Suppressing a Charge Density Wave by Changing Dimensionality in the Ferecrystalline Compounds $([SnSe]_{1.15})_1(VSe_2)_n$ with n = 1, 2, 3, 4

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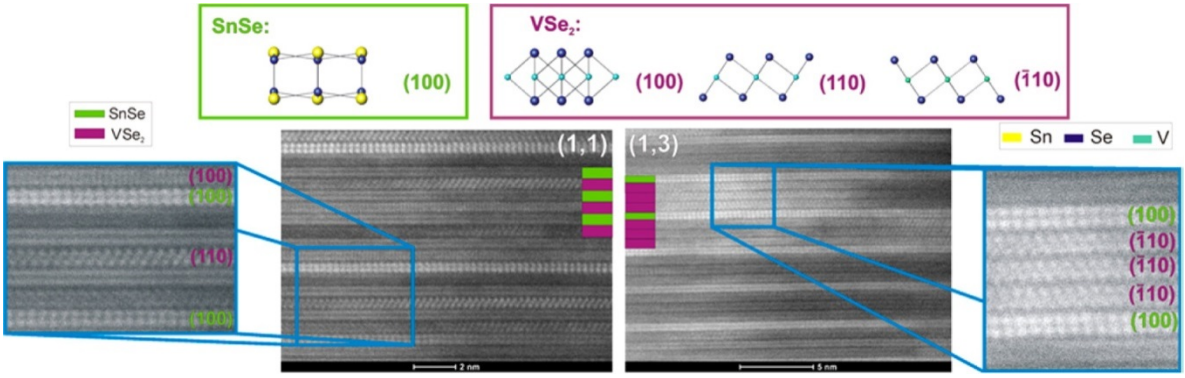
Short Abstract

The compounds, $([SnSe]_{1.15})_1(VSe_2)n$, were prepared using designed precursors in order to investigate the influence of the thickness of the VSe_2 constituent on the charge density wave transition. This transition observed in the resistivity of $([SnSe]_{1.15})_1(VSe_2)_1$ was confirmed. The electrical properties of the n = 2 and 3 compounds are distinctly different. For n = 1, this temperature correlates with the onset of the charge density wave transition. The transport properties observed suggest an abrupt change in electronic properties on increasing the thickness of the VSe_2 layer beyond a single layer.



Above. HAADF-STEM images of the samples $([SnSe]_{1.15})_1(VSe_2)_n$ with n = 1 and 3. The different crystallographic orientations of the individual layers are highlighted.