

Characterization and Synthesis of manganese silicate/graphene oxide hybrid for CO₂ capture

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Among the nano-structured materials, the hollow spheres in the dimension from nanometer to micrometer are of significant interest because of property, such as high specific surface, low density, high damping capacity, low thermal conductivity and dielectric permittivity and can be also used as catalysts, potential drug carriers, fillers, coatings, dyes, artificial cells and photonic crystals. Recently, the method based on the Kirkendall effect was developed to synthesize hollow structures. Herein, we reports that manganese silicate ultra-thin hollow nanospheres (MSHSs) using surfactant-free hydrothermal method to improve the hydrogen storage capacity and CO₂ capture were synthesized in a smaller, simpler, easier and more uniform way than hollow spheres using other methods.

To measure the CO₂ selectivity performance of MSHS and GO/MSHSs, H₂, O₂, N₂ and CO₂ isotherms are used at 298 K. For the selective adsorption of MSHSs showed 62:1 of CO₂/N₂ and that of GO/MSHSs showed 99.9:1 of CO₂/H₂ at 298 K, respectively.