

Molecular magnetism in 2D materials: From chemical design to spin control in molecular devices

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Until recently magnetism has been an elusive property in 2D materials. In this talk the impact of molecular magnetism in this field will be presented [1]. In the first part I will focus on the design of molecular 2D magnets that, in contrast to what happens with the inorganic 2D magnets, are chemically stable in open air, keeping their magnetic properties preserved upon functionalizing their surface with different organic molecules [2]. In the second part I propose to create hybrid heterostructures by interfacing a layer of a functional molecular material with a 2D material. The aim is that of tuning the properties of the “all surface” 2D material *via* an active control of the hybrid interface [3]. 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). 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.

REFERENCES

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