

Supplementary Information

Enhancing Hydrogen Storage Kinetics and Cycling Properties of NaMgH₃ by 2D Transition Metal Carbide MXene Ti₃C₂

Zhouming Hang, Zhencan Hu, Xuezhang Xiao^{*}, Ruicheng Jiang, Meng Zhang

For dehydrogenation observation, the NaMgH_3 and NaMgH_3 -7 wt.% Ti_3C_2 samples were heated in a home-made quartz tube at 400 °C. In order to prevent samples from oxygen and water, the quartz tube was connected to a vacuum pump. The photographs of two samples before and after dehydrogenation were contrasted in the Fig. S1.

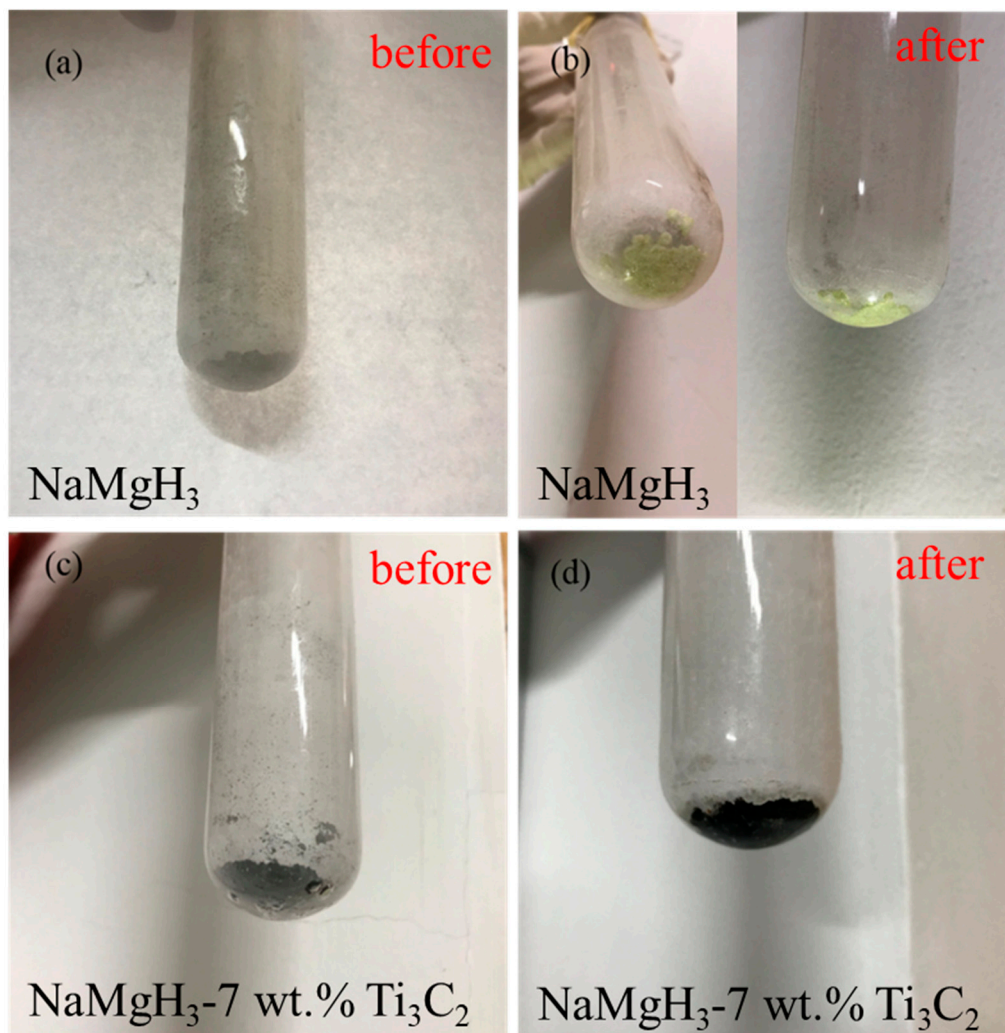


Figure S1. Photographs of pure NaMgH_3 and NaMgH_3 -7 wt.% Ti_3C_2 (a and c) before and (b and d) after dehydrogenation at 400 °C;

In order to calculate the gravimetric heat storage capacities of NaMgH_3 and NaMgH_3 -7 wt.% Ti_3C_2 samples, the differential scanning calorimeter (DSC) analyses were carried out. The DSC analyses were tested at a set heating rate of $5\text{ }^\circ\text{C}/\text{min}$, to obtain the exothermic peaks of two samples. The gravimetric heat storage capacities were determined by integrating the peak area in Fig. S2.

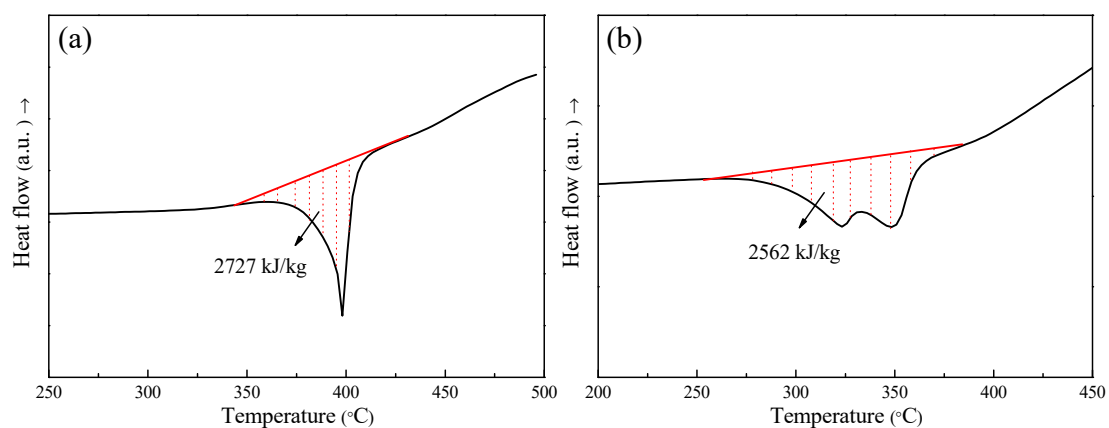


Figure S2. DSC profiles of (a) pure NaMgH_3 and (b) NaMgH_3 -7 wt.% Ti_3C_2 at a heating rate of $5\text{ }^\circ\text{C}/\text{min}$.