Supporting Information

Molecular Anchoring to Oxide Surfaces in Ultrahigh Vacuum and in Aqueous Electrolytes: Phosphonic Acids on Atomically-Defined Cobalt Oxide

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Figure S1: LEED images of the Co$_3$O$_4$ (111) film after preparation at 120 (a) and 140 eV (b).

Figure S2: SNIFTIRS spectra of 0.1 M (a) and 1 M (b) ammonia buffer (pH 10) on Co$_3$O$_4$ (111)/Ir(100) measured between 0.3 and 1.3 V$_{RHE}$ in p-polarization. The reference potential is 0.3 V$_{RHE}$. 
Figure S3: SNIFTIRS spectra recorded after adsorption of PPA on Co$_3$O$_4$(111)/Ir(100) at different concentrations of buffer and PPA; left: 0.1 M ammonia buffer with 2 mM (a), 10 mM (c), and 16 mM PPA (e); right: 1 M ammonia buffer with 20 mM (b), 100 mM (d), and 200 mM PPA (f). The reference potential is 0.3 V$_{RHE}$.