Experiment Report – HE2781

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"High-pressure XMCD study at the K-edge of Invar alloys at low temperature"

Magnetic properties of Fe64Ni36 and Fe-Pt Invar alloys under high pressure have been investigated through X ray Magnetic Circular Dichroism (XMCD) up to 12 GPa at ambient temperature.

Results obtained with this technique on Fe-Pt samples emphasize the 2gamma-state interpretation of the Invar effect.

For the Fe-Ni alloy, the relative evolution of the iron magnetic moment at 300 K, measured through XMCD, shows the existence of a plateau between 4 and 10 GPa, also expected within this approach.

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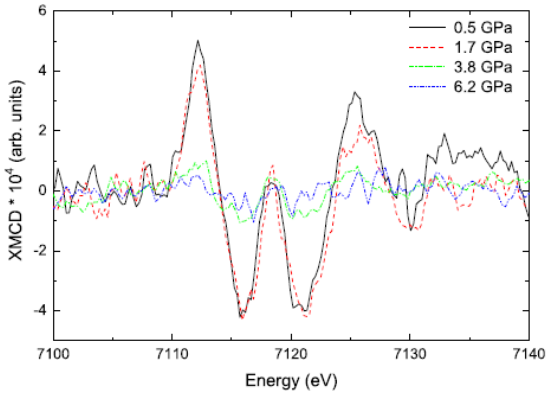

FIG. 2. (Color online) Normalized XMCD signals obtained on the $Fe_{72}Pt_{28}$ sample, at 0.5 GPa in black solid line, 1.7 GPa in red dashed line, 3.8 GPa in green dotted line, and 6.2 GPa in blue dot-dashed line.

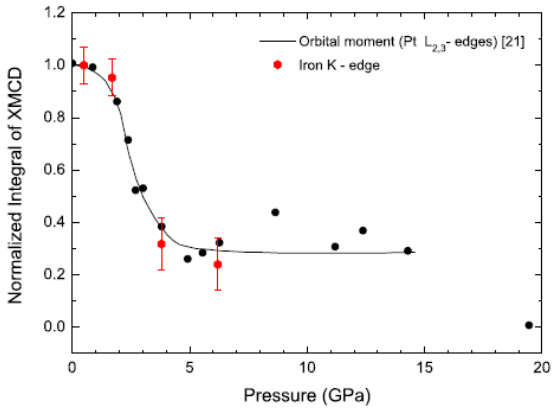

FIG. 3. (Color online) Pressure dependence of normalized integrals of XMCD signals for the $Fe_{72}Pt_{28}$ sample. Red diamonds: Fe *K* edge and black circles: orbital magnetic moment deduced from the measurements at the Pt $L_{2,3}$ edges (Ref. 21).