

## MICROSTRUCTURE OF HEAT TREATED NdFeB-BASED ALLOYS

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### ABSTRACT

Alloys of composition closed to the stoichiometric require a lengthy heat treatment to dissolve  $\alpha$ -Fe within the microstructure. Microstructural comparisons of alloys before and after heat treatment revealed increasing amount of the  $\text{Nd}_2\text{Fe}_{14}\text{B}$  phase but proportionally decreasing the secondary phase (Nd-rich and  $\text{Nd}_{1.1}\text{Fe}_4\text{B}_4$ ). Grain size of hard magnetic phase increased substantially with time and temperature of treatment. Such microstructural conditions are generally attributed to the lower rate of hydrogen reaction.

<http://journal.masshp.net/wp-content/uploads/Journal/2006/A.Shaaban%2028-33.pdf>

### REFERENCES

- [1]. Sagawa M., Fujimura S., Togawa N., Yamamoto H. and Matsuura Y. (1984); J. Appl. Phys. 55 2083
- [2]. Ma B.M. and Bounds C.O. (1991); J. Appl. Phys. 70 (10) 6471
- [3]. Hirose Y., Hasegawa H. and Sasaki S. (1998); Proc. of the 15th Int. Workshop on Rare-Earth Magnets and Their Applications, Dresden.
- [4]. Fujita A. and Harris I.R. (1994); IEEE Trans. on Magn 30 (2) 860
- [5]. Ahmed F.M., Edgeley D.S. and Harris I.R., Proc. of the 13th Int. Workshop Rare-Earth Magnets and Their Applications, Birmingham, UK (1994) 463
- [6]. Cannesan N., Williams A.J., Harris I.R., Gutfleisch O., Le Breton, Proc. of the 17th Int. Workshop on Rare-Earth Magnets and Their Applications, Edited by Hadjipanayis G.C. and Bonder M.J. (2002)