

CMP Seminar

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Visualizing Crystal Growth through Advanced Microscopy and X-ray Diffraction Mapping

This talk will cover specific research efforts at the National Institute of Standards and Technology (NIST) and Michigan State University (MSU) in the field of crystal synthesis from vapor to solid phase.

Work at the NIST explores methods and processes to control catalyzed synthesis of nanowires through chemical vapor deposition. Our methodology focused on deterministic synthesis through a combination of positioning catalysts and ion irradiation to tailor the surface lattice constant, exploring the responses of nanocrystals during heteroepitaxial growth. The second half of the talk focuses on homoepitaxial bulk crystal synthesis at MSU. It seeks to address how the extremes of a plasma-based growth environment can be controlled to induce large-scale uniform epitaxial overgrowth. The fundamentals of the chemical kinetics governing diamond crystal synthesis in the microwave induced plasma environment will be discussed relative to the reactor design and resultant crystal morphology, as well as future efforts to understand the changes in reaction kinetics as a function of location on the seed crystal surface.

Monday, October 14th, 2019 at 4:10 p.m.
Room 1400 BPS Bldg.
Host: Norman Birge