

Ambient Condition Hydrogen Storage Capacity of Palladium–Carbon Nanotube Nanocomposites

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Metal nanoparticle–nanotube composites are envisaged as very promising solid–state hydrogen storage materials for mobile applications. Amongst various composites, those containing palladium are considered as the prototypes and are expected to show a significant hydrogen storage capacity. This has resulted in several rigorous investigations of nanotube–palladium system. In most of these studies, metal nanoparticles are implanted via condensed–phase reduction or high energy ball–milling methods. However, it is important that the metal particles should be on the external surface of the carbon nanotubes, for an efficient hydrogen adsorption. In this study, we present the hydrogen storage characteristics of palladium doped multi–walled carbon nanotubes. Our study compares the storage capacity of nano–composites prepared via other techniques and reveals valuable insights about the method of doping and the metal content in the nano–composite samples.