Effect of hydrogen on the magnetic characteristics of $Nd_2Fe_{14}B$ single crystal

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9.7 cm

$Nd_2Fe_{14}B$ single crystals were hydrogenated to the composition $Nd_2Fe_{14}BH_x$ where x ranges from 0 to 3.3. Magnetic characteristics of the present single crystals were investigated in the temperature range 4.2 to 750 K. It is established that hydrogen absorption does not change the crystal structure of these compounds but is accompanied by an expansion of a unit cell volume. The measurements show that the hydrogen absorption leads to an increase of the Curie temperatures and values of the iron moment in all the hydrides investigated. A systematic study of the influence of hydrogen on the spin reorientation transition is reported.

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