

*Unusual magnetic behaviour in the potential multiferroic  $Pb_3TeCo_3V_2O_{14}$ .*

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The langasites (space group  $P321$ ) are a major focus of research in the materials science community due to their versatile and interesting structure with respect to exploring geometric frustration.  $Ba_3NbFe_3Si_2O_{14}$  is a langasite derivative ( $S=5/2$ ) wherein the  $Fe^{3+}$  atoms, the only magnetic species in this compound, are oriented in isolated stacked triangular arrays. Our research has shown that  $Ba_3NbFe_3Si_2O_{14}$  is also a multiferroic around the  $T_N = 26$  K transition. Our previous attempts to make other possible multiferroics by substituting  $Fe^{3+}$  in the lattice failed; most transition elements do not find the tetrahedral site favourable. However it has been shown that substituting Nb for Te allows one to synthesize a whole other range of compounds related to the dugganite structure,  $Pb_3TeZn_3As_2O_{14}$ , which has the same space group as these langasites (B.V Mill. Russ. *J. Inorg. Chem.*, 54, 2010, p.1205). We were able to synthesize  $Pb_3TeCo_3V_2O_{14}$  and present, here, its structural and magnetic properties.