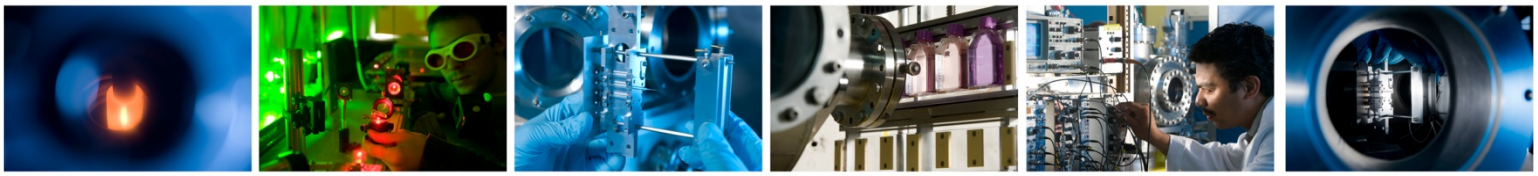

Jeudi 5 mars à 14h30

SALLE DE SÉMINAIRE – BÂT F.

“ZnO nanoparticles heavily doped with Mn prepared by sol-gel method”

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Recent advances in the theory and experimental realization of ferromagnetic semiconductors give hope that a new generation of microelectronic devices based on the spin degree of freedom of the electron can be developed. Room-temperature ferromagnetism was firstly predicted for p-type ZnO with 5 at.% Mn [Dietl et al., Science287, 1019 (2000)]. A large amount of reports on „dilute magnetic semiconductors“ in form of thin films and nanoparticles followed, and high-temperature ferromagnetism was observed also in this system without transition metal (TM) doping. Unfortunately, the data are plagued by instability and a lack of reproducibility. Ferromagnetism in diluted doped ZnO is still far from understood. The presence or absence of ferromagnetism in Mn doped ZnO critically depends on the synthesis method, Mn–Mn spacing, carrier density and ZnO type [Pearton et al., J Appl Physics, 93 (2003)]. Our contribution follows the Dietl’s prediction and its main aim was to study the solubility and distribution of Mn in ZnO prepared by the citrate sol-gel method. A series of ZnO:Mn nanopowders with different Mn content was prepared and their structural and magnetic properties are described and discussed.