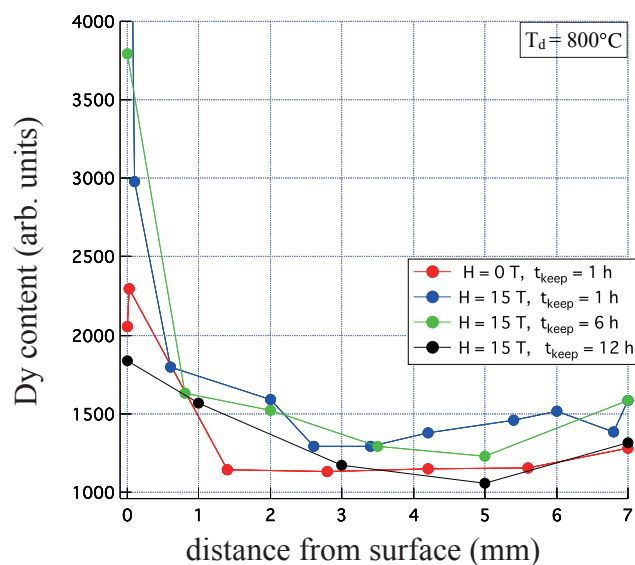


Effect of Strong Gradient Magnetic Fields on the Coercivity of Nd-Fe-B Sintered Magnets during Grain-Boundary Diffusion Processing of Dy

ネオジウム系焼結磁石の保磁力に与えるDy粒界拡散時の強勾配磁場の影響



Shown in the figure is the depth profiles of Dy content derived from SEM-EDS observations for the Nd-Fe-B sintered magnets diffusion processed at $T_D = 800^\circ\text{C}$ and annealed at $T_a = 500^\circ\text{C}$, plotted against the distance from the surface where the Dy layer was deposited. Strong gradient magnetic fields were applied during the diffusion processing by using the 15T-CSM. Dy content rapidly decreases with increasing distance from surface in all the samples. However, we can notice the appreciable increase in the Dy content for the 15T-processed samples as compared with that for the reference sample (red circles) that was processed without magnetic fields. This result therefore suggests the effect of magnetic force fields which enhance the Dy diffusion toward the inner portion of bulk magnets.

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拡散深さの限界が課題となっているネオジウム焼結磁石のDy粒界拡散による保磁力増強法を克服するため、強勾配磁場で発生可能な磁気力を用いて、常磁性状態であるDyの粒界中での拡散を促進させる可能性について検討した。その結果、上図のように有意な磁場効果を観測することができた。

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