

## PROGRAM

for the

### 18<sup>TH</sup> ANNUAL CONFERENCE ON FOSSIL ENERGY MATERIALS MARRIOTT HOTEL, KNOXVILLE, TENNESSEE

**Wednesday, June 2<sup>nd</sup>, 2004**

- 12:00 noon      Registration
- 1:00 p.m.        Welcome and Introductory Remarks  
Roddie Judkins, Oak Ridge National Laboratory
- 1:10 p.m.        Brief Update on DOE's Advanced Research Materials Program  
Robert Romanosky  
U.S. Department of Energy, National Energy Technology Laboratory

#### **Session 1– FUNCTIONAL MATERIALS**

- 1:30 p.m.        Introduction  
Tim Armstrong, Oak Ridge National Laboratory

#### **1a. Materials for Hydrogen-Separation Membranes**

- 1:40 p.m.        Development of Inorganic Membranes for Hydrogen Separation  
Brian Bischoff, Oak Ridge National Laboratory
- 2:10 pm         Efficient Production of Pure Hydrogen from Hydrocarbons Using Palladium Membrane Reactors  
Steve Paglieri, Los Alamos National Laboratory
- 2.40 p.m.        Hydrogen Permeability of Pd-Cu Alloy Composite Membranes Over a Wide Range of Temperatures and Pressures  
B.H. Howard, National Energy Technology Laboratory, Pittsburgh
- 3.10 p.m.        Break
- 3:30 p.m.        Advances in Air Brazing for Use in Joining and Sealing High-Temperature Gas Separation Membranes  
Scott Weil, Pacific Northwest National Laboratory

#### **1b. Advanced Gas-Separation Materials**

- 4:00 p.m.        Advanced Processing of Metallic Powders  
Iver Anderson, Ames Laboratory
- 4.30 p.m.        Activated Carbon Composites for Air Separation  
Tim Burchell, Oak Ridge National Laboratory
- 5:00 p.m.        Adjourn

## **Session 2 – POSTERS**

6:00-7:30 p.m. Reception and Poster Session

### **2a. Alloys for Ultra-Supercritical Steam Applications**

1. Understanding Damage Mechanisms in Ferritic Steels  
Bob Swindeman, Oak Ridge National Laboratory
2. High Creep-Strength Alloys  
Phil Maziasz, Oak Ridge National Laboratory
3. Ultra-Supercritical Steam Corrosion  
G.R. Holcomb, Albany Research Center
4. Formability of alloy IN740  
Gail Ludka, Oak Ridge National Laboratory

### **2b. Oxide Dispersion-Strengthened Alloys**

5. Improved ODS Alloy for Heat Exchanger Tubing  
Larry Brown, Edison Welding Institute
6. ODS Alloy Development  
Ian Wright, Oak Ridge National Laboratory
7. Optimization of ODS Alloy Properties  
Bimal Kad, University of California at San Diego
8. Reduction in Defect Content in ODS Alloys  
Andy Jones, University of Liverpool

### **2c. Corrosion Testing in Coal-Fired Environments**

9. USC Materials Plant Trails at the Niles Plant  
Denny McDonald, McDermott Corp
10. In-Plant Corrosion Probe Tests  
Gregg Stanko, Foster Wheeler Development Corporation
11. Fireside Corrosion of Alloys for USC Plants  
Ken Natesan, Argonne National Laboratory
12. High-Temperature Materials Testing in Coal Combustion Environments  
Matt Mathur, U.S. Department of Energy, National Energy Technology Laboratory

### **2d. Functional Materials**

13. Economical Fabrication of Membrane Materials  
Tim Armstrong, Oak Ridge National Laboratory

### **2e. Breakthroughs in Materials Performance and Reliability**

14. Novel Processing of Mo-Si-B Intermetallics for Improved Efficiency of Power Systems  
Matt Kramer, Ames Laboratory
15. Evaluation of the Intrinsic and Extrinsic Fracture Behavior of Iron Aluminides  
B.R. Cooper, Bruce Kang, West Virginia University
16. Study of Fatigue and Fracture Behavior of Cr-Based Alloys and Intermetallic Materials  
Peter Liaw, University of Tennessee

## Thursday, June 3<sup>rd</sup>, 2004

7:30 a.m. Continental Breakfast

### Session 3 – COATINGS AND PROTECTION OF MATERIALS

8:30 a.m. Introductory Remarks  
Udaya Rao  
U.S. Department of Energy, National Energy Technology Laboratory

8:45 a.m. Investigation of Iron Aluminide Weld Overlays  
John DuPont, Lehigh University

9:15 a.m. Coating Microstructure-Property Issues  
Richard Wright, Idaho National Engineering and Environmental Laboratory

9:45 a.m. Extended Lifetime Metallic Coatings  
Bruce Pint, Oak Ridge National Laboratory

10:15 a.m. Break

10:45 a.m. Aluminide Coatings for Power Generation Applications  
Ying Zhang, Tennessee Technology University

11:15 a.m. Slurry-Based Mullite Coatings for Corrosion Resistance  
Beth Armstrong, Oak Ridge National Laboratory

11:45 noon Lunch

2:00 p.m. Chemically Vapor-Deposited YSZ for Thermal and Environmental Barrier Coatings  
Ted Besmann, Oak Ridge National Laboratory

2:30 p.m. Modeling of Chemically Vapor-Deposited Zirconia for Thermal Barrier and Environmental Barrier Coatings  
Tom Starr, University of Louisville

3:00 p.m. Development of Nondestructive Evaluation Methods for Ceramic Coatings  
Bill Ellingson, Argonne National Laboratory

3:30 p.m. Break

4:00 pm Concepts for Smart, Protective High-Temperature Coatings  
Peter Tortorelli, Oak Ridge National Laboratory

4:30 p.m. Corrosion Probes for Fireside Monitoring in Coal-Fired Boilers  
Bernie Covino, Albany Research Center

5:00 p.m. Adjourn

## **Friday, June 4<sup>th</sup>, 2004**

7:30 a.m. Continental Breakfast

### **Session 4 – BREAKTHROUGHS IN MATERIALS PERFORMANCE & RELIABILITY**

8:20 a.m. Introductory Remarks  
Ian Wright  
Oak Ridge National Laboratory

8:30 a.m. Invited Paper: Locating Hydrogen with Neutrons--What's Possible, and What's Not.  
Andrew Payzant, Oak Ridge National Laboratory

#### **4a. Temperature Capabilities Beyond Current Alloys**

9:00 a.m. Mo-Si Alloy Development  
Joachim Schneibel, Oak Ridge National Laboratory

9:30 a.m. Progress in Controlled Oxidation for Functional and Protective Surfaces  
Mike Brady, Oak Ridge National Laboratory

10:00 a.m. Break

#### **4b. Materials for Increased Reliability in Combustion/Gasification Environments**

10:30 a.m. Testing of a Very High Temperature Heat Exchanger for IFCC Power Systems  
John Hurley, University of North Dakota, Energy and Environmental Research Center

11:00 a.m. Improved Refractories for Slagging Gasifiers in IGCC Power Systems  
James Bennett, Albany Research Center

11:30 a.m. Development of a Commercial Process for the Production of Silicon Carbide Fibrils  
Richard Nixdorf, ReMaxCo Technologies, Inc.

12:00 noon Closing Remarks  
Robert Romanosky, U.S. Department of Energy, National Energy Technology  
Laboratory  
Roddie Judkins, Oak Ridge National Laboratory

12:30 p.m. Adjourn