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### **Magnetic semiconductors studied by XMCD and XPS**

The doping of semiconductive materials like GaAs with ferromagnetic transition metals could open the possibility of integrating magnetic material in conventional electronic. It has been predicted the possibility of designing new electronic devices based on the electron spin degree of freedom: it is the field of spintronic.

The doping of GaAs with Mn is a promising way to realize room temperature ferromagnetic semiconductors, even if its Curie temperature is far below room temperature. A crucial parameter is the degree of electrical activation of Mn, that can have a different valency depending on the crystal position.

X-Ray magnetic circular dichroism is an elemental selective magnetic probe that can be used in conjunction with X-ray absorption (XAS) to obtain information on local Mn orbital and spin magnetic moment and Mn electronic state. The use of X-ray photoemission spectroscopy (XPS) can give complementary information on electronic structure due to its improved surface sensitivity.