Switching and charging of a ruthenium dye on Ag(111) – Supplemental material

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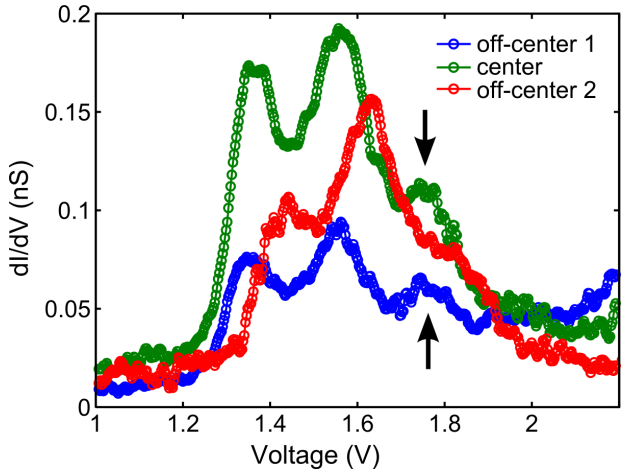

Fig. S1 Differential conductance dI/dV vs. voltage on an unswitched N3 (Figs. 2(a) and (b)). The data was recorded at the center of the molecules (green) and at two off-center positions (red and blue). A third vibronic peak can be observed (arrow).

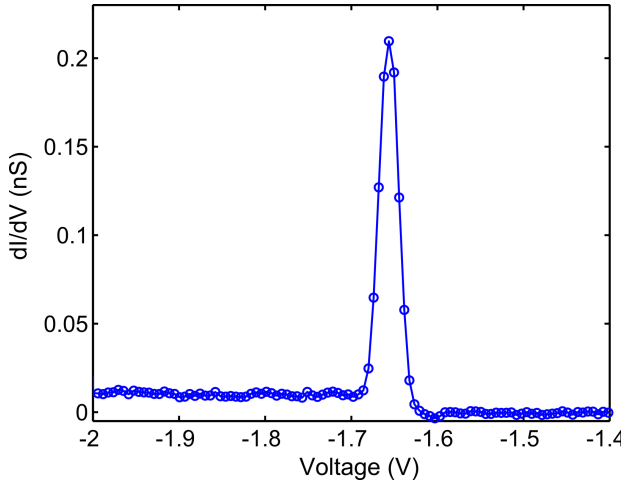

Fig. S2 Differential conductance dI/dV vs. voltage of the molecule on which the dI/dV map in Fig. 3(a) was performed. For this molecule we find $E_0 \sim 240\,\mathrm{mV}$ from the measured onsets $V^- = -1.62\,\mathrm{V}$ and $V^+ = 0.28\,\mathrm{V}$). The tip-molecule distance is defined by a current of 51 pA and a voltage of $-2\,\mathrm{V}$.

Calculation of E_0 and α

The energy level E_0 and the fraction α are calculated from the onsets of P^- at V^- and P^+ at V^+ as: $E_0/e = -V^- \left(\frac{V^+}{V^+ - V^-}\right)$ and $\alpha = \frac{V^-}{V^+ - V^-}$. With the values from Fig. 3(a) ($V^- = -2.2\,\mathrm{V}$ and $V^+ = 0.47\,\mathrm{V}$) $E_0 = 0.39\,\mathrm{V}$ and $\alpha = 0.18$ are obtained.

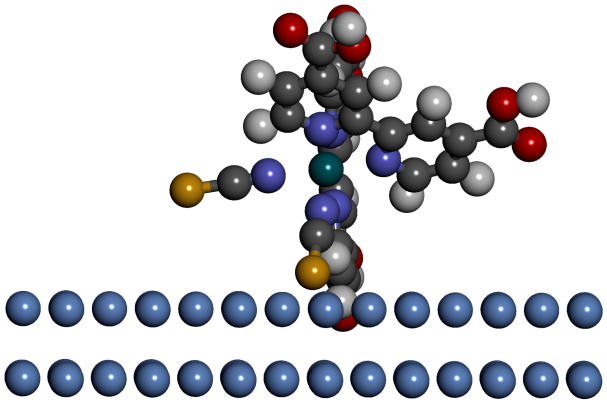

Fig. S3 Suggested adsorption geometry of N3 at a single step after the switching as viewed from the upper terraces. The step is parallel to the plane of the paper.

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