

ETCHING TIME DEPENDENCE OF MAGNETIC PROPERTIES IN ONE SIDE ETCHED Co-BASED RIBBON

Lan Jin* (Chungnam National University, Daejeon, Korea)

CheolGi Kim (Chungnam National University, Daejeon, Korea)

SeokSoo Yoon (Andong University, Korea)

Chong-Oh Kim (Chungnam National University, Daejeon, Korea)

Much attention has been paid to study the origin of giant magnetoimpedance (GMI) effect in annealed ribbons. Even though it has not been completely understood by now and it must be studied further in detail. Co-base amorphous ribbons were annealed in the open under the condition of 380 °C and applying field of 3 Oe during 8 hours. Then the crystallization layer came into being on the surface of ribbons. In this work, the field annealed ribbons were etched by HF acid solution at different etching time. But just single surface was etched and the other side was hidden. With respect to the magnetoimpedance measurements, the voltage drop across the sample ends and search coil were analyzed through a lock-in amplifier that allowed the determination of the first and second harmonic contributions with respect to the exciting current flowing through the sample. Helmholtz coils were employed to apply a homogeneous dc field along the longitudinal axis of the ribbons. As for 4 terminal contact methods, voltage drop, ΔV , of wheel side etched ribbon increases with the longer etching time, while that of air side etched ribbon decreases with increasing etching time. The harmonic component of the GMI voltage as a function of etching time will be discussed in detail to clarify the difference effect of the air side and wheel side on the magnetoimpedance effect.