Supplementary Information

**O2, NO2 and NH3 Coordination to Co-porphyrin Studied Using Scanning Tunneling Microscopy on Au(111)**

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FIGURE CAPTIONS

**Figure S1.** (a) A typical STM image of mixed molecular islands on the Au(111) surface after deposition of CoTPP and H2TPP molecules. (b) A high-resolution STM image for a mixed molecular island. The two representative molecules of CoTPP and H2TPP are denoted by blue and green marks, respectively. The sizes of STM images: (a) 96 × 96 nm² and (b) 7.4 × 7.4 nm². Tunneling current: $I_T = 0.1$ nA. Sample voltage: (a) $V_S = -0.3$ V, (b) $V_S = -0.2$ V.

**Figure S2.** High resolution STM images of (a) O2-CoTPP and (c) NO2-CoTPP. Line profiles along with the blue, red, green and violet lines depicted in (a) and (c), respectively. Profiles are vertically shifted for clarity. Tunneling current: $I_T = 0.1$ nA. Sample voltage: (a) $V_S = -0.3$ V, (b) $V_S = -0.2$ V.
Figure S3. Simulated constant-current STM images of (a) O$_2$-CoTPP and (c) NO$_2$-CoTPP. Line profiles along with the blue, red, green and violet lines depicted in (a) and (c), respectively. Profiles are vertically shifted for clarity.

Figure S1. (a) The typical STM image of mixed molecular islands on the Au(111) surface after deposition of CoTPP and H$_2$TPP molecules. (b) A high-resolution STM image for a mixed molecular island. The two representative molecules of CoTPP and H$_2$TPP are denoted by blue and green marks, respectively. The sizes of STM images: (a) 96 × 96 nm$^2$ and (b) 7.4 × 7.4 nm$^2$. Tunneling current: $I_t$ = 0.1 nA. Sample voltage: (a) $V_s$ = - 0.3 V, (b) $V_s$ = - 0.2 V.
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