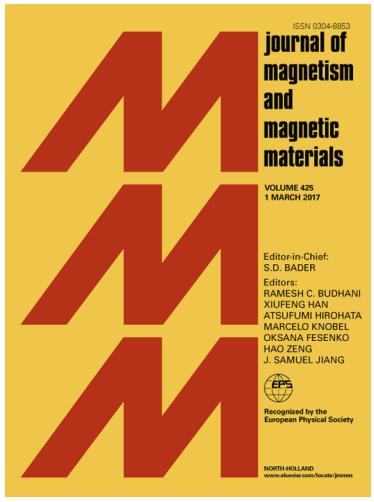

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Dependence of the demagnetization behavior on the direction of grain boundary diffusion in sintered Nd-Fe-B magnets

Fugang Chen[1*], Tieqiao Zhang[2], Wenhao Zhang[2], Lanting Zhang[2*], Yunxue Jin[1]

1 School of Materials Science and Engineering, Jiangsu University of Science and Technology, Zhenjiang 212003, People's Republic of China

2 School of Materials Science and Engineering, Shanghai Jiao Tong University, Shanghai 200240, People's Republic of China

Abstract

The effect of the direction of coercivity distribution gradient on the demagnetization behavior of anisotropic sintered Nd-Fe-B magnets was investigated via both experiments and simulations. In the grain boundary diffusion process (GBDP) using $Dy_{70}Cu_{30}$, the magnet diffused parallel to the *c*-axis shows much higher squareness factor (H_k/H_{cj}, 0.92) than that diffused perpendicular to the *c*-axis (H_k/H_{cj}, 0.83). To simulate the different gradient of coercivity distribution with respect to the *c*-axis after the GBDP, composite Nd-Fe-B magnets composed of two different grades of Nd-Fe-B magnets were fabricated via diffusion bonding. The anisotropic demagnetization behavior of the composite magnets sandwiched in two directions is similar to that of the magnets after GBDP along two perpendicular directions. Micro-magnetic simulations further confirmed the dependence of demagnetization

* Corresponding author. fax: 86 21 54747471;

E-mail: lantingzh@sjtu.edu.cn (L.T. Zhang), chenfugang@sjtu.edu.cn (F.G. Chen)