

Imaging strain-mediated magnetoelectric heterostructures using photoemission electron microscopy

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The magnetic properties of epitaxial thin films can be electrically controlled via piezoelectric strain from ferroelectric substrates, and the resulting changes are typically measured macroscopically using magnetometry [1,2]. For epitaxial films of the manganite $\text{La}_{0.67}\text{Sr}_{0.33}\text{MnO}_3$ on ferroelectric substrates of BaTiO_3 and relaxor $\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})_{0.72}\text{Ti}_{0.28}\text{O}_3$, I will reveal the microscopic nature of the strain-mediated magnetoelectric coupling using images obtained by photoemission electron microscopy (PEEM) with contrast from x-ray magnetic circular dichroism (XMCD). Similarly, microscopic information will also be obtained using ferromagnetic resonance (FMR).

References

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