

Supporting Information

Continuous Wet Chemical Synthesis of $\text{Mo}(\text{C,N,O})_x$ as Anode Materials for Li-Ion Batteries

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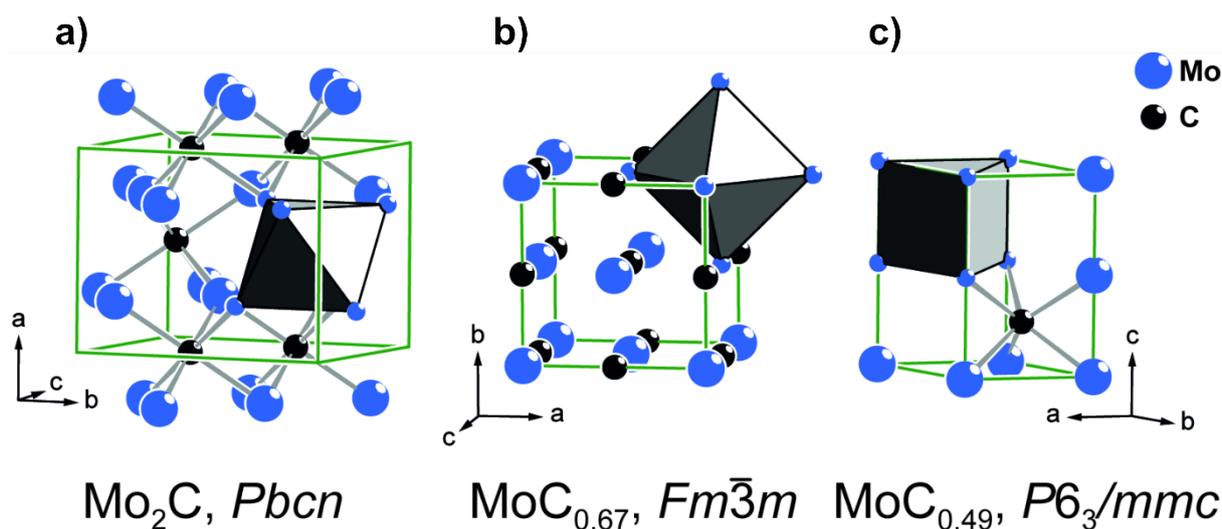


Figure S1: Crystal structures of a) orthorhombic Mo₂C,^{1,2} b) cubic MoC_{0.67},³ and c) hexagonal MoC_{0.49} Mo atoms are depicted in blue, C atoms in black.

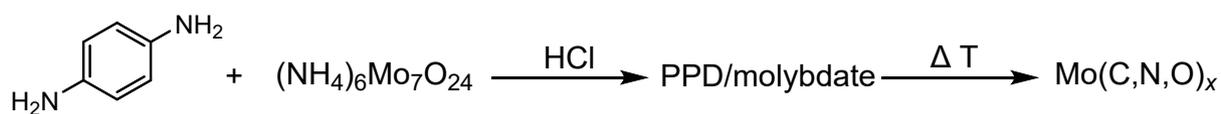


Figure S2: General reaction scheme, first step precursor precipitation followed by pyrolysis reaction.

Table S1: Elemental analysis of PPD/molybdate precursors after the pyrolysis.

	Carbon / mass%	Hydrogen / mass%	Nitrogen / mass%
Ideal Mo₂C	5.89	0	0
Ideal MoOC	9.69	0	0
Ideal Mo₂N	0	0	6.80
PPD/molybdate (9:1) (600°C)	20.85	0.24	0.74
PPD/molybdate (10:1) (600°C)	21.45	0.22	0.59
PPD/molybdate (1:1) (750°C)	0.38	0	2.56
PPD/molybdate (2:1) (750°C)	2.01	0	0.22
PPD/molybdate (5:1) (750°C)	3.19	0	0.14
PPD/molybdate (9:1) (750°C)	22.75	0	0.24
PPD/molybdate (10:1) (750°C)	20.02	0	0.24
PPD/molybdate (15:1) (750°C)	22.62	0	0.30
PPD/molybdate (18:1) (750°C)	23.57	0	0.20
PPD/molybdate (20:1) (750°C)	23.15	0	0.19
PPD/molybdate (25:1) (750°C)	22.86	0	0.23
PPD/molybdate (30:1) (750°C)	22.59	0	0.23

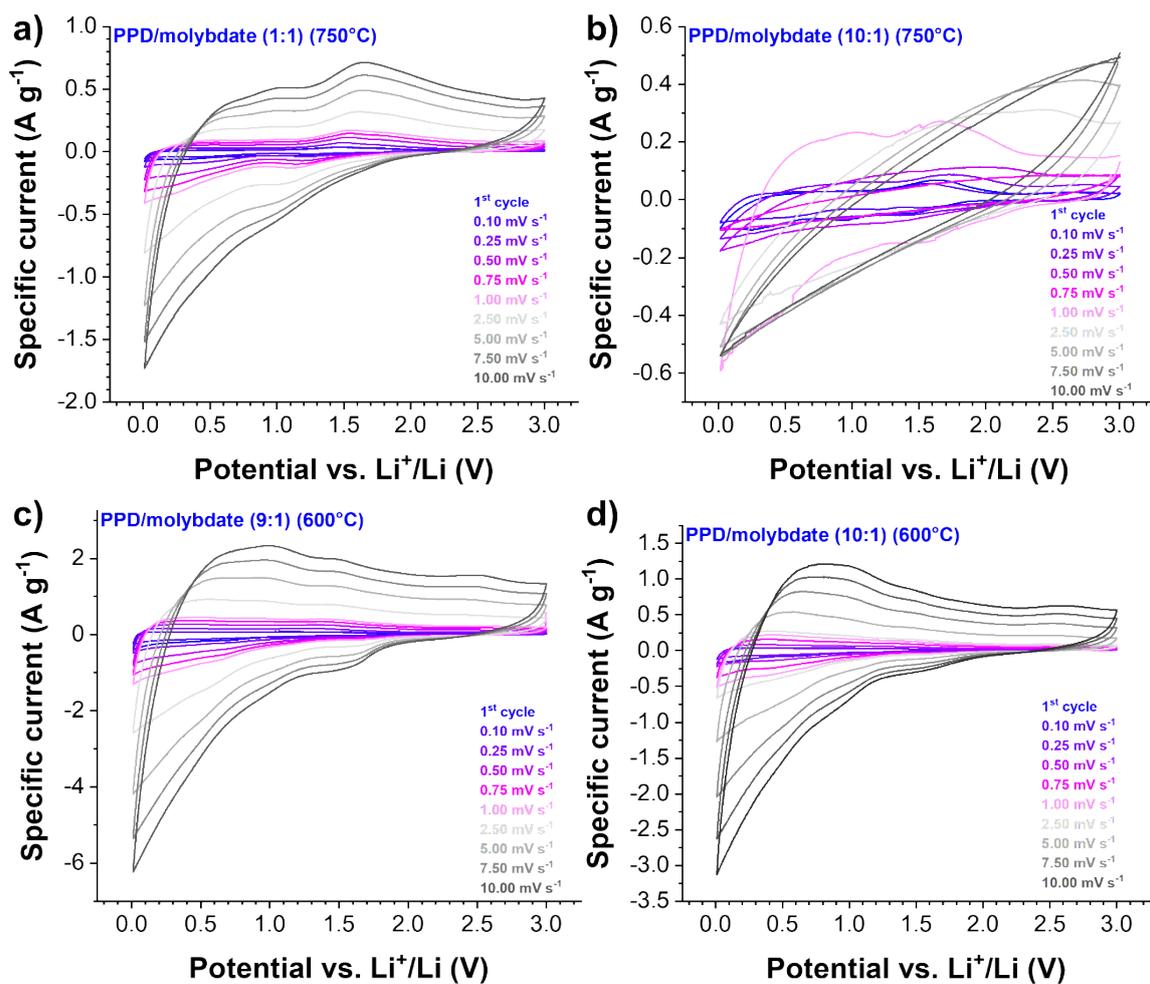


Figure S3: Electrochemical performance of pyrolyzed PPD/molybdate hybrid materials. Cyclic voltammograms at different scan rates and potential range between 0.01 V and 3.00 V vs. Li⁺/Li for (a) 1:1 and (b) 10:1 pyrolyzed at 750 °C as well as (c) 9:1 and (d) 10:1 synthesized at 600 °C.

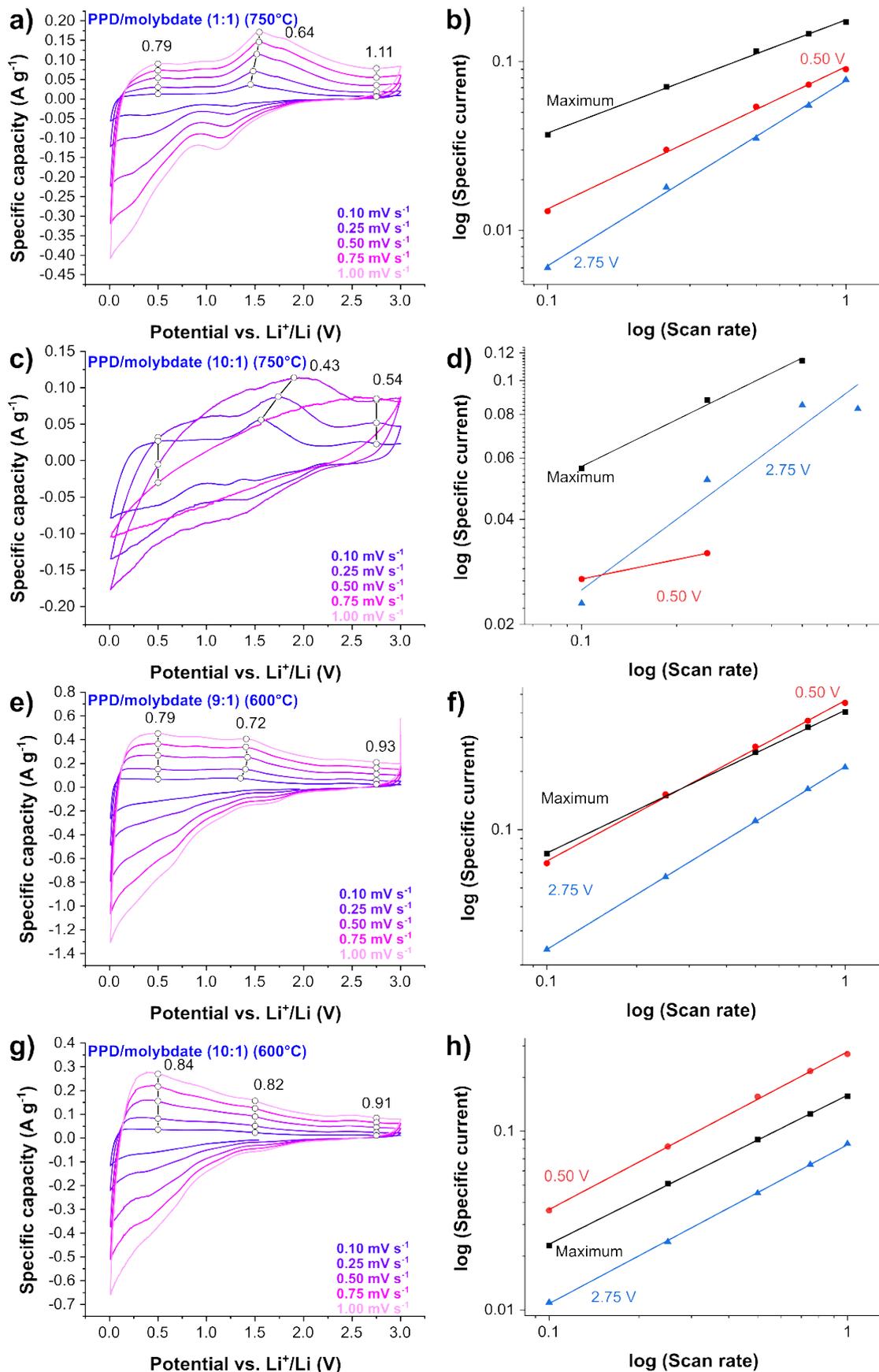


Figure S4: Cyclic voltammograms at different scan rates and kinetic fitting to calculate b-values for (a-b) PPD/molybdate (1:1) (750°C); (c-d) PPD/molybdate (10:1) (750°C); (e-f) PPD/molybdate (9:1) (600°C); (g-h) PPD/molybdate (10:1) (600°C).

Supporting References

- (1) Parthé, E.; Sadogopan, V. The Structure of Dimolybdenum Carbide by Neutron Diffraction Technique. *Acta Crystallogr.* **1963**, *16*, 202–205. <https://doi.org/10.1107/s0365110x63000487>.
- (2) Norlund Christensen, A. A Neutron Diffraction Investigation on a Crystal of Alpha-Mo₂C. *Acta Chem. Scand. Ser. A* **1977**, *31*, 509–511.
- (3) 'Rudy, E. .; 'Brukl, C. E. .; 'Windisch, S. . Constitution of Niobium (Columbium)-Molybdenum-Carbon Alloys. *Trans. Metall. Soc. AIME* **1967**, *239*, 1796–1808.