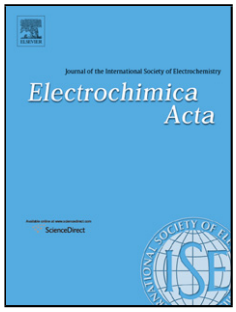

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Porous cobalt chalcogenide nanostructures as high performance pseudo-capacitor electrodes

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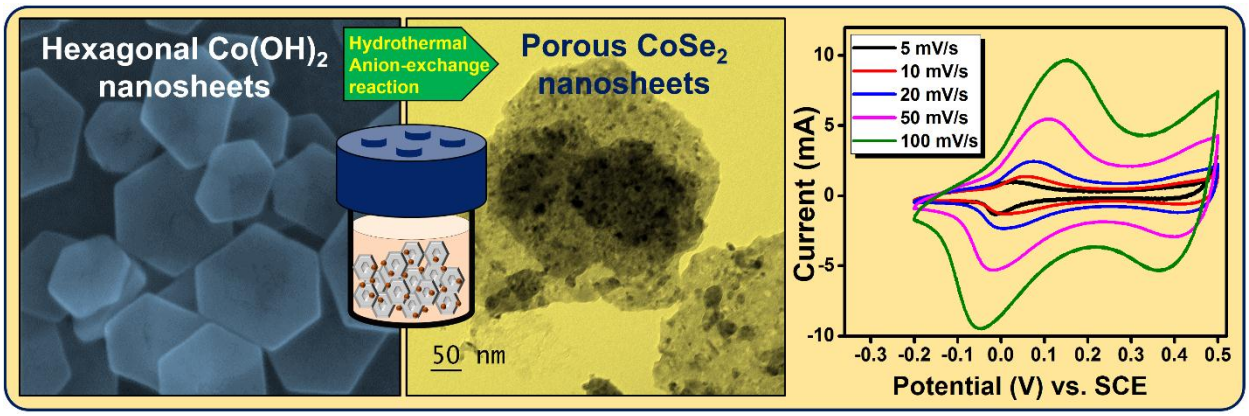
Highlights Hydrothermal method is employed to synthesize $Co(OH)_2$ hexagonal nanosheets.

- $Co(OH)_2$ nanosheets are transformed to $CoTe_2$ and $CoSe_2$ *via* anion-exchange reaction.
- Nanoporous $CoTe_2$ and $CoSe_2$ are fabricated as pseudo-capacitor electrodes.
- Specific capacitance at 5 mV s^{-1} scan rate for $CoTe_2$ = 360 F g^{-1} and $CoSe_2$ = 951 F g^{-1}.
- Excellent capacitance of $CoSe_2$ is complimented by its good retention capability.

Graphical Abstract



Abstract

Electrochemical supercapacitor is an essential technology that is pivotal for the development of reliable energy storage devices. Herein, we report the fabrication of supercapacitor electrodes using nanostructured porous cobalt chalcogenide ($CoTe_2$ and $CoSe_2$) electrodes, anticipating an enhanced performance owing to their higher contact area with electrolyte and large pore volume enabling shorter diffusion paths for ion exchange. In this regard, we synthesized $CoTe_2$ and $CoSe_2$ nanostructures *via* an anion-exchange-reaction

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