Enhanced hydrogen storage properties of MgH_2 catalyzed by a cerium doped TiCrV BCC alloy

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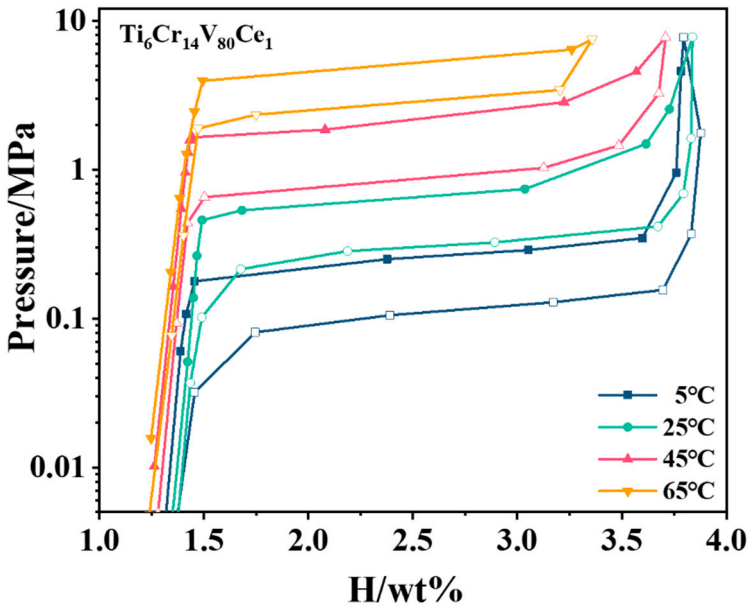

Figure S1. The PCT curves of the as-cast $Ti_6Cr_{14}V_{80}Ce_1$ alloys at the different temperature.

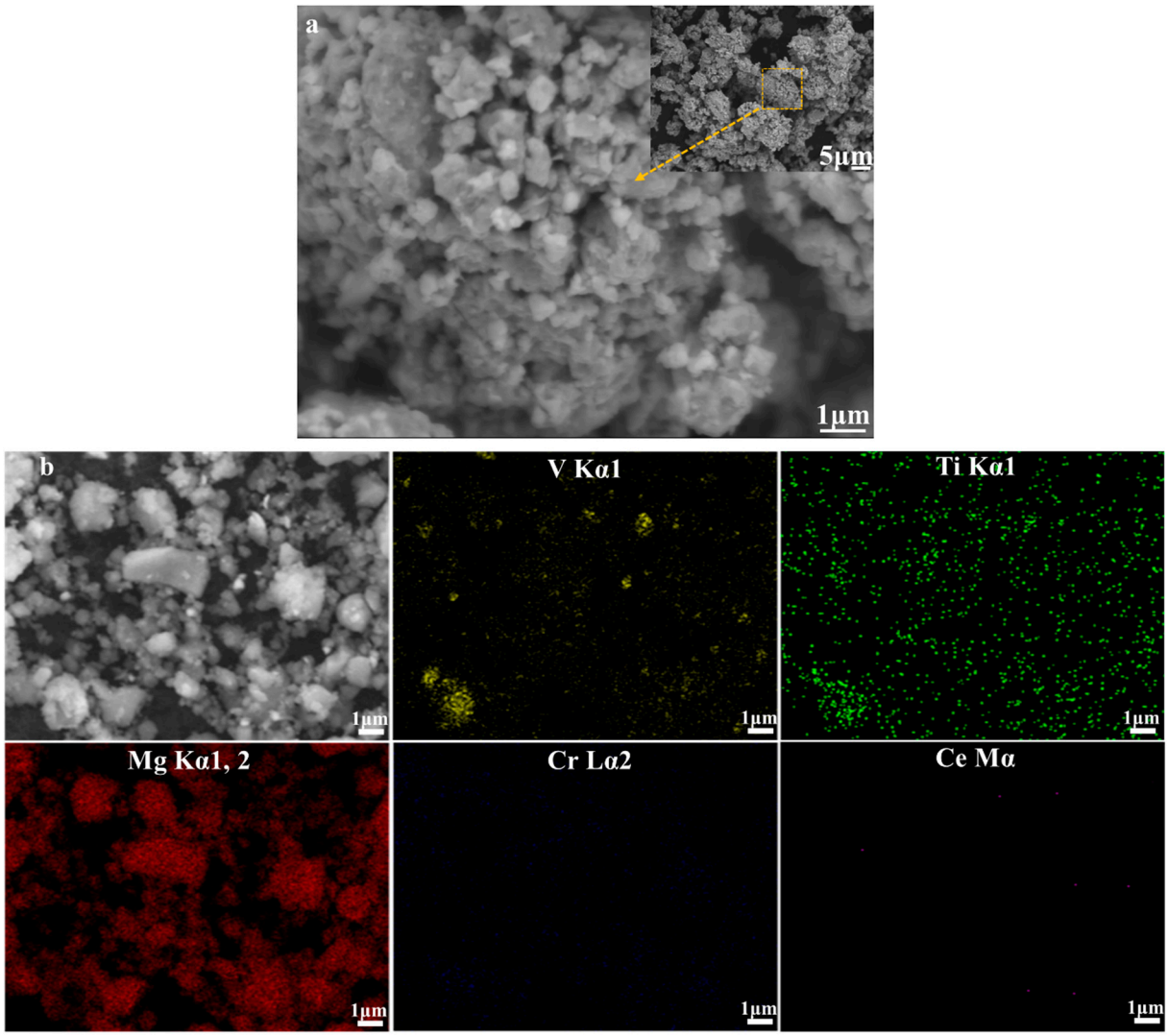

Figure S2. The SEM image of the $Ti_6Cr_{14}V_{80}Ce_1H_x$ hydride by pre-ball milled under hydrogen pressure(a); The SEM image and EDS mapping results of the ball milled MgH_2-10 wt%$Ti_6Cr_{14}V_{80}Ce_1H_x$ composite (b).

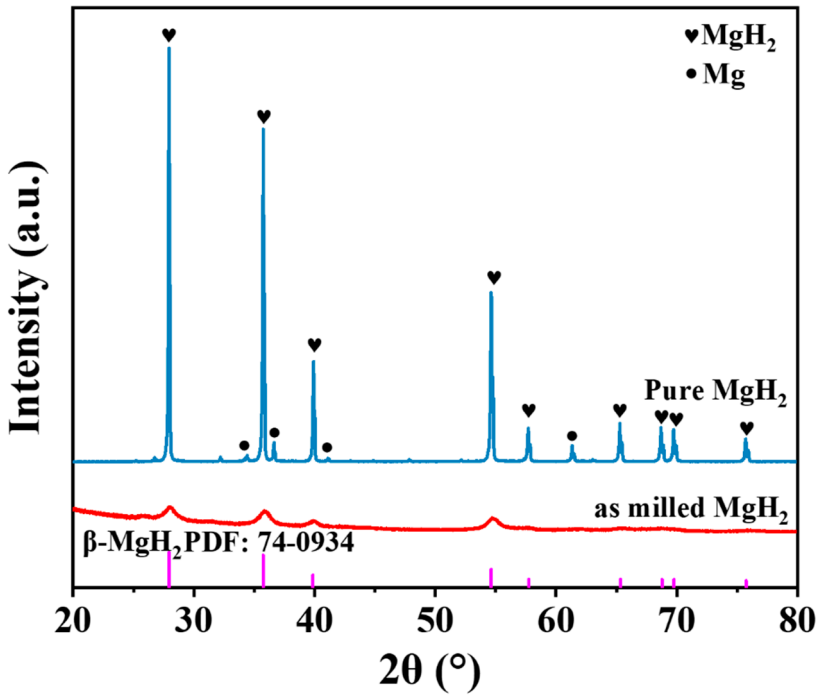

Figure S3. The XRD patterns of the pure MgH_2 and the ball milled MgH_2.

Table S1. Comparison of different catalysts-doped on dehydrogenation kinetics of MgH_2

System component	Dehydrogenation temperature (℃)	Apparent activation energy (E_a / kJ mol^{-1})	Refs
MgH_2	/	119.56 ± 4.9	This work
MgH_2-10 at%Fe	254.5	92	[1]
MgH_2-10 at%Ti	316.5	98	[1]
MgH_2-10 at%(TiFe)	326.5	92	[1]
MgH_2-VTi	212.19	71.77	[2]
MgH_2-30 wt%$TiFe_{0.92}Mn_{0.04}Co_{0.04}$	220	84.6	[3]
MgH_2-20 wt%$Ti_{0.35}Cr_{0.45}V_{0.2}$	/	86.43	[4]
Mg-TiCrV/Ti_3C_2	/	98.19	[5]
MgH_2-10 wt%$Ti_6Cr_{14}V_{80}Ce_1H_x$	254.3	62.62 ± 5.1	This work

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