

School of Physical Sciences Seminar

Date: October 28th 2021 13:00 in SA217

Speaker: Matthew Snelgrove, a PhD student at DCU.

Title: Characterising Infiltration Techniques in Polymer Area Selective Deposition

Description: The increasing demands in integrated circuit (IC) technology is causing top-down photolithography to fast approach its technological and financial limitations. Research into 'bottom-up' methods as an alternative for next-generation electronic devices has led to major efforts in identifying suitable polymers for area selective deposition (ASD) and block copolymer (BCP) lithography. These new patterning approaches rely upon a self-assembled surface containing 'active' or 'in-active' polymer regions that are exposed to metal precursors. These precursors will either be incorporated or rejected by the active or inactive polymers, respectively. Subsequent polymer removal can be achieved through an oxygen rich process, leaving a metal oxide patterned in such a way that imitates the original morphology of the polymer structure to which the metal was exposed.

The Surfaces & Interfaces Research & Analysis (SIRA) group at DCU, alongside the AMBER centre at TCD, are developing and characterising metal infiltration techniques into various polymers that have shown the capability to be used in ASD and BCP sectors. This talk will give a brief background into the concept of polymer ASD/BCPs, before discussing recent progress made in DCU concerning metal oxide fabrication via polymer infiltration using atomic layer deposition (ALD) and X-ray photoelectron spectroscopy (XPS).