

# Broadband Dielectric and Optical Spectroscopy on Correlated Systems: From mHz to THz

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Transition-metal oxides and chalcogenides exhibit a plenty of highly diverse functional material properties prospective application. This variability results from the balance of competing interactions between correlated microscopic degrees of freedom (spin, charge, orbital, structure). This sensitive balance often can be influenced by only small external fields and reaches from highly frustrated ground states to multiferroic order. The low-lying excitations and collective modes in such complex phases demand for a spectroscopic window bridging the DC transport and thermodynamic material properties and the usual phononic and electronic energy scales. The phenomenology reaches from glassy relaxational features to the search for collective magneto-electric excitations in multiferroics, so called electro-magnons.

The talk will introduce the experimental approaches which shall be utilized to cover this broad frequency range and will illustrate it considering selected investigations on rare-earth manganites and thio-spinel systems.