

Polymer Hydrogel Supported Ni/Pd Alloys for Hydrogen Gas Production from Hydrolysis of Dimethylamine Borane with a Long Recyclable Lifetime

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Table S1. Confidence Intervals of Reaction Rates

Different samples in Figure 3 have different confidence intervals.

Sample	pure Pd	Ni/Pd 5:1	Ni/Pd 10:1	Ni/Pd 20:1	Ni/Pd 30:1	pure Ni
reaction rate (ml/min)	1.08	1.37	1.68	2.46	1.75	1.09
standard deviation (ml/min)	0.03	0.04	0.04	0.06	0.03	0.03
95% confidence interval (ml/min)	1.01-1.15	1.29-1.46	1.59-1.78	2.34-2.59	1.68-1.83	1.02-1.17

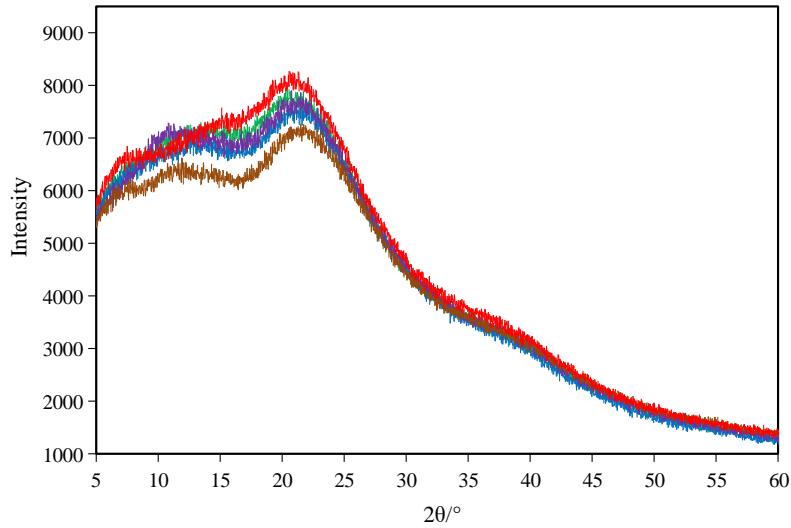


Figure S1. X-ray diffraction results of the hydrogels with various metal nanoparticles: (brown) pure Pd; (blue) PdNi with Pd/Ni=1/5; (purple) Pd/Ni =1/10; (green) Pd/Ni =1/20; (red) Pd/Ni =1/30.

The average size of metal crystallites are calculated by using the Scherrer formula,

$$D = K\lambda / (\beta \cos \theta),$$

where D is the crystallite grain size of the particle (nm), $K = 0.94$.

The wavelength of X-ray $\lambda = 1.5418 \text{ \AA}$. $\Theta = 2\theta/2$.

β = the full width at half maximum intensity of the peak (in rad).

The samples all show broad diffraction peaks with $2\theta = 22.65^\circ$, $\beta = 8^\circ = 0.1397$. Thus, the average size of metal crystallites $D = 1.06 \text{ nm}$.

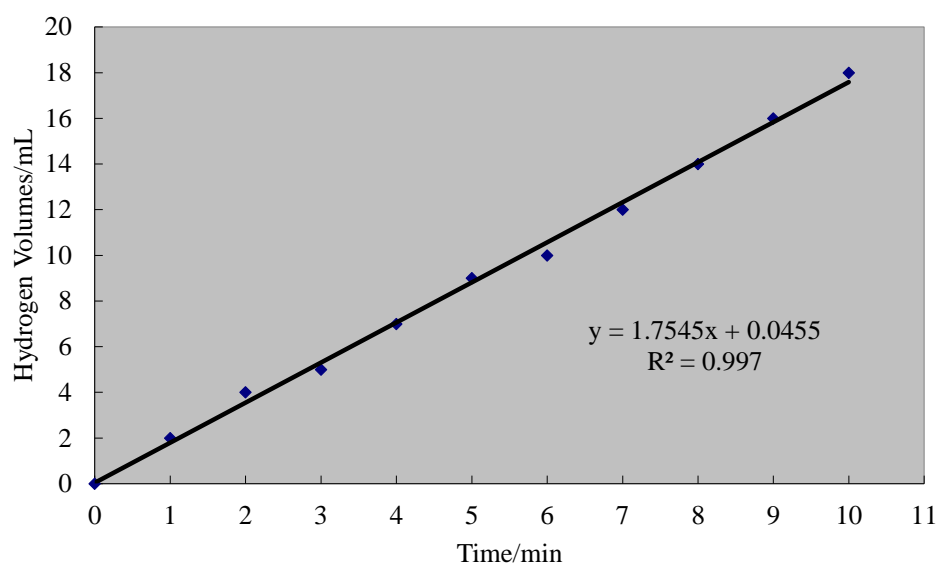
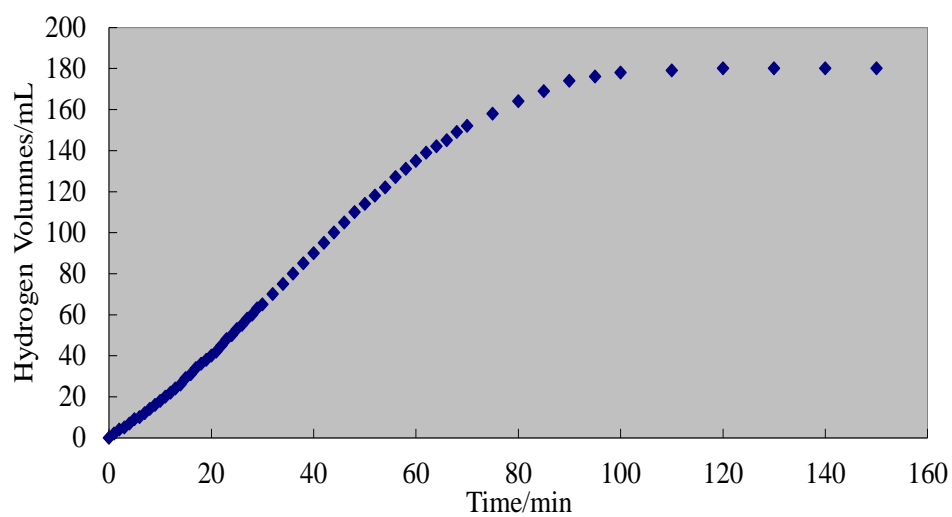


Figure S2. Representative volumes of hydrogen gas produced from Ni/Pd 30/1 with time over 160 min and the initial hydrogen volumes in the first 10 min.