

Abstract Submitted
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Pressure Dependent Magnetism in Magnetically Ordered Interlanthanide Chalcogenides¹ E.S. CHOI, Florida State University/NHMFL, R.P. GUERTIN, Tufts University, THOMAS ALBRECHT-SCHMITT, G.B. JIN, Auburn University — Several new interlanthanide chalcogenide compounds, $\text{Ln}'/\text{Ln}''/\text{Q}$ (Ln =light and Ln'' =heavy lanthanide, Q =S or Se) have been synthesized using a novel flux-growth technique, their complex structures determined, and their magnetic properties measured. The majority, with general formula $\text{Ln}'\text{Ln}''\text{Q}_3$ are paramagnetic for $T > 2\text{K}$, with effective moments consistent with the magnetic Ln constituents. EuLn_2Q_4 (Ln =Tb - Lu), which crystallize in the CaFe_2O_4 - type three-dimensional channel structure, are all antiferromagnetic with $T_N \sim 3\text{-}5\text{ K}$. The Ln constituent is geometrically frustrated and has secondary effects on the magnetic properties, which are dominated by the Eu-Eu superexchange coupling. The sharply defined Neel temperature increases with hydrostatic pressure to $P \sim 7\text{ kbar}$ for all EuLn_2Q_4 . (For example, for EuLu_2Se_4 , $dT_N/dP = +0.03\text{ K/kbar}$ at low pressures.)

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