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

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Supporting information

Fig. S1 XRD pattern of LiAlH$_4$, Li$_3$AlH$_6$, 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$_3$AlH$_6$-doped sample after ball milling.
#1. Preparation of LiAl(NH)₂ by ball milling.

\[ \text{LiAlH}_4 + \text{LiAl(NH)}_2 \rightarrow \text{LiAl(NH)}_2 + 4\text{H}_2 \]

150 r/min 15 hrs release 3.67 H₂

Purity=3.67/4*100%=92 %