

3D Microscopy : From Micro to Nano and From Bio to Semi

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An understanding of the three-dimensional nature of matter has always been important. From the macro-scale to the atomic scale: the order and distribution of heterogeneous materials in a sample govern its characteristics. Until recently, the microscopic scale on which the three dimensional character of a material could be studied was limited by the (microscopy) techniques available and also by the ability to reconstruct 3D information from 2D data sets.

Recent advancements in electron optics enable imaging of atomic sized features, while 3D reconstruction from a stack of images has become easier with the advancement of modern computing power. This new 3D application technique can be applied to a range of different materials - from cryogenically frozen biological samples to state-of-the-art semiconducting samples.

This presentation will show cutting-edge 3D imaging technology from a range of systems (SEM, FIB/DualBeam, TEM and Cryo TEM) and will illustrate how such systems can be used individually or in concert, to isolate and visualize anything from metal fatigue on steel bearings to the internal structure of a cell.