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SILAR synthesized nanostructured ytterbium sulfide thin film electrodes for symmetric supercapacitors

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Abstract

A simple and inexpensive successive ionic layer adsorption and reaction (SILAR) method was used for synthesis of ytterbium sulfide (Yb_2S_3) thin film. The valence states and crystal structure of Yb_2S_3 thin film material were identified using X-ray photoelectron spectroscopy and X-ray diffraction analysis, respectively. Wettability test of Yb_2S_3 thin film showed hydrophilic nature with the value of 21.70° . The surface texture of Yb_2S_3 thin film was examined using field emission scanning electron microscope (FE-SEM). The specific surface area and pore size distribution were measured using the Brunauer-Emmet-Teller (BET) and Barrette-Joynere-Halendar (BJH) methods. The supercapacitive performance of Yb_2S_3 thin film was studied using cyclic voltammetry, galvanostatic