

## Hydrogen evolution performance by thermal decomposition of metal doped Mg alanate

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Magnesium alanate, which was known to have high hydrogen storage capacity, was synthesized by mechanochemically metathesis reaction method of magnesium chloride and sodium alanate in order to produce hydrogen. Synthesized materials were characterized by XRD and by Pressure-Composition isotherm of the evolved hydrogen gas. XRD patterns of synthesized magnesium alanate showed that metathesis reaction of cations between magnesium chloride and sodium alanate proceeded without any solvent. 3.2 wt.% of hydrogen was released by the thermal decomposition of magnesium alanate mixed with sodium chloride, byproduct of metathesis reaction. In order to enhance thermal kinetics of decomposition step, magnesium alanate was doped with a titanium promoter, titanium trichloride, by ball milled for up to 30 min. It was noticeable that the addition of titanium to the magnesium alanate remarkably reduced peak decomposition temperature from 120 °C to 80 °C.