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FLASH HALL (28c) - Seminar Room

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In-situ and analytic TEM studies of strongly correlated manganites

Perovskite oxide materials with strong electronic or electron-lattice correlations exhibit a fascinating variety of properties from ferroelectricity over colossal resistance effects to high-temperature superconductivity. In these materials, interfaces and other defects can have a tremendous effect on the local correlation interactions which requires spatially resolved study of atomic, chemical and electronic structure. Recent developments in analytical and in-situ high resolution transmission electron microscopy enable Ångstrom-resolution access to correlation physics.

In addition, in-situ stimulation techniques offer real time analysis of cooperative processes during phase transitions in external fields. In this talk will focus on the understanding of polaron properties and dynamics in colossal resistance effects in manganites. Based on this, I will show examples, how strong correlations in manganites can be used to develop new approaches for steering photovoltaic and thermoelectric energy conversion.

