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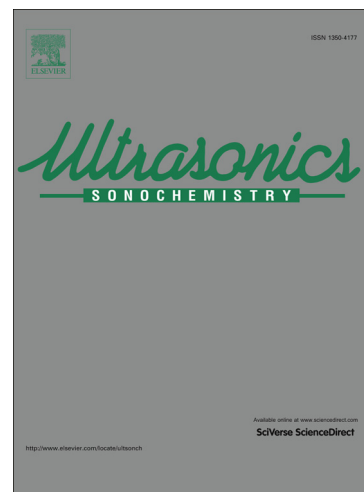
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**Cd₂SiO₄/Graphene nanocomposite: ultrasonic assisted synthesis,
characterization and electrochemical hydrogen storage application**

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ABSTRACT

For the first time, a simple and rapid sonochemical technique for preparing of pure Cd₂SiO₄ nanostructures has been developed in presence of various surfactants of SDS, CTAB and PVP. Uniform and fine Cd₂SiO₄ nanoparticle was synthesized using of polymeric PVP surfactant and ultrasonic irradiation. The optimized cadmium silicate nanostructures added to graphene sheets and Cd₂SiO₄/Graphene nanocomposite synthesized through pre-graphenization. Hydrogen storage capacity performances of Cd₂SiO₄ nanoparticle and Cd₂SiO₄/Graphene nanocomposite were compared. Obtained results represent that Cd₂SiO₄/Graphene nanocomposites have higher hydrogen storage capacity than Cd₂SiO₄ nanoparticles. Cd₂SiO₄/Graphene nanocomposites and Cd₂SiO₄ nanoparticles show hydrogen storage capacity of 3300 and 1300 mAh/g, respectively.

Keywords: Nanostructures; Ultrasonic assisted; Graphene nanocomposite; Hydrogen storage; Electron microscopy.

1. Introduction

In energy storage and conversion related devices, compared with bulk materials, mesoporous nanostructured materials have drawn much attention because of their unique electrical and optical properties [1-2]. The various

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