Hydrogen Storage Capacities of MOF-5 and/or Carbon

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Metal-organic frameworks (MOFs) have become promising material for their potential applications as hydrogen storage. However, MOFs have shown low hydrogen storage capacity at room temperature. The hydrogen storage capacity in MOFs and carbon materials can be increased by loading noble metal and/or combining these two materials using physical bridges for increasing the contacts and facilitating secondary spillover. Here, we report the amount of hydrogen storage in MOF-5 and carbon material synthesized using zeolite-Y showing the surface area of 2900 m^2/g and 3600 m^2/g, respectively. Doping platinum into carbon and MOF-5 increased the hydrogen storage capacity compared to pure carbon and MOF-5. Hybrid material of 5 wt% Pt-carbon/MOF-5 resulted in enhancement in hydrogen storage capacity through hydrogen spillover process.