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Supporting Information

Metal-Organic Coordination Strategy to Metal-decorated Mo-based Complexes: Multi-dimensional Structural Evolution and High Rate Lithium Ion Battery Applications

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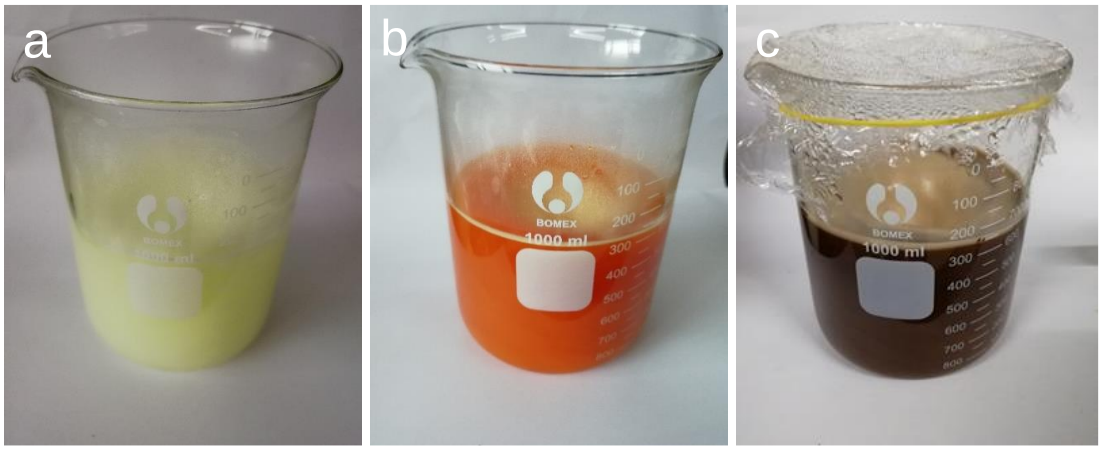

Figure S1. Digital photograph of the preparation process without the adjustment of pH value. The solution of metal molybdate and SDS (a) without dopamine hydrochloride, (b) with dopamine hydrochloride for 0 h and (c) with dopamine hydrochloride for 12 h under stirring.

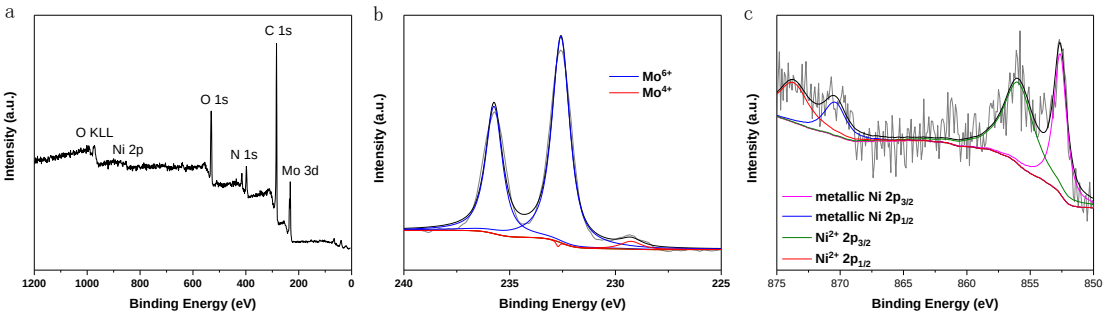

Figure S2. XPS spectra of Ni-MoO_2/N-C nanopetals. (a) Survey scan. (b) Mo 3d spectrum. (c) Ni 2p spectrum.

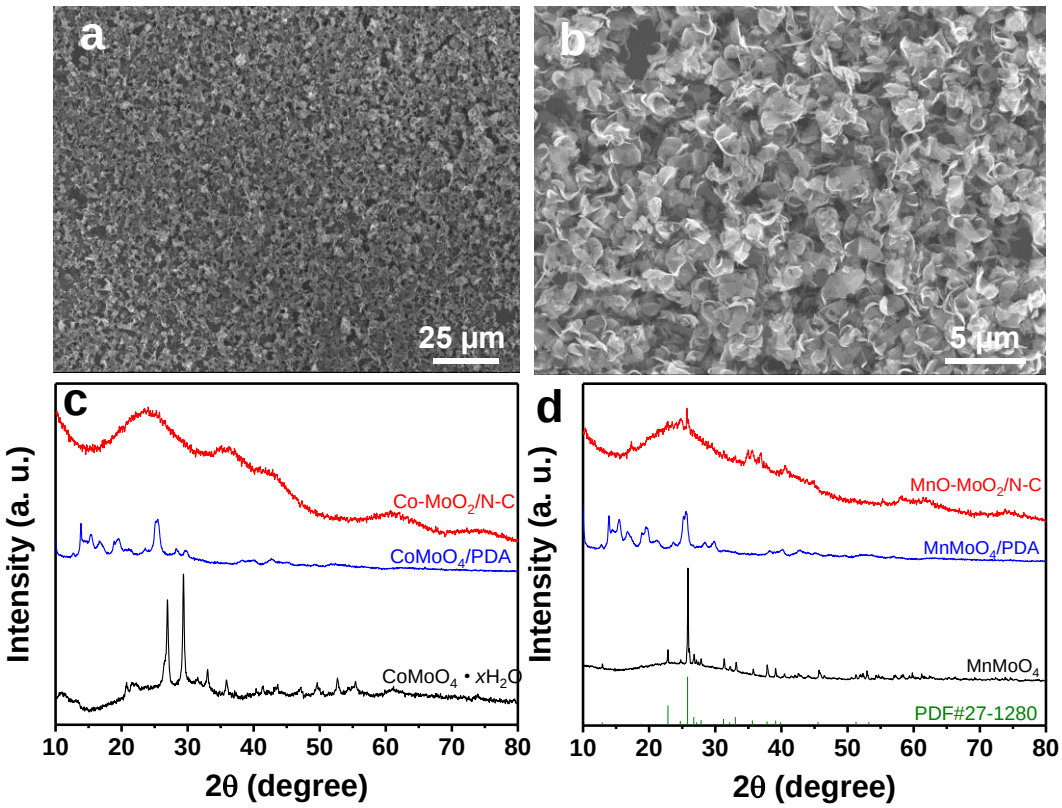

Figure S3. Characterizations of other metal-MDA and products. SEM images (a-b) Co-MDA nanopetals. XRD patterns of (c) Co-MDA, (d) MnO-MDA and their corresponding oxides.

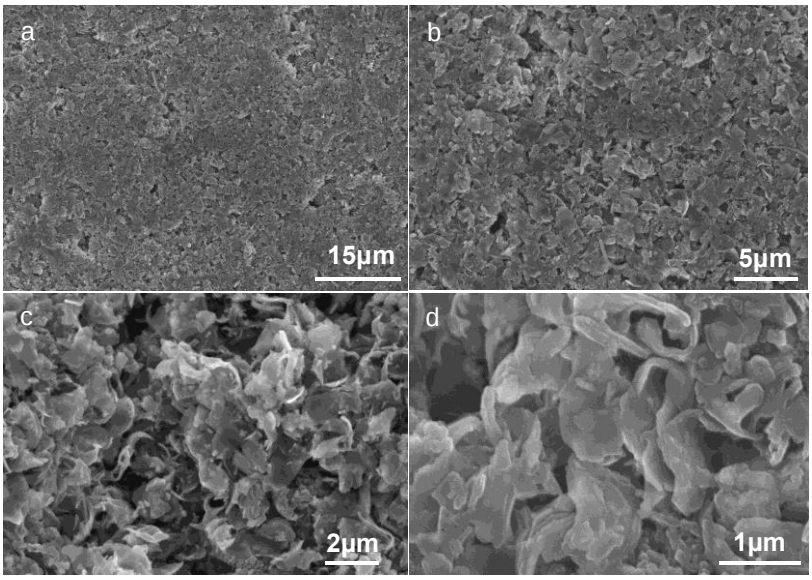

Figure S4. Characterizations of cycled Ni-MoO_2/N-C nanopetals electrode.

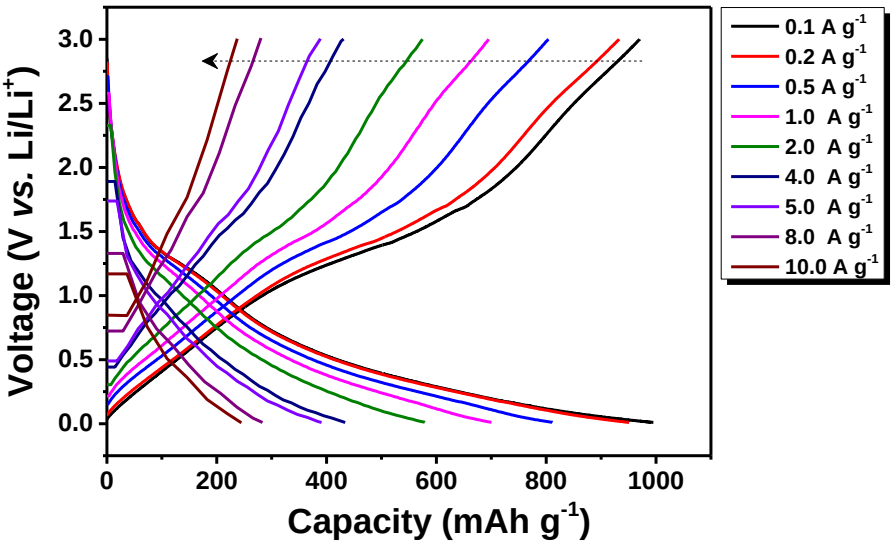

Figure S5. Lithium storage capabilities of Ni-MoO_2/N-C. Typical voltage *vs.* capacity profiles of Ni-MoO_2/N-C nanopetal in the rate test.

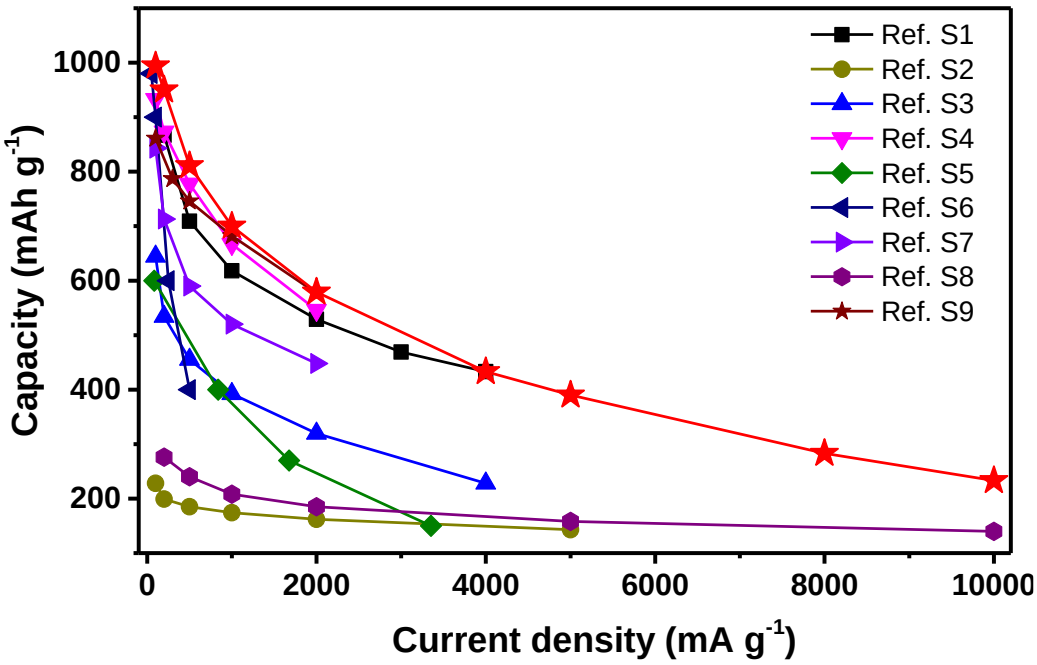

Figure S6. Comparison of lithium storage capability. The rate performances of Ni-MoO_2/N-C compared to the MoO_2-based anode reported before.[S1-S9]

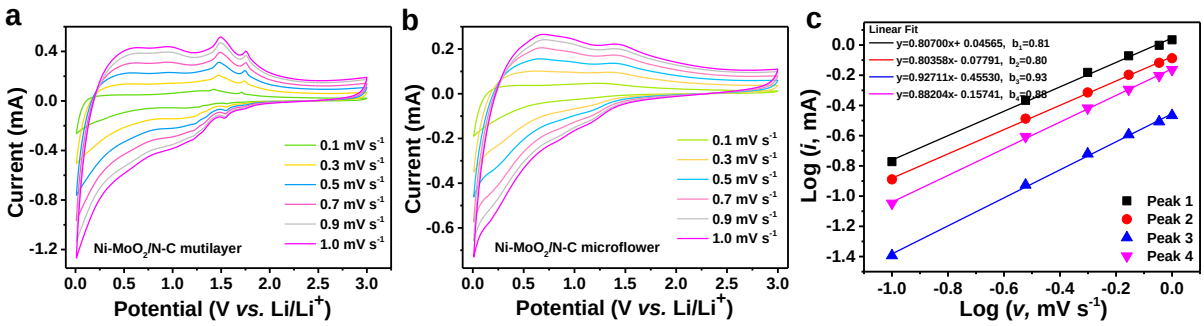

Figure S7. Electrochemical analysis. The CV curves of (a) Ni-MoO_2/N-C multilayer (a) and (b) microflower under different scan rates within the potential range of 0.01-3V. (c) Estimate of pseudocapacitive behavior of Ni-MoO_2/N-C nanopetal.

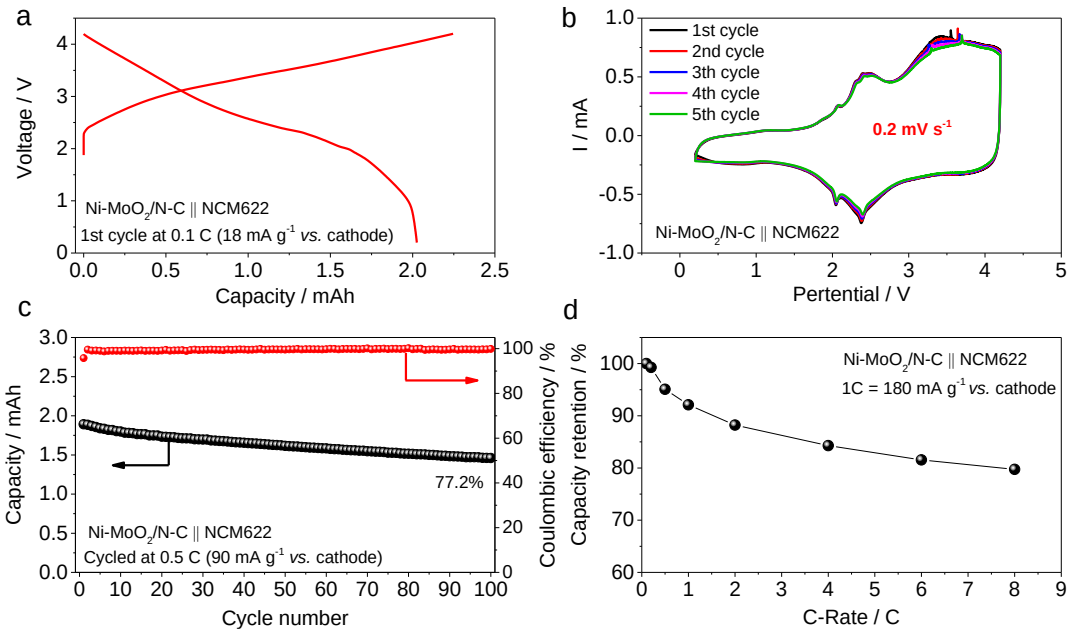

Figure S8. Electrochemical performance of lithium ion battery. (a) The 1st charge-discharge curves. (b) CV results upon cycling. (c) Cycle performance. (d) Rate capabilities.

Table S1 Impedance parameters, R_s, R_{SEI} and R_{ct}, obtained from the EIS plots in Figure 7e-f.

Sample	R_s (Ω)	R_{SEI} (Ω)	R_{ct} (Ω)
Nanopetals	2.426	1.88	29.09
Multilayers	2.996	14.7	114.1
Microflowers	2.094	7.732	158.6
Nanopetals after cycling	1.73	13.37	28.14

Supporting References

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