

Influence of Ti and V substitution for Al on the properties of $\text{Nd}_{60}\text{Fe}_{30}\text{Al}_{10}$ alloys

Chau N., Luong N.H., Huu C.X., Thep N.T., Anh H.D.

Center for Materials Science, National University of Hanoi, 334 Nguyen Trai, Thanh Xuan, Hanoi, Viet Nam

Abstract: Systems with compositions $\text{Nd}_{60}\text{Fe}_{30}\text{Al}_{10-x}\text{Ti}_x$ and $\text{Nd}_{60}\text{Fe}_{30}\text{Al}_{10-x}\text{V}_x$ ($x=2, 4, 6, 8$, and 10) have been prepared by arc melting and copper mold suction-casting. The cast surface of the samples is partially crystalline. At increasing the Ti or V content, the crystalline fraction in the samples increases and for $x=10$, the alloys are fully crystalline. Melting temperatures also increase with increasing Ti or V content in the samples. All samples, some of them in a partly crystalline state, exhibit good hard magnetic properties at room temperature. With increasing Ti or V content, the magnetization continuously decreases, whereas both the coercivity and the Curie temperature increase. Thermomagnetic curves measured for all samples at low field exhibit an interesting shape. The temperature dependence of the coercivity of the samples has been determined. ?? 2003 Published by Elsevier Science B.V.

Author Keywords: Crystallization-amorphous systems; Hard magnetic materials; Magnetization; Rare-earth alloys

Index Keywords: Aluminum; Crystalline materials; Crystallization; Magnetic materials; Magnetization; Titanium; Vanadium; Curie temperature; Neodymium alloys

Year: 2003

Source title: Journal of Magnetism and Magnetic Materials

Volume: 262

Issue: 3

Page : 441-444

Cited by: 3

Link: Scopus Link

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

Editors: Franse J.J.M.Duc N.H.Brommer P.R.

Conference name: Hanoi International Symposium

Conference date: 30 September 2002 through 30 September 2002

Conference location: Hanoi

Conference code: 61079

ISSN: 3048853

CODEN: JMMMD

DOI: 10.1016/S0304-8853(03)00075-1

Language of Original Document: English

Abbreviated Source Title: Journal of Magnetism and Magnetic Materials

Document Type: Conference Paper

Source: Scopus

Authors with affiliations:

1. Chau, N., Center for Materials Science, National University of Hanoi, 334 Nguyen Trai, Thanh Xuan, Hanoi, Viet Nam
2. Luong, N.H., Center for Materials Science, National University of Hanoi, 334 Nguyen Trai, Thanh Xuan, Hanoi, Viet Nam
3. Huu, C.X., Center for Materials Science, National University of Hanoi, 334 Nguyen Trai, Thanh Xuan, Hanoi, Viet Nam
4. Thep, N.T., Center for Materials Science, National University of Hanoi, 334 Nguyen Trai, Thanh Xuan, Hanoi, Viet Nam
5. Anh, H.D., Center for Materials Science, National University of Hanoi, 334 Nguyen Trai, Thanh Xuan, Hanoi, Viet Nam

References:

1. Inoue, A., Zhang, T., Takeuchi, A., (1997) IEEE Trans. Mag., 33, p. 3814
2. Inoue, A., Zhang, T., Zhang, W., Takeuchi, A., (1996) J. Inst. Met., 37, p. 99
3. Inoue, A., Zang, T., Takeuchi, A., (1997) Sci. Rep., RITU A, 44, p. 261
4. Li, Y., Ding, J., Ng, S.C., Wang, X.Z., (1998) J. Magn. Magn. Mater., 187, p. 273
5. Ding, J., Li, Y., Wang, X.Z., (1999) J. Phys. D, 32, p. 713
6. Chau, N., Luong, N.H., Anh, D.T.K., Huu, C.X., (2000) Proceedings of the Third Vietnamese-German Seminar on Physics and Engineering, p. 133. , Ho Chi Minh City, 3-8 April
7. Chau, N., Luong, N.H., Huu, C.X., Phuc, N.X., Dan, N.H., (2002) J. Magn. Magn. Mater., 242-245, p. 1314
8. Dan, N.H., Phuc, N.X., Ky, V.H., Hong, N.M., Chau, N., Luong, N.H., Huu, C.X., Tung, L.D., (2001) MRS Symp. Proc., 674, pp. U261
9. Fan, G.J., Loser, W., Roth, S., Eckert, J., Schuetz, L., (2000) J. Mater. Res., 15, p. 1556