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Short-range and Long-range Magnetic Ordering in SrCuP_2O_7 and PbCuP_2O_7

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Figures S1–S6. Experimental (red crosses), calculated (green lines), and difference (blue lines) X-ray powder diffraction (XRD) patterns for SrCuP_2O_7 , SrZnP_2O_7 , and $\text{PbCu}_{1-x}\text{Zn}_x\text{P}_2\text{O}_7$ ($x = 0, 0.1, 0.5$, and 1.0). Bragg reflections are indicated by green tick marks. XRD data were collected with a RIGAKU RINT 2500 diffractometer ($\text{CuK}\alpha$ radiation, 2θ range of $8\text{--}60^\circ$, a step width of 0.02° , and a counting time of 1 s/step). Note that some XRD patterns show the presence of texture. The RIETAN-2000 program (Izumi, F.; Ikeda, T. *Mater. Sci. Forum* **2000**, 321–324, 198) was used to obtain the calculated XRD patterns and lattice parameters. Atomic coordinates for SrCuP_2O_7 , SrZnP_2O_7 , PbCuP_2O_7 , and PbZnP_2O_7 were fixed at those reported in the literature.

Figure S7. Magnetic specific heat for $\text{PbCu}_{1-x}\text{Zn}_x\text{P}_2\text{O}_7$ ($x = 0, 0.1$, and 0.5). Note the units of C_m : $\text{J K}^{-1}\text{ mol-Cu}^{-1}$.

Figure S8. Differential thermal analysis (DTA) for SrCuP_2O_7 and PbCuP_2O_7 .

Figures S1 and S2

Figures S3 and S4

Figures S5 and S6

Figure S7. Magnetic specific heat for $\text{PbCu}_{1-x}\text{Zn}_x\text{P}_2\text{O}_7$ ($x = 0, 0.1$, and 0.5). Note the units of C_m : $\text{J K}^{-1} \text{ mol-Cu}^{-1}$.

Figure S8. Differential thermal analysis (DTA) for SrCuP_2O_7 and PbCuP_2O_7 .