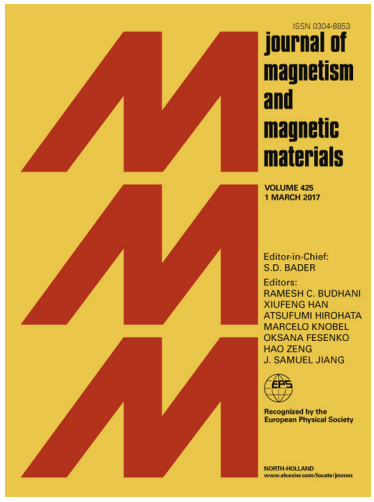

Dynamic magnetic characteristics and relaxation of $Fe_{73.5}Cu_1Nb_3Si_{15.5}B_7$ nanocrystalline alloy under operating temperature and magnetizing frequency

Aina He, Shiqiang Yue, Anding Wang, Chuntao Chang, Xinmin Wang

PII: S0304-8853(17)31641-4
DOI: http://dx.doi.org/10.1016/j.jmmm.2017.07.080
Reference: MAGMA 63011

To appear in: *Journal of Magnetism and Magnetic Materials*

Received Date: 2 June 2017
Revised Date: 20 July 2017
Accepted Date: 21 July 2017

Please cite this article as: A. He, S. Yue, A. Wang, C. Chang, X. Wang, Dynamic magnetic characteristics and relaxation of $Fe_{73.5}Cu_1Nb_3Si_{15.5}B_7$ nanocrystalline alloy under operating temperature and magnetizing frequency, *Journal of Magnetism and Magnetic Materials* (2017), doi: http://dx.doi.org/10.1016/j.jmmm.2017.07.080

Dynamic magnetic characteristics and relaxation of $Fe_{73.5}Cu_1Nb_3Si_{15.5}B_7$ nanocrystalline alloy under operating temperature and magnetizing frequency

Aina He, Shiqiang Yue, Anding Wang*, Chuntao Chang*, Xinmin Wang,

Key Laboratory of Magnetic Materials and Devices, Zhejiang Province Key Laboratory of Magnetic Materials and Application Technology, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang 315201, China

Corresponding author: Anding Wang and Chuntao Chang,

Telephone: +86-574-86685027

Fax: +86-574-87617212

Email: anding@nimte.ac.cn; ctchang@nimte.ac.cn

Keywords: Nanocrystalline alloy; Dynamic magnetic characteristic; Core loss; Complex permeability; Magnetic relaxation

Abstract

The alternation of dynamic magnetic characteristics with operating temperature and magnetizing frequency in annealed $Fe_{73.5}Cu_1Nb_3Si_{15.5}B_7$ nanocrystalline alloy core was systematically studied by AC *B-H* loop tracer and complex permeability approach. It is found that the operating temperature below 160 ^oC has little influence on core loss when the induction (*B*) is less than 1.1 T. As *B* becomes higher, core loss measured at higher temperature becomes larger. The *B* and remanence (B_r) at 80 A/m under power frequency both decline slightly as the temperature goes up. Furthermore,