Fundamental studies on hydrogenation disproportionation desorption and recombination (HDDR) processes in Nd-Fe-B-Type alloys.

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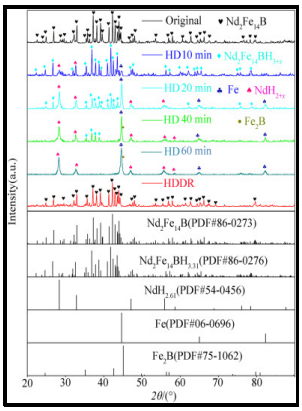

Description: -
-Fundamental studies on hydrogenation disproportionation desorption and recombination (HDDR) processes in Nd-Fe-B-Type alloys.
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Structural studies of some hydrogen

The present status of those HDDR powders and the bonded magnets made from them are reviewed with regards to the powder particle size dependence of their magnetic properties, their magnetic thermal stability, and their magnetization behavior. The route of applying low pressure of 4—25 MPa on the as-disproportionated green compact during the desorption recombination process in situ hot deformation in a spark plasma sintering SPS system can obtain completely recombined NdFeB magnet with good anisotropy and magnetic properties.

Pressure effect on hydrogen absorption by Nd

Structure and magnetic properties of bulk nanocrystalline Nd-Fe-B permanent magnets prepared by hot pressing and hot deformation.

In

In HD treatments, increasing hydrogen pressure from 100 kPa up to 200 kPa at room temperature, does not affect particles size distribution but accelerates the reaction by decreasing the incubation time. The potential of this technique for monitoring various phenomena relevant to the hydrogenation, disproportionation, desorption and recombination HDDR processing of Nd-Fe-B-type alloys is assessed, together with an evaluation of its capacity for delineating magnetic and phase transitions. Optical micrographs suggest that the Nd-rich grain boundary phase acts as a diffusion path for the hydrogen in the HDDR-process.

In

Generally, the grain refinement is a useful technique to enhance ductility of metallic materials. Recently, it has been demonstrated that the coarse-grained materials are converted into very fine grained powder by the HDDR hydrogenation, disproportionation, desorption and recombination process in the Nd-Fe-B permanent magnets.

Structural studies of some hydrogen

 Enhanced magnetic properties and bending strength of hot deformed Nd—Fe—B magnets with Cu additions.

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