

# Mitigating Challenges in Nanofabrication with Novel Electron and X-ray Microscopy

Sandip Basu, Ph.D.

*Carl Zeiss Microscopy LLC., White Plains, NY 10601*

*sandip.basu@zeiss.com*

With the miniaturization of features and advent of new materials, there are more challenging needs for electron microscopy for surface sensitive imaging and analysis in the field of nanofabrication. For high resolution electron microscopy measurements, it is critical to ensure that the device and any defect are not damaged or electrically altered by the electron beam. At ZEISS, one of the ways we try to mitigate these challenges is with excellent scanning electron microscope performance at low accelerating voltages and currents. But that is just the beginning. In this presentation we will discuss a few highlights of how novel hardware and software advents are allowing the surface sensitive imaging and complementary analytics to benefit microstructural and chemical characterization at micro and nanoscale.

This presentation will also touch upon the application of Zeiss 3D X-ray microscopy in nanofabrication. The innovative Zeiss X-ray microscope provides high-resolution, non-destructive imaging, enabling in-depth examination of intricate nanostructures. By utilizing this technology, researchers can analyze 3D microstructure, reveal defects, and monitor fabrication processes at unprecedented resolutions. The results demonstrate that Zeiss 3D X-ray microscopy enhances the accuracy and efficiency of nanofabrication, paving the way for advanced manufacturing in fields such as electronics, medicine, and materials science. The findings highlight the potential for further optimization and increased capabilities in nanoscale engineering.

