

Supplementary Information for

# Self-templated synthesis of microporous CoO nanoparticles with highly enhanced performance for both photocatalysis and lithium-ion batteries

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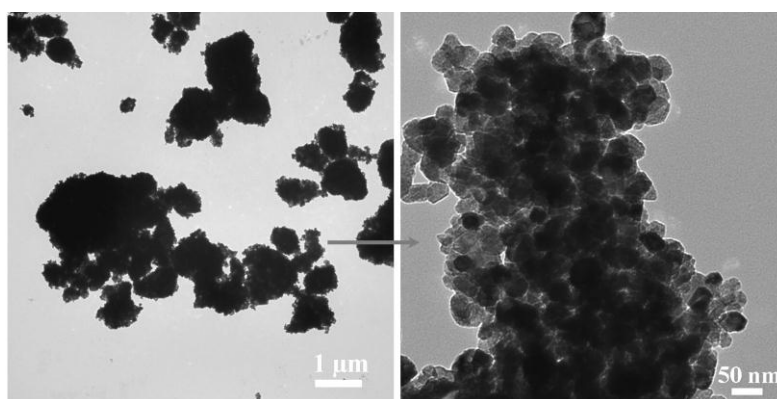


Figure. S1 TEM images of commercial CoO powder showing the agglomeration of numerous nanoparticles with particle diameter around 40-60 nm.

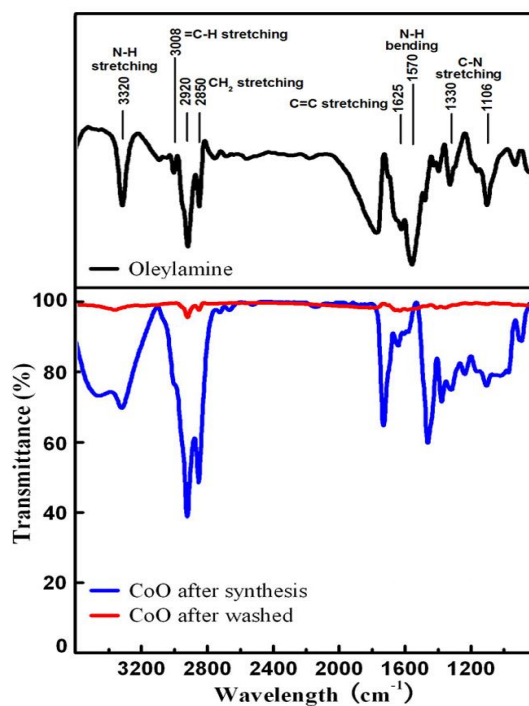
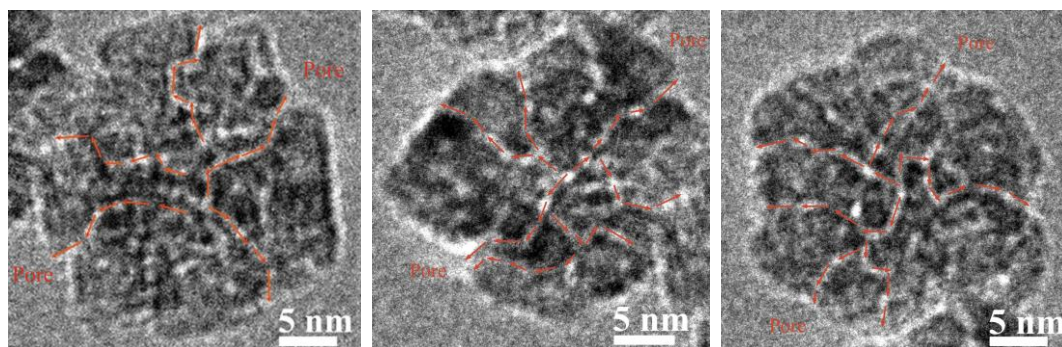
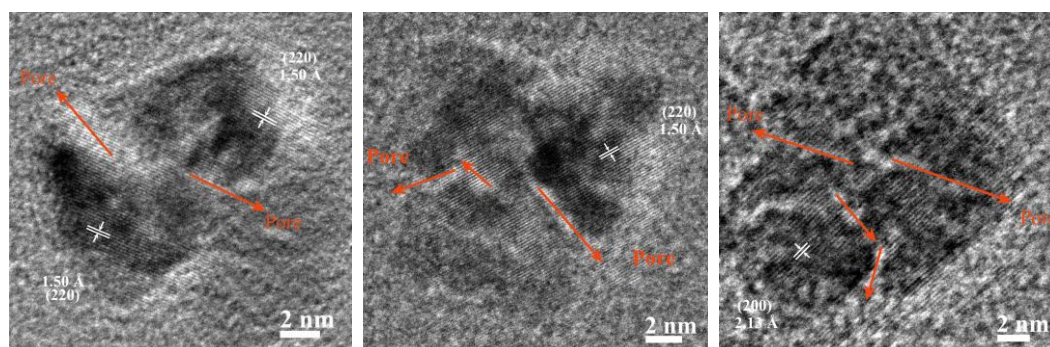


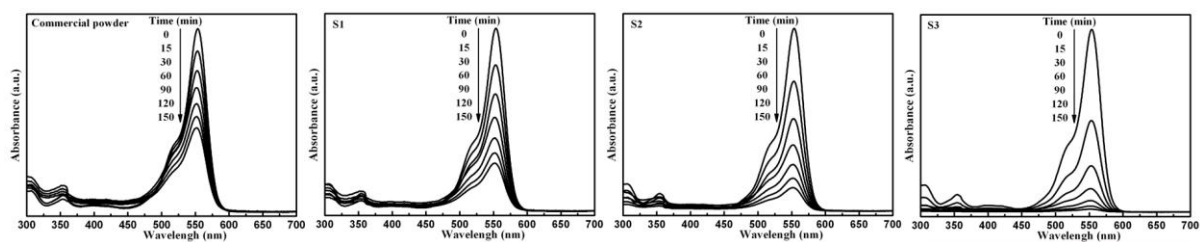
Figure. S2 FTIR spectra of the oleylamine (96%, Aldrich), the as-synthesized CoO nanoparticles and CoO nanoparticles after a washing process with ethanol.



**Figure. S3** HRTEM images of three nanoparticles from sample 2 with the arrows showing the long and winding nanochannels.



**Figure. S4** HRTEM images of three nanoparticles from sample 3 with the arrows showing the short and straight nanochannels.



**Figure. S5** Time-dependent UV-vis absorption spectra for Rh B photodegradation with microporous CoO samples 1-3 and commercial powder.