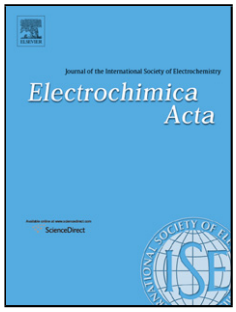

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Shape-controlled synthesis of $CuCo_2S_4$ as highly-efficient electrocatalyst for nonenzymatic detection of H_2O_2

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Highlights

- A facile hydrothermal approach is developed for the shape-controlled synthesis of $CuCo_2S_4$ by just changing the type of metal precursor without using template, structure-directing agent or complicated steps.
- For the first time, $CuCo_2S_4$ was explored as electrocatalyst for H_2O_2 oxidation.
- The sensor based on flower-like $CuCo_2S_4$ exhibited remarkable catalytic performance for H_2O_2 detection with a wide linear range, a high sensitivity and a low detection limit.

Abstract

Controllable synthesis of $CuCo_2S_4$ was reported for electrochemical sensing of H_2O_2. It is the first time that $CuCo_2S_4$ was explored as electrocatalyst for H_2O_2 oxidation. A facile hydrothermal approach is developed for the shape-controlled synthesis of $CuCo_2S_4$ by just changing the type of metal precursor. The structures, compositions and electrochemical properties of $CuCo_2S_4$ were studied. Electrochemical studies showed that flower-like $CuCo_2S_4$ with large surface area and three-dimensional porous structure exhibited excellent electrocatalytic activity toward H_2O_2 oxidation and an excellent analytical performances with a high sensitivity of 857.1 μA mM^{-1}