

Stress Changes of CoNi Electrodeposits Deposited from Chloride Baths for Magnetic-MEMS

Chloride 용액으로부터 전기도금된 자성 MEMS 용이원계 CoNi 후막의 응력 변화

송락영 · 고장면 · 박덕용*

한밭대학교 공업화학과, *응용소재공학과

Electrodeposited magnetic thin films of the iron-group metals (Fe, Co and Ni) have been developed because of potential applications in computer read/write heads and microelectromechanical systems (MEMS). Magnetic-MEMS devices such as magnetic recording heads, magnetometers, microactuators, micromotors, and frictionless microgears require the use of both hard and soft magnetic materials [1-4].

Film stress is an important factor for MEMS devices because, unlike in the data storage application, the thickness of magnetic films in MEMS can range from nanometers (e.g. NEMS devices) to few millimeters thick (e.g. high aspect ratio microstructures using LIGA and SU-8 processes). In many cases, this film stress could exceed the strength of the film, resulting in cracking, deformation of devices, and interfacial failure. Therefore, it is very important to develop high performance soft magnetic materials with minimum film stress.

In this work, the film stress changes of CoNi thin films electrodeposited from chloride baths with increasing cobalt contents were studied. The rest of detailed test results will be further discussed.

Acknowledgement

This work was supported by grant No. R01-2003-000-10597-0 from the Basic Research Program of the Korea Science & Engineering Foundation.

References

1. N. V. Myung, D.-Y. Park, B.-Y. Yoo and P. T. A. Sumodjo, *J. Magn. Magn. Mater.*, 265 189-198, (2003).
2. H. H. Yang, N. V. Myung, J. Yee, D.-Y. Park, B.-Y. Yoo, M. Schwartz, K. Nobe, and J. W. Judy, *Sensors and Actuators A, Physical*, **97-98**, 88-97 (2002).
3. J. W. Judy, R. S. Muller and H. H. Zappe, *IEEE J. Microelectromechanical Systems*, **4**, 162 (1995).
4. C. H. Ahn and M. G. Allen, *IEEE Trans. Ind. Electron.* **45**, 866 (1998).

