

**Workshop on Characterization of Advanced Materials under Extreme Environments for Next Generation Energy Systems  
September 25-26, 2009**

**AGENDA**

**TOPIC 1:**     [Plenary - Energy Systems and Materials](#)

- **Prof. S. Yip**, MIT, *Fundamental Challenges in Multi-scale Materials Modeling and Simulation*
- **Dr. L. Mansur**, ORNL, *Fundamentals of Void Swelling in Metal Alloys*
- **Prof. J. Glimm**, SBU, *Computational Approaches: Models and Simulations*
- **Dr. B. Larson**, ORNL, *Advanced Characterization of Materials Under Extreme Conditions Using Next Generation Probes*

**TOPIC 2:**     [Advanced Materials and Fuels for Next Generation Energy Systems](#)

- **Mr. Jon Carmack** (plenary), INL, *Characterization in Advanced Fuel Development*
- **Dr. P. Hosemann/S. Maloy**, LANL, *Characterization and Testing of Core Materials for Fast Reactor Applications*
- **Dr. Hugh Isaacs**, BNL, *Corrosion in Advanced Reactor Systems*
- **Prof. Tsakalakos**, Rutgers University, *Nanostructured Coatings and Their Characterization Under Nuclear Energy System Extremes*

**TOPIC 3:**     [Material Characterization Techniques and Extreme Conditions - Next Generation Probes](#)

- **Prof. I. Noyan** (plenary), Columbia University, *Characterization of Radiation Damage Using X-ray Diffraction*
- **Dr. E. Bozin**, Columbia University, *Atomic Structure at the Nanoscale: 21st Century Material Challenge*
- **Dr. L. Margulies**, Risøe Institute/BNL-NSLS2, *Three Dimensional X-ray Diffraction Microscopy*
- **Dr. Y. Zhu**, BNL-CFN, *The State-of-the-art Electron Beam Nanoscale Characterization*

**TOPIC 4:**     [Computational Approaches and Modeling](#)

- **Prof. A. El-Azab**, Florida State University, *Computational Modeling of Defects and Microstructure Dynamics in Materials Under Irradiation*
- **Dr. M. Stan**, LANL, *Atomistic and Continuum Simulations of Phase Stability of Alloys - Advanced Models and Simulations of Nuclear Fuel Materials*
- **Dr. W. Ku**, Condensed Matter, BNL, *A New First-Principles Computational Method for Disordered Materials*
- **Prof. R. Samulyak**, SBU, *Multi-Physics Simulations of the Failure of Fuel Rods During Accidents in Sodium-Cooled Fast Reactors*

**Friday, September 25, 2009**

<b>Starts</b>	<b>Ends</b>	<b>Events</b>	<b>Location</b>												
7:30 AM	8:30 AM	Registration	CFN 2 <sup>nd</sup> Flr Conf Rm												
8:00	8:20 AM	Breakfast	CFN 2 <sup>nd</sup> Flr Conf Rm												
8:20	8:30 AM	<b>Welcoming Remarks:</b> Dr. Sam Aronson, Director, BNL	CFN 2 <sup>nd</sup> Flr Conf Rm												
8:30	10:15 AM	<b>Topic 1: Energy Systems and Materials – Plenary Session</b> <a href="#">Dr. W. Horak, EENS-BNL, Chair</a> Professor Sidney Yip, MIT Dr. Louis K. Mansur, ORNL Prof. James Glimm, SBU Dr. Bennett Larson, ORNL	CFN 2 <sup>nd</sup> Flr Conf Rm												
10:15	10:30 AM	Break	CFN 2 <sup>nd</sup> Floor Conf Rm												
10:30	12:00 PM	<b>Topic 2: Advanced Materials for Next Generation Energy Systems and Prospects</b> <a href="#">Dr. M. Todosow, EST-BNL, Chair</a> Mr. Jon Carmack, INL Dr. P. Hosemann & S. Maloy, LANL Dr. Hugh Isaacs, BNL Prof. Thomas Tsakalakos, Rutgers U	CFN 2 <sup>nd</sup> Floor Conf Rm												
12:00 PM	1:00 PM	<b>Photo (first) and Lunch</b>	CFN 2 <sup>nd</sup> Floor Conf Rm												
1:00	2:30 PM	<b>Topic 3: Material Characterization Techniques and Extreme Conditions/Next Generation Probes</b> <a href="#">Dr. L. Ehm, NSLS-BNL, Chair</a> Prof. Ismail Noyan, Columbia University Dr. Lawrence Margulies, Risøe Institute/NSLS2 Dr. Emil Bozin, Columbia University Dr. Yimei Zhu, CFN-BNL	CFN 2 <sup>nd</sup> Floor Conf Rm												
2:30	3:30 PM	<b>Breakout Sessions (by techniques)</b> <a href="#">Dr. Juergen Thieme, NSLS2–BNL, Chair</a> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><b><u>Technique</u></b></td> <td style="text-align: center;"><b><u>Facilitator</u></b></td> </tr> <tr> <td>(1) strain mapping</td> <td>Prof. M. Croft</td> </tr> <tr> <td>(2) diffraction (PDF, diffuse)</td> <td>Dr. L. Ehm</td> </tr> <tr> <td>(3) microprobes (chem., elec.)</td> <td>Dr. Margulies</td> </tr> <tr> <td>(4) electrons</td> <td>Dr. Y. Zhu</td> </tr> <tr> <td>(5) modeling</td> <td>Dr. M. Stan</td> </tr> </table>	<b><u>Technique</u></b>	<b><u>Facilitator</u></b>	(1) strain mapping	Prof. M. Croft	(2) diffraction (PDF, diffuse)	Dr. L. Ehm	(3) microprobes (chem., elec.)	Dr. Margulies	(4) electrons	Dr. Y. Zhu	(5) modeling	Dr. M. Stan	CFN 1st & 2nd Floor Conf Rooms, and Atrium
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3:30	3:45 PM	Break	CFN 2nd Floor Conf Rm												
3:45	4:30 PM	Continued Breakout Sessions – prepare for presentation	CFN 1st & 2nd floor Conf Rooms, and Atrium												
4:30	5:30 PM	<b>Breakout Session Group Leaders present summaries to all workshop participants</b>	CFN 2 <sup>nd</sup> Floor Conf Rm												

6:00	8:00 PM	Dinner	Berkner Hall												
<b>Saturday, September 26, 2009</b>															
<b>Starts</b>	<b>Ends</b>	<b>Events</b>	<b>Location</b>												
8:00 AM	8:30 AM	Check-in; Coffee	Berkner Hall Main Lobby												
8:30	10:15 AM	<b>Topic 4: Computational Approaches and Modeling</b> <a href="#">Prof. K. McDonald, Princeton U., Chair</a>  Prof. Anter A El-Azab, FSU Dr. Marius Stan, LANL Dr. Ku, Wei, Condensed Matter-BNL Prof. R. Samulyak, SBU	Berkner Hall Auditorium												
10:15	11:15 AM	<b>Breakout Sessions by Problem Areas:</b> <a href="#">Dr. L. K. Mansur, ORNL, Chair</a>  <table border="0"> <tr> <td><b><u>Problem Area</u></b></td> <td><b><u>Facilitator</u></b></td> </tr> <tr> <td>(1) radiation damage (structure and fuels)</td> <td>Dr. L. Ecker</td> </tr> <tr> <td>(2) materials properties at extremes</td> <td>Dr. H. Ludewig</td> </tr> <tr> <td>(3) corrosion</td> <td>Dr. H. Isaacs</td> </tr> <tr> <td>(4) new materials (coatings/films)</td> <td>Prof. T. Tsakalakos</td> </tr> <tr> <td>(5) computational modeling</td> <td>Prof. R. Samulyak</td> </tr> </table>	<b><u>Problem Area</u></b>	<b><u>Facilitator</u></b>	(1) radiation damage (structure and fuels)	Dr. L. Ecker	(2) materials properties at extremes	Dr. H. Ludewig	(3) corrosion	Dr. H. Isaacs	(4) new materials (coatings/films)	Prof. T. Tsakalakos	(5) computational modeling	Prof. R. Samulyak	Berkner Hall Rooms A, B, C, D
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11:15	12:00 PM	Reports on Breakout Sessions by Facilitators	Berkner Hall Auditorium												
12:00 PM	12:15 PM	Closing Remarks - Adjourn	Berkner Hall Auditorium												