

초미세결정립  $\text{Fe}_{(92-x)}\text{Zr}_4\text{B}_x\text{Cu}_1$  ( $X=10,8,6$ ) 리본의 자기임피던스에 대한 열처리 효과  
 THE ANNEALING EFFECT ON MAGNETOIMPEDANCE(MI) IN  
 NANOCRYSTALLINE  $\text{Fe}_{(92-x)}\text{Zr}_4\text{B}_x\text{Cu}_1$  ( $X=10,8,6$ ) RIBBONS

조완식·김종오·이희복\*·유성초\*\*

충남대학교 공과대학 재료공학부

\*공주대학교 물리교육과

\*\*충북대학교 물리학과

TEL : (042)821-6633 FAX : (042)822-8232

The nanocrystalline  $\text{Fe}_{(92-x)}\text{Zr}_4\text{B}_x\text{Cu}_1$  ( $X=10,8,6$ ) have been heat-treated at various annealing conditions for the measurement of magnetoimpedance(MI) effect. The annealing temperatures to the all compositions were taken as 450°C, and 550°C without and with the magnetic field of 1.0kOe applied to the transverse direction to the sample respectively. The measurements of MI effect were carried out in the frequency range from 100kHz to 10MHz with various currents from 2mA to 50mA. The external DC magnetic fields for MI measurement were swept from -120 to +120Oe. 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. We have found that the MI effects were suppressed mostly in annealed samples except the sample annealed at 550°C. The peak shapes at near the zero DC magnetic field were changed for the annealed sample in magnetic field drastically. 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 and also the shapes of MI curves are getting broader as the measured frequency increases.

② Poster presentation