

Laboratoire Léon Brillouin
SÉMINAIRE

Mardi 20 novembre 14h30

CEA-Saclay ;b; ;font color = 'red'; ;LLB ;/font ;i/b; Bât 563 p15 (Grand

Neutron diffraction study of the bi-magnetic core/shell
nanosystems

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Nanostructured heterogeneous systems consisting of antiferromagnetic core and ferromagnetic shell are very interesting due to proximity effects, in particular, the exchange bias. The report presents an overview of the latest results of such bi-magnetic systems studied by neutron diffraction. The oxide systems MnO/Mn₃O₄ and FeO/Fe₃O₄, where a shell is synthesized by oxidation of a core, and a new system, where a core is a mesoporous replica of Co₃O₄ with a gyroidal symmetry with "nanowires" coated with Fe₃O₄ are considered.

The stable magnetic order in a shell and a core, which persists up to room temperature, much above the magnetic ordering temperatures of core and shell, was discovered. This phenomenon was attributed to proximity effect, when the net ferromagnetic moment at interface biases the magnetic counterparts. Other new phenomena, in particular the unusual magnetic domain fragmentation near the magnetic transition and a considerable enhancement of Néel temperature of the MnO core were found.

Le cafe sera servi 10 minutes avant

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