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Single crystal synthesis and magnetism of the $BaLn_2O_4$ family (Ln=lanthanide)[1] TIGLET BESARA, JEFFREY WHALEN, MATTHEW LUNDBERG, DANIEL RAMIREZ, JIFENG SUN, LIANYANG DONG, THEO SIEGRIST, National High Magnetic Field Laboratory/Florida State University — The $BaLn_2O_4$ family (Ln=La-Nd, Sm, Gd-Yb) has been synthesized for the first time in single crystalline form using a novel metal flux method. The family crystallizes in the CaV_2O_4 structure with quasi-one-dimensional zigzag chains of lanthanides, and we present a study of the structure details as the lanthanide goes from La to Yb. Magnetic susceptibility measurements on the series reveal that, while one analog (Gd) orders at low temperatures, some of the others (Tb, Ho, Nd) display magnetic anomalies. Some of the analogs (Ce, Tb, Nd, Yb) exhibit a susceptibility that clearly deviates from the Curie-Weiss behavior, due to crystal field effects. In general, the series display geometrically frustrated antiferromagnetic interactions.

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