

## Hydrogen Storage

Many technical challenges must be overcome before hydrogen energy systems can be introduced, including how to effectively store the hydrogen.



Conventional solutions include liquefaction or compression, however these both have energy efficiency and safety concerns. A more promising alternative is solid-state hydrogen materials: however the conventional alloys used, such as  $LaNi_5$ , are very heavy.

Therefore, for automotive and mobile applications, there is an urgent need to develop new solid-state hydrogen storage materials, predominately composed of light-elements, which exhibit a high gravimetric storage density and reversible sorption at ambient temperatures and pressures.

In different projects, we are synthesizing a wide range of candidate materials, including light-metal hydrides, borohydrides, nano-carbon, and microporous materials. These materials are then characterized using the facilities in

the Hydrogen Technology Laboratory.