

Abstract Submitted  
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**Effects of additives on hydrogen absorption and desorption characteristics of Nd(Fe,Mo)<sub>12</sub> alloys**<sup>1</sup> JINGZHI HAN, CHANGSHENG WANG, HONGLIN DU, HAIYING CHEN, YINGCHANG YANG, School of Physics, Peking University, 100871 — Effects of additives such as Co, Zr, Nb and Ga on hydrogen absorption and desorption characteristics of Nd(Fe,Mo)<sub>12</sub> alloys are investigated. The results show that Zr or Nb addition increases the temperature of the disproportionation, and Co or Ga addition decreases the temperature of the recombination. This indicates that Zr or Nb addition makes the disproportionation sluggish while Co or Ga addition is effective for enhancing the recombination, which is similar to the effects of the above additives on the hydrogen absorption and desorption characteristics of Nd<sub>2</sub>Fe<sub>14</sub>B alloys. However, according to XRD measurement of the magnetic oriented samples, Anisotropic HDDR NdFe<sub>10.5-X</sub>M<sub>X</sub>Mo<sub>1.5</sub> (M=Co,Zr,Nb or Ga) powders is not found. In order to analyze the reason leading to isotropic Nd(Fe,Mo)<sub>12</sub> and anisotropic Nd<sub>2</sub>Fe<sub>14</sub>B powders, the similarities and differences of the Nd(Fe,Mo)<sub>12</sub> and Nd<sub>2</sub>Fe<sub>14</sub>B systems and their corresponding HDDR phenomena are discussed, and whether leading to anisotropic powders or not is suggested to be related to crystal growth direction of the Nd-Fe-B and Nd(Fe,Mo)<sub>12</sub> system. At the same time, it is also found that the Nb addition is helpful for improving the magnetic properties of the HDDR Nd(Fe,Mo)<sub>12</sub>N<sub>X</sub> magnetic materials, and the HDDR NdFe<sub>10.3</sub>Nb<sub>0.2</sub>Mo<sub>1.5</sub>N<sub>X</sub> powders have a Br of 54 emu/g, a iHc of 3900 Oe. Moreover, the Mr/Ms ratio of the above powders reaches 0.60.

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