

Variable Temperature Near-Field Spectroscopy in Correlated Systems

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I will discuss our advances towards the development of instrumentation designed to study nano-scale optical properties of materials in a cryogenic environment. The main capability of our Variable-Temperature scattering-based Scanning Near Field Microscope (VT-SNOM) is to measure the complex dielectric function with a spatial resolution of 20-30 nm in a 10 K - 300 K temperature range. Measurements around the metal-insulator transition on 20 nm thick subsurface EuO films will be presented.