Magnetic spin textures in intercalated transition metal dichalcogenides

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Noncentrosymmetric magnetic systems have been found to host a variety of exotic, and in some cases topologically protected, magnetic states such as skyrmion lattices, bimerons, chiral solitons and helimagnetism to list a few. One class of material that has faced increased scrutiny in recent years for their magnetism are layered materials such as the intercalated transition metal dichalcogenides. Intercalating magnetic transition metal ions (for example, M = V, Cr, Co, Fe) into the van der Waals gap between neighbouring NbS_2 layers can lead both to a noncentrosymmetric structure and variety of complex magnetic behaviours. Here, we report the synthesis and characterization of single crystals of noncentrosymmetric $M_{1/3}NbS_2$, where M = V, Mn, Cr and Fe, by chemical vapour transport. We present our investigations into the diverse array of magnetism exhibited by these compounds [1,2,3,4].

References

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