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Pressure Dependent Magnetism in Magnetically Ordered Interlanthanide Chalcogenides[1] 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, Ln′/Ln″/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 $Ln'Ln''Q_3$ are paramagnetic for T> 2K, 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 $T_N \sim$ 3-5 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 kbar for all $EuLn_2Q_4$. (For example, for EuLu2Se4, $dT_N/dP = +0.03$ K/kbar at low pressures.)

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