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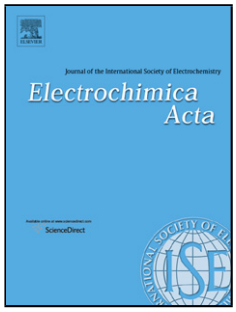

Title: Free-standing Two-dimensional Mesoporous $ZnCo_2O_4$ Thin Sheets Consisting of 3D Ultrathin Nanoflake Array Frameworks for High Performance Asymmetric Supercapacitor

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Free-standing Two-dimensional Mesoporous $ZnCo_2O_4$ Thin Sheets Consisting of 3D Ultrathin Nanoflake Array Frameworks for High Performance Asymmetric Supercapacitor

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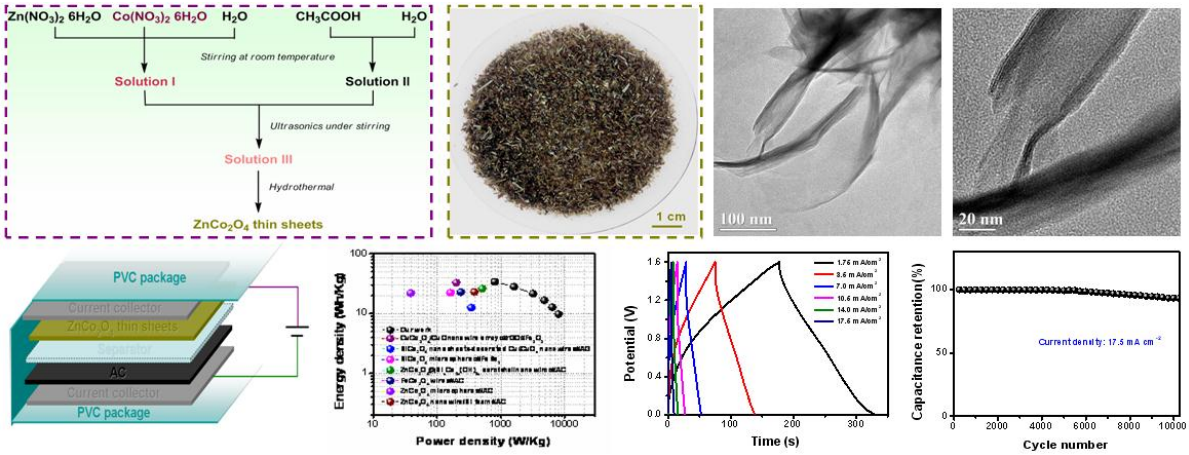
Graphical Abstract



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Abstract:

For developing high performance supercapacitors (SCs), it is critical to fabricate advanced electrode materials with porous nanostructures and high surface area to facilitate the transport of ions and electrons and impede the volumetric variation during cycling. Herein, we reported the fabrication of free-standing two dimensional (2D) mesoporous $ZnCo_2O_4$ thin sheets (CQU-Chen-Zn-Co-O-1) consisting of 3D ultrathin nanoflake array frameworks by facile decomposition of a mixed aqueous solution of zinc ion (Zn^{2+}), cobalt ion (Co^{2+}) and acetic acid (CH_3COOH, AA) under hydrothermal condition *without any additive agent*. The resulting CQU-Chen-Zn-Co-O-1 delivers a high capacitance of 2.72 $F \cdot cm^{-2}$ (2690.86 $F \cdot g^{-1}$) at 2.02 $mA \cdot cm^{-2}$ and high rate capability of 59.76 % from 1.01 to 10.1 $mA \cdot cm^{-2}$ and superior cycling performance of 3.5 % loss after 5,000 cycles.

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