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)**

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

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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 Mines 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 Suddireddy\(^5\),  Mogens Mogensen\(^3\)
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.

‡ - 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 Sandersa, S. Elangovanb, W. Grover Coorsb, Ryan O'Hayrea
aColorado School of Mines, 1500 Illinois St, Golden, CO 80401 USA

11:40 Proton Conductivity in BCY20-Pd Ionic Hybrid Material, Archana Subramaniyana, 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 IV, 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:Zn₁₋ₓMgₓO by Pulse Laser Deposition and Digital Doping, Yi Ke¹², Ryan P. O’Hayre², Joseph Berry¹, David S. Ginley¹
1 National Renewable Energy Laboratory, Golden, CO, 80401; 2 Metallurgy and Materials 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 Bergeson 2, Arrelaine Dameron 2, Joe Berry 2, Phil Parilla 2 and Ryan O’Hayre 1
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 Hest 2, Alexander Miedaner 2, Calvin Curtis 2, John Perkins 2, Joseph Berry 2, Ryan O’Hayre 1, David Ginley 2
1 Colorado School of Mines, Golden Colorado 80401 USA  
2 National 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 Giobanu 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 Singe 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