Synthesis, structure, chemical doping and high pressure studies of the SrPt$_3$P with unique structure features$^1$ BENMAAN JAWDAT, BING LV, XIYU ZHU, YUYI XUE, CHING CHU$^2$, Texas Center for Superconductivity and Department of Physics, University of Houston, Houston, TX 77204-5002 — Superconductivity up to 8.4K was reported by Takayama et al.$^3$ in APt$_3$P (A=Sr, Ca and La) in 2012 with structural information based only on X-ray powder refinement. The compounds are suggested to crystallize in an antiperovskite-based structure closely related to that of the heavy fermion superconductor CePt$_3$Si but are nonpolar unlike CePt$_3$Si. Both small single crystals and polycrystalline samples of SrPt$_3$P, the compound with the highest $T_c$ of this class of materials, are synthesized through solid state reactions. In this presentation, full and detailed structural information will be revealed based on X-ray single crystal analysis. Different chemical doping on different sites and high pressure studies have been carried out on the compound of SrPt$_3$P. The results and its implication will be presented and discussed.

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