

XRD experiment on 1) magnetic thin films, and 2) Small Crystals

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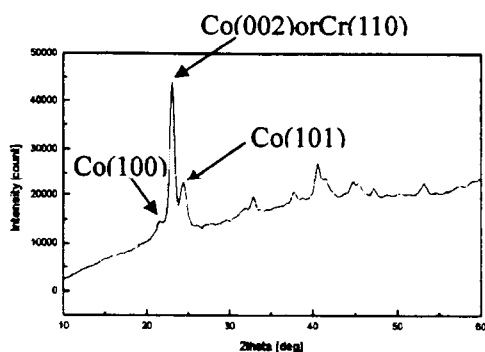
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1) To investigate the relationship between magnetic property and the crystallographic microstructure on magnetic recording media, we examined the possibility which the XRD equipment of BL-24 hutch-A could be applied to the evaluation on the sputtered films of hard-disks.

Fig.1 shows the typical layer structure of glass substrate hard-disk. Magnetic layer and under-layer were striped by acid-etching. And these films fixed on the single hole mesh(1mm diam.) were measured by XRD method. Fig.2 shows the typical spectrum on these films. The peaks originated in magnetic layer and under layer were clearly detected. This result suggested the XRD measurement on very small spot can be applied to thin film samples. We suppose these method are available to evaluate the crystallographic microstructure of the epitaxial thin films.



Carbon Layer	~ 200A
Co-alloy Magnetic Layer	~ 200A
Cr-alloy Under Layer	~ 500A
Ni-Al Seed Layer	~ 1000A
Glass substrate	

2) We have applied the system of BL-24 hutch-A to the single crystal structure analysis of a small and unstable crystal. The crystal includes rather large pigment molecules with molecular weight of about 1500. The crystal used was of dimension of 0.1 x 0.1 x 0.04 mm. The collimator of 0.1 mm was used and had shown to give enough diffraction. The 40 frames were recorded, the measurement condition : oscillation of 8 degree about the phi axe and measuring time of 180s for each frame. The crystal belongs to the triclinic system, space group P-1. The 10144 unique reflections were observed. These reflections were successfully used for the structure determination with direct method (Sheldrick, 1985). The refinement of the structure is in the process.