



Contribution ID: 186

Type: Talk

[611] Ultrafast demagnetization dynamics in TbMnO₃

Wednesday 23 August 2017 17:00 (15 minutes)

TbMnO₃ is a well-studied low-temperature multiferroic. Below 41 K the magnetic system orders antiferromagnetically into a spin density wave. Upon further cooling, below 27 K, the magnetic order changes to cycloidal and a ferroelectric polarization arises.

We present our results on photoinduced demagnetization dynamics in TbMnO₃, following excitation at 1.55 eV and 3 eV photon energies. The magnetic and orbital orders are tracked via the (0 q 0) and (0 2q 0) reflections, respectively, using polarization dependent resonant X-ray diffraction at the Mn *L*₂ edge. The timescales and pathways of the transition between the multiferroic and the high temperature phase will be discussed.

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Session Classification: Correlated-Electron Physics in Transition-Metal Oxides

Track Classification: Correlated-Electron Physics in Transition-Metal Oxides