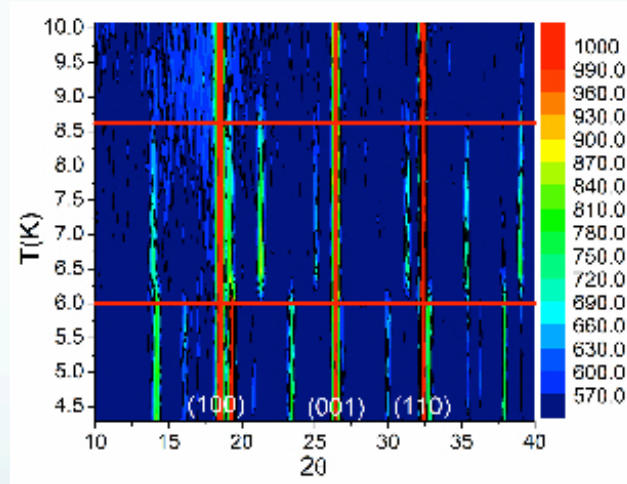
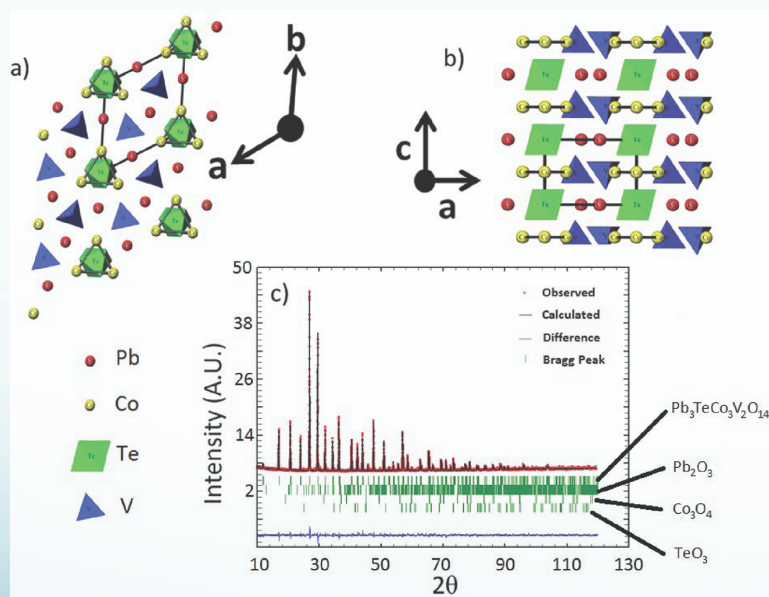


New Multiferroics Based on 2D Frustrated Sublattices

Chris Wiebe, Department of Chemistry, University of Winnipeg

We aim to synthesize new multiferroics based on the $\text{Ba}_3\text{NbFe}_3\text{Si}_2\text{O}_{14}$ structure, which is composed of 2D layers of Fe^{3+} trimers. By introducing Te^{6+} on the Nb^{5+} site we found that we can stabilize other transition metals on the tetrahedral Fe site and have recently discovered new multiferroic compounds which include $\text{Pb}_3\text{TeCo}_3\text{V}_2\text{O}_{14}$ and $\text{Pb}_3\text{TeCo}_3\text{P}_2\text{O}_{14}$.



Magnetic diffractogram from $\text{Pb}_3\text{TeCo}_3\text{V}_2\text{O}_{14}$. there are two magnetic transitions, as well as short-ranged ordering at high temperatures.

Structure of $\text{Pb}_3\text{TeCo}_3\text{V}_2\text{O}_{14}$ shown from the (a) ab and (b) ac planes. XRD of the pattern is shown in (c).

Next step – synthesis of new members with other transition metals.