

다중벽 탄소나노튜브의 수소 흡착 거동에 대한 Mg 나노입자의 영향

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Influence of Mg nanoparticles on Hydrogen Adsorption Behaviors of Multi-walled Carbon Nanotubes

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In this work, magnesium (Mg) nanoparticles were plated onto the surfaces of multi-walled carbon nanotubes (MWNTs) in order to investigate the effects of their presence on the high pressure hydrogen storage behaviors of the resultant Mg/MWNTs. The structure of Mg/MWNTs was characterized by X-ray diffraction (XRD) and transmission electron microscopy (TEM). The pore structure and total pore volumes of Mg/MWNTs were analyzed by $N_2/77$ K adsorption isotherms. The hydrogen storage behaviors of the Mg/MWNTs were investigated by BEL-HP at 298K and 100 bar. From the results, it was found that Mg particles were homogeneously distributed on the MWNT surfaces. The hydrogen storage capacity increased in proportion to the Mg content. It can be concluded that Mg particles play an important role in hydrogen storage characteristics due to the hydrogen spillover effect.

Key words : Hydrogen storage (수소저장), Multi-walled carbon nanotubes (다중벽 탄소나노튜브), Mg particles (Mg 입자), Spillover effect (스필오버 현상).

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