

Development on the High Performance Magnetic Devices

Keywords : Magnetic storage, Microstructure control, Magnetic dynamics

Background

As the use of the cloud computing and the information appliances, the amount of digital information in the world rapidly increases. To store the digital information, the development of the magnetic data storage with high areal density is strongly required.

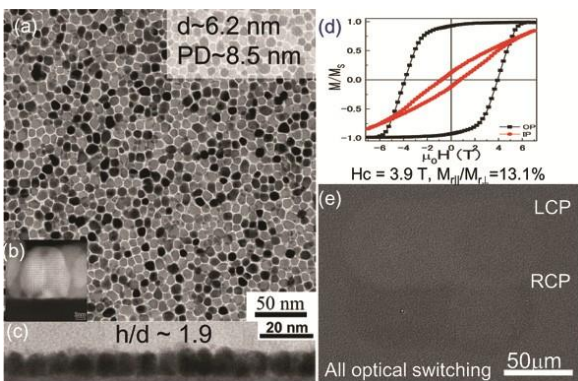
Aim

The magnetic properties can be controlled by not only the physical properties but also the microstructure. The purpose of the work is to realize high areal density hard disk drive(HDD) by the material development and the microstructure control.

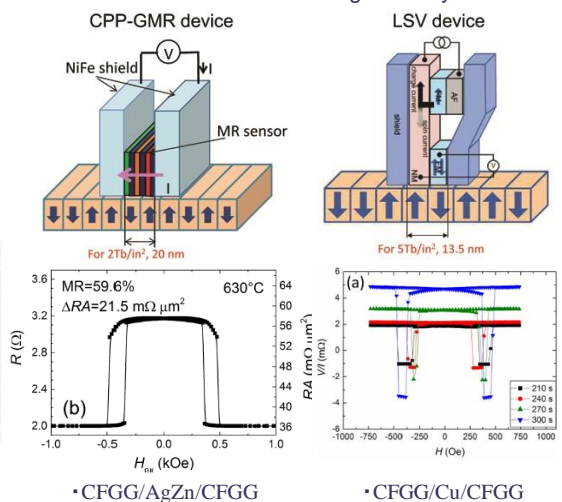
Advanced Research Topics

To increase the areal density in HDD, the improvements of recording media and the write/read head are necessary.

FePt-C media for HAMR and its magnetization control by light



MR sensor for reader in high density HDD



Publications

- Ikhtiar, S. Kasai, Y.K. Takahashi, *et al*, *Appl. Phys. Lett* **108**, 062401 (2016).
- C-H, Lambert, S. Mangin, Y.K.Takahashi *et al*, *Science* **345**, 1337 (2014).
- L. Zhang, Y.K. Takahashi, K. Hono, *et al*, *J. Appl. Phys.***109**,07B703 (2011).

Summary

- microstructure control by its analysis.
- development of materials with high physical properties.
- development of high properties by mentioned above.
- control of the magnetization dynamics will be carried out for the ideal switching.

Research outcome

- realize HDD larger than 4 Tbit/in² by FePt-based media and read head using highly spin polarized materials.



Yukiko Takahashi, Magnetic Recording Materials Group

E-mail : TAKAHASHI.Yukiko@nims.go.jp

URL : <http://www.nims.go.jp/apfim>