

LIQUID METAL PROCESSING & CASTING CONFERENCE

September 20-23, 2026

El Dorado Hotel, Santa Fe, New Mexico, USA



CONFERENCE PROGRAM

nmavs.org/lmpc2026

Presented by



**Science and Technology
of Materials, Interfaces, and Processing**

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WELCOME NOTE

DEAR ATTENDEES,

Thank you for joining us for the 16th Liquid Metal Processing & Casting Conference. This conference, held every two years, was originally spawned as an accompaniment to the Specialty Metal Processing Consortium (SMPC) which grew out of industrial melt research at Sandia National Laboratories in the early 1990s. The previous conference was held in 2024 in Leoben, Austria, but the first was held here in New Mexico!

This conference is unique in that it covers chemical metallurgical research that is of great use to industry. The applied nature of most of the work is reflected in the balance between academic and industrial participation. This is a great opportunity to learn about the challenges that specialty metal's industry and the work that goes in to powering your everyday life.

We are grateful for your participation and hope you learn from the technical presentations and take advantage of the social events over the next several days.

From all of us at the local New Mexico Chapter of the American Vacuum Society, we welcome you to LMPC 2026 here in sunny, sunny Santa Fe.

Sincerely Yours,

The LMPC 2026 Organizing Committee

ORGANIZERS

LOCAL ORGANIZING COMMITTEE

Chair

Dr. Jonathan S. Paras, Sandia National Laboratories

Co-Chairs

Dr. Andrew Elliott, CONSARC Corporation & Dr. Dana
Medlin, Sandia National Laboratories

TECHNICAL ORGANIZERS

Dr. Martin Detrois , NETL

Professor Abdellah Kharicha, Montanuniversitat Leoben
Professor Andrew Krane, Purdue University

SCIENTIFIC COMMITTEE

Martin Detrois ,National Energy Technology Laboratory, USA

Andrew Elliott, CONSARC Corporation, USA

Kyle Fezi, Fort Wayne Metals, USA

Stephane, Hans, Aubert & Duval, France

Harald Holzgruber INTECO Melting and Casting Technologies GmbH, Austria

Zhouhua Jiang, Northeastern University, P.R. China

Abdellah Kharicha, Montanuniversität Leoben, Austria

Paul King, Ampere Scientific USA

Matthew Krane, Purdue University, USA

Henry Lippard, ATI, USA

Alec Mitchell, University of British Columbia, Canada

Corey O'Connell, Special Metals, USA

Ashish Patel, CARPTENTER, USA

Thibault Quatravaux, Universite de Lorraine, France

Gerd Weides, Saarschmiede GmbH, Germany

IMPORTANT INFORMATION

FOOD & BEVERAGE

The following are provided *gratis* for your enjoyment each day:

Morning refreshments (10:30am)

A buffet lunch (12:15pm)

Afternoon refreshments (3:00pm)

Morning and afternoons refreshments will include light snacks, coffee, tea, water, and other beverages. The hotel and the surrounding area in Santa Fe offer a variety of restaurants within walking distance for a full breakfast or dinner.

KEY EVENTS

The **Welcome Reception** will be held on Sunday evening and is a prime opportunity to network after your arrival.

Exhibits will be held in the concourse outside the Zia ballroom concomitantly with the main presentation throughout the day. Please visit our sponsors to discuss offerings and opportunities.

The **Banquet Dinner** will be held in the Zia ballroom on Tuesday at 6:30pm. Enjoy the opportunity to discuss the symposia with your colleagues.

PROCEEDINGS

Anyone who purchased a proceedings manual at the time of registration will receive one at the welcome desk. Otherwise, proceedings will be available for sale on-site, supply subject to availability. Proceedings are hardcover; authors retain full rights to their material.



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KEYNOTE SPEAKER

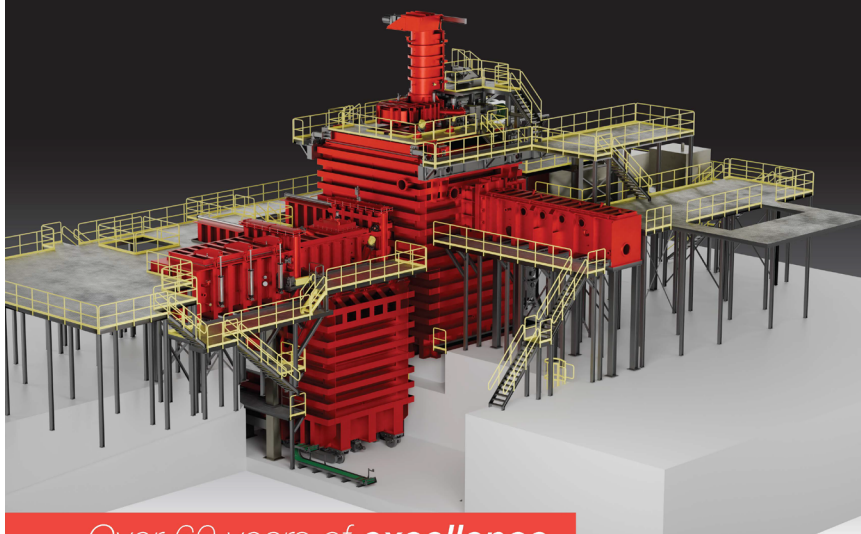


Dr. Rodney L. Williamson
Sandia National Laboratories

Rodney L. Williamson received his BA in chemistry from Brigham Young University in 1976 and his Ph.D. in physical chemistry from the University of Washington in 1983. He did post-doctoral research at the Air Force Weapons Laboratory, working on spectroscopic gain diagnostics for chemical laser systems from 1983 to 1984, and was hired at Sandia National Laboratories (SNL) as a member of the technical staff in September of 1984. At SNL he teamed with Dr. Frank J. Zanner to help form the Specialty Metals Processing Consortium (SMPC) in 1989, an organization bringing together engineers and scientists from the specialty metals industry, universities, and U.S. national laboratories to perform pre-competitive research in the field of process metallurgy controls and diagnostic techniques.

In 2007, Dr. Williamson left SNL and went to work at the University of Texas in the Center for Advanced Manufacturing with Dr. Joseph J. Beaman. At the same time, he did research for the SMPC as an independent contractor. Over the years he has conducted and published scientific and engineering research in the areas of optical and magnetic resonance spectroscopy, chemical laser diagnostics, metal vapor arc physics, process metallurgy and control technology applied to vacuum arc remelting, thermal spray diagnostics and controls, and chemical sensor technology based on magnetic field-structured composite materials. In 2005 he received a Career Achievement Award from ASM International. He also received two Lockheed-Martin Employee Recognition Awards (1994, 2003) for his work at SNL, as well as seven Awards for Excellence for work leading to patents. He received a Best Paper Award for a paper presented at the International Symposium on Liquid Metals Processing and Casting in 2001.

Dr. Williamson retired from active research in 2016 but still does consulting work for both SNL and the SMPC.



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SCHEDULE OF EVENTS

MONDAY, SEPTEMBER 21, 2026

- 9:00** **TECHNICAL COMMITTEE**, Opening remarks
- 9:10** **ROD WILLIAMSON**, Keynote
- 10:00** **MARIANA GRIGOLETO**, Aperam Alloys Imphy/Jean Lamour Institute, *Modeling of Current Repartition in Electroslag Remelting: A Staggered-Grid Electromagnetic Approach*
- 10:30** **COFFEE BREAK**
- 10:45** **MEHRAN ABDI**, Montanuniversitaet Leoben, *Effect of Arc Distribution on Melt Pool Dynamics and Inclusion Redistribution in Vacuum Arc Remelting (VAR)*
- 11:15** **RICHARD SMITH**, Carpenter Technology, *2D-Axisymmetric Modeling of Effect of Varying Arc Behavior on VAR*
- 11:45** **ZILONG ZHANG**, University of South Carolina, *Beyond the Gaussian Assumption: Modeling Temporospatial Arc Behavior and Melt Pool Dynamics in Vacuum Arc Remelting*
- 12:15** **LUNCH**
- 1:30** **CALEB SCHRAD**, Purdue University, *Scaling Analysis of Vacuum Arc Remelting Sump Conditions*
- 2:00** **EBRAHIM KARIMI-SIBAKI**, Montanuniversitaet Leoben, *Modeling Nitrogen Alloying to the Ingot in the Pressure Electroslag Remelting (PESR) Process*
- 2:30** **ZHIMIN YOU**, Northeastern University, *Kinetic Simulation of Multiphase Interactions in the Ruhrstahl-Heraeus (RH) Degassing Process*
- 3:00** **COFFEE BREAK**
- 3:15** **KOSUKE FUKUMOTO**, The Japan Steel Works, *The Prediction of Freckle Formation in ESR Ingot Considering Solidification Front Angle*
- 3:45** **PAUL JABLONSKI**, National Energy Technology Laboratory, *Evaluation of Melt Rates and Their Impact on Electro-slag Remelting Operation*

SCHEDULE OF EVENTS (cont.)

MON. (cont.)	4:15	RAMANATHAN KRISHNAMURTHY , Haynes International, <i>Effect of Melt Rate Swings on the Characteristics of an Electroslag Remelted HAYNES® 282® Alloy Ingot</i>
	4:45	THOMAS HOLZGRUBER , National Energy Technology Laboratory, <i>Industrial-Scale Rotating Casting Mold: Experiments and Model Validation for As-Cast 21-Ton Steel Ingots</i>
	5:15	ADJOURN
TUESDAY, SEPTEMBER 22, 2026	9:00	CHRISTIAN RUST , INTECO Melting and Casting Technologies GmbH, <i>Power Supply Architectures for Electroslag Remelting: A Comparative Study</i>
	9:30	LEV MEDOVAR & Y. DONG , China First Heavy Industries, <i>ESR Technologies for Nitrogen Alloyed Steel</i>
	10:00	DAN MCCULLEY , Ampere Scientific, <i>Advances in Monitoring Key Process Dynamics in Electroslag Remelting through an External Array of Magnetic Field Sensors</i>
	10:30	COFFEE BREAK
	10:45	JAVAD MOHSSENI , Wacker Chemie AG, <i>XRD-Based Structural Characterization of Premelted ESR Fluxes: Bridging the Gap Between Chemical Specification and Phase-Controlled Performance</i>
	11:15	REINHOLD SCHNEIDER , RWTH IME, <i>Remelting Behavior of High Resistivity ESR Slags</i>
	11:45	MARTIN DETROIS , National Energy Technology Laboratory, <i>Proposed Mechanism for Slag Skin Failure During Electroslag Remelting of 316 Stainless Steel</i>
	12:15	LUNCH

SCHEDULE OF EVENTS (cont.)

TUES. (cont.)	1:30	JOÃO MARCOS SOUZA DIAS , Framatome, <i>Experimental and Numerical Development of a Lab-Scale VAR Test Bench for Reaction Zone Characterization</i>
	2:00	MARIO EPLER , Carpenter Technology, ICME <i>Framework and Experimental Validation of Production Size Vacuum Arc Remelting of Superalloy Ingot</i>
	2:30	KASSANDRA HERNANDEZ , Oregon State University, <i>Machine Learning and Computer Vision Approach for Elucidating Relationships between Arc Position Sensing and Event Detection</i>
	3:00	COFFEE BREAK
	3:15	TORU OKABE , The University of Tokyo, <i>Direct Production of Low-Oxygen-Concentration Titanium from Molten Titanium, and Casting into Oxyhalide Crucibles</i>
	3:45	TAKA NARUMI , The University of Tokyo, <i>Direct Observation of Deformation in Semisolid Metals Using Time-resolved Synchrotron Radiation X-ray Imaging Techniques</i>
	4:15	HARUKI TANOUE , Kyushu University, <i>Electrical Conductivity of Molten $\text{CaF}_2\text{-Al}_2\text{O}_3\text{-CaO}$-based ESR Slags: Measurement and Modeling</i>
	4:45	TAKESHIRO SUMITA , Kyushu University, <i>Electrical Conductivity Measurement of Molten Slags Utilizing the van der Pauw-Ohta Method</i>
	5:15	ADJOURN
	6:30	BANQUET DINNER

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SCHEDULE OF EVENTS

WEDNESDAY, SEPTEMBER 23, 2026

- 9:00** **LONGZHOU MA**, Consarc Corporation, *Real-Time Detection of VAR Process Anomalies and Artificial Electrode Defects Using a Portable Magnetic Tomography Device*
- 9:30** **RAMESH MINISANDRAM**, ATI Specialty Materials, *Experimental Observations and Numerical Study on the Influence of Processing Conditions in Vacuum Arc Remelting*
- 10:00** **MATHIEU GARRIGUE**, Aubert & Duval, *Solidification Structure and Local Segregation for IN718 Remelted Ingot*
- 10:30** **COFFEE BREAK**
- 10:45** **MITCHELL FENTON**, Consarc Corporation, *Next Generation VAR – Bringing State of the Art Melt Technology to Specialty Metal Industry*
- 11:15** **DANIEL MCCULLEY**, Ampere Scientific, *Investigating the Use of Externally Applied Transverse Magnetic Fields to Reduce Inclusion Entrainment During Vacuum Arc Remelting of AMS 6308 Steel*
- 11:45** **IÑAKI VICARIO**, Consarc Corporation, *Influence of Charge Quality on the Final Ingot Micro Purity in VCAP (Vacuum CAP) Technology*
- 12:15** **LUNCH**
- 1:30** **UWE HAISSL**, INTECO Melting and Casting Technologies GmbH, *Development of a 50kg lab-scale Flake Caster Plant*
- 2:00** **ADARSH SHUKLA**, GE Aerospace Research, *Evaluation of Electron Beam Drip Melting for the Reduction of Dirty White Spot Anomalies in Alloy 718*
- 2:30** **PATRICE BERTHOD**, University of Lorraine, *TaC Migration during the Solidification of Superalloys Highly Alloyed with Tantalum to Form Dense Network of Strengthening TaC Carbides*
- 3:00** **COFFEE BREAK**

SCHEDULE OF EVENTS

WED. (cont.)	3:15	LUCAS MARDEN , Massachusetts Institute of Technology, <i>Development of a High Throughput Liquid Metal Density Measurement Apparatus</i>
	3:45	YANWU DONG , Northeastern University, <i>The Influence of Deoxidation on the Cleanliness, Microstructure and Properties of Invar Alloy</i>
	4:15	WEI GONG , Northeastern University, <i>Effects of Magnesium Treatment and Electrode Melting Rate on Microsegregation during Electroslag Remelting of GH3128 Nickel-Based Superalloy</i>
	4:45	ADJOURN

THANK YOU

On behalf of the organizers of the 16th Liquid Metal Processing and Casting Conference, thank you for your attendance and participation.
