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Crystal Growth of the S=1/2 Antiferromagnet $K_2PbCu(NO_2)_6$ Elpasolite ¹ LIANYANG DONG, Department of Chemical and Biomedical Engineering, FAMU-FSU College of Engineering; National High Magnetic Field Laboratory, Florida State University, TIGLET BESARA, National High Magnetic Field Laboratory, Florida State University,, THEO SIEGRIST, Department of Chemical and Biomedical Engineering, FAMU-FSU College of Engineering; National High Magnetic Field Laboratory, Florida State University — The elpasolite $K_2PbCu(NO_2)_6$ is known for its two structural transitions at 281 K and 273 K. Single crystals of $K_2PbCu(NO_2)_6$ have been grown in aqueous solution, but the rapid nucleation rate and convective transport renders it difficult to obtain large high quality single crystals. We developed a gel method to grow $K_2PbCu(NO_2)_6$ Elpasolite with sizes up to 5x5x5 mm³, suitable for neutron diffraction measurements. Susceptibility measurements clearly show that the Jahn-Teller distortions at 286K and 273K with associated orbital ordering produce a linear chain Heisenberg antiferromagnetic system. The intrachain interaction strength has been derived from a Bonner-Fisher analysis that yielded a value of 5.4K.

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