

Supplementary Materials

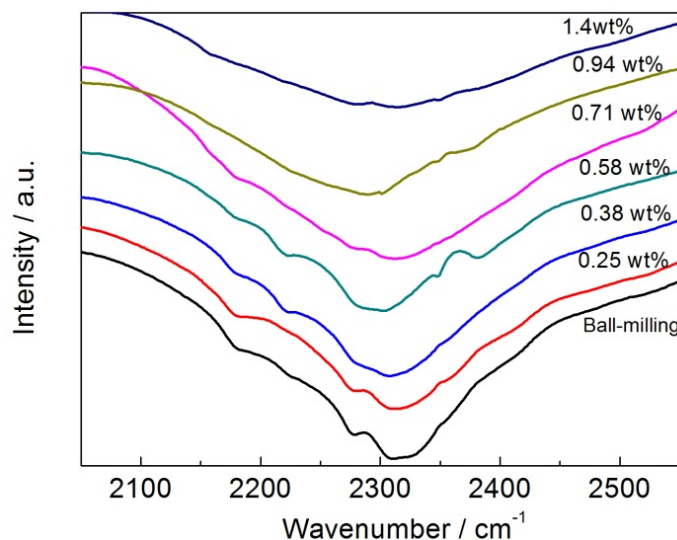


Figure S1. FT-IR spectra of B–H stretching vibrations from T_2 ($2\text{Mg}(\text{NH}_2)_2\text{--}3\text{LiH--LiBH}_4$) samples collected at 460 K at different degree of dehydrogenation: 0 wt%, ball-milling stage; 0.25 wt%; 0.38 wt%; 0.58 wt%; 0.71 wt%; 0.94 wt%; 1.4 wt%.

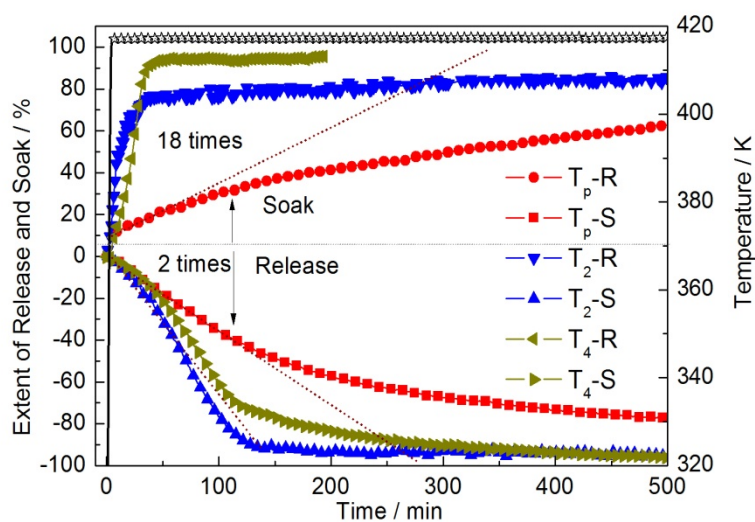


Figure S2. Isothermal hydrogen desorption and sorption of the $2\text{Mg}(\text{NH}_2)_2\text{--}3\text{LiH}$ composite (T_p), $2\text{Mg}(\text{NH}_2)_2\text{--}3\text{LiH--LiBH}_4$ composite (T_2) and $2\text{Mg}(\text{NH}_2)_2\text{--}3\text{LiH--}1/3\text{LiBH}_4$ composite (T_4) at 416 K under the pressure of 0.01 and 6 MPa, respectively.