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Indium Doping Induced Lattice Constant Variation in Tin Pyrophosphate HEBER MARTINEZ, CRISTIAN BOTEZ, JOSHUA MORRIS, UTEP — SnP_2O_7 and $Sn_{1-x}In_xP_2O_7$ (x from 0 to 0.2), were synthesized and characterized by X-ray diffraction over a range of temperatures and pressures. XRD confirmed indium solubility limit to be x=0.12. LeBail and Rietveld refinements confirmed the room temperature structure of the undoped and doped material to be the Pa-3 space group and that doping induced an increase in the lattice constant a with temperature increase. a reaches its highest value at doping level x=0.1, consistent with its highest value of protonic conductivity as measured by Nagao et. al. XRD measurements under an evacuated atmosphere, and under 5 bar of He pressure, inhibited the lattice constant a increment, providing a hint for the mechanism of proton incorporation to the bulk and enhancement in conductivity.

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