Title: Development of a hybrid imaging and sensing system for biological studies

Abstract: A hybrid imaging and sensing system composed of scanning ion conductance microscopy (SICM), atomic force microscopy (AFM), surface plasmon resonance microscopy (SPRM), and resistive pulse (RP) techniques has been developed. SICM and AFM provide high-resolution real-time monitoring of topographic changes and SPRM allows visualization and mapping of molecular interactions at a group of objects (e.g. eukaryotic cells, and bacteria) simultaneously. The RP component enables controlled delivery of nanoparticles or large biomolecules for localized analysis. The application of this hybrid system in two biological problems will be discussed.