

ZERO-FIELD AND IN-FIELD MÖSSBAUER SPECTROMETRY APPLIED TO NANOSTRUCTURED Zn FERRITES

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Nanostructures of ferrite exhibit quite complex structural and magnetic features. Indeed, the cationic disorder which is dependent on the preparation routes, is also governed by the confinement effect. It originates thus non-colinear magnetic behaviours combined to some dynamic effects caused by the superparamagnetic fluctuations. Consequently, the hyperfine structure observed by Mössbauer spectrometry requires great attention to be interpreted. In the presentation we discuss thus on the basis of some recent results obtained by low temperature Mössbauer spectrometry, in zero-field and in different external magnetic fields, how to extract the hyperfine field distributions characteristic of the different Fe sites, from the effective field distributions. The goal of this study deals with the description of the mean cationic disorder within the nanoparticle or within the crystalline grain and the role of surfaces or grain boundaries, respectively, in nanoparticles and nanostructured powders.