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THERMOMAGNETIC ANALYSIS OF Nd-Fe-B NANO-CRYSTALLINE ALLOYS, W.S. PARK, M.J. PARK (Dept. of Physics, Korea Univ., Seoul, 136-701, Korea), H.T. KIM, (Dept. of Metal. Eng., Chungnam National Univ., Taejon, 306-764, Korea), Y.B. KIM (KRISS, Taejon, 305-606, Korea).

The Nd-Fe-B nanocrystalline alloys were prepared by melt-spinning and subsequent annealing, and their magnetic properties and phases have been studied by x-ray diffractometry and theromomagnetic analysis. The magnetic properties of melt-spun alloys $Nd_2Fe_{80}B_{18}$ and $Nd_{10}Fe_{82}B_8$ are ${}_iH_c$ = 1.1kOe, B_r = 1.5T, $(BH)_{max}$ = 8MG · Oe and ${}_iH_c$ = 6.0kOe, B_r = 1.2T, $(BH)_{max}$ = 17.5MG · Oe, respectively. The high remanence and maximum energy of them are due to the exchange interaction between $Nd_2Fe_{14}B$ phase and α-Fe and/or Fe_3B phase(s). In both as-spun and crystallized alloys containing $Nd_2Fe_{14}B$, Hopkinson effect is observed. Curie temperatures of amorphous alloys depend on Nd/Fe atomic ratio. The phases of melt-spun alloys after annealing at 675-725 °C are confirmed to be α-Fe or metastable compound Fe_3B with a small amount of $Nd_2Fe_{14}B$ when Nd<7 at.%, $Nd_2Fe_{14}B$ with small amount of α-Fe and/or Fe_3B when Nd = 9-11 at.%.

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MAGNETO-IMPEDANCE(MI) EFFECT ON $Fe_{(92-x)}Zr_4B_xCu_1$(x=10,8,6) RIBBONS

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The MI effects of as-quenched samples are increased as Fe contents decrease. The fairly linear MI effect has been observed to the as-quenched sample with X=10. This result shows a possible application of a linear magnetic sensor. As the current increasing, in all samples, MI effect showed the tendency to increase but all samples become saturated at the current larger than 12 mA approximately. The frequency dependance of MI effect has shown the typical tendency where the maximum values of MI are increasing.

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GOSS TEXTURE FORMATION AND MAGNETIC INDUCTION IN THIN-GAUGED 3% Si-Fe STRIP

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A 3% silicon-iron was prepared through vacuum induction melting, and the ingot was hot-rolled to plates with thickness of 1 or 2 mm. The thickness of the plates was reduced to 100 μm through mechanical polishing and cold-rolling or cold rolling and chemical polishing processes according to the thickness of the plates. After final annealing at 1200℃ for 3.6 ks under a vacuum of approximately 10^{-6} torr, the strips showed the magnetic induction[B_{10}T] higher than 1.90 T regardless of the preparation process of strips 100 μm thick. It was observed from texture analyses by ODF that a nearly complete (110)[001] Goss texture formed after final annealing at 1200℃ for 3.6 ks whether the hot- or cold-rolled surface was removed or not. This result implies that the complete Goss texture formation after final annealing is not influenced by the surface texture of hot- and cold-rolled samples[1], but by a driving force necessary for tertiary recrystallization[2,3] which can be obtained from an appropriate cold-rolling condition.

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ELECTRICAL TRANSPORT PROPERTIES OF In AND Al SUBSTITUTED Mg-Mn FERRITES, Y.PURUSHOTHAM and P.VENUGOPAL REDDY (Department of Physics, Osmania University, Hyderabad-500 007, India), MAHAVIR SINGH and S.P.SUD (Department of Physics, Himachal Pradesh University, Shimla-171 005, India)

Thermopower and electrical conductivity studies of polycrystalline In^{3+} and Al^{3+} substituted Mg-Mn ferrites having different compositions were undertaken in the temperature range 300-700K, using differential and two-probe methods [1] respectively. It has been observed that all the ferrites are found to exhibit clear and well-defined transitions near their respective Curie temperatures in both Seebeck coefficient and electrical conductivity Vs temperature behaviour. Using the temperature variation of charge carrier mobility a conduction mechanism in these ferrites is suggested.

[1] V.D.Reddy, M.A.Malik and P.V.Reddy, *Mat.Sci. & Eng.* **B8** (1991) 295.

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