## ER05

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## ER06

# Highly-ordered FePd Nanostructure and Magnetic Properties in Ultrahigh Density Magnetic Recording

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Resently, Nanoscale patterned and Particulate magnets are considered as one of the method for ultra high density magnetic recording media. They are shown that patterning leads to improve thermal stability that requires for the limit of the minimum particle size. So they are good candidate for next generation ultrahigh-density magnetic media. We have focused on the formation of dot arrays and nanoparticles of highly ordered and highly oriented FePd with large magnetic anisotropy (Ku = $1.8 \times 10^7$erg/cm$^3$). We fabricated magnetic dot arrays of $L1_0$-ordered FePd films with well-defined geometry, which is suitable for the precise analysis of the magnetization process in reduced dimension, and can be related with the application of patterned media. Patterned perpendicular media with predefined single-domain islands can be perfomed by using electron beam lithography. The dot size was changed in the range of 0.5 to 5 μm. The coercivity ($H_c$) of patterning $L1_0$-ordered FePd films increased than that of continuous films. In addition, coercivity ($H_c$) was enhanced by post-annealing. It is shown post-annealing accelerates L10-FePd ordeing and improves hard magnetic properties.

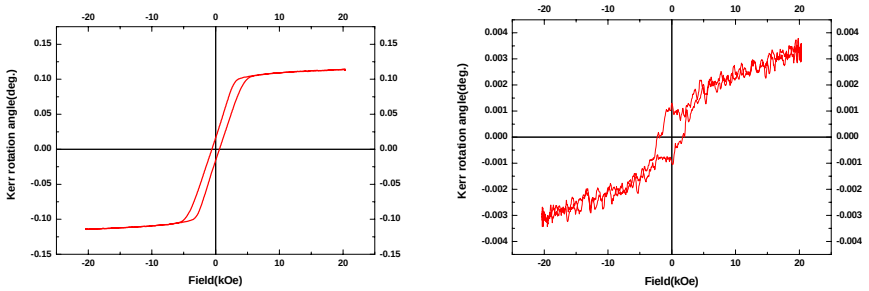


**Fig. 1.** Magnetization curves for (a) FePd continuous films, (b) dot arrays as patterned (0.5 μm).

**REFERENCES**

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