

## Supporting information

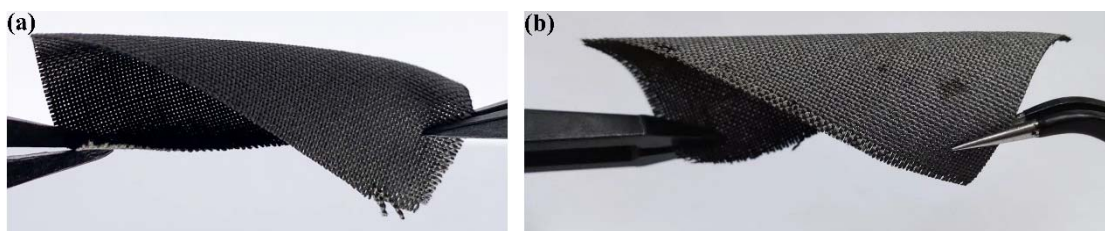
# Highly Loaded and Binder-Free Molybdenum Trioxide Cathode Material Prepared Using Multi-Arc Ion Plating for Aqueous Zinc Ion Batteries

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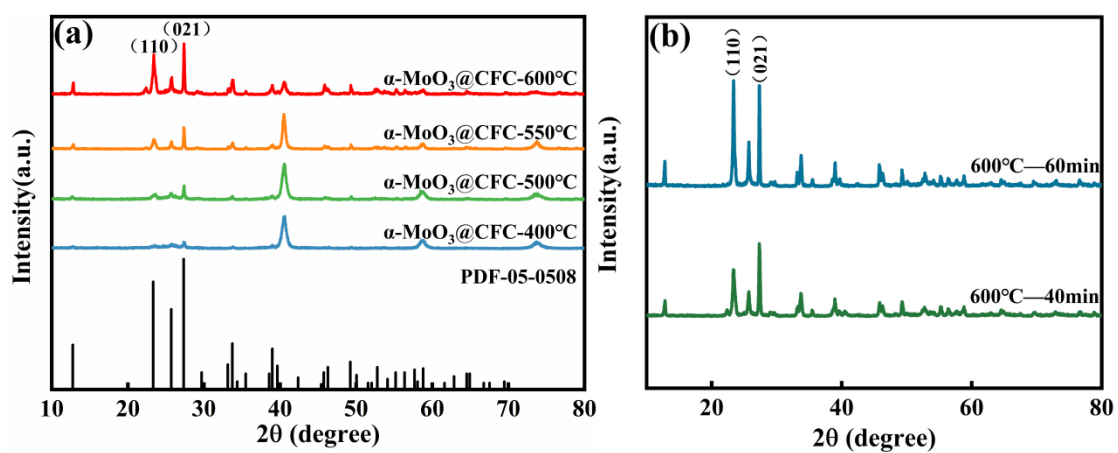
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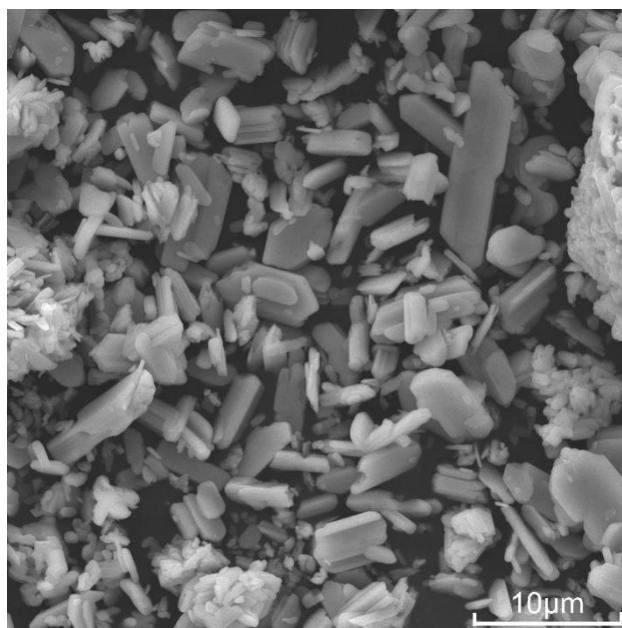
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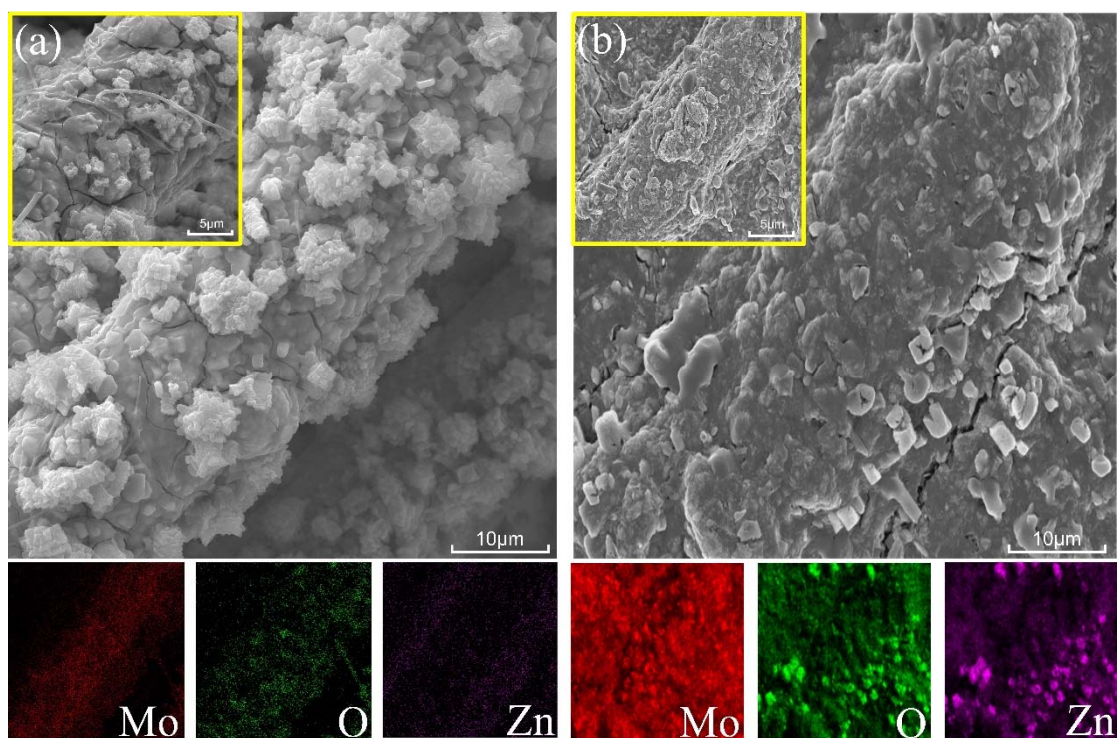
**Figure S1.** Macroscopic morphology of (a) Mo@CFC, (b)  $\alpha$ -MoO<sub>3</sub>@CFC.



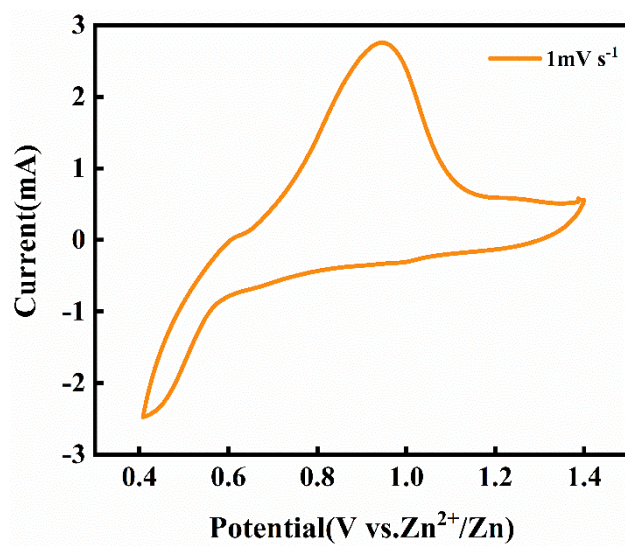
**Figure S2.** XRD patterns of  $\alpha$ -MoO<sub>3</sub>@CFC at (a) different heating temperatures, (b) different heating times at 600°C.



**Figure S3.** SEM image of commercial MoO<sub>3</sub>.



**Figure S4.** The ex-situ SEM images of  $\alpha$ -MoO<sub>3</sub>@CFC(a) and commercial MoO<sub>3</sub>(b) after 20 cycles at a current density of 1 A g<sup>-1</sup>.



**Figure S5.** 1 mV s<sup>-1</sup> CV curves of commercial MoO<sub>3</sub>.