

## Micromagnetic Simulation of Magnetization Reversal Behavior of Dipolar Coupled Ising-Like Nanodot Array

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Collective magnetization reversal behavior in nanodot array has drawn much attention due to the possibility of technological applications to spintronics and ultrahigh density recording[1]. We report here a comprehensive magnetization reversal study of patterned arrays of a dipolar coupled Ising-like dot array, where nanodot arrays of Co/Pt multilayer with perpendicular magnetic anisotropy are patterned in a self-assembled way based on a colloidal lithography. To mimic real magnetization reversal behavior of dot arrays, we have taken AFM image of dot array to get a quantitative topological information of dot array, as demonstrated in Fig. 1(a). By carrying out micromagnetic simulation over the area having the topological profile obtained from the analyzed AFM image[2], we find that there exists a ripple-like domain structure mainly governed by the dipolar inter-dot interactions in the dot array, as illustrated in Fig. 1(b). The micromagnetically predicted ripple-like domain patterns are experimentally confirmed by the MFM observation.

This work is supported by the Korean Ministry of Science and Technology through the Creative Research Initiatives Project.

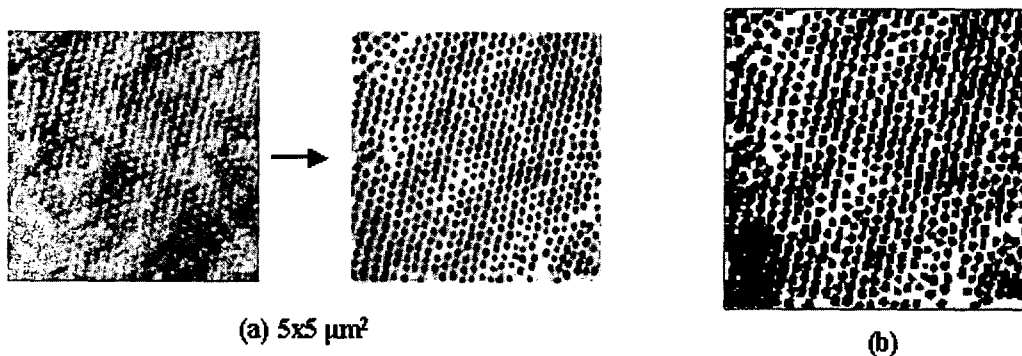


Fig. 1

### References

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- [2] M. J. Donahue and D. G. Porter, OOMMF User's Guide, Version 1.2a3, <http://math.nist.gov/oommf>.