MONASH University

MONASH CENTRE FOR ELECTRON MICROSCOPY

SEMINAR

Direct Imaging of Nanomaterials using combined Exit Wave Restoration and Aberration Corrected TEM

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Wednesday 12 December 2007, 3:00 p.m. – 4.00 p.m.
Science Lecture Theatre S11, Bldg 25

Abstract

High-resolution electron microscopy is a powerful technique to study the atomic structures of nanomaterials. However, conventional high-resolution images suffer from aberrations introduced by the objective lens, and these images are generally not directly interpretable. Recent successful development of the aberration corrected microscopes [4] has greatly reduced the spherical aberration and hence the image delocalisation. The phase (of the specimen exit plane wavefunction) restored [5] from a series of differently aberrated images gives a directly interpretable representation of the atomic structures.

I will firstly discuss the exit wave restoration algorithms and the experimental implementations for conventional and aberration corrected TEM. Applications of the combined exit wave restorations and aberration corrected TEM, on the peapod structure of $Sc_3N@C_{68}$@SWNT, and Pt catalytic nanoparticles will be given, to demonstrate the power of this technique in direct atomic resolution imaging.

Visitors are most welcome: Please note the parking arrangements. There is a designated Visitors Car Park (N1) clearly ground-marked by white paint and tickets, at a cost of $1.4/hour for up to 3 hours, are available from a dispensing machine.

Convenor: Dr. Joanne Etheridge

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