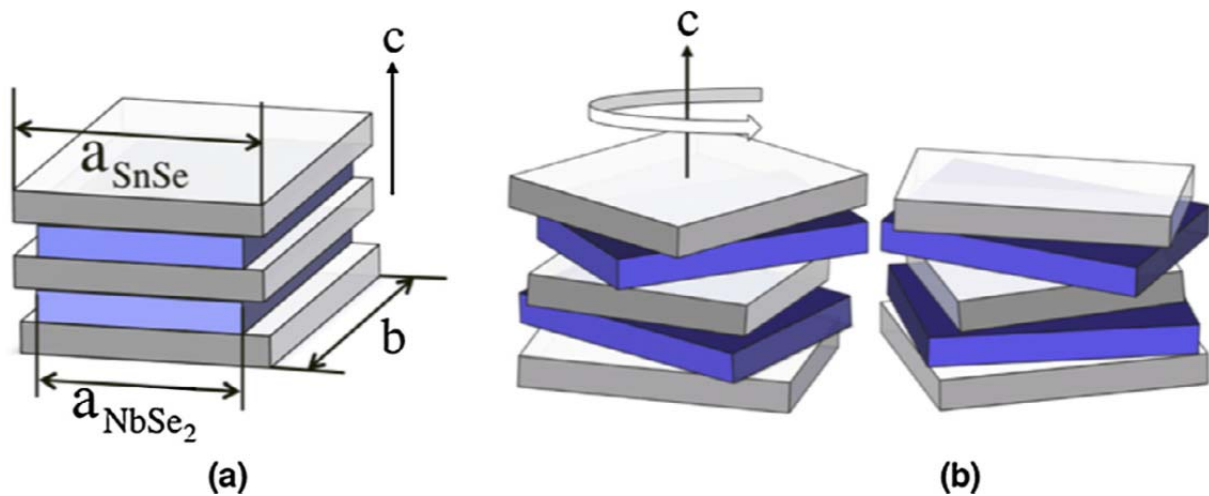


## Structural and electrical properties of a new $([\text{SnSe}]_{1.16})_m(\text{NbSe}_2)_1$ polytype

M. B. Alemayehu, M. Falmbigl, C. Grosse, K. Ta, S. F. Fischer, and D. C. Johnson  
J. Alloys Compd. **619**, 861-868 (2015).

### Short Abstract

A new polytype of the misfit layer compound  $([\text{SnSe}]_{1.16})_1(\text{NbSe}_2)_1$  with extensive rotational disorder was prepared from designed modulated elemental reactants. This polytype, previously referred to as a ferecrystal, formed over a range of compositions and precursor thicknesses. The  $a$ - and  $b$ -axis in-plane lattice parameters of both the SnSe and NbSe<sub>2</sub> constituents were unequal. The ferecrystalline compound is 1.6 times more conductive than the misfit layer compound. Hall effect measurements indicate that the ferecrystal is a  $p$ -type metal and that the higher conductivity is due to the higher mobility of carriers in the ferecrystalline compound.



**Above.** A schematic representation of the structure of the  $([\text{SnSe}]_{1.16})_1(\text{NbSe}_2)_1$  misfit layer compound (a) and two grains of the  $([\text{SnSe}]_{1.16})_1(\text{NbSe}_2)_1$  ferecrystal compound (b) illustrating the extensive rotational disorder between the constituent layers.