TECHNISCHE UNIVERSITÄT DRESDEN

Institut für Festkörper- und Materialphysik

IFMP Institut für Festkörper- & Materialphysik

IFMP Seminar

Date Monday, June 29, 2026, at 16:00

REC/C213

Zoom: Not available

Speaker **Aishwarya Radhakrishnan**
University of Madras, India

Title **The Origin of the Spin Reorientation Transition in $Gd_{2-x}Ho_xFeCrO_6$ (x = 0.5) Double Perovskite**

Abstract The influence of rare-earth Ho^{3+} ions at the *A*-site (Gd^{3+}) of Gd_2FeCrO_6 (GFCO) is investigated. The crystal structure, Raman modes and magnetic properties of the parent Gd_2FeCrO_6 (GFCO) and $Gd_{2-x}Ho_xFeCrO_6$ (GHFCO) with x=0.5 are reported. The compounds Gd_2FeCrO_6 (GFCO) and $Gd_{1.5}Ho_{0.5}FeCrO_6$ (GHFCO), synthesised via the solid-state reaction method, crystallise in an orthorhombic structure with the *Pbnm* space group. The difference in the ionic radii between Ho and Gd gives rise to a shift in the highly intense XRD peak of GHFCO, and the corresponding changes represent a double perovskite structure. The observed 10 Raman-active modes further confirm the orthorhombic structure, and a higher wavenumber shift is observed in GHFCO. An increase in the Néel transition to 235 K is observed in GHFCO compared to the parent GFCO, whose T_N is ~190 K. GHFCO exhibits strong bifurcation, evidenced by the ZFC/FC curves, but for GFCO there exists an overlap between the curves. *M-H* loops were traced at 300 and 10 K for GFCO and GHFCO. Most importantly, spin reorientation is observed in GHFCO at low temperatures.

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