

Hydrogen storage properties of transition metal coated hollow glass microsphere

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Hollow glass microspheres were prepared by flame forming method with a variation of composition of fritz and blowing agents. The formation of hollow glass microspheres were confirmed by SEM measurements. It was revealed that the SiO_2 , Na_2O and B_2O_3 ratio of fritz played an important role in formation of hollow glass microspheres. The row materials range of forming hollow glass microspheres was 60 ~ 77 wt.% of SiO_2 , 10 ~ 30 wt.% of Na_2O and 10 ~ 20 wt.% of B_2O_3 respectively. The size of hollow glass microspheres was decreasing with increasing size of fritz. However thickness of hollow glass microspheres was increasing with increasing size of fritz. Hollow glass microspheres prepared by flame forming method retained their shape at pressure up to at least 70 bar. The addition of a small amount of Co and Ge to the hollow glass microspheres greatly increased hydrogen storage and retention performance of hollow glass microsphere. The hydrogen storage contents of Co doped hollow glass microspheres were investigated about 80 cc/g. They were 1.5 times higher than that of hollow glass microspheres without metal doping.