

## Supporting Information

### Ni nanoparticles supported on CNTs with excellent activity produced by atomic layer deposition for hydrogen generation from hydrolysis of ammonia borane

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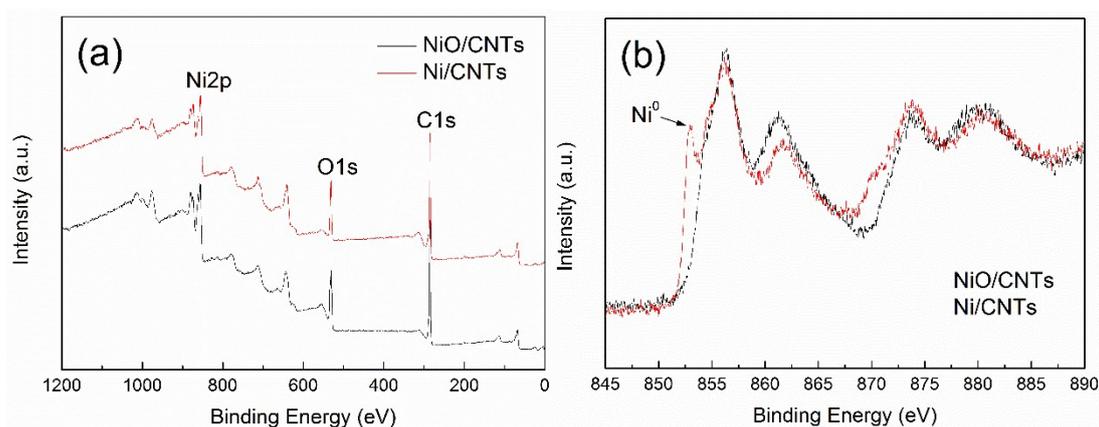
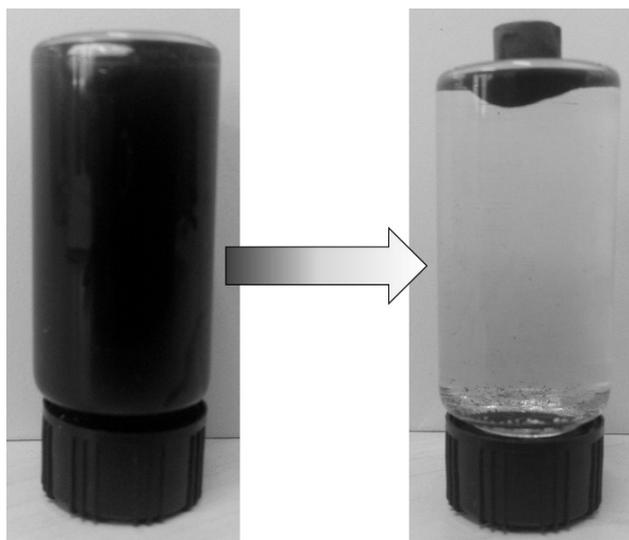


Fig. S1. XPS survey spectra (a) and XPS Ni 2p spectra (b) for NiO/CNTs and Ni/CNTs.



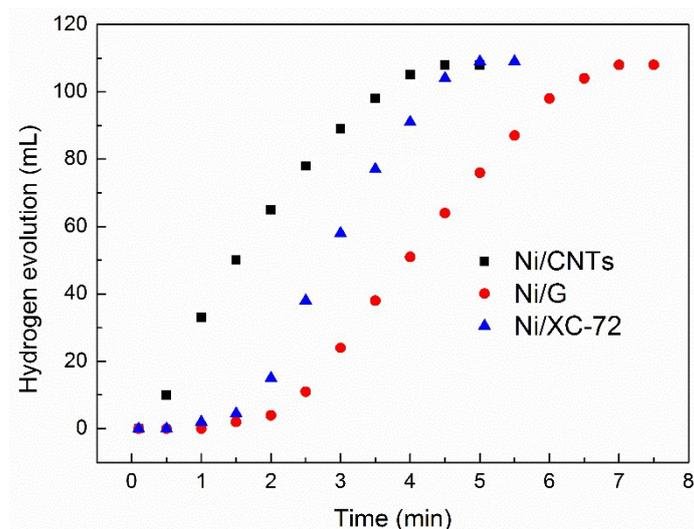
**Fig. S2.** Photographs of the Ni/CNTs catalysts before (left) and after (right) magnetic separation.

**Table S1.** Relative content of XPS C1s functional groups of CNTs, NiO/CNTs and Ni/CNTs.

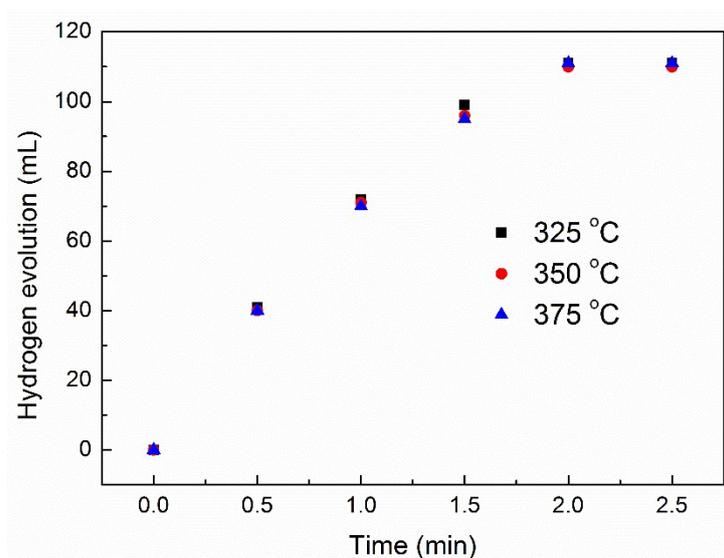
Catalyst	Relative content (%)						Heterocarbon (%)
	C=C	C-C	C-O	C=O	O=C-O	$\pi$ - $\pi^*$	
CNTs	71.6	9.0	8.8	2.4	2.4	5.8	13.6
NiO/CNTs	37.1	21.4	13.3	6.4	21.6	0.2	41.3
Ni/CNTs	58.2	17.5	10.8	4.1	4.8	4.6	19.7

**Table S2.** Data comparison of Ni/CNTs catalysts before and after Pt doping.

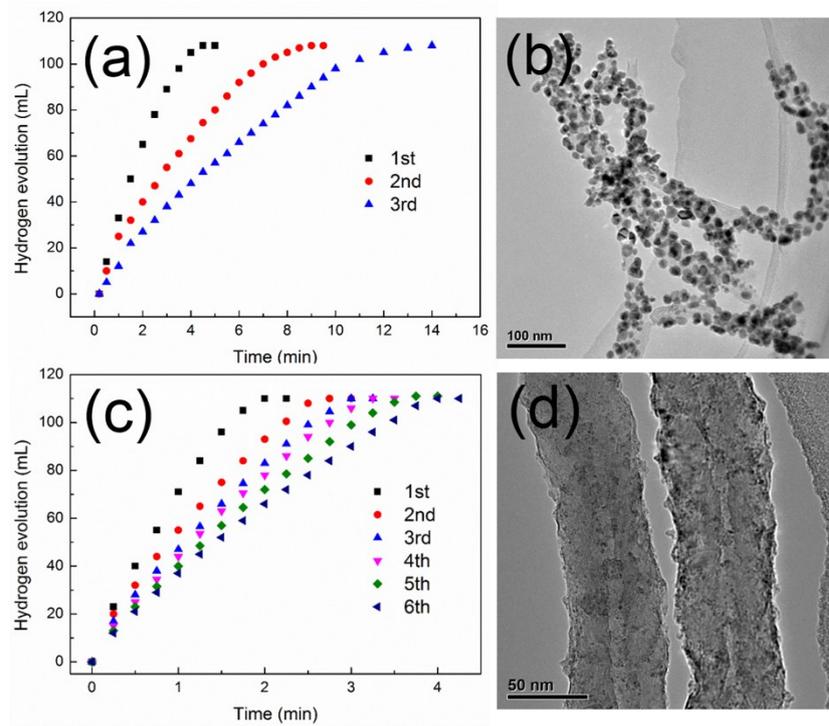
Catalysts	Pt loading (wt%)	Average size (nm)	Induction period (s)	Completion time (min)
Ni/CNTs	0	5.6	15	4.5
Pt-Ni/CNTs	0.68	3.6	0	2.0



**Fig. S3.** Hydrogen generation from AB solution (0.15 mol/L, 10.0 mL) at  $25 \pm 0.5$  °C catalyzed by Ni/CNTs, Ni/XC-72 and Ni/G.



**Fig. S4.** Hydrogen generation from AB solution (0.15 mol/L, 10.0 mL) at  $25 \pm 0.5$  °C catalyzed by Pt-Ni/CNTs obtained at different reduction temperatures.



**Fig. S5.** Hydrogen generation from AB solution (0.15 mol/L, 10.0 mL) catalyzed by Ni/CNTs (a) and Pt promoted Pt-Ni/CNTs (c) bimetallic catalysts during a three-cycle and six-cycle durability test at  $25 \pm 0.5$  °C, respectively ; The corresponding TEM images after three (b) and six (d) catalytic cycles, respectively.