



Experiment title: Compositional Origins of Stacking Faults in Co-alloy Thin Films

Experiment number:
28-01-58

Beamline:
BM 28

Date of experiment:
from: 21/3/00

Date of report:
17th May 2002

Shifts:
15

Local contact(s):
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Received at XMaS:

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Report:

Due to a break-down of the pre-amplifier solid state detector during this experiment we attempted to carry out this experiment using the bicron detector but found that the in-plane diffraction in the Co-alloy thin films we had intended to study was too weak with the alternative detector system. We thus had to change to a different type of thin film sample set in order to use the beamtime effectively.

For the rest of the experiment, we concentrated on a study of phase transformations in PtMnCr/NiFe exchange-coupled films. The results of this study were presented at the Joint European Magnetism Conference (JEMS) held in Grenoble in August 2001 and the paper is due to appear in the April 2002 edition of the Journal of Magnetism and Magnetic Materials. The abstract follows overleaf:

Synchrotron X-ray Measurements of the fcc/fct Phase Transformation in PtMnCr Pinning Layers

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Abstract

We examine the change in structure of the pinning layer of PtMnCr/NiFe bilayers in the as-deposited state and upon annealing, using synchrotron radiation. The X-ray measurements show that the degree of transformation of the fcc phase of PtMnCr to the antiferromagnetic fct phase increases with annealing time. Although a slightly higher amount of the fct(111) planes grow at 0°, 25° and 45° with respect to the surface, it is apparent that the re-orientation and growth of the fct phase is predominantly random. These structural effects are discussed in terms of their effect on the magnetic properties.