Séminaire de Myrtil KAHN

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Salle Patrick Alnot, IJL

NMR spectroscopy for nanoscience

For nanoparticles to meet the societal challenges for which they are intended, it is still necessary to characterize them in detail, as the chemical and physical properties of these objects are still often dependent on the method of synthesis.[1]

NMR spectroscopy is a powerful tool that is increasingly used in nanoscience. It allows a fine characterization of both the core and the surface state of nano-objects.[2] This tool also allows the dynamic aspects of both the surface species and the atoms in the nanoparticle network to be highlighted.[3]

In this presentation, all these aspects will illustrate on specific examples, taking as an example ZnO nanoparticles obtained by an organometallic synthesis approach in solution.

[1] *Angew. Chem. Int. Ed.*, **2003**, *42*, 5321-5324; *Adv. Func Mater.*, **2005**, *15*, 458-468; *Chem. Phys. Chem.*, **2006**, *07*, 2392-2397; *Adv. Funct. Mater.*, **2009**, *19*, 1775–1783; *J. Mater. Chem.* **2009**, *19*, 4044 – 4060; *Appl. Phys. Lett.*, **2010**, *97*, 192112; *Mater. Chem. Phys.*, **2011**, *129*, 605-610; *Angew. Chem. Int. Ed.*, **2011**, 50, 12032-12035; *Chem. Eur. J.*, **2015**, *21*, 18855 – 18861; *Chem. Eur. J.*, **2016**, *22*, 10127-10135; *Eur. J. Inorg. Chem.*, **2016**, 2056-2062; *J. Phys. Chem. C*, **2019**, *123*, 29436-29444; *Int. J. Hydrog. Energy*, **2020**, *45*, 24765-24778
[2] *Eur. J. Inorg. Chem.*, **2012**, 2691-2699; *Chem. Eur. J.*, **2012**, *18*, 5384-5393; *J. Am. Chem. Soc*, **2016**, *138*, 16322-16328; *Nanoscale Advances*, **2020**, *2*, 1046-1053**;** *Nanoscale Advances* **2021**, *3*, 6088 – 6099
[3] PCCP, **2018**, *20*, 12413 – 12421; *ChemPhysChem*, **2020**, 21, 2454-2459; *JACS-Au*, **2021**, *1*, 187–200

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