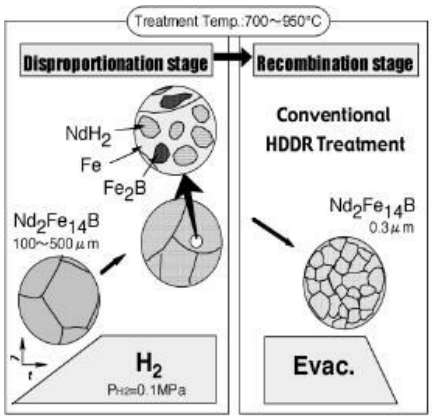
Hydrogen processing research

Hydrogen can be used as a processing tool, to modify the microstructure of a range of functional materials.



For example, in Nd-Fe-B magnet alloys, a series of hydrogen - vacuum heat treatments can be applied to a cast alloy to give a powder with a 100x reduction in grain size and partial grain alignment, that is therefore magnetically coercive.

This is called the Hydrogen Disproportionation Desorption Recombination (HDDR) process.

We are working with the **Magnetic Materials Group (/research/activity/metallurgy-materials/magnets/index.aspx)** to try to understand the mechanisms involved in the HDDR process, and to apply the process to other types of material.