Electronic Supplementary Material (ESI) for RSC Advances.
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Electronic Supplemental Material
Magnetic Properties of On-Surface Synthesized Single-Ion Molecular Magnets

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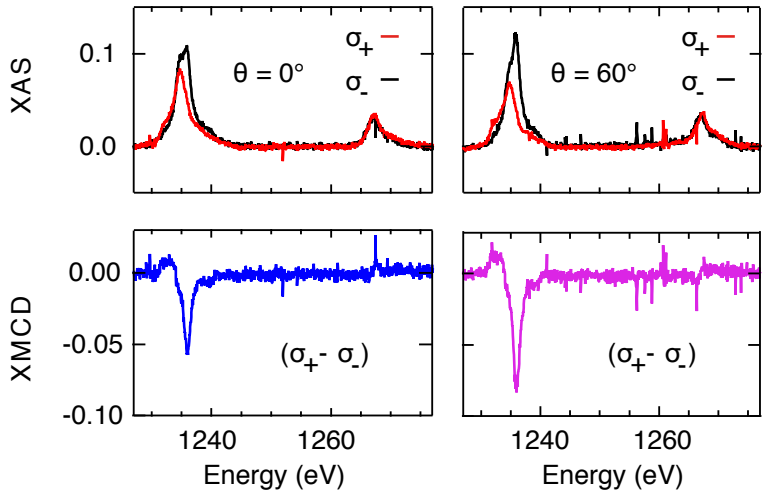

FIG. S1. XAS and XMCD spectra of 0.6 ML Tb atoms deposited directly on Ag(111) at RT. The spectral features of XAS and the magnitude of XMCD significantly differ from those of *on-surface* synthesized as well as *ex-vacuo* synthesized $TbPc_2$, and point to an in-plane easy axis ($\mu_0 H = 6.8$ T, $T = 3$ K).

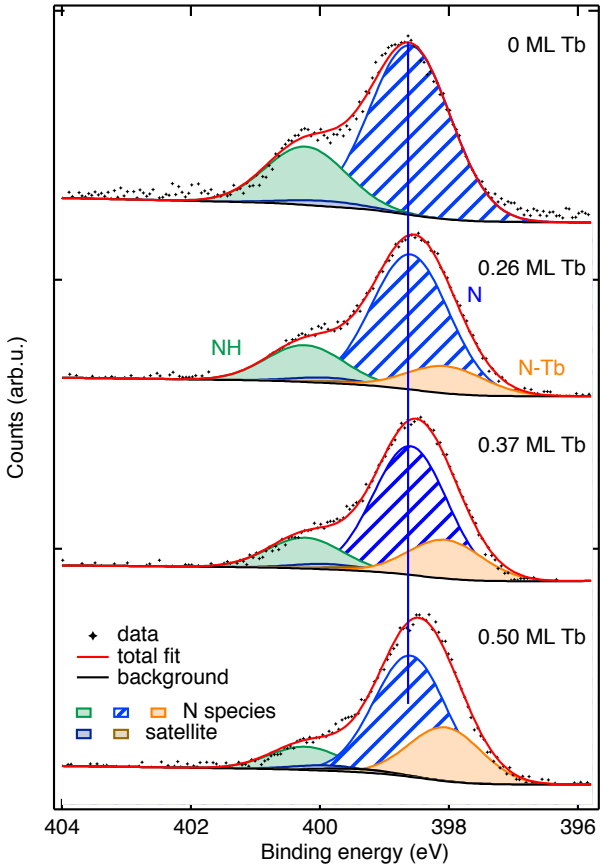

FIG. S2. N1s XPS spectra and corresponding fit for 1.9 ML pristine 2H-Pc molecules (upper panel) and after successive deposition of Tb. The amount of Tb is determined from the fit of the spectra including the different components.

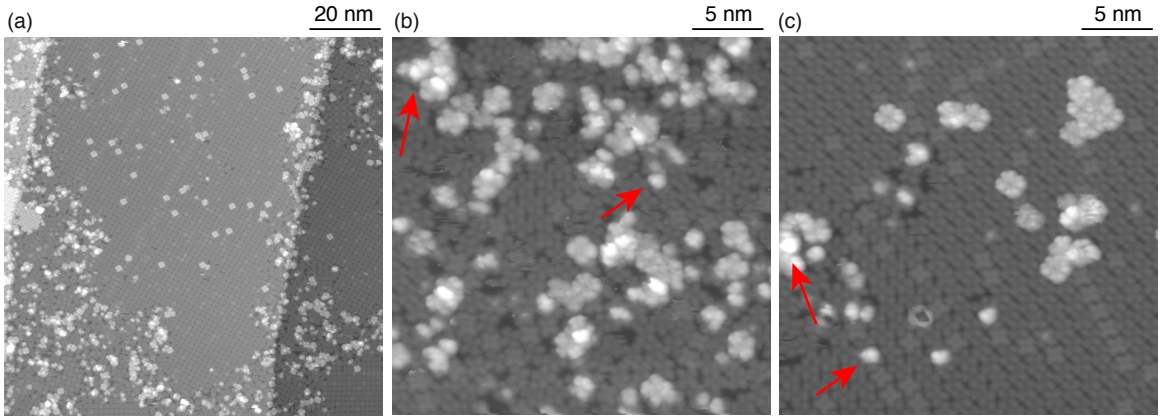

FIG. S3. STM images of a sample with a ratio between Tb and 2H-Pc molecules exceeding 0.5 and a 2H-Pc coverage lower that 2 ML (1.2 ML 2H-Pc/Ag(111) + 0.8 ML Tb). (a) Large scale image. (b), (c) zoom on different regions showing $TbPc_2$ molecules (gray) embedded in the 2H-Pc layer (dark gray) and Tb clusters (white dots). Red arrows point to some clusters. ($V_t = -2.0$ V, $I_t = 50$ pA, $T = 78$ K).

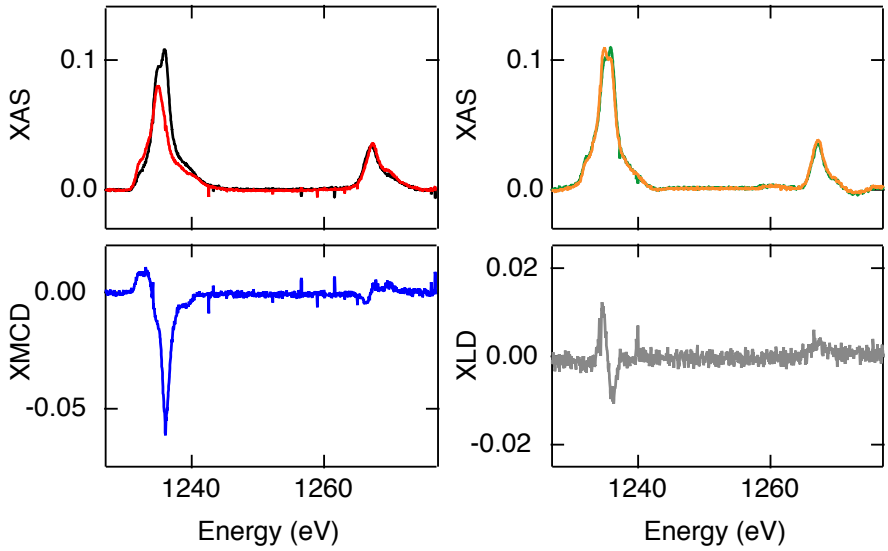

FIG. S4. (left) Normal incidence XAS and XMCD spectra and (right) grazing incidence XAS and XLD spectra of a sample with a ratio between Tb and 2H-Pc molecules exceeding 0.5 and a 2H-Pc coverage lower that 2 ML (1.4 ML 2H-Pc/Ag(111) + 2.0 ML Tb). The XMCD is strongly reduced with respect to the one shown in Fig. 1 in the main text for $TbPc_2$ molecules. In addition, the XLD is reduced and reversed in sign (left: $\mu_0 H = 6.8$ T, right: $\mu_0 H = 0.05$ T; $T = 3$ K).