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**Variable temperature nano-optics in correlated electronic systems** ADRIAN GOZAR, Brookhaven National Laboratory, RAINER HELD, DARRELL SCHLÖM, Department of Materials Science and Engineering Cornell University, USA — We report on the development and performance of instrumentation designed to study nano-scale optical properties of correlated electronic systems in a cryogenic environment. The main capability of our Variable-Temperature scattering-based Scanning Near-Field Optical 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. VT-SNOM measurements around the metal-insulator transition on 20 nm thick subsurface EuO films will be presented.

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