

High hard magnetic properties and cellular structure of nanocomposite magnet $\text{Nd}_{4.5}\text{Fe}_{73.8}\text{B}_{18.5}\text{Cr}_{0.5}\text{Co}_{1.5}\text{Nb}_1\text{Cu}_{0.2}$

The N.D., Chau N., Vuong N.V., Quyen N.H.

Center for Materials Science, University of Science, Vietnam National University, Hanoi, 334 Nguyen Trai, Hanoi, Viet Nam; Institute of Materials Science, Vietnamese Academy of Science and Technology

Abstract: The formation of special nanostructure, cellular structure, in $\text{Nd}_{4.5}\text{Fe}_{73.8}\text{B}_{18.5}\text{Cr}_{0.5}\text{Co}_{1.5}\text{Nb}_1\text{Cu}_{0.2}$ nanocomposite magnet has been observed by means of SEM for the first time. Ultrafine structure of cellules with thickness of 20-25 nm and length in range of 200-300 nm leads to high shape anisotropy of the materials. Therefore, high hard magnetic properties were obtained with $(\text{BH})_{\text{max}}$ up to 17.3 MG Oe in ribbons with very high remanence of 13.5 kG. The role of Cr and Co in the formation and refinement of cellular structure is proposed. Effect of heat treatment on hard magnetic properties is discussed in detail. ?? 2006 Elsevier B.V. All rights reserved.

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Correspondence Address: Chau, N.; Center for Materials Science, University of Science, Vietnam National University, Hanoi, 334 Nguyen Trai, Hanoi, Viet Nam; email: chau@cms.edu.vn

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Authors with affiliations:

1. The, N.D., Center for Materials Science, University of Science, Vietnam National University, Hanoi, 334 Nguyen Trai, Hanoi, Viet Nam
2. Chau, N., Center for Materials Science, University of Science, Vietnam National University, Hanoi, 334 Nguyen Trai, Hanoi,

3. Vuong, N.V., Institute of Materials Science, Vietnamese Academy of Science and Technology
4. Quyen, N.H., Institute of Materials Science, Vietnamese Academy of Science and Technology

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