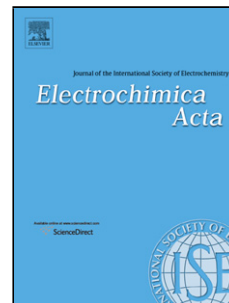


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Tuberose surface architecture of $\text{Sr}(\text{OH})_2$ film as supercapacitive electrode

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Research Highlights It is the first report on tuberose surface morphology of strontium hydroxide ($\text{Sr}(\text{OH})_2$) achieved in thin film form on stainless steel substrate by simple and cost effective successive ionic layer adsorption and reaction method at room temperature without any binder.

- The tuberose morphology exhibits high porosity as it consists of secondary, tertiary and even higher-order branches suitable for the supercapacitive behaviour.
- The $\text{Sr}(\text{OH})_2$ film electrode exhibit the specific capacitance of 413 C g^{-1} at 2 Ag^{-1} current density in 1 M NaOH electrolyte.
- The electrode has high energy density of 45.95 Whkg^{-1} with power density of 2.6 kWkg^{-1} at 2 mAg^{-1} .

Abstract

The first report, on tuberose surface morphology of strontium hydroxide ($\text{Sr}(\text{OH})_2$) has been achieved on stainless-steel (SS) substrate in the form of thin film by easy, economical efficient and less time consuming successive ionic layer adsorption and reaction (SILAR) technique at room temperature. X-ray diffraction analysis reveals polycrystalline nature of film with orthorhombic crystal structure. Fourier Transmission Infrared Spectroscopy (FTIR), Energy-dispersive X-ray spectroscopy (EDS) and Raman analyses reveal the composition and phase purity of the active material. The morphology of the prepared sample was characterized by Field Emission Scanning Electron Microscopy (FE-SEM), Higher Resolution Transmission Emission Microscopy (HR-TEM) which confirms the tuberose morphology of the $\text{Sr}(\text{OH})_2$ thin film. Furthermore, tuberose surface architecture has been successfully utilized as supercapacitive electrode with high specific capacity of 413 C g^{-1} in 1 M NaOH aqueous

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