

Atomic Origin of Magnetic Hardness in our Best Permanent Magnet and Full Magnetization Reversal in Permalloy Dots

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**Vendredi 20 novembre à 15h00
Grand Amphi Soleil**

After a brief overview of the Advanced Photon Source, the nation's most brilliant x-ray source for research, we will discuss the atomic origin of magnetic hardness in our best permanent magnet – Nd₂Fe₁₄B. Rare-earth (RE) ions dramatically enhance magnetic stability through the interaction of their anisotropic (4f) electron clouds with the electric field of surrounding charges. Here we show that the *simultaneous* presence of RE ions in dissimilar atomic environments undermines the intrinsic stability of the highest performance permanent magnets. Experiments were done by using helicity-dependent resonant diffraction technique in combination with a digital lock-in detection scheme that synchronizes the measured x-ray diffracted intensity with the helicity modulation of the incoming x-ray beam. We will also show recent results on time-dependent magnetization reversal measurements of micron-sized NiFe dots using polarization dependent photoemission electron microscopy. Finally, an overview of a beamline at the APS operating in the energy range between 500-3000 eV and dedicated to spectromicroscopy will be given.

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Formalités d'entrée : accès libre dans l'amphi du Pavillon d'Accueil. Si la manifestation a lieu dans le Grand Amphi Soleil du Batiment Central, merci de vous munir d'une pièce d'identité et de prévenir le secrétariat en charge de l'événement.

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