

**Photoelectron emission microscopy (PEEM) on bilayer manganite  
 $\text{La}_{1.1}\text{Sr}_{1.9}\text{Mn}_2\text{O}_7$**

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Perovskite manganites have been intensively studied for their intriguing features which would be applicable to spintronic device such as a colossal magnetoresistance. Among them, it is well known that bi-layered  $\text{La}_{2-2x}\text{Sr}_{1+2x}\text{Mn}_2\text{O}_7$  exhibits the competition between the ferromagnetic interaction and antiferromagnetic interaction along the c axis, reflecting the two-dimensionality. Charges are weakly localized within the ferromagnetic (FM)  $\text{MnO}_2$  layers in the A-type AFM order, but is destabilized by the three-dimensional FM order. It is recognized that a local lattice distortion strongly influences on magnetism and transport phenomena in the complex electronic materials.

We report the PEEM measurement on  $\text{La}_{1.1}\text{Sr}_{1.9}\text{Mn}_2\text{O}_7$  in order to understand the underlying electronic structure of the matrix. We have demonstrated that PEEM with synchrotron radiation is an useful tool to probe an electronic structure image and a local strain field at an element-selective site; stripe-like domains were observed at the Mn  $L_2$  edge.