Nanoparticle Tracking Using CLSM* & OSSM** Imaging

J.S. Park, C.K. Choi and K.D. Kihm
Micro/Nano-Scale Fluidics and Heat Transport Laboratory [http://go.to/microlab]
Texas A&M University, College station, Texas

The Confocal Laser Scanning Microscopy* (CLSM) and Optical Serial Sectioning Microscopy** (OSSM) enable nano-particle tracking to locate their axial locations with a micrometer resolution. The three-dimensional diffraction patterns, so-called Point Spread Function (PSF), are theoretically predicted and experimentally validated so that the defocus distance ($\Delta z$) can be determined from the comparison of the two. A plan-apochromatic objective (40X, NA 0.75) are used to detect the diffraction patterns of 500-nm fluorescence-coated polystyrene spheres suspended in the 170-um deep micro-layer of water.