SEMINAR SERIES

International Institute for Carbon-Neutral Energy Research
Kyushu University

Title Exploring Resolution Limits in the Electron Microscope?

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Date & Time Friday, March 6, 2015 3:00 p.m.

Place I²CNER Hall, Ito campus, Kyushu University

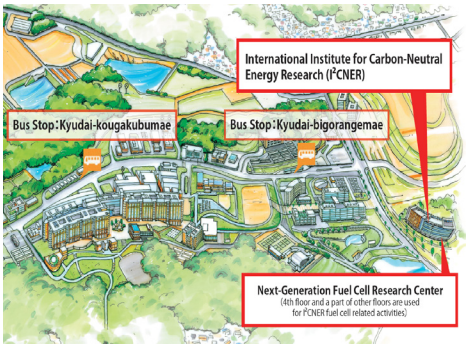
Abstract

The picometer-scale wavelength of the fast moving, high energy electron offers the theoretical possibility of unprecedented levels of resolution. This tantalizing prospect for imaging materials at the atomic scale or even finer with the transmission electron microscope was an ongoing target for many generations of scientists and engineers who continually struggled for more than half a century to design and build instruments having the best possible practical performance. Recent years have witnessed significant advances in instrumentation, and the recent emergence of aberration correction methods has pushed electron microscope resolving power to beyond the 1-Å resolution barrier, which was once considered insurmountable. These are undoubtedly exciting times, not only for the electron microscopy community, but also for the much broader materials community interested in probing the innermost structure of solid objects using these powerful instruments. This talk will address the grand challenge of ultimate resolution limits for imaging with the electron microscope and provide an overview of ongoing trends in instrumental performance. Representative examples that illustrate the potential impact of atomic-resolution electron microscopy obtainable with the latest generation of aberration-corrected instruments will also be briefly described.

About the Speaker

Prof. Dave Smith received his Ph.D. in Physics (1978) and D.Sc. (1988) from the University of Melbourne. He was Director, Cambridge University High Resolution Electron Microscope (1980 to 1984), Director, ASU Center for High Resolution Electron Microscopy (1991 to 2006), and President, Microscopy Society of America (2009). His long-term research interests have centered on the development and applications of atomic-resolution electron microscopy, with recent interests in oxide and semiconductor heterostructures. He is the author/co-author of 20 book chapters and over 500 refereed journal publications, he is a Fellow of American Physical Society, Materials Research Society, Microscopy Society of America, and Institute of Physics (UK), and he was the recipient of the 2014 MSA Distinguished Physical Scientist Award.

Host: Professor Zenji Horita



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