Spectroscopic signatures of domain walls in hexagonal ErMnO₃

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We investigated the spectroscopic response of stripe- and vortex-containing $ErMnO_3$ in order to uncover the dynamic signatures of the domain walls. We quantify Born effective charge and polarization differences using the lattice behavior, analyze the local rare earth environment from the *f*-manifold excitations, and reveal how shifts in the charge transfer excitations impact the band gap. These findings are unified with a discussion of hybridization and domain wall density effects.

Mesoscopic stripe and vortex domains in h- $ErMnO_3$ along with the crystal structure and vibrational response. We use the spectral contrast to reveal Born charge and polarization differences.

