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**Angle resolved photoemission spectroscopy and X-ray diffraction study on IrTe1.6Se0.4** D.-H. KIM, K.-T. KO, KYOO KIM, J.-H. PARK, Pohang Univ of Sci Tech, B.-G. PARK, T.-Y. KOO, Pohang Accelerator Laboratory, J.-J. YANG, S.-W. CHEONG, Dept. Physics and Astronomy, Rutgers University, USA
— IrTe2 shows an interesting phase transition accompanying $\mathbf{q} = (\mathbf{1/5}, \mathbf{0}, \mathbf{1/5})$ lattice distortion, Ir valence fluctuation, and $J_{eff} = 1/2$ dimer formation. In order to study the role of anion doping, we investigated $IrTe_{1.6}Se_{0.4}$ which is known to exhibit $\mathbf{q} = (\mathbf{1/6}, \mathbf{0}, \mathbf{1/6})$ lattice distortion and higher transition temperature, about 370 K. The electronic structure of $IrTe_{1.6}Se_{0.4}$ single crystal was investigated by using angle resolved photoemission spectroscopy before and after the dimerization transition, which displays abrupt changes. Ir valence, investigated by corelevel X-ray photoemission, varies continuously from a pure $Ir^{3+}$ state to $Ir^{4+}$:$Ir^{3+} \simeq 1:1$ state, while x-ray diffraction measurement reveals a first order structure transition. In this talk, we will discuss an implication of our observations.

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