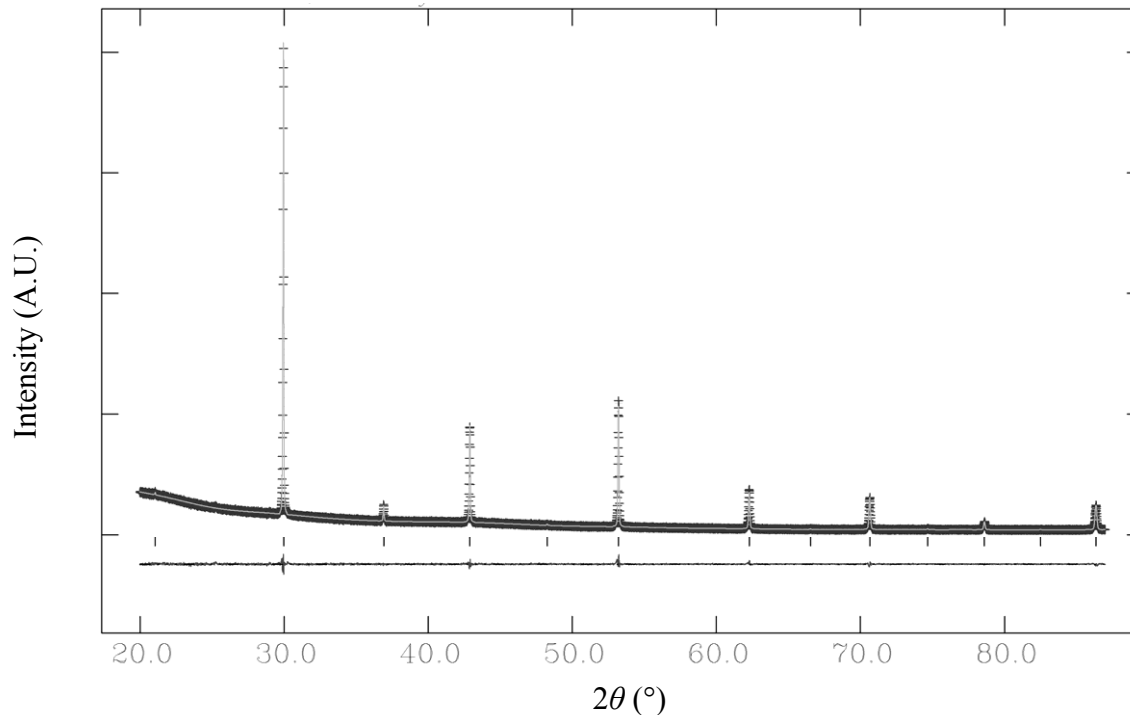


Supplementary information: Oxyanion doping strategies to enhance the ionic conductivity in
 $\text{Ba}_2\text{In}_2\text{O}_5$

Rietveld refinement of X-ray diffraction data for $\text{Ba}_2\text{In}_{1.7}\text{P}_{0.3}\text{O}_{5.3}$

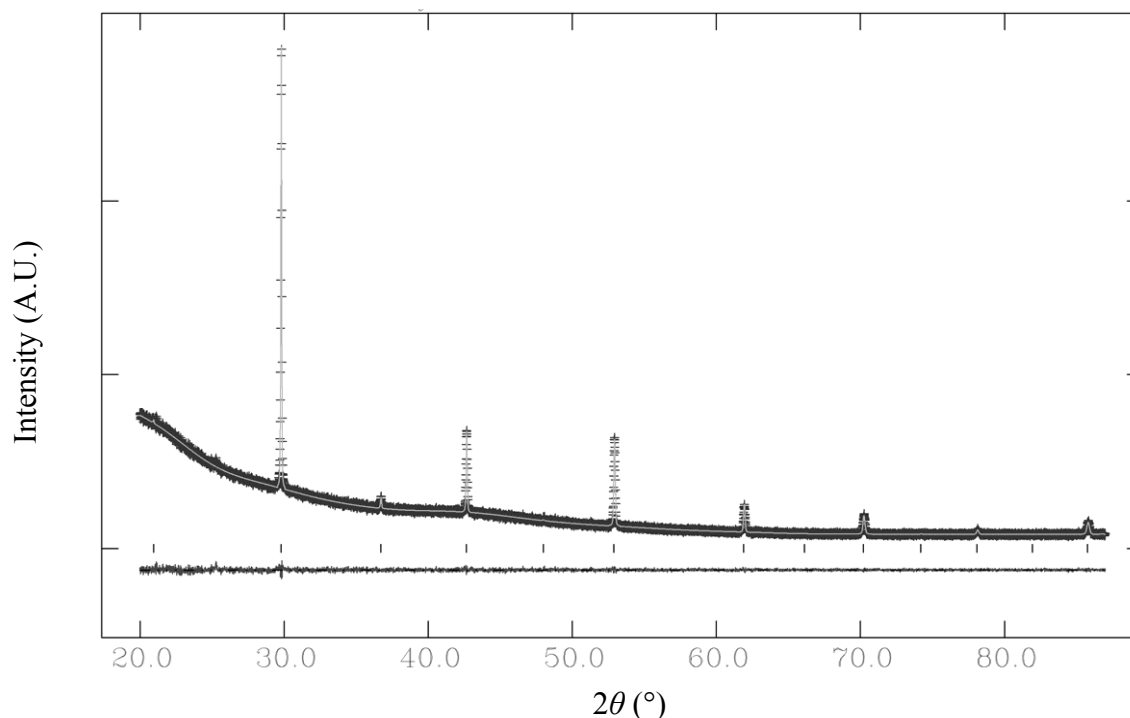


Observed (cross), calculated (line), reflection positions and difference plots (observed – calculated) of $\text{Ba}_2\text{In}_{1.7}\text{P}_{0.3}\text{O}_{5.3}$ from the Rietveld refinement for room temperature X-ray diffraction data.

Refined crystal structure $\text{Ba}_2\text{In}_{1.7}\text{P}_{0.3}\text{O}_{5.3}$ with cubic $Pm\bar{3}m$ (221) space group, from room temperature X-ray diffraction data.

		a (Å)	R_{wp}	R_p	χ^2	
		4.208(1)	2.98	2.09	1.34	
		x	y	z	Fractional occupancy	U_{iso} (Å ² x 100)
Ba	1(b)	½	½	½	1.000	1.36(2)
In	1(a)	0	0	0	0.842(3)	1.79(5)
P	1(a)	0	0	0	0.158(3)	1.79(5)
O	3(d)	0	0	½	0.833	4.30(20)

Rietveld refinement of X-ray diffraction data for Ba₂In_{1.7}S_{0.3}O_{5.45}

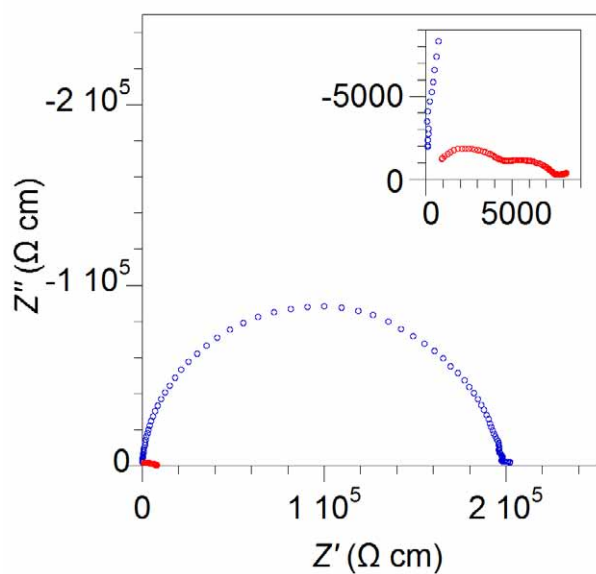


Observed (cross), calculated (line), reflection positions and difference plots (observed – calculated) of Ba₂In_{1.7}S_{0.3}O_{5.45} from the Rietveld refinement for room temperature X-ray diffraction data.

Refined crystal structure of Ba₂In_{1.7}S_{0.3}O_{5.45} using cubic *Pm3m* (221) space group using room temperature X-ray diffraction data.

		a (Å)	R_{wp}	R_p	χ^2	
		4.227(1)	2.69	1.94	1.093	
		x	y	z	Fractional occupancy	U_{iso} (Å ² x 100)
Ba	1(b)	½	½	½	1.000	0.85(5)
In	1(a)	0	0	0	0.868(9)	2.17(16)
S	1(a)	0	0	0	0.133(9)	2.17(16)
O	3(d)	0	0	½	0.908	8.42(48)

Representative impedance data



Complex impedance plane plots for Ba₂In_{1.7}P_{0.3}O_{5.3} at 270 °C dry (blue) and wet (red). The zoom in of the wet data are also shown in the insert.