



**AMERICAN CERAMIC SOCIETY**

**St. Louis Section  
*and the*  
Refractory Ceramics Division**

Fifty-sixth Annual Symposium

on

Refractories – VIRTUAL MEETING

**March 24-25, 2021**

**PLEASE NOTE: The conference presentation times are written in the Central Daylight Time (CDT) zone of the U.S. (UTC -5).**

**Theme:**

**“Properties and Performance of Refractory Ceramics – *A Tribute to Richard C. Bradt*”**

## PROGRAM

### “Properties and Performance of Refractory Ceramics – A Tribute to Richard C. Bradt”

March 24<sup>th</sup>, 2021

#### General Session 1

Moderator: Bob Hunter

- 9:00 A.M. Welcome – Chris Perry and Jeff Smith
- 9:15 Let’s Make a Castable with Almost No Water – and No Cement. Use of Particle Packing Principles to Minimize Water Addition to Castables  
*Bjørn Myhre - Elkem Silicon Materials*
- 9:45 Thermal Shock of Refractories: A Review  
*Joseph Homeny - The Edward Orton Jr. Ceramic Foundation*
- 10:15 4.1 Refractory Ceramics  
*Victor C. Pandolfelli - Federal University of São Carlos, Brazil*
- 10:45 Break
- 11:00 Derivation of Thermal Stress Resistance Parameters through Dimensional Analysis  
*Jay J. Tu - HTMS, LLC*
- 11:30 Structure Determines Properties: Failure Analysis of Ceramics and Refractories  
*David Ahearn – Esi*
- 12:00PM Lunch Break
- 1:00 Presentation of the 2020 T.J. Planje St. Louis Refractories Award to **Thomas (Tom) Vert, P.Eng., M.B.A., B. Eng. (Ceramic) Retired Vice President Manufacturing – ArcelorMittal Dofasco Inc., Hamilton, Ontario, Canada**

#### Richard C. Bradt Education Session A

Moderator: Kelley Wilkerson

- 1:45 Applications of Fiber Optic Sensors in Ceramic Industry  
*Muhammad Roman and Jie Huang - Missouri University of Science and Technology*
- 2:15 Machine Learning to Predict Refractory Corrosion During Nuclear Waste Vitrification  
*Natalie Smith-Gray, Irmak Sargin, Scott Beckman and John McCloy - Washington State University in Pullman, WA*
- 2:45 Break
- 3:00 Interactions between Molten Tundish Slags and Periclase/Periclase-Olivine Tundish Linings  
*Tyler M. Richards, Jeffrey D. Smith, Ronald J. O’Malley and Todd P. Sander – Missouri University of Science and Technology*

#### General Session 2

- 3:30 Building the Fundamental Basis for Advancement of Refractory Technology  
*Charles E. Semler - Refractories Consultant*
- 4:00 Formation of Hexa-Aluminate Solid Solution Phases in Spinel Containing Castables – Mineralogical Investigations in the system CaO-Al<sub>2</sub>O<sub>3</sub>-MgO  
*Mark Snyder, Andreas Buhr, Sebastian Klaus, Marius Bauer, Matthias Göbbels and Jerry Dutton – Almatix, Inc.*
- 4:30 Closing Remarks – Chris Perry

March 25<sup>th</sup>, 2021

8:00AM RCD Membership Meeting

### **General Session 3**

**Moderator: Bob Hunter**

9:00 **Welcome** – Chris Perry

9:15 **2020 Alfred W. Allen Award Winner - J Am Ceram Soc. 2018;101:4171-4183**  
On the Nonlinear Behavior of Young's Modulus of Carbon-Bonded Alumina at High  
Temperatures  
*Bruno Luchini, Joern Grabenhorst, Jens Fruhstorfer, Victor C. Pandolfelli and Christos G.  
Aneziris;*

10:15 Sample Preparation, Thermal Expansion, and Hasselman's Thermal Shock Parameters of Self-  
Flow Refractory Castables  
*William L. Headrick, Jr. – RHI Magnesita*

10:45 Break

11:00 Corrosion Interaction between Copper Melt, Slags and Sic-Based Refractories  
*Sarra Boubtane - University of Applied Sciences, WesterWaldCampus, Höhr-Grenzhausen;*  
*Almuth Sax - University of Koblenz-Landau, Chair of Technical Chemistry and Corrosion*  
*Science, Koblenz; Dieter Heumannskämper - Morgan Molten Metal Systems GmbH, Berkatal-*  
*Frankenhain; Peter Quirnbach - Deutsches Institut fuer Feuerfest und Keramik, Germany*

11:30 “Stronger Is Not Always Better” and Other Lessons from Dick Bradt as Applied to Monolithic  
Refractories Development and Characterization  
*Len Krietz*

12:00PM Lunch Break

1:00 Presentation of the 2021 T.J. Planje St. Louis Refractories Award to **Ruth Engel – Refractory  
Consulting Services**

### **General Session 4**

**Moderator: Kelley Wilkerson**

1:45 Imerys' Calcined Aluminosilicates- A Data-Based Comparison of Our Expanded Higher Alumina  
Range  
*Scot Graddick, Cyrille Deteuf and Phil Edwards - Imerys RAC*

2:15 High Grade Guyanese Bauxite Source in a Class of Its Own  
*John Karson - First Bauxite, LLC*

2:45 Break

3:00 High Temperature Research at Missouri S&T  
*Ronald J. O'Malley - Missouri University of Science & Technology*

3:30 *Closing Remarks – Chris Perry*