

SHANDITE TYPE $\text{CO}_3\text{SN}_2\text{S}_2 = \text{SN}_2\text{CO}_3\text{S}_2$ – STORY, STRUCTURE, MAGNETISM**Richard Wehrich^{1,2}, Florian Pielnhöfer²**¹University of Augsburg, Germany²University of Regensburg, Germany

S $\text{n}_2\text{Co}_3\text{S}_2$, a highly anisotropic $S_{1/2}$ half metal ferromagnet (HFM) was just found as magnetic Weyl semimetal with intrinsic giant anomalous Hall Effect (AHE). The compound was first prepared in our institute in 1979, predicted as HFM in 2001 and characterised as half antiperovskite $\text{SnCo}_{3/2}\text{S}$. It crystallizes in shandite type structure i.e. $\text{Pb}_2\text{Ni}_3\text{S}_2$. When its ferromagnetism with $T_C=176$ K was investigated by DFT calculations, a fascinating half metal $S=1/2$ ground state was discovered. The prediction of the magnetic state was confirmed from experimental investigations on single crystals that have further shown a completely anisotropic out-of-plane magnetic ordering of spins in Kagomé-layers of Co atoms. Studies on its magnetism in the following decades finally led to the recent discoveries of topological properties and a giant anomalous hall effect. Here, we review the crystal and electronic structure of $\text{Sn}_2\text{Co}_3\text{S}_2 = \text{SnCo}_{3/2}\text{S}$ including the concept of half anti-perovskites (HAP) that was developed from the relation to MgNi_3C .

Biography

R. Wehrich has completed his PhD at the age of 28 years at the University of Regensburg, followed by postdoctoral studies at CNRS Bordeaux, Paris, and Dresden. He is Professor at the University of Augsburg. He has published more than 75 papers in reputed journals.

richard.wehrich@mrm.uni-augsburg.de