



Contribution ID : 109

Type : not specified

## Structural and magnetic properties of magnetic nanoparticles

*Saturday, 26 September 2020 10:30 (30)*

During the past three decades, a great deal of attention has been devoted to the synthesis of nanoparticles: many routes have been developed to prepare well-controlled magnetic nanoparticles and the influence of the different chemical parameters has been studied in depth to achieve high reproducibility. It is clear that the size, morphology, chemical composition, structural and physical properties of nanoparticles are now rather well controlled. Such a strategy allows for an in-depth characterization and better understanding of complex architectures that result from the assembly of magnetic nanoparticles and/or functionalized core-shell nanoparticles and hollow magnetic nanoparticles.

We will show how magnetic nanoparticles such as iron oxides (maghemite and magnetite, and mixtures) can be studied using complementary techniques such as diffraction, microscopy, magnetic measurements and  $^{57}\text{Fe}$  Mössbauer spectrometry. The variety of nanostructure morphology makes it possible to better understand certain growth mechanisms on the one hand, and certain intrinsic phenomena such as surface and interface effects, exchange bias and the role of dipolar interactions on the other hand.

In addition, the experimental results of structural and magnetic properties are compared to those predicted by some computer models including Monte Carlo, ab initio and molecular dynamics, illustrating in particular the nature and structural and magnetic properties of the surface.

**Presenter(s)** : Dr GRENECHE, Jean-Marc (U Lemans, France)

**Session Classification** : keynote talks