

# ADVANCED ELECTRON MICROSCOPY & MATERIALS PHYSICS WORKSHOP

November 7-8, 2007  
Brookhaven National Laboratory  
Building 735, CFN Seminar Room  
Long Island, New York

## PROGRAM

### WEDNESDAY (November 7<sup>th</sup>)

7:30 – *Continental Breakfast*

#### Instrumentation & Aberration Correction

- 8:30 - Welcome – Yimei Zhu (BNL) and Konrad Jarausch (HTA)
- 8:40 - Opening Remarks – Emilio Mendez, CFN Director
- 8:45 - Harald Rose (TU-Darmstadt) – The History of Aberration Correction
- 9:15 - Max Haider (CEOS) – New Correctors to Fulfill the Requirements of Future Instruments
- 9:45 - Bernd Kabius (ANL) - Aberration Correction Concepts Within the TEAM Project

10:15 *Coffee Break*

- 10:30 - Phil Batson (IBM) - Unexpected Benefits from Aberration-Corrected Electron Optics
- 11:00 - Rodney Herring (Victoria) - Coherence Property Measurements of Phonon-, Plasmon-, and Ionization-loss Electrons and Their Contributions to the Stobbs Factor
- 11:30 - Angus Kirkland (Oxford) - Combining Direct and Indirect Aberration Correction and Compensation

12:00 - *Lunch*

#### Advanced EM in Materials Physics

- 1:30 - Steve Pennycook (ORNL) – New Views of Materials with Aberration-Corrected STEM
- 2:00- Koji Kimoto (NIMS) - A Few Practical Aspects of Atomic-Column Imaging Using ADF and EELS
- 2:30 - Nigel Browning (UC-Davis) - Imaging and Spectroscopy of Nanoscale Systems in the STEM

3:00 – *Coffee Break*

- 3:30 - Yimei Zhu (BNL) - Aberration Corrected STEM/EELS Analysis of Layered Thermoelectric Oxides

- 4:00 - Ji-Jung Kai (National Tsing Hua University) - The Characterization of Helium Bubbles in SiC/SiC Composite Using EELS and the Current Development on Structure Reversion  
4:30 - Rudolf Tromp (IBM) - Cathode Lens Microscopy: The Next Generation  
5:00 - Ray Twesten (Gatan) - Advances in Multi-Dimensional Imaging Techniques for STEM.

6:00 - *Dinner*

7:00 - Konrad Jarausch (Hitachi) – Novel Approaches for In-Situ and 3D Microscopy

## **THURSDAY (November 7<sup>th</sup>)**

7:30 - *Continental Breakfast*

### Advanced EM in Materials Physics

- 8:00 - Manfred Ruehle (MPI-Stuttgart) - Challenges of Electron Microscopy in Materials Physics  
8:30 - Robert Klie (UI-Chicago) - Atomic-Scale Studies of Complex Oxide Interfaces Using Aberration-Corrected Z-contrast Imaging and EELS  
9:00 - Rafal Dunin-Borkowski (TU Denmark) - Catalyst Nanoparticles Imaged Using Aberration Correction, Focal Series Restoration and Electron Tomography  
9:30 - David Muller (Cornell) - EELS Imaging and Spectroscopy of Interface Phases

10:00 - *Coffee Break*

- 10:15 - Mike O'Keefe (LBNL) - Cs Correction and Focal-Series Reconstruction of the Exit-Surface Wave  
10:45 - Jim Bentley (ORNL) - Nanoscale Elemental Mapping in TEM and STEM  
11:15 - Larry Allard (ORNL) - Catalyst Characterization via Aberration-Corrected STEM in the HTML User Program  
11:45 - Doug Blom (U-SC) – Aberration-Corrected STEM of MoVTaNbO Complex Oxide Analysis  
12:15 - Closing Remarks – Yimei Zhu (BNL) and Konrad Jarausch (HTA)

12:30 - *Lunch*

### CFN instrumentation (option):

- 1:30 - Operation and optimization of Cs corrected STEM/EELS (in laboratory) and tour of CFN facilities and instrumentation – break into small groups  
(a) Live Cs-corrected STEM/EELS at CFN and discussion (60 minutes)  
(b) Tour of the CFN facilities and microscopes and discussion (60 minutes)