MONASH University
Centre for Electron Microscopy

SEMINAR

Development of CVD, electron beam and plasma processes for nanostructure self-assembly.

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11.00am – 12.00pm
G29/30, New Horizons Building

Abstract

The relatively new field of 'Beam chemistry' incorporates a range of processes in which charged particle beams (electrons and ions) are used to dissociate chemical precursors inside an SEM, dual FIB-SEM or TEM. These high resolution electron/ion beam techniques allow for etching and deposition using gaseous precursors at nanometre length scales. These techniques are unique in that they also enable high resolution imaging of the deposited and etched nanostructures during processing.

In this seminar I will outline recent research in my group aimed at developing combined electron beam and plasma functionalization processes for nanostructure fabrication and for selective attachment of nanostructures at specific locations in optoelectronic and photonic devices. I will focus on a few recent demonstrations of the potential of beam chemistry methods: *in situ* fabrication of high purity metal (Au, Pt, Co, Ni) nanostructures and surface functionalization of silicon and other materials under gaseous atmospheres, enabling selective deposition of nanodiamonds, quantum dots and biomolecules at desired locations.

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