Supplementary information

Low temperature hydrogen generation and ammonia suppression from calcium borohydride combined with guanidinium borohydride

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In Fig. S1, TG result shows that NH$_3$ molecules move off MgCl$_2$·(NH$_3$)$_6$ gradually with thermal decomposition of MgCl$_2$·(NH$_3$)$_6$. However, no apparent ammonia evolution is observed below 300 °C in EATPD curve, indicating thorough absorption of ammonia by our EATPD apparatus.
Fig. S2. MS of m/e = 2 (H₂), m/e =14 (BH₃), m/e =16 (NH₃) and m/e =27 (B₂H₆) profiles for GBH and sample G1 (GBH / Ca(BH₄)₂ composite with a mole ratio of 1:0.5). The heating rate is 10 °C/min.
Fig. S3. MS of m/e = 2 (H$_2$) profiles for sample G2 (GBH / Ca(BH$_4$)$_2$ composite with a mole ratio of 1:1) and Ca(BH$_4$)$_2$. The heating rate is 10 °C/min.
Fig. S4. EATPD result for G1. The heating rate is 5 °C/min.
Fig. S5. DSC results for sample G1.
Fig. S6. XRD patterns for the GBH (a) and G1 (b) heated to 150 and 300 °C in argon.
Fig. S7. TG and MS profiles of m/e=2 (H$_2$) and m/e=16 (NH$_3$) for the NaBH$_4$/guanidinium chloride composites with a mole ratio of 1:1 (a) and 2:1 (b). The heating rate is 10 °C/min.
Fig. S8. XRD patterns for the as-prepared NaBH₄/guanidinium chloride composites with mole ratios of 1:1 and 2:1 (a) and their products after heated to 150 °C (b) in argon.