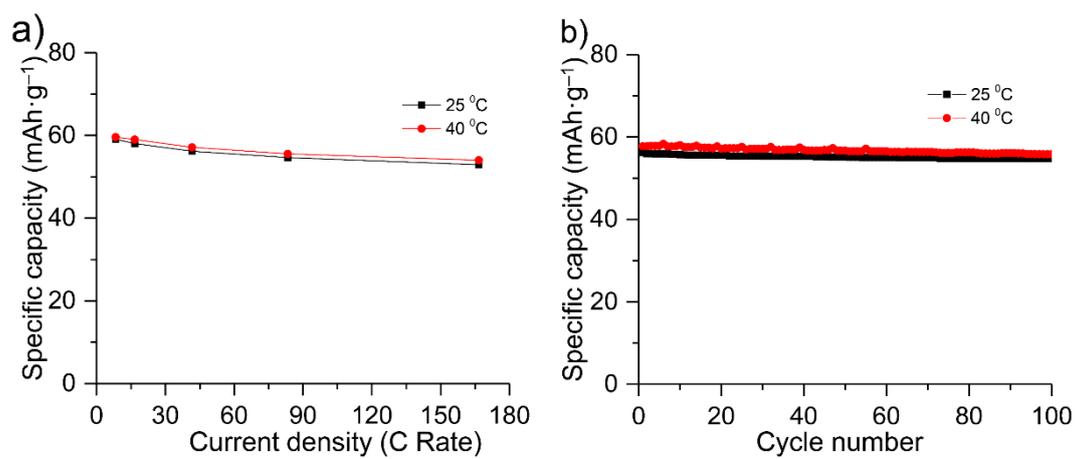


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3 **Figure S1.** Rate performance (a) and cycling performance (b) of 1_{frame} at different temperatures.

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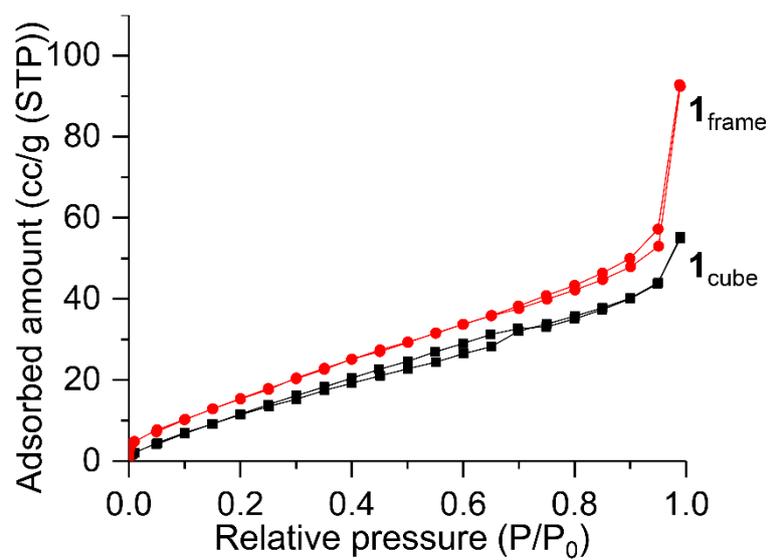
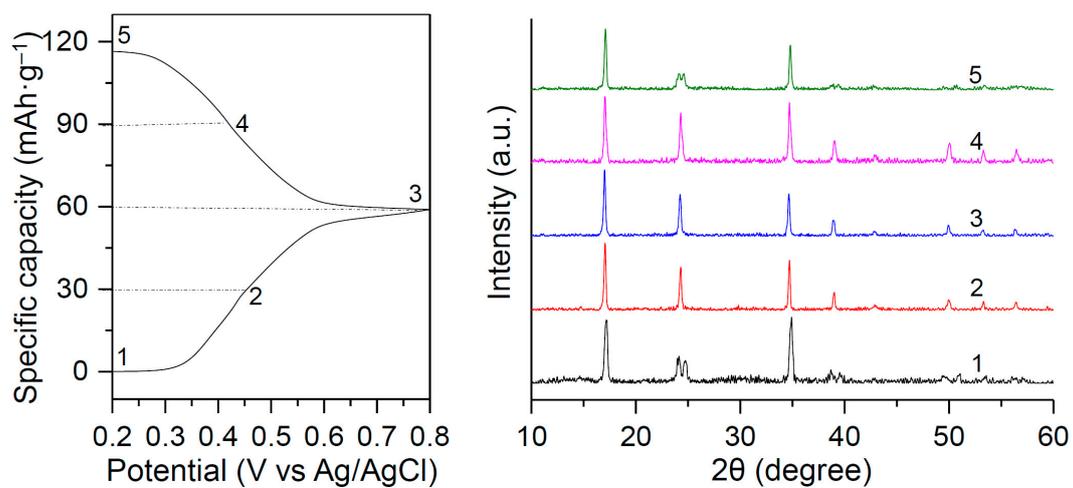


Figure S2. N₂ adsorption-desorption isotherms of 1 crystals.

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Figure S3. *ex situ* PXRD patterns of the electrochemically activated cubic crystals at charge/discharge during the first cycle at a current density of 0.07A·g⁻¹.

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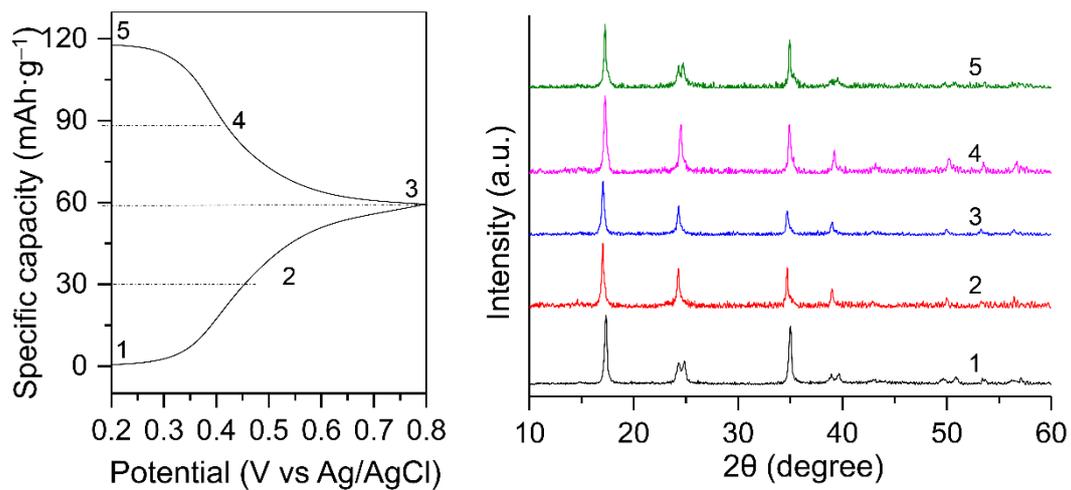
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66 **Figure S4.** *ex situ* PXRD patterns of the electrochemically activated mesoframes at charge/discharge during the
67 first cycle at a current density of 0.07A·g⁻¹.

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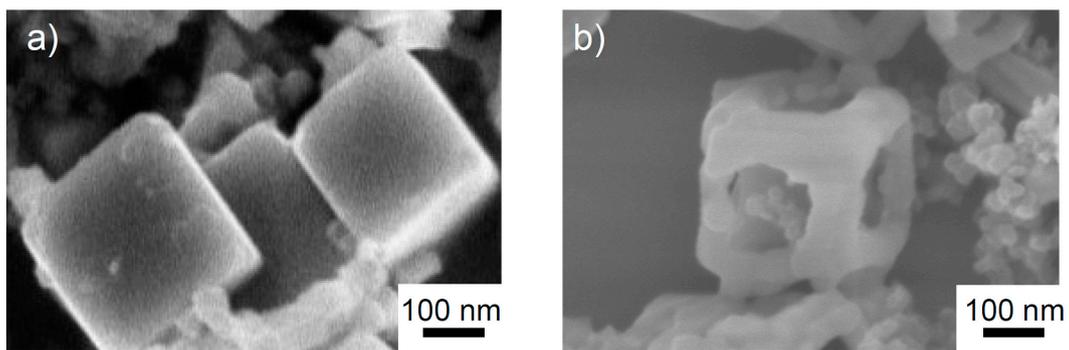
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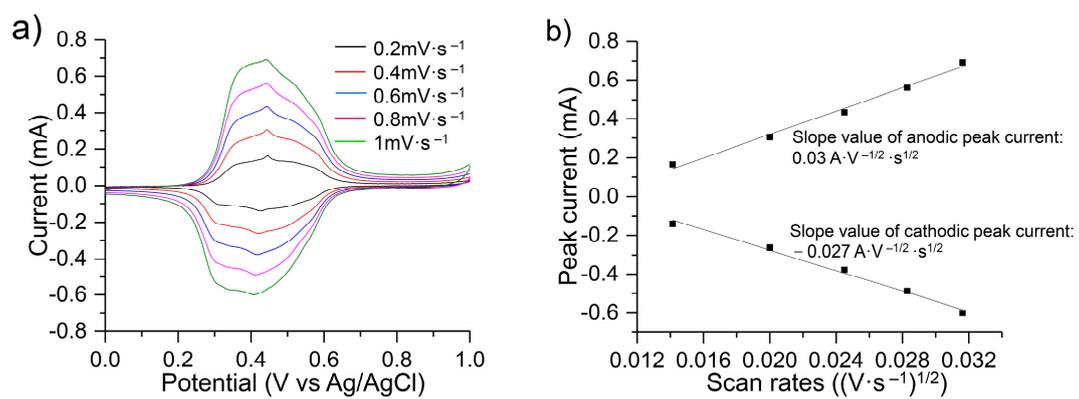
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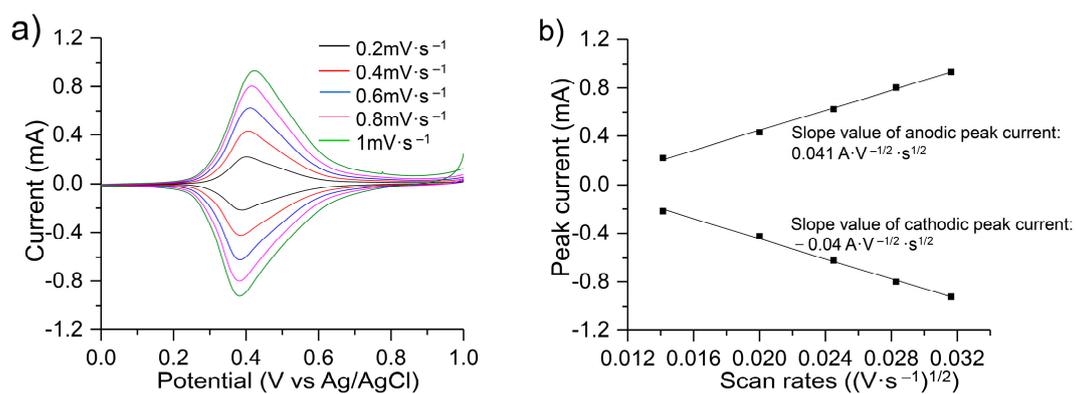
96 **Figure S5.** (a) SEM of cubic crystals after cycling. (b) SEM of mesoframes after cycling for 500 cycles.

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Figure S6. (a) Cyclic voltammograms of 1_{cube} at various scanning rate (b) the anodic and cathodic peak currents as functions of the square root of scanning rates.



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103 **Figure S7.** (a) Cyclic voltammetry curves of **1_{frame}** at various scanning rate (b) the anodic and cathodic peak
104 currents as functions of the square root of scanning rates.

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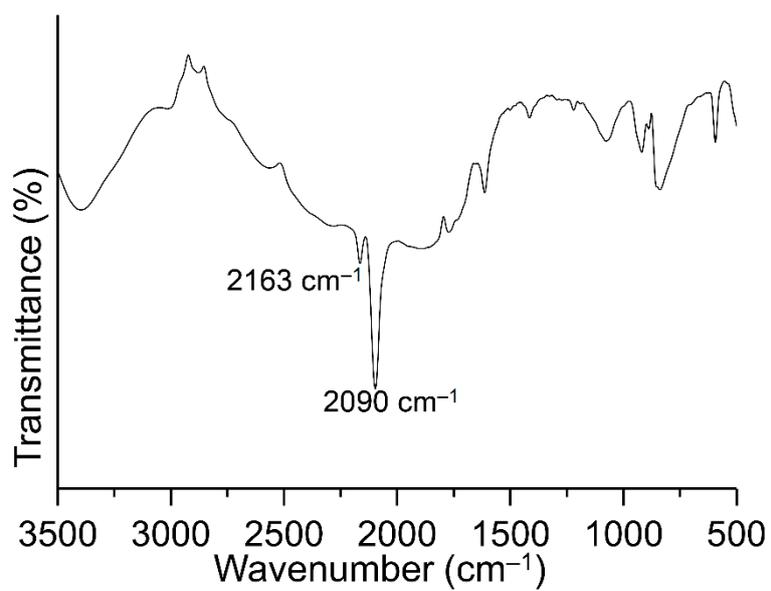
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136 **Fig S8.** FT-IR Spectrum of mesoframes before electrochemical activation.

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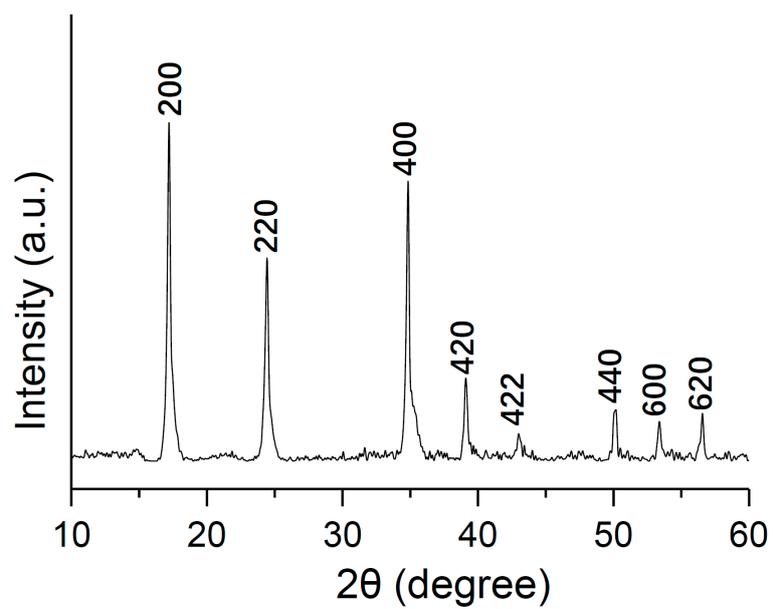
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164 **Fig S9.** PXRD patterns of mesoframes before electrochemical activation.