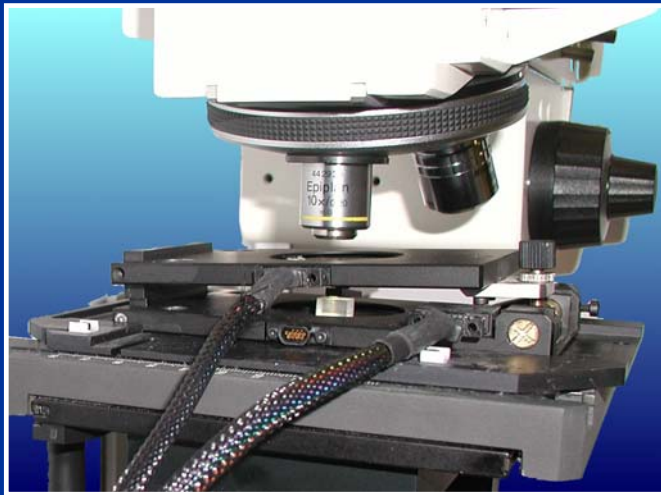
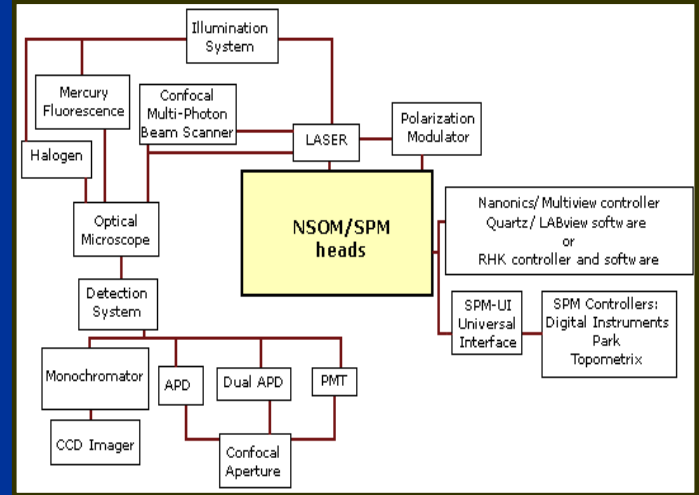


Near-Field Scanning Optical Microscopy (NSOM) System

NSOM Equipment

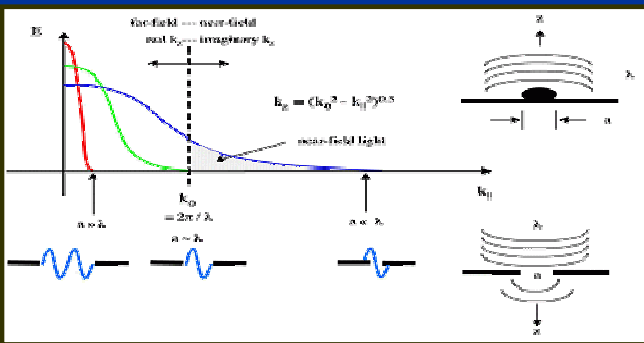


NSOM Schematic



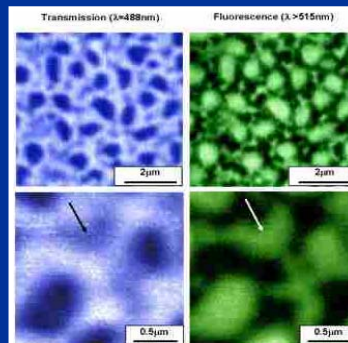
- The central part of NSOM is the tapered, aluminum coated, single-mode optical fiber probe (tip), which has a tiny aperture of only a few tens of nanometers. High optical resolution is achieved by illuminating a sample through the sub-wavelength aperture while the sample is held in close proximity to the probe. Within the near-field the optical resolution is limited only by the probe aperture size ($\sim 50\text{ nm}$), breaking the diffraction limit ($1/2$) to the resolution of ordinary optical microscopy

NSOM Feature

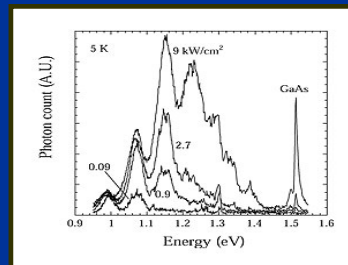


- The NSOM tip-sample distance is regulated by feedback mechanisms similarly to those used in AFM, but here sensing the lateral shear force interaction of the probe with the sample during the scanning process.
- Simultaneous high-resolution optical ($\sim 50\text{ nm}$) and topographical ($\sim 10\text{ nm}$ x, y-resolution, $\sim 1\text{-}2\text{ nm}$ z-resolution) images are obtained by scanning the sample

NSOM Image & Spectra



- Shear force (topography), transmission NSOM, and fluorescence NSOM images of a phase separated polymer blend sample



- PL spectra of quantum dots at various excitation power density (measured by NSOM).

- As the excitation power increased, higher sub-band emission peaks became discernible