

2D magnetic materials based on molecular/2D heterostructures

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The crossover between molecular magnetism and 2D materials affords the opportunity of creating novel molecule-based 2D materials and hybrid heterostructures formed by magnetic molecules and 2D materials [1]. In this talk I will present some relevant advances on this topic. In particular, I propose to create these hybrid heterostructures with the aim is that of tuning the properties of the 2D material *via* an active control of the hybrid interface [2]. To reach this goal the molecular system of choice will be based on spin-crossover complexes able to switch between two spin states upon the application of an external stimulus (temperature, light or pressure). As 2D materials we will focus on (semi)conducting graphene and transition metal dichalcogenides (MoS₂ and WSe₂). This concept will provide a new class of stimuli-responsive molecular/2D heterostructures, which may be at the origin of a novel generation of hybrid materials and devices of direct application in highly topical fields like electronics, spintronics or molecular sensing.

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References

[1] E. Coronado, *Nature Rev. Mater.* 5 (2020) 87

[2] J. Dugay *et al.* *Nano Lett.* 17 (2017) 186