Contribution ID: **36** Type: **not specified**

Magnetoresistive materials: hyperfine studies using radioactive isotopes.

Tuesday, 18 December 2007 12:15 (30 minutes)

This year the Physics Nobel Prize was awarded to Albert Fert and Peter Grunberg for the discovery of the magnetic effect of giant magnetoresistance, the basis of today's magnetic recording in computer hard disks. This discovery is an example of using magnetism to control the electrical current flow through materials built at the nanometer scale. More recently, colossal magnetoresistance was discovered in magnetic oxides such as mixed valence manganites, leading to even larger changes of resistance (up to several orders of magnitude). In this talk the properties associated to spin dependent electron transport are addressed. The relation to local structure, spin- polarized electron band and charge localization phenomena is discussed. The talk will point out the application of hyperfine studies, performed using radioactive isotopes, mainly at ISOLDE, that contribute to explore this exciting research field.

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Session Classification: Solid State Physics