

Abstract Submitted  
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**In situ ARPES on Sr<sub>2</sub>IrO<sub>4</sub> thin films electron and hole-doped via cation substitution** JOCIENNE NELSON, BRENDAN FAETH, JASON KAWASAKI, CELESTA CHANG, DAVID MULLER, DARRELL SCHLOM, KYLE SHEN , Cornell University — Sr<sub>2</sub>IrO<sub>4</sub>, a Mott insulator with spin-orbit coupling, has garnered much attention due to its similarities to the prototypical cuprate superconductor La<sub>2</sub>CuO<sub>4</sub> and its predicted high temperature superconductivity. It is thus essential to explore the full phase diagram of Sr<sub>2</sub>IrO<sub>4</sub>. We grow carrier doped Sr<sub>2</sub>IrO<sub>4</sub> epitaxial thin films by oxide molecular beam epitaxy, and characterize the films using in situ angle-resolved photoemission. We present methods for both electron and hole-doping Sr<sub>2</sub>IrO<sub>4</sub> using substitutional doping on the Sr site, thus maintaining the structure of the IrO<sub>2</sub> planes, and minimizing the strong disorder scattering which occurs when substituting on the Ir site. We describe the subsequent evolution of the electronic structure by ARPES and transport.

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