

Hyperfine Interactions 2014 vol.226 N1-3, pages 701-711

Radiofrequency forward Mössbauer scattering method in study of magnetic materials

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Abstract

Mössbauer spectra in forward scattering scheme were measured for iron borate (FeBO_3) exposed to radiofrequency (rf) field below the Neel temperature. The spectra have satellites spaced by doubled rf field frequency. The semiclassical model of Mössbauer transmission through a thick magnetic sample under rf reversals of a hyperfine field is proposed. This model reproduces all features of the measured spectra. Experiments and model calculations indicate additional possibilities of this measurement scheme for study the soft magnetic materials. © 2013 Springer Science+Business Media Dordrecht.

<http://dx.doi.org/10.1007/s10751-013-0989-0>

Keywords

Magnetic materials, Mössbauer forward scattering, Quantum interference, Radiofrequency thickness effects