

## Enhanced hydrogen storage properties of a dual-cation ( $\text{Li}^+$ , $\text{Mg}^{2+}$ ) borohydride and its dehydrogenation mechanism

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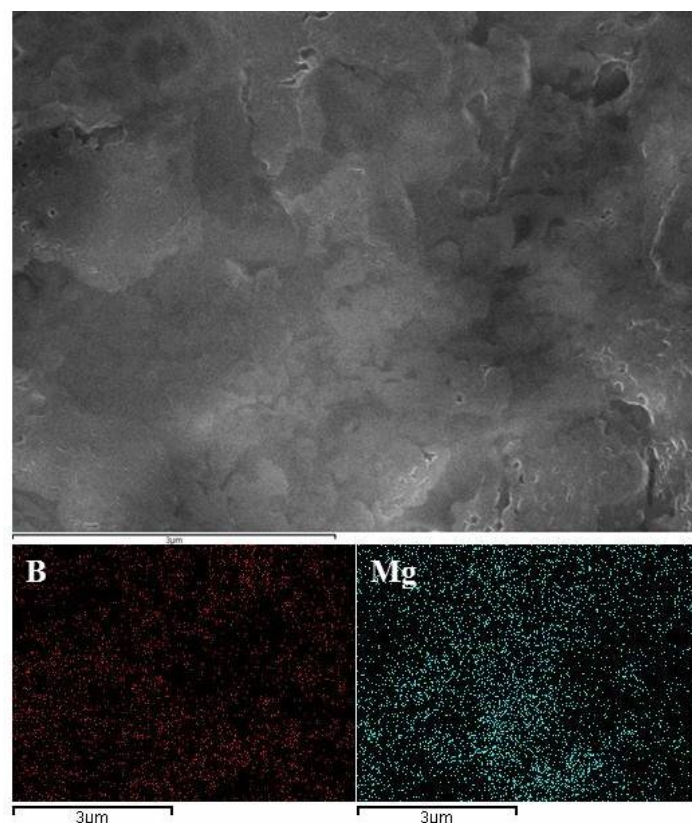
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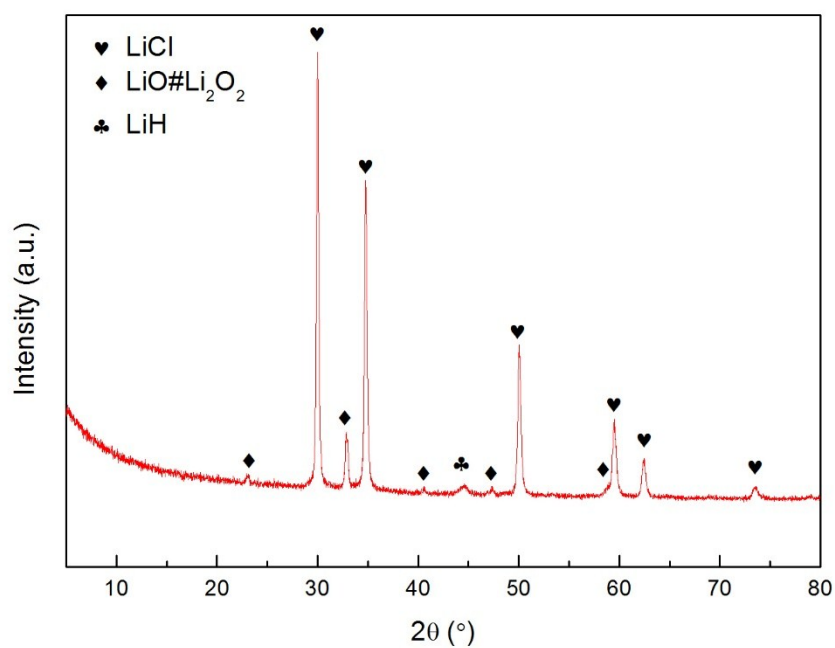
§ Liuting Zhang and Jianguang Zheng contributed equally.



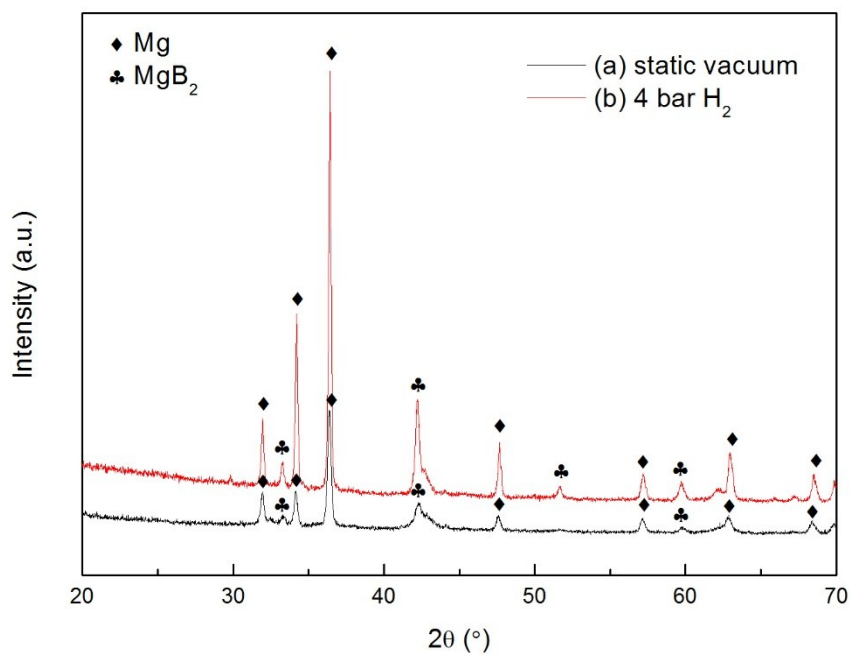
**Fig. s1** EDS mapping profiles of Li-Mg-B-H compound.

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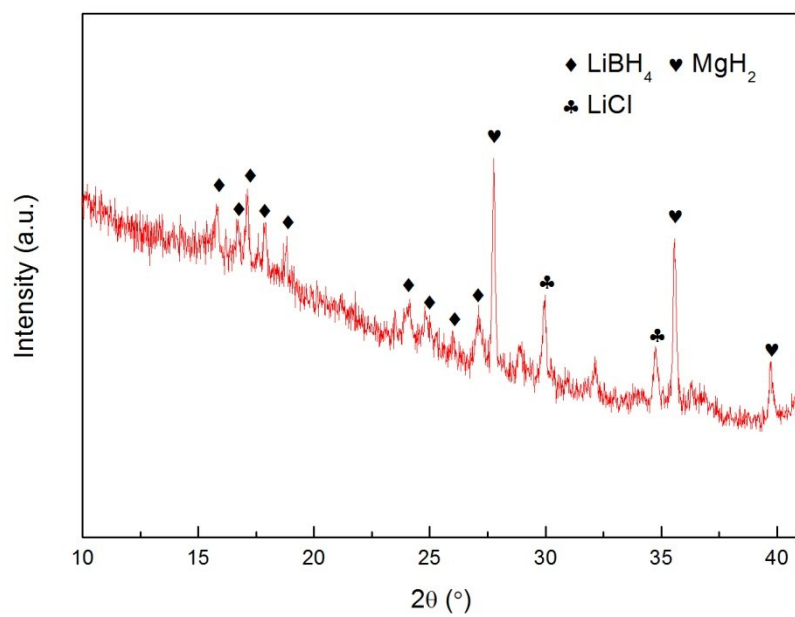
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**Fig. s2** XRD pattern of filter residue of Li-Mg-B-H.



**Fig. s3** XRD patterns of Li-Mg-B-H decomposed from room temperature to 500 °C at different initial hydrogen pressure (a) static vacuum and (b) 4 bar.



**Fig. s4** XRD pattern of the rehydrogenated sample of Li-Mg-B-H.