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Anion-Anion Bonding and Topology in Ternary Iridium Tin Selenides[1] BENJAMIN TRUMP, JAKE TUTMAHER, TYREL MCQUEEN, Johns Hopkins University — Iridium compounds have been under intense scrutiny due to strong relativistic effects (spin-orbit coupling) which have comparable energy scales to crystal field stabilization and electron correlations, which could lead to non-trivial behavior. Here we report the synthesis, characterization, and physical properties of two new, and one known, Ir-Sn-Se compounds. Resistivity, specific heat, and magnetization measurements show that all three have insulating and diamagnetic behavior, indicative of low spin $5d^6$ Ir^{3+}. Furthermore, electronic structures calculations on $Ir_2Sn_3Se_3$ show a single, spherical, non-spin-orbit split valence band that supports mobile p-type carriers, and imply that $Ir_2Sn_3Se_3$ is topologically non-trivial under tensile strain, due to inversion of Ir-*d* and Se-*p* states.

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