

57FE MÖSSBAUER SPECTROSCOPY IN STUDYING OF IRON CONTAINING NANOSTRUCTURES

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Abstract

⁵⁷Fe Mössbauer spectroscopy presents a powerful tool for characterization of iron containing nanoparticles, nanocomposites or nanostructured thin films. In opposite to XRD, it is not limited by particle size or amorphicity of investigated material. Mossbauer spectroscopy provides deep characterization from the point of view of local crystal structure and internal magnetism of materials. The technique is able to distinguish different valence and spin states of iron atoms, different positions of Fe atoms in crystal structure, and it is possible to quantify relative contents of iron containing phases in material. Case studies showing significance of Mossbauer spectroscopy in nanomaterial research will be presented.

Keywords: Mössbauer spectroscopy, iron, magnetic behavior

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