IRG-2: Double Perovskite Interfaces and Heterostructures

Materials for Room Temperature Spintronics

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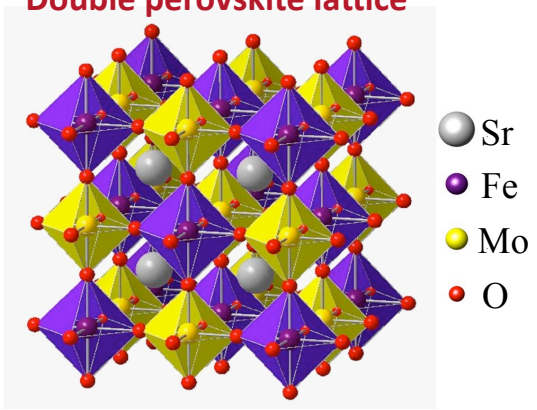
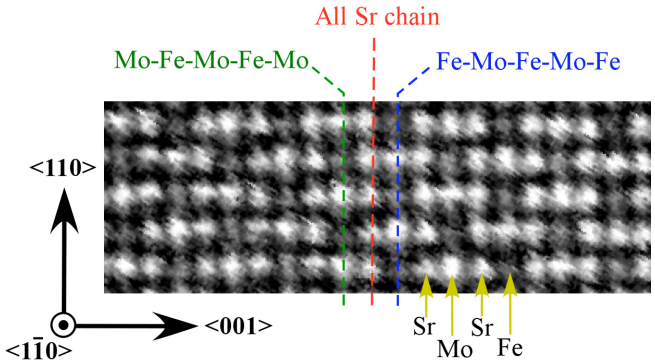
Ordered double perovskites, such as Sr_2FeMoO_6, are among the very few materials that allow electrons of one spin direction to move through them as though they were passing through a normal metal, while blocking electrons of the opposite spin. Materials that behave this way at room temperature are even more exotic.

Double perovskite lattice





Scanning transmission electron microscope image of an Sr_2FeMoO_6 film

To unlock the potential of Sr_2FeMoO_6 it is essential to deposit films where the iron (Fe) and molybdenum (Mo) ions are highly ordered and the formation of unwanted phases is suppressed. CEM researchers have been able to deposit highly ordered, single crystalline films of Sr_2FeMoO_6 that retain their magnetism to temperatures over 227°C.

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