

Supplementary Information:

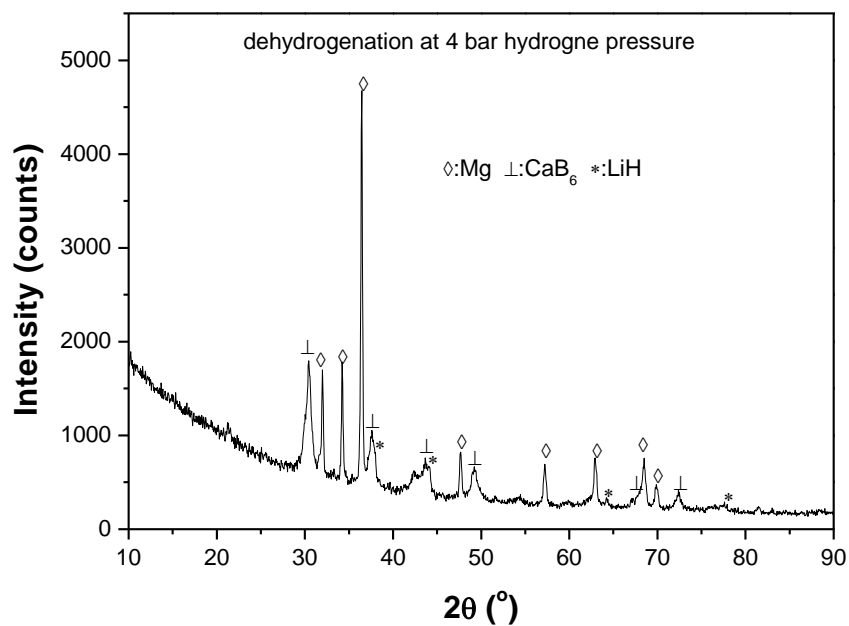


Fig. S1 XRD pattern of the dehydrogenated $6\text{LiBH}_4\text{-CaH}_2\text{-3MgH}_2$ composite under 4 bar of H_2 .

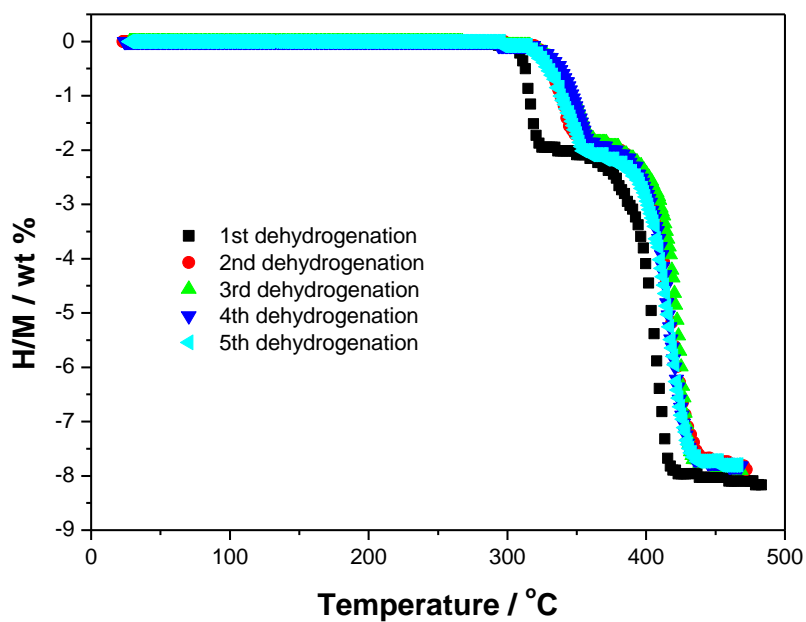


Fig. S2 Dehydrogenation curves of the $6\text{LiBH}_4\text{-CaH}_2\text{-3MgH}_2$ sample in the initial five cycles

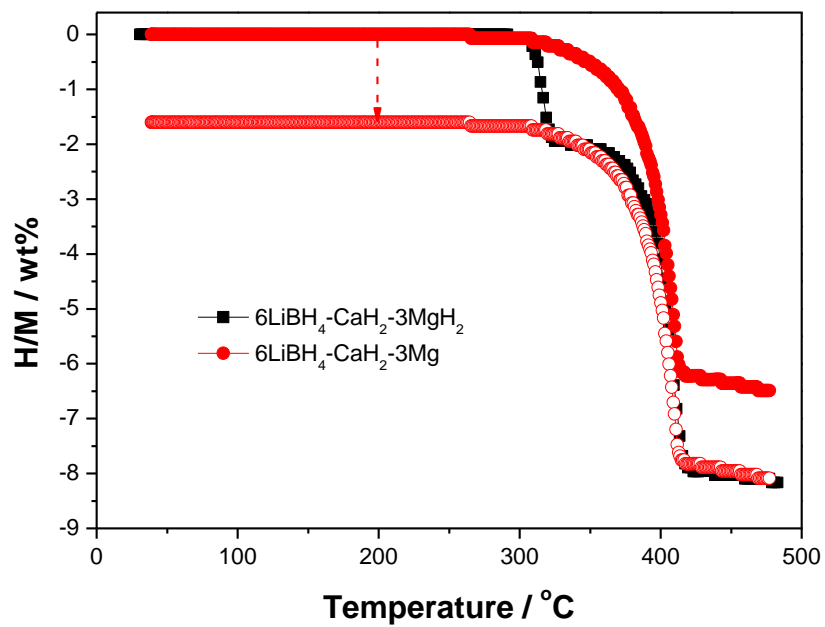


Fig. S3 Comparison on dehydrogenation behavior of the 6LiBH₄-CaH₂-3Mg and 6LiBH₄-CaH₂-3MgH₂ samples