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Structural transition and doping induced superconductivity in $IrTe_2$[1] HUIBO CAO, BRYAN CHAKOUMAKOS, XIN CHEN, Oak Ridge National Laboratory, JIAQIANG YAN, Oak Ridge National Laboratory; University of Tennessee Knoxville, MICHAEL MCGUIRE, Oak Ridge National Laboratory, HUI YANG, University of Tennessee Knoxville; Northeastern University, China, RADU CUSTELCEAN, Oak Ridge National Laboratory, HAIDONG ZHOU, University of Tennessee Knoxville;Florida State University Tallahassee, ANDREW CHRISTIANSON, DAVID SINGH, Oak Ridge National Laboratory, DAVID MANDRUS, Oak Ridge National Laboratory; University of Tennessee Knoxville — Doped $IrTe_2$ compounds are of current interest as they offer the opportunity to investigate the relationship between a structural transition and the appearance of superconductivity. Here we present the results of an investigation of the structural transition of $Ir_{1-x}Pt_xTe_2$ (x=0, 0.03, and 0.05) by X-ray and neutron diffraction. In $IrTe_2$ a structural modulation was observed with a wave vector of k = (1/5, 0, 1/5) below 285 K, accompanied by a structural transition from a trigonal to a triclinic lattice. First principles calculations suggest the local bonding instability associated with the Te $5p$ states is likely the origin of the structural phase transition. Pt-doping (x=0.03) suppresses the structural transition down to 70 K and the superconductivity appears at 3 K. No response to onset of superconductivity was observed in the structural parameters suggesting that strong electron-lattice coupling does not play a role in $IrTe_2$.

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