Titanium-Decorated Carbon Nanofibres as a Potential High-Capacity Hydrogen Storage Medium

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The science and technology related with graphitic nanofibres (GNFs) in hydrogen storage has evidently progressed in recent years. In this work, hydrogen is a carrier of high energy density, and is regarded as an ideal energy carrier because of its non-pollution property. Hydrogen storage properties of the GNFs with Ti were investigated. The metal was dispersed on GNFs surfaces using an incipient wetness impregnation procedure. We investigated the hydrogen storage capabilities of the Ti-doped GNFs in the range of 0.5 ~ 10wt% of Titanium. The composite microstructures of Ti/GNFs were characterised by X-ray diffraction (XRD) and by transmission electron microscopy (TEM). The crystallinity and morphplogy were investigated by scanning electron microccopy (SEM). The hydrogen storage behaviors of Ti/GNFs were stuided by using PCT apparatus at moderate pressure and temperature. From the work, the hydrogen capacity was observed to be markedly improved by Ti doping on the GNFs.