

## AGENDA

for the

# 19<sup>TH</sup> ANNUAL CONFERENCE ON FOSSIL ENERGY MATERIALS MARRIOTT HOTEL, KNOXVILLE, TENNESSEE MAY 9-11, 2005

## Monday, May 9<sup>th</sup>, 2005

- 12.00 noon      Registration
- 1.00 pm        Welcome and Introductory Remarks  
Roddie Judkins, Oak Ridge National Laboratory
- 1.10 pm        Brief Update on DOE's Advanced Research Materials Program  
Robert Romanosky  
U.S. Department of Energy, National Energy Technology Laboratory

### Session 1 – NEW ALLOYS

- 1.30 pm        Introduction, Roddie Judkins, Oak Ridge National Laboratory

#### 1a. Alloys for Ultra-Supercritical Steam Applications

- 1.40 pm        Evaluation of New Ferritic Steels by Computational Modeling and Synchrotron Radiation  
Mike Santella, John Shingledecker/Bob Swindeman, Oak Ridge National Laboratory
- 2.10 pm        Update on the Coal Ash Corrosion Resistant Materials Testing Program - Evaluation of  
the First Two Sections and Status of the Third  
Denny McDonald, The Babcock and Wilcox Company
- 2.40 pm        Fireside Corrosion of Alloys for USC Plants  
Ken Natesan, Argonne National Laboratory
- 3.10 pm        Break
- 3.30 pm        Ultra-Supercritical Steam Corrosion  
Gordon Holcomb, Albany Research Center

#### 1b. Oxide Dispersion-Strengthened Alloys

- 4.00 pm        Optimization of ODS Alloy Properties  
Bimal Kad, University of California at San Diego
- 4.30 pm        Reduction in Defect Content in ODS Alloys  
Andy Jones, University of Liverpool
- 5.00 pm        Adjourn

**Monday, May 9<sup>th</sup>, 2005**

**Session 2 – POSTERS**

6.00-7.30 p.m. Buffet Reception and Poster Session

**2a. Functional Materials**

**Materials for Hydrogen-Separation Membranes**

1. Development of Inorganic Membranes for Hydrogen Separation  
Brian Bischoff, Oak Ridge National Laboratory
2. Palladium Coated Vanadium Alloy Membranes for Hydrogen Separation  
Steve Paglieri, Los Alamos National Laboratory
3. Braze Sealing Technology for Gas Separation Membranes  
Scott Weil, Pacific Northwest National Laboratory
4. Economical Fabrication of Membrane Materials  
Tim Armstrong, Oak Ridge National Laboratory

**Advanced Gas-Separation Materials**

5. Advanced Processing of Metallic Powders  
Iver Anderson, Ames Laboratory
6. Activated Carbon Composites for Air Separation  
Fred Baker, Oak Ridge National Laboratory

**2a. Project Overviews**

7. Improved ODS Alloy for Heat Exchanger Tubing  
Larry Brown, Edison Welding Institute
8. ODS Alloy Development  
Ian Wright, Oak Ridge National Laboratory
9. In-Plant Corrosion Probe Tests  
Gregg Stanko, Foster Wheeler Development Corporation
10. In-Situ Mechanical Property Measurement and Influence of Impurity Elements on Grain Boundary Strength of Cr and Mo Alloys  
Barry Cooper and Bruce Kang, West Virginia University
11. Microstructural Evolution of TiAl-Intermetallic Alloys Containing W and B  
Peter Liaw, University of Tennessee
12. Strengthening Issues for High-Temperature Ni-based Alloys for use in USC Steam Cycles  
John Shingledecker, Oak Ridge National Laboratory
13. Materials Needs for USC Steam Turbines  
Phil Maziasz, Oak Ridge National Laboratory
14. Aluminide Coatings for Power Generation Applications  
Ying Zhang, Tennessee Technology University

## Tuesday, May 10<sup>th</sup>, 2005

- 7.30 am Continental Breakfast
- 8.20 am Introductory Remarks, Ian Wright, Oak Ridge National laboratory
- 8.30 am Invited Talk: US-UK Collaboration in Fossil Energy Materials  
John Oakey, Cranfield University, England

### Session 3 – BREAKTHROUGHS IN MATERIALS PERFORMANCE & RELIABILITY

#### 3a. Temperature Capabilities Beyond Current Alloys

- 9.00 am Mo-Si Alloy Development  
Mike Brady (for Joachim Schneibel), Oak Ridge National Laboratory, and Rob Ritchie, University of California at Berkeley
- 9.30 am Multiphase HT Alloys: Exploration of Laves-Strengthened Steels  
Mike Brady, Oak Ridge National Laboratory
- 10.00 am Break
- 10.30 am Novel Processing of Mo-Si-B Intermetallics for Improved Efficiency of Power Systems  
Matt Kramer, Ames Laboratory
- 11.00 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
- 11.30 a.m. Concepts for Smart, Protective High-Temperature Coatings  
Peter Tortorelli, Oak Ridge National Laboratory
- 12:00 am Lunch

#### 3b. Materials for Increased Reliability in Combustion/Gasification Environments

- 2.00 pm Improved Refractories for Slagging Gasifiers in IGCC Power Systems  
James Bennett, Albany Research Center
- 2.30 pm Corrosion-Resistant Ceramic Coatings  
Beth Armstrong, Oak Ridge National Laboratory
- 3.00 pm Development of a Commercial Process for the Production of Silicon Carbide Fibrils  
Richard Nixdorf, ReMaxCo Technologies, Inc.
- 3.30 pm Break

#### 3c. Breakthroughs in Materials Performance and Reliability

- 4.00 pm Corrosion Probes for Fireside Monitoring in Coal-Fired Boilers  
Bernie Covino, Albany Research Center
- 4.30 pm Development of Nondestructive Evaluation Methods for Ceramic Coatings  
Bill Ellingson, Argonne National Laboratory
- 5.00 pm Adjourn

## Wednesday, May 11<sup>th</sup>, 2005

7.30 am Continental Breakfast

### Session 4 – COATINGS & PROTECTION OF MATERIALS

8.20 am Introductory Remarks  
Udaya Rao, U.S. Department of Energy, National Energy Technology Laboratory

8.30 am Invited Talk: Overview of EERE Office of Industrial Technology Materials R&D  
Sara Dillich, U. S. Department of Energy, Office of Industrial Technology

9.00 am Extended Alloy Lifetimes Through Improved Coating Performance and Reactive Element Optimization  
Bruce Pint, Oak Ridge National Laboratory

9.30 am Coating Microstructure-Property Issues  
Richard Wright, Terry Totemeier, Idaho National Engineering and Environmental Laboratory

10.00 am Break

10.30 am Investigation of Iron Aluminide Weld Overlays  
John DuPont, Lehigh University

11.00 am YSZ Thermal Barrier Coatings by MOCVD  
Ted Besmann, Oak Ridge National Laboratory

11.30 am Modeling of Chemically Vapor-Deposited Zirconia for Thermal Barrier and Environmental Barrier Coatings  
Tom Starr, University of Louisville

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

12.30 pm. Adjourn