

## **Albert Fert**

(Unité Mixte de Physique CNRS/Thales,  
Palaiseau et Univ. Paris-Sud, Orsay)

## **The Present and Future of Spintronics**

Spintronics is based on the exploitation of the influence of the spin of the electrons on their mobility and takes its roots in results of fundamental research on the electrical conduction in ferromagnetic conductors. Its development followed the discovery of the Giant Magnetoresistance (GMR) of the magnetic multilayers in 1988. Spintronics has led to important applications, the best known being the use of GMR in the read heads of the hard disc drives.

Nowadays the field of spintronics is in considerable expansion. The spin transfer phenomena, for example, allow us to manipulate the magnetization of a ferromagnet without applying any magnetic field but only by transfer of spin angular momentum from an electrical current. This will be soon applied to write magnetic memories (MRAM) and to generate microwaves (telecommunications). Spintronics with semiconductors and molecular spintronics are also promising fields of research. I will review the recent breakthrough and their technological potential

**Lundi 26 mai 2008 à 15 heures**

**Salle André Berthelot, bât. 141**

Le café sera servi 15 minutes avant

*NB : La présentation d'une carte d'identité ou d'un passeport est exigée à l'entrée du centre. Tous les auditeurs extérieurs sont priés de prévenir à l'avance de leur visite Emilie Chancrin, tél. 01 69 08 23 50 (U.E. : délai de 24 h, hors U.E. : délai de 4 jours).*