Electronic Supplementary Material (ESI) for Dalton Transactions
This journal is © The Royal Society of Chemistry 2013

Effects of Al-based additives on the hydrogen storage performance of the $Mg(NH_2)_2$-2LiH system

Hujun Cao,[abc] Yao Zhang,[a]* Jianhui Wang,[a] Zhitao Xiong,[a] Guotao Wu,[a] Jieshan Qiu[b] and Ping Chen[a d]*

[a] *Dalian National Laboratory for Clean Energy, Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian 116023, P. R. China.*

[b] *Carbon Research Laboratory, Liaoning Key Lab for Energy Materials and Chemical Engineering, State Key Lab of Fine Chemicals, Dalian University of Technology, Dalian 116024, China.*

[C] *University of Chinese Academy of Sciences, Beijing 100049, China.*

[d] *International Institute for Carbon-Neutral Energy Research (I2CNER), 744 Moto-oka, Nishi-ku, Fukuoka, 819-0395 JAPAN.*

Supporting information

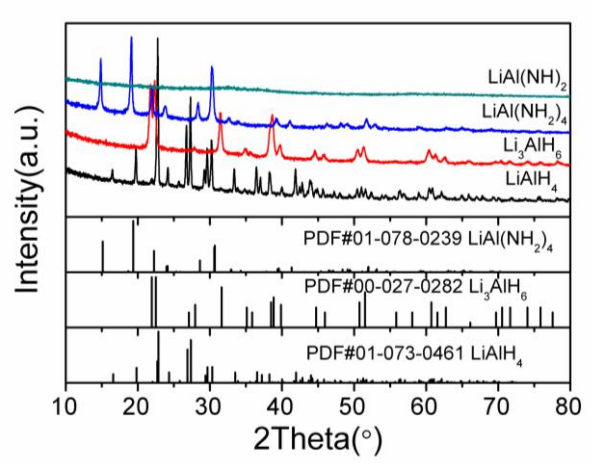

Fig. S1 XRD pattern of $LiAlH_4$, Li_3AlH_6, $LiAl(NH_2)_4$ and $LiAl(NH)_2$.

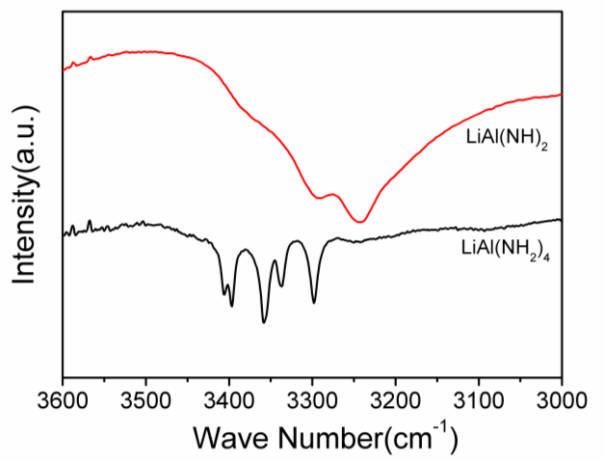

Fig. S2 FTIR spectra of $LiAl(NH_2)_4$ and $LiAl(NH)_2$.

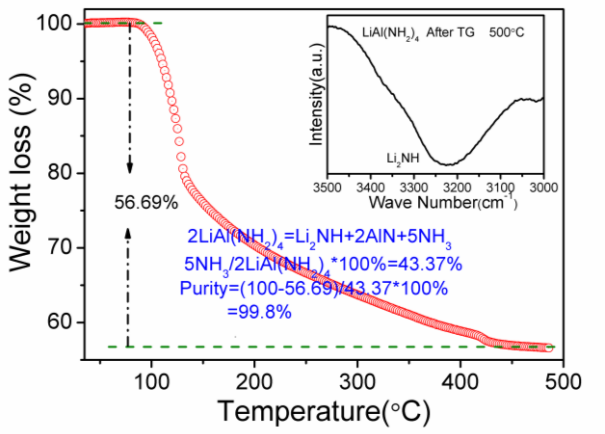

Fig. S3 TG curve of $LiAl(NH_2)_4$, the inlet is FTIR spectrum of the $LiAl(NH_2)_4$ after TG.

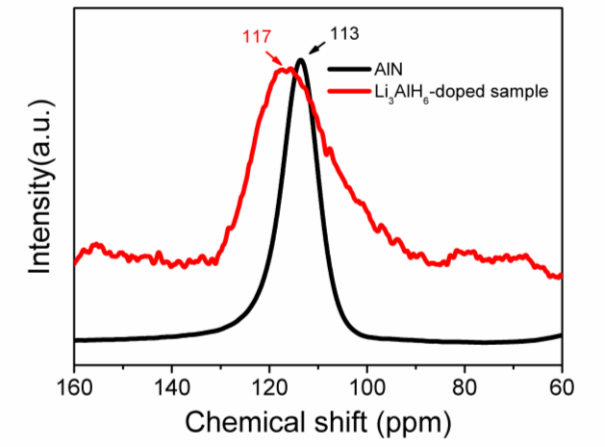

Fig. S4 ^{27}Al MAS NMR spectra of AlN and Li_3AlH_6-doped sample after ball milling.

This journal is © The Royal Society of Chemistry 2013

#1. Preparation of $LiAl(NH)_2$ by ball milling.

$LiAlH_4 + LiAl(NH_2)_4 \rightarrow LiAl(NH)_2 + 4H_2$

150 r/min 15 hrs release 3.67 H_2

Purity=3.67/4*100%=92 %