Applied Magnetic Resonance 1995 vol.9 N3, pages 329-354

ENDOR and transferred hyperfine interaction of impurity rare-earth ions with nearest diamagnetic ions in crystals

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Abstract

The tetragonal Er3+ ion associated with the interstitial F- ion along the [100] axis in CaF2 is studied using ENDOR. The parameters of the transferred hyperfine interaction and of the nuclear Zeeman interaction of the surrounding fluorine ions are determined. Anomalously large values of the pseudo-nuclear Zeeman effect on the F- nuclei are found. The theoretical analysis of these parameters is carried out in a frame of operator techniques in the theory of transferred hyperfine interactions. A number of useful relations for practical calculations of the values of the local field at ligand nuclei are reported. © 1995 Springer.

http://dx.doi.org/10.1007/BF03161957