

Description of Additional Supplementary Files

Supplementary Data 1:

The atomic coordinates of the optimized computational models are provided in Supplementary Data folder for a-NMO-slab, a-RNMO-slab, a-Ru-NiOOH-slab, c-NiOOH-slab, c-NMO-bulk, and c-NMO-slab.

Supplementary Movie 1:

The adsorbed intermediate $^*\text{O}$ undergoes spontaneous transfer from Ni to Ru. Video playback speed is 8 times faster.

Supplementary Movie 2:

The adsorbed intermediate $^*\text{OH}$ undergoes spontaneous transfer from Ru to Ni. Video playback speed is 8 times faster.