

“Modeling and Simulation and Its Potential Effect on the Refractory Industry”



Sixtieth Annual Symposium on Refractories

sponsored by

**The Greater Missouri Section
and Refractory Ceramics Division of**

THE AMERICAN CERAMIC SOCIETY

at

**Hilton St. Louis Airport Hotel
St. Louis, Missouri**

on

March 26th – 27th, 2025

PROGRAM

“Modeling and Simulation and Its Potential and Practical Effect on the Refractory Industry”

March 25th, 2025

5:00 P.M. Kickoff Social Event – Topgolf Chesterfield, MO - <https://topgolf.com/us/st-louis/>

March 26th, 2025

7:15 A.M. Registration and Coffee

8:00 Morning Technical Sessions
Welcome and Introductions

Greater Missouri Section Chairman

Jason Lonergan

Missouri University of Science & Technology

Refractory Ceramics Division Chair

Austin Scheer

Ransom and Randolph

Co-Program Coordinators

Rebecka Annunziata

Arcelor Mittal

Brady Gould

Christy Refractories

8:15 Digital Refractory Management
Yakup Bayram – PaneraTech, Inc.
Ruth Engel – Refractory Consulting Services

8:45 Laser Scanning of Refractory, from Status Assessment to Prediction
Martin Welling – MINTEQ International, Inc. – FERROTRON Division, Duisburg Germany

9:15 Modeling and Simulation to Help Evaluate the Effectiveness of Flow Control Products in Steelmaking
Pavan Shivaram – RHI Magnesita

9:45 Coffee Break

10:15 A Computational Fluid Dynamics (CFD) Study for Corrosion and Wear of Refractory In Molten Slag System
Rajat Durgesh Ramteke and Manoj Mahapatra – University of Alabama at Birmingham
James G. Hemrick – Oak Ridge National Laboratory

10:45 Understanding Slags and Predicting Refractory Corrosion Using Automated Analysis of SEM Images and FactSage Simulation
Somnath Mandal – Vesuvius Research
Ilona Jastrzębska, Joanna Przystaś and Oliwia Pająk – AGH University of Krakow, Poland
Adam Piwowarczyk – Cracow University of Technology, Poland

11:15 Digital and Infrared Sensor Approach to Evaluating Primary Steel Refractories
James Wente – University of Illinois-Urbana

11:45-1:00 Luncheon Banquet

Afternoon Session

- 1:00 Novel Fiber Optic Sensing Strategies for Refractory Systems in Steelmaking Applications
Hanok Tekle, Farhan Mumtaz, Todd Sander, Jeffrey D. Smith, Jie Huang and Ronald J. O'Malley
Missouri University of Science and Technology
- 1:30 Thermophysical Characterization of Investment Casting Shells for Enhanced Simulation Accuracy
Evan Letourneau – MAGMA Foundry Technologies, Inc.
- 2:00 Predicting the Water Removal of Refractory Castables – The Key Milestones to Further Understand and Optimize Monolithic Drying
Murilo Henrique Moreira, Túlio Múmic Cunha, Icaro Caldeira Finhana, and Victor Carlos Pandolfelli – Federal University of Sao Carlos, Brazil
Stefano Del Pont – Université Grenoble, France
- 2:30 Coffee Break
- 3:00 Still Pitching at 86 and Designing Mixes while Dreaming
Kent Weisenstein
- 3:30 Refractories Symposium 60th Anniversary “A Celebration of Planje Recipients”
Jeffrey D. Smith – Missouri University of Science & Technology
- 4:30 Questions & Discussion
Co-Program Coordinator
- 5:00 Closing Remarks
Greater Missouri Section Chairman
Jason Lonergan
Missouri University of Science & Technology
Refractory Ceramics Division Chair
Austin Scheer
Ransom and Randolph
- 5:00-7:00 Exposition and Cocktail Hour
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|-----------------------------|--------------------------------------|
| AC Tech | Kyanite Mining Corp. |
| Almatis, Inc. | Kymera International |
| Alteo-Alumina | Lancaster Products |
| AluChem | PRCO America |
| Azelis | Rain Carbon |
| BassTech International | R-E-D Industrial Products |
| Bautek Minerais Industriais | Refractory Minerals |
| Christy Minerals | TAM Ceramics |
| Cremer Erzkontor N.A. | The American Ceramic Society |
| Elkem Silicon Products | Tianjin New Century Refractories Co. |
| Ferroglobe | US Minerals |
| FX Minerals | Washington Mills |
| GNPGraystar | |
| Gorka Cement | |
| Great Lakes Minerals, LLC | |
| Hindalco/GBL | |
| Imerys | |
- 7:00 Dinner Buffet

March 27th, 2025

- 6:30 A.M. Refractory Ceramics Division (RCD) Breakfast Meeting
- 8:15 Morning Technical Sessions
Welcome and Introductions
- Greater Missouri Section Chairman**
Jason Lonergan
Missouri University of Science & Technology
Refractory Ceramics Division Chair
Austin Scheer
Ransom and Randolph
- Co-Program Coordinators**
Rebecka Annunziata
Arcelor Mittal
Brady Gould
Christy Refractories
- 8:30 **Invited Paper – 2024 Alfred W. Allen Award Winner**
Impact on Aggregate/Matrix Bonding When a Refractory Contains Zinc Aluminate Instead of Spinel and Magnesia-Chrome
Somnath Mandal and Manoj Mahapatra – University of Alabama at Birmingham
James G. Hemrick – Oak Ridge National Laboratory
- 9:30 Correlating Thermodynamic Simulations with Hot Properties of Refractories Castables: A Validation Study Using Hot Modulus of Rupture (HMOR) and Refractories Under Load (RUL) Measurements
Hong Peng – Elkem Silicon Products Development, Kristiansand, Norway
Wenjing Liu – Wuhan University of Science and Technology, Wuhan, China
- 10:00 Coffee Break
- 10:30 Modeling and Optimization of Cement Clinker Production
Chengcheng Tao – Purdue University
- 11:00 A Comparison of Reactive High Alumina C-A Cements
Scot Graddick – Imerys RAC
- 11:30 Bulk Density Measurement of Refractory Raw Materials – Faster and Better with a Spin Dryer
Andreas Buhr – Almatiss GmbH, Germany; Geert Wams – Almatiss BV, The Netherlands; Brittany Purifoy – Almatiss, Inc., Arkansas; Aniruddha Sadhukhan – Almatiss Alumina Private Ltd., India; Morgan Zhang – Qingdao Almatiss Co., PR China; Shogo Kijima – Almatiss Ltd, Japan; Gerhard Urbanek – RHI Magnesita, Austria
- 12:00 Questions & Discussion
Co-Program Coordinator
- Greater Missouri Section Chairman**
Jason Lonergan
Missouri University of Science & Technology
Refractory Ceramics Division Chair
Austin Scheer
Ransom and Randolph
- 12:30 Greater Missouri Members Meeting