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Novel electronic transition in layered $IrTe_2$ YOON SEOK OH, Rutgers Center for Emergent Materials and Department of Physics and Astronomy, Rutgers University, J.J. YANG, Laboratory for Pohang Emergent materials, Postech, Korea, Y. HORIBE, S.-W. CHEONG, Rutgers Center for Emergent Materials and Department of Physics and Astronomy, Rutgers University — Layered chalcogenides such as 1T-TaS_2, 1T-$TiSe_2$, Bi_2Se_3, and MoS_2 exhibit rich low-dimensional physical properties such as superconductivity, topological insulator, charge density waves (CDW), and field-effect-transistor with high mobility. $IrTe_2$ forms in the layered CdI_2 structure, and exhibits diamagnetism and superlattice modulations below ∼260 K. In addition, superconductivity appears when the ∼260 K transition is fully suppressed by, for example, chemical doping. The origin of the ∼260 K transition in $IrTe_2$ has been controversial. It was claimed to be a structural transition, which suppresses electronic conduction. It was also reported that Fermi surface instability drives the transition - *i.e.* it is charge density wave-type. In this talk, we present our comprehensive studies on electron diffraction and transport experiments under chemical/hydrostatic pressure to unveil the origin of the novel electronic transition in $IrTe_2$.

Yoon Seok Oh
Rutgers Center for Emergent Materials and
Department of Physics and Astronomy, Rutgers University

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