On-surface metalation of salophene molecules with Dy on Au(111) substrate

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In recent years, metal-organic complexes have garnered much interest as an active area of research as a result of their enormous potential application in, e.g.: high-efficiency organic light-emitting devices, solar cells, photodetectors, or in electrocatalysis [1,2]. Metal-organic complexes are also a promising pathway for microelectronic miniaturization and open up new possibilities in the development of spintronics [3-5]. Since not all complexes are stable in air, *in situ* on-surface metalation is an attractive alternative to wet chemistry.

On-surface metalation of 5,5′-dibromosalophene with 3d transition metals (Co, Fe and Cr) on Co-intercalated graphene grown on Ir (111) was shown to be a promising pathway to vary magnetic and electronic properties of metal–organic complexes [6]. Moreover, on-surface metalation gives clean samples of various different metal–organic complexes, without any pollution or contaminations.

Within this contribution, we present results focused on *in situ* under UHV conditions, the on-surface metalation process of 5,5′-dibromosalophene with dysprosium. The metalation is realized in a two-step process deposition of the rare-earth metal atoms on sample kept at room temperature, followed by postprocessing annealing at elevated temperatures. The morphology and electronic structure of the obtained salophene complexes were investigated by using a combination of scanning tunneling microscopy and spectroscopy.

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