

Abstract Submitted
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Raman studies of electronic excitations in $\text{Sr}_2\text{Ir}_{1-x}\text{Rh}_x\text{O}_4$ JHIH-AN YANG, DMITRY REZNIK, Department of Physics, University of Colorado at Boulder, TONGFEI QI, GANG CAO, Department of Physics and Astronomy, University of Kentucky — A novel Mott insulator Sr_2IrO_4 driven by strong spin-orbital interaction (SOI) has recently attracted a lot of attention. Small onsite Coulomb repulsion can open a gap in the SOC-induced $J=1/2$ states due to the narrow band. Interesting electronic phases in $\text{Sr}_2\text{Ir}_{1-x}\text{Rh}_x\text{O}_4$ were discovered by substituting Ir^{4+} with Rh^{4+} , which can effectively tune the strength of spin-orbit interaction. We report results of a Raman scattering investigation of $\text{Sr}_2\text{Ir}_{1-x}\text{Rh}_x\text{O}_4$ from $x=0$ to $x=0.7$. The evolution of the phonon spectrum with Rh doping and temperature as well as the resonant profiles of phonons will be discussed. In addition, we also observed broad luminescence-like signal whose origin is not well understood. Latest results on high energy electronic excitations and luminescence will be presented.

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