

## High Frequency Properties of Patterned Fe-Al-O Thin Films

N.D. Ha<sup>1</sup>, B.C. Park,<sup>1</sup> B.K. Min<sup>2</sup>, C.G.. Kim<sup>1</sup> and C.O. Kim<sup>1</sup>

<sup>1</sup>Department of Material Engineering, Chungnam National University, Daejon 305-764, South Korea

<sup>2</sup>Korea Electrotechnology Research Institute, 28-1, Seongju-Dong, Changwon, Kyungnam  
641-600, Korea

As a result of the recent miniaturization an enhancement in the performance of thin film inductors and thin film transformers, there are increased demands for the thin films with high magnetic permeability in the high frequency range, high saturation magnetization, in high electrical resistivity, and low coercive force [1, 2]. In order to improve high frequency properties, we will investigate anisotropy field by shape and size of pattern. The Fe-Al-O thin films of 16mm and 1 $\mu$ m thickness were deposited on Si wafer, using RF magnetron reactive sputtering technique with the mixture of argon and oxygen gases. The fabricating conditions are obtained in the working partial pressure of 2mTorr, O<sub>2</sub> partial pressure of 5%, input power of 400W, and Al pellets on an Fe disk with purity of 99,9%. Magnetic properties of the continuous films as followed: the  $4\pi M_s$  of 19.4kG,  $H_c$  of 0.6Oe,  $H_k$  of 6.0Oe and effective permeability of 2500 up to 100MHz were obtained. In this work, we expect to enhance effect of magnetic anisotropy on patterned of Fe-Al-O thin films.

### References

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