Optical Nanoscopes, Superlenses, and Microscope Condensers

In this seminar I will discuss the fundamental physical principles making possible the realization of optical nanoscopes; i.e., optical microscopes capable of imaging structures smaller than 100 nm with a resolution of at least 20 nm, then much smaller than the classical resolution limit of optical microscopes (~200 nm). In particular, I will describe experiments realized in our research group suggesting that so-called far-field superlenses can be considered modern microscope condensers. I will discuss some consequences of this assessment related with the possibility of a superlens path to far-field optical nanoscopy.