

The interplay between magnetism and chemical binding

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Single molecule spintronics aim to identify new spin transport effects near the limit of electronic component's miniaturization. While the focus in this field is on magneto-transport properties, not much is known about the effect of magnetism on the structure of molecular conductors. Here, we reveal a new phenomenon: the direction of applied magnetic field can affect the properties of a metal-molecule chemical bond. Specifically, we show that magnetic field direction affects the formation of metal-single molecule-metal junctions and the stability of the metal-molecule bond. Our findings reveal the interplay between magnetism and chemical binding at the level of a single chemical bond.