

Supporting Information

## **Liquid channel built-in solid magnesium hydrides for boosting hydrogen sorption**

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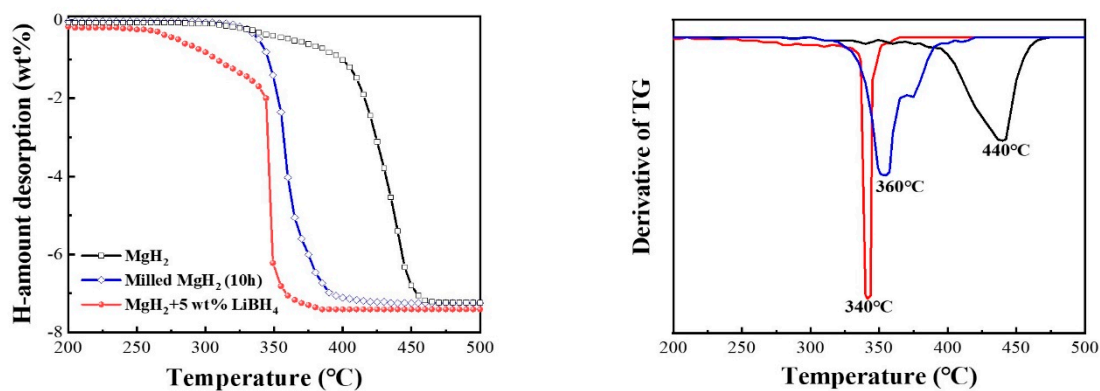
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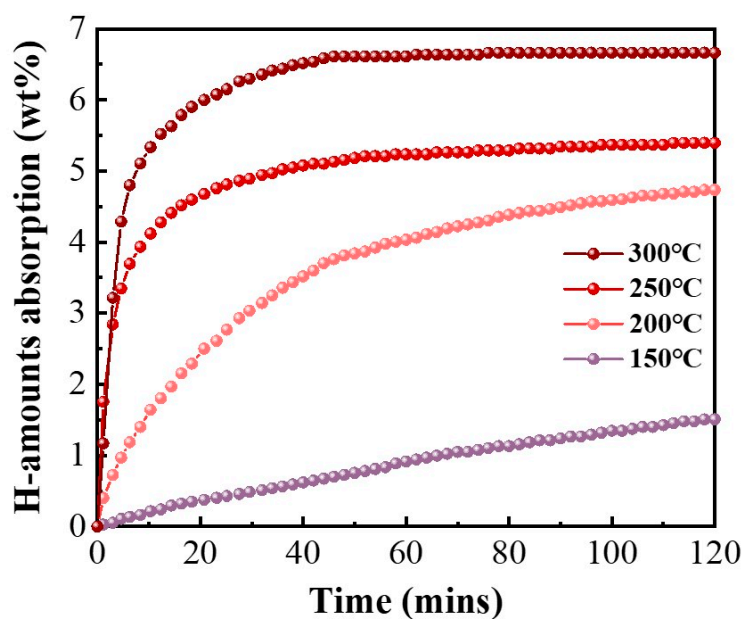
Key Laboratory of Green Fabrication and Surface Technology of Advanced Metal Materials  
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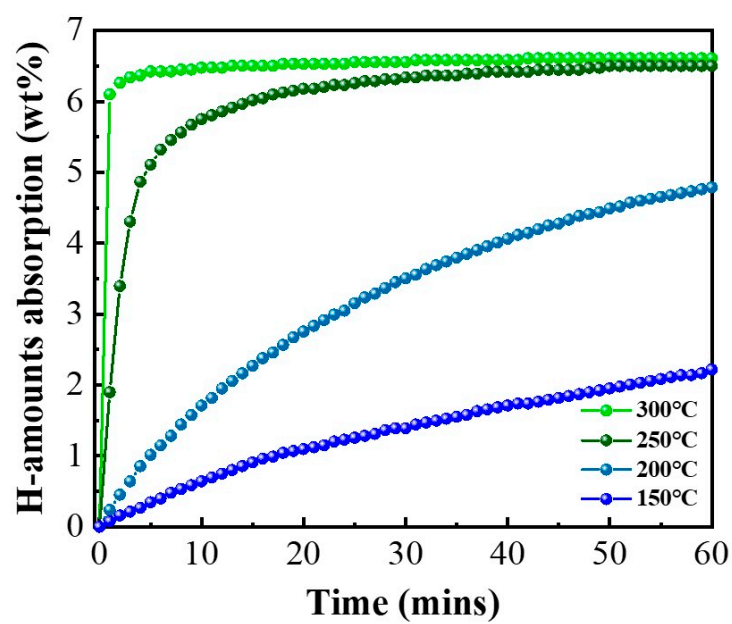
Hefei General Machinery Research Institute, Hefei, Anhui 230031, China.



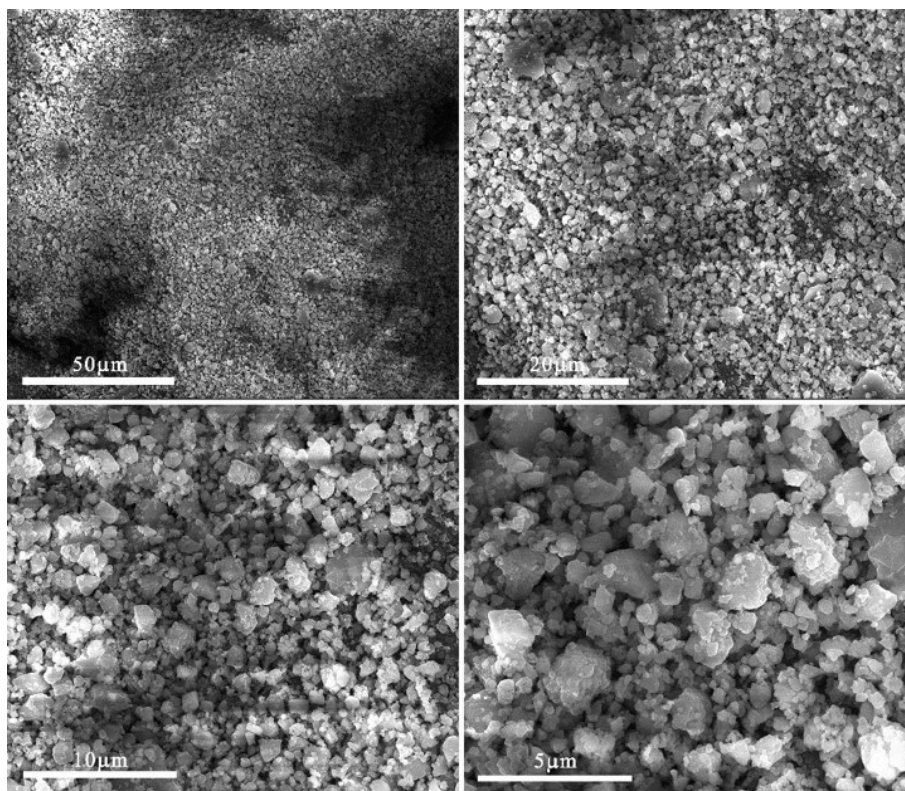
**Figure S1.** Temperature-programmed kinetics of desorption for bulk MgH<sub>2</sub> compared with ball-milled and doped 5wt% LiBH<sub>4</sub> (left) corresponding first order derivative graph (right).



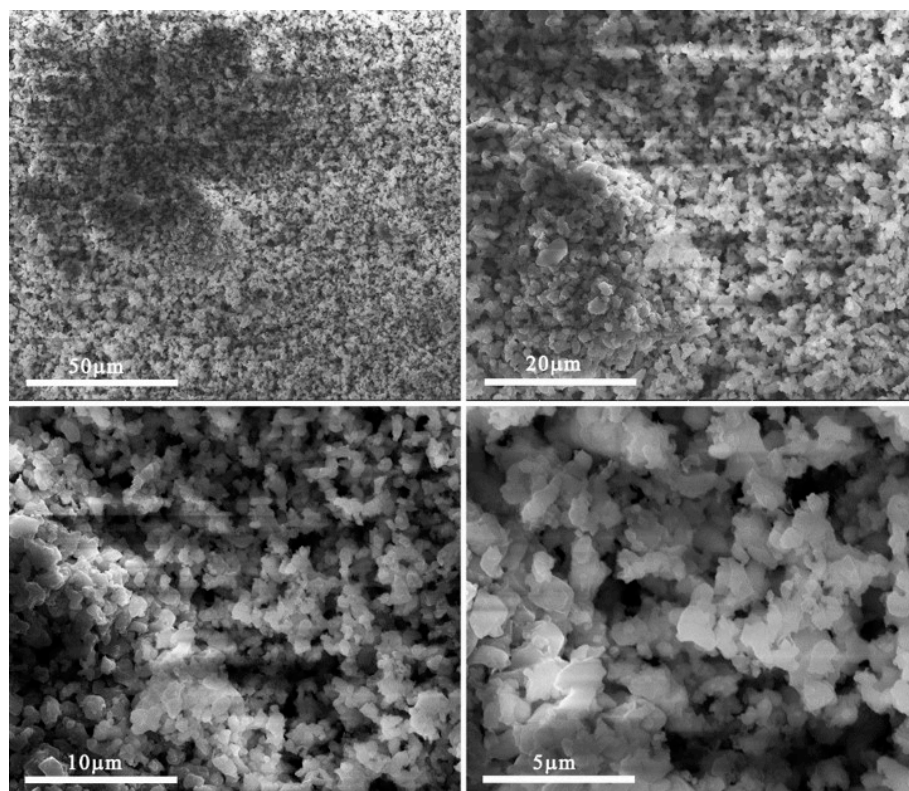
**Figure S2.** Isothermal absorption of MgH<sub>2</sub> at 150, 200, 250, and 300°C.



**Figure S3.** Isothermal absorption of LiBH<sub>4</sub>-doped MgH<sub>2</sub> at 150, 200, 250, and 300°C.

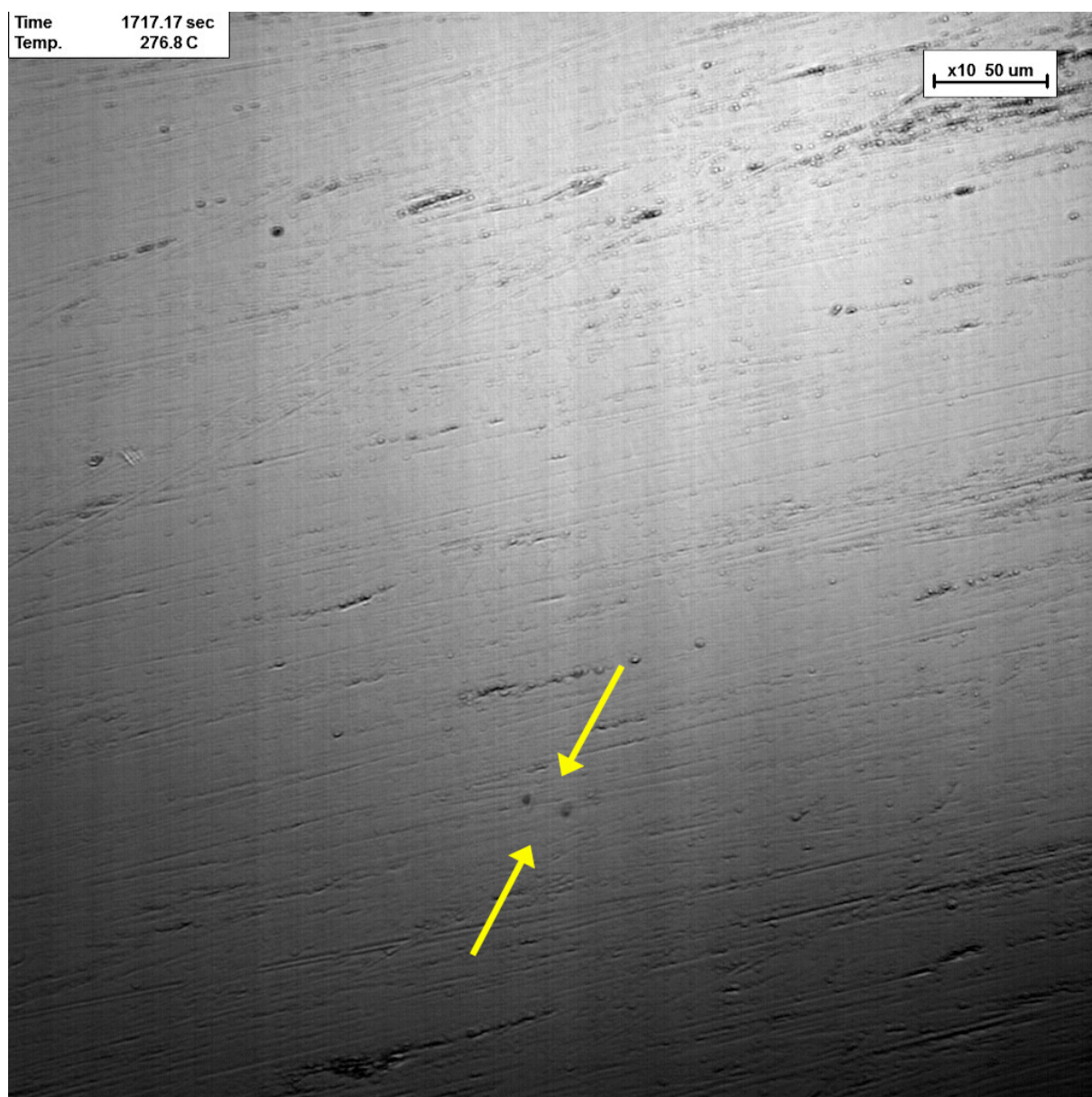


**Figure S4.** SEM images of LiBH<sub>4</sub>-doped MgH<sub>2</sub> before kinetic cycle

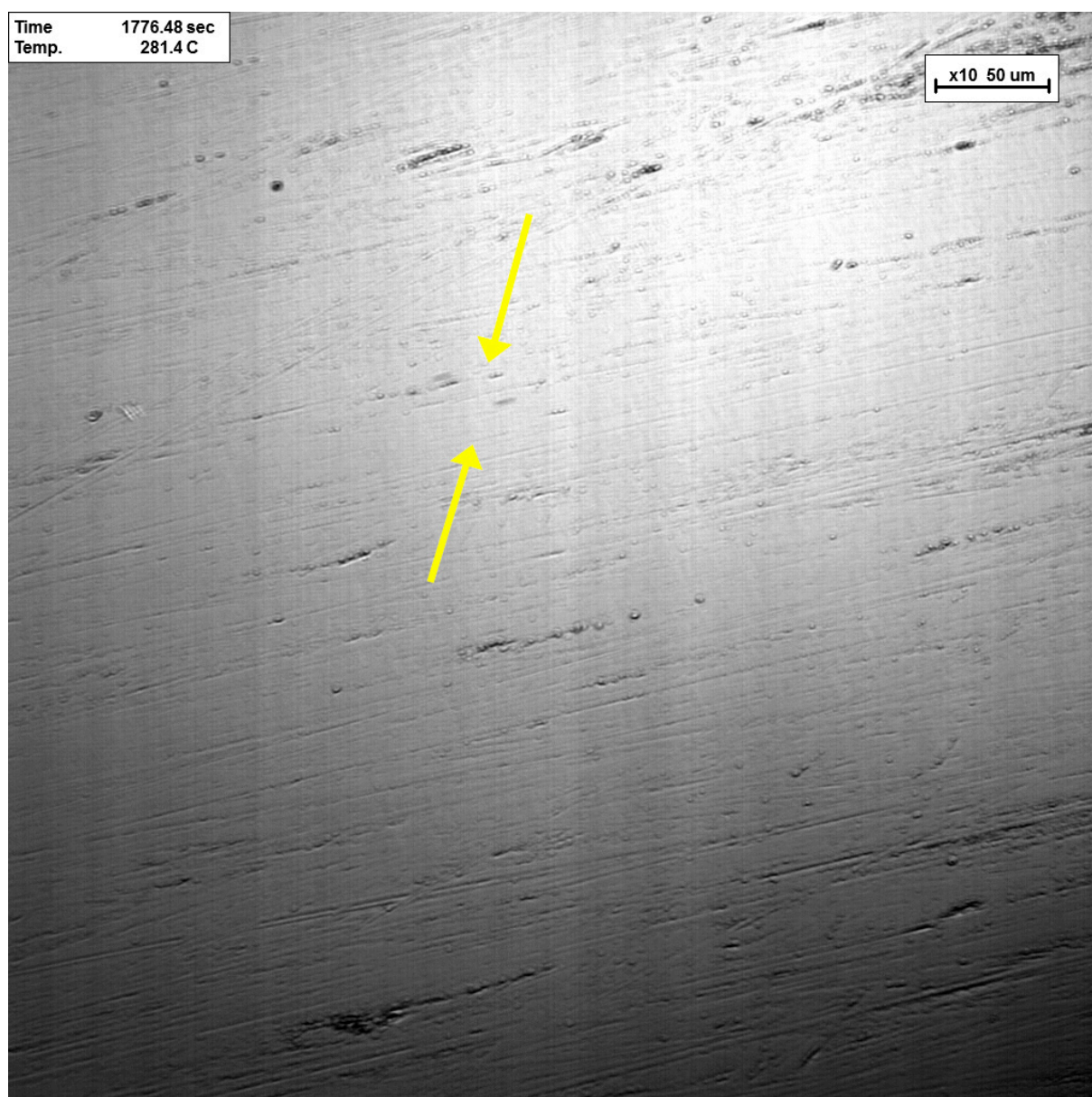


**Figure S5.** SEM images of LiBH<sub>4</sub>-doped MgH<sub>2</sub> after six kinetic cycles





**Figure S6.** High temperature laser confocal image for liquid phase transition during hydrogen desorption at 276°C



**Figure S7.** High temperature laser confocal image for liquid phase transition during hydrogen desorption at 281°C