactive plutonium from entering, in any way, the biosphere of the earth. The presentation will describe the materials technology that had to be developed to meet the challenge. The major items will be:

- Long-term air oxidation of platinum-group metals Pt, Rh, Ir and their alloys
- Interdiffusion between Pt-group metals on one hand and several refractory metal alloys such as Ta-10 W, W-26 Re, and TZM

Many photomicrographs will be shown

**Bio** Dr. Ogren joined ASM as a student at Iowa State University in Ames, Iowa while working at an Atomic Energy Laboratory on that campus. He joined TRW

(now part of Northrop Grumman Aerospace Systems) just as its name changed from the SPACE TECHNOLOGY LABORATORIES to TRW. He retired as Chief Materials Scientist in Chemical Engineering Operations of TRW. He holds numerous patents for several components in the high-powered chemical laser field. He was actively involved in designing and evaluating radioisotope containment materials for use in space nuclear power applications. Those early applications included the Radioisotope Thermoelectric Generators (RTG) employed in the manned missions to the Moon. In subsequent years, RTG's have been used on all the missions to the so-called outer planets in our solar system. Dr. Ogren retired in 1989 and subsequently taught aerospace engineering courses at the Helsinki Technical Institute in Finland and courses on mechanical engineering and materials science at Loyola Marymount University. He consulted for the European Space Agency on techniques to sterilize spacecraft hardware. In 1994, he was invited to join the faculty of the Ghulam Ishaq Khan Institute of Engineering Sciences in Pakistan where he served a professor of Materials Engineering for two years. For the past ten years, he has been responsible for the ASM Education Program in the Los Angeles Chapter. His presentation to the ASM Chapter will focus on the materials aspects of selecting radioisotope containment vessels.

### Meeting Details

<b>WHAT:</b>	<b>Radioisotope Thermoelectric Generators</b>
<b>WHO:</b>	<b>Dr. John Ogren, FASM</b>
<b>WHERE:</b>	<b>Cirivello's Sports Stop 4115 N Viking Way Long Beach, CA 90808-1403 (562) 420-2113</b>
<b>TIME:</b>	<b>5:30 PM: Social 6:30 PM: Dinner 7:00 PM: Program</b>
<b>WHEN:</b>	<b>Tuesday, September 20, 2011</b>
<b>COST:</b>	<b>\$5 for dinner (Students free)</b>
<b>R.S.V.P.</b>	<b>Andrew Kent <a href="mailto:Andrew.Kent@ngc.com">Andrew.Kent@ngc.com</a> (626) 812-1502</b>



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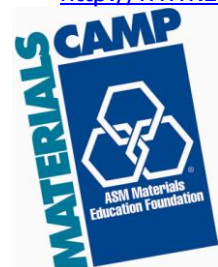
**Credit:** 2 graduate credits available for an additional cost of about \$200.

**Schedule:** This is a full day (8:00 to 5:00 PM) 5-day long workshop. (Note: Possibility of late afternoon/evening in the event of fieldtrips scheduled.)

**Faculty:** Primary faculty are two experienced high school “Master Teachers” who have taught materials science courses for many years and helped develop this innovative approach to hands-on learning of applied science principles.

### **How to apply:**

- Click on link below.  
<http://www.zoomerang.com/Survey/WEB22BQMD9DGLY/>; or visit [www.asmfoundation.org](http://www.asmfoundation.org).



### **Questions?**

For more information, please visit [www.asmfoundation.org](http://www.asmfoundation.org) or contact: Jeane Deatherage, Administrator of Foundation Programs at ([jeane.deatherage@asminternational.org](mailto:jeane.deatherage@asminternational.org)).



# CALL FOR ABSTRACTS AND EXHIBITORS



**ASM WEST Chapters**  
**Orange Coast, Los Angeles, San Fernando**  
<http://www.asmorangeoast.com>

## **ASM West Symposium on Biomaterials, Medical Devices and Tools: Challenges with Design, Fabrication and Testing**

*November 14th, 2011, 8 am – 6 pm  
University of California, Irvine  
Calit2 Auditorium and Atrium  
Irvine, CA*

- **Registration (Includes Technical Program, Breakfast, Lunch and Coffee Breaks)**
  - ASM members: \$40
  - Non-members: \$60
  - Full-time Students: \$10 (must show valid ID)
  
- **Sponsors / Exhibitors (Includes Technical Program, Breakfast, Lunch and Coffee Breaks)**
  - \$150 w/tabletop
  - \$100 no tabletop

**How to submit an abstract:** Email author's complete contact info and proposed presentation (title, 250 words abstract)

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2. mail payment to (check payable to "ASM Orange Coast Chapter"):

Attn: Joe Breslin, Buehler Ltd, 35 Parker, Irvine CA 92618

**To submit an abstract, to register or for more information:** [asmorangeoast@gmail.com](mailto:asmorangeoast@gmail.com)



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## Chapter Realignment

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\* 10% discount for full year purchase, 8 issues September-May (no December newsletter). Paper newsletter is sent in spring and fall with monthly electronic updates.

To advertise in this newsletter, contact us at [michael.t.hahn@ngc.com](mailto:michael.t.hahn@ngc.com)

The South Bay Chapter is being merged with the Los Angeles Chapter. The Chapter boundaries are being realigned for Los Angeles, Orange Coast, and San Fernando. Those affected by the realignment should have received something from ASM headquarters. If you have not already responded to the notice from ASM, please do so. No member's chapter affiliation will be changed without consent. As before, any member may choose to affiliate with any chapter.



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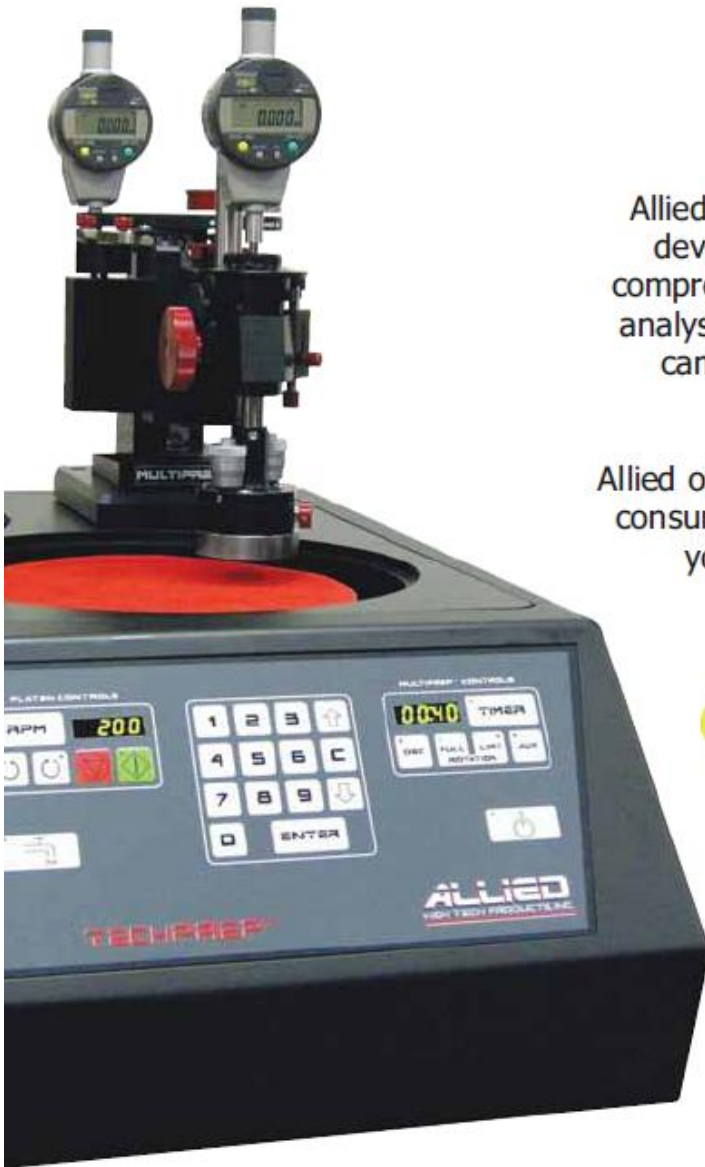
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[kmaung@uci.edu](mailto:kmaung@uci.edu)

San Fernando Valley Chapter Chair  
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**September 2011**

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