

*April 22, 2015*

*11:45 a.m. -  
1:15 p.m.*

*9th Floor*

*Room 906*

*Photonics Cen-  
ter*

*8 Saint Mary's  
Street*

*Lunch will be  
served!*



# Photonics Forum

Novel Electron Microscopy in Materials Science Research  
Dr. Soumendra Basu, Boston University

The Boston University Photonics Center recently acquired a Tecnai Osiris Scanning/Transmission Electron Microscope (S/TEM) and a Quanta 3D Focused Ion Beam (FIB). The role of S/TEM observations in materials research will be discussed in this Photonics Forum for many materials systems. Examples in photonic materials include characterization of defect formation during hetero-epitaxial growth of gallium nitride (GaN) and indium gallium (InGaN) thin films on sapphire, and phase separation and ordering in InGaN thin films. Examples in electronic materials includes the study of hetero-epitaxial growth of superconducting yttrium barium copper oxide (YBCO) thin films on lanthanum aluminate substrates, and electron beam assisted disordering of oxygen vacancies in YBCO. Examples in energy materials include the study of nucleation in chemically vapor deposited environmental barrier coatings for gas turbines used for power generation, and surface phase formation in complex oxides used as cathode materials in solid oxide fuel cells. The use of the FIB in preparation of area-specific electron-transparent samples for the S/TEM will also be discussed.

Dr. Soumendra Basu is the Associate Division Head of the Division of Materials Science and Engineering and a Professor of Mechanical Engineering at Boston University. His research interests include thin films for photonic, electronic, fuel cell and superconducting applications; thermal barrier and environmental barrier coatings for gas turbine and fuel cell applications; environmental degradation of materials at elevated temperatures; structure and stability of surfaces and interfaces; and characterization of structure and phase transformations in materials using electron microscopy techniques. After receiving his Ph.D. in Materials Science and Engineering from MIT, Dr. Basu was a Post Doctoral Research Associate at Los Alamos National Laboratory, prior to joining Boston University in 1990. Dr. Basu has published more than 120 peer reviewed papers and has been on the Organizing/International Advisory Committees of several national and international conferences.

 Photonics Center

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