

**First Conference
Colorado Center for Advanced Ceramics**

Thursday, August 27, 2009

8:05 *Introduction* Ivar Reimanis, Director, CCAC

CCAC Faculty Research Overview Presentations

8:15 Ivar Reimanis

8:30 Nigel Sammes

8:45 Ryan O'Hayre

9:00 Brian Gorman

9:15 Hongjun Liang

9:30 Mark Eberhart

9:45 Jian Tong

10:00 – 10:20 BREAK

Graduate Student Presentations (speaker is indicated in bold)

10:20 *Comparison of Mechanical Testing Methods for Micro-tubular Solid Oxide Fuel Cells*, **B. R. Roy** and N. M. Sammes
Department of Metallurgical and Materials Engineering, Colorado School of Mines,
Golden, Colorado 80401, USA

10:30 *Long Term Performance Stability of Micro-Tubular SOFCs Operating in the Intermediate Temperature Regime*, **Kevin V. Galloway**, Nigel M. Sammes
Department of Metallurgical and Materials Engineering, Colorado School of Mines,
Golden, Colorado 80401, USA

10:40 *Fabrication of an intermediate-temperature anode-supported planar SOFC via tape casting and lamination*, **Chung Min An**, Nigel Sammes
Department of Metallurgical and Materials Engineering, Colorado School of Mine
1500, Illinois St. Golden Colorado 80401

10:50 *Investigation of Doped Strontium Titanate Materials for Use as Solid Oxide Electrolysis Cell Cathodes*, **Jason Fish**^{1,2,3}, Nigel Sammes^{1,2}, Christopher Graves^{3,4}, Bhaskar Reddy Suddireddy³, Mogens Mogensen³

¹Department of Metallurgical and Materials Engineering, Colorado School of Mines, Golden, CO

²Colorado Center for Advanced Ceramics, Colorado School of Mines, Golden, CO

³Fuel Cells and Solid State Chemistry Division, Risø DTU National Laboratory for Sustainable Energy, 4000 Roskilde, Denmark

⁴Lenfest Center for Sustainable Energy and Department of Earth and Environmental Engineering, Columbia University, New York, NY 10027 USA

11:00 *Design and Testing of Ceramic Microchannel Heat Exchangers*, **Berkeley Hippel**, Robert J. Kee, Division of Engineering, Colorado School of Mines, Golden, CO 80401 USA.

11:10 *Growth and Characterization of Nano Ni Precipitates in 10YSZ Matrix via Internal Reduction*, **J. White**[†], I.E. Reimanis[†], G. Coors[‡], J. O'Brien[§]

[†] - Colorado School of Mines, Golden, CO

[‡] - Ceramatec, Salt Lake City, Utah

[§] - Quantum Design, San Diego, CA

11:20 *Development of a Starch Based Binder Systems for the Aqueous Extrusion of NaSiCON*, **Joshua Persky**

Department of Metallurgical and Materials Engineering, Colorado School of Mines, Golden, Colorado 80401, USA

11:30 *Results and Implications of Steam Flux Measurements in BZY20*, **Michael**

Sanders^a, S. Elangovan^b, W. Grover Coors^b, Ryan O'Hayre^a

^aColorado School of Mines, 1500 Illinois St, Golden, CO 80401 USA

11:40 *Proton Conductivity in BCY20-Pd Ionic Hybrid Material*, **Archana**

Subramanian, Jianhua Tong, Nigel Sammes, Ryan O'Hayre

Department of Metallurgical and Materials Engineering, Colorado School of Mines, Golden, Colorado 80401 USA

11:50 *Investigations of Space Charge Effects via an Ionic Field Effect Transistor*, **Ann**

Deml, Mark Lusk, Annette Bunge, Will Medlin, and Ryan O'Hayre

Colorado School of Mines, Department of Metallurgical and Materials Engineering, Golden, CO 80401 USA

12:00 – 1:30 LUNCH (on own)

1:30 *Characterization of Polycrystalline Silicon Thin Films for Photovoltaic Devices*

Harvey L. Guthrey IV¹, Brian P. Gorman¹, Mowafak Al-Jassim²

¹Metallurgical and Materials Engineering Dept., Colorado School of Mines

²National Renewable Energy Labs, Golden, Colorado

1:40 *Engineering Band Gap and Conductivity of Ga : Zn_{1-x}Mg_xO by Pulse Laser*

Deposition and Digital Doping, **Yi Ke**^{1,2}, Ryan P. O'Hayre², Joseph Berry¹, David S.

Ginley¹

¹National Renewable Energy Laboratory, Golden, CO, 80401; ²Metallurgy and Material Science Engineering Department, Colorado School of Mines, Golden, CO, 80401

1:50 *Fabrication and Characterization of Rectifiers to Harvest Solar Energy*, **Prakash Periasamy**¹, Jeremy Bergeson², Arrelaine Dameron², Joe Berry², Phil Parilla² and Ryan O'Hayre¹

¹ Department of Metallurgical and Materials Engineering, Colorado School of Mines.

² National Renewable Energy Laboratory.

2:00 *Solution Deposition of Indium Zinc Oxide Films*

by Ultrasonic Spray Pyrolysis, **Robert Pasquarelli**¹, Maikel van Hest², Alexander Miedaner², Calvin Curtis², John Perkins², Joseph Berry², Ryan O'Hayre¹, David Ginley²

¹Colorado School of Mines, Golden Colorado 80401 USA

²National Renewable Energy Laboratory, Golden Colorado 80401 USA

2:10 *Creating Artificial "Cells" for the Targeted Delivery of Nanoscopic Objects*, **Sarah McMurray**, Laura Pate, Douglas Thamm, Daniel Gustafson, Hongjun Liang
Department of Metallurgical and Materials Engineering, Colorado School of Mines, Golden, Colorado 80401, USA

2:20 *Bio-inspired Solar Energy Harvesting Based on Membrane Protein Functions*

Laura Pate, Sarah McMurray, Stephen Boyes, Hongjun Liang

Department of Metallurgical and Materials Engineering, Colorado School of Mines, Golden, Colorado 80401, USA

2:30 – 2:40 BREAK

2:40 *TRISO Coated Fuel Durability Under Extreme Conditions*, **Brian Hansford**, Dr. Ivar Reimanis, Dr. Brian Gorman, Department of Metallurgical and Materials Engineering, Colorado School of Mines, Golden, Colorado 80401, USA

2:50 *Confirmation of a Pressure-Induced Phase Transformation in β -Eucryptite with In-Situ Raman Spectroscopy*, **T. Jochum**, I. Reimanis,

Colorado School of Mines, USA; M. Lance, Oak Ridge National Laboratory, USA

3:00 *A Reactive Force Field (ReaxFF_{LiAlSiO}) for Lithium Aluminum Silicates*, **Badri Narayanan**^a, Cristian V Ciobanu^b, Adri C. T. van Duin^c, Ivar Reimanis^a

^a Department of Metallurgical and Materials Engineering, Colorado School of Mines, Golden CO 80401

^b Division of Engineering, Colorado School of Mines, Golden CO 80401

^c Department of Mechanical Engineering, Pennsylvania State University, University Park, PA 16802

3:10 *Determination of Crack Growth Parameters Using the Dynamic Fatigue Indentation Technique* **S. Ramalingam**, I. E. Reimanis,

Metallurgical and Materials Engineering Department Colorado School of Mines
Golden CO 80401 and E. R. Fuller, Jr. Guest Scientist, NIST Gaithersburg, MD

3:20 *Transparent Spinel*, **Marc Rubat du Merac**, Ivar Reimanis,
Department of Metallurgical and Materials Engineering, Colorado School of Mines,
Golden, Colorado 80401, USA

3:30 *Preparing Single Phase Spinel Powder via the Pechini Method*, Brian Gorman,
Harvey Guthrey, and **Emily Mieritz**
Department of Metallurgical and Materials Engineering, Colorado School of Mines,
Golden, Colorado 80401, USA