Studies of the Local Phase-transition Behaviour for Ni^+-II Centers in $RbCaF_3$ Crystal from EPR Data

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By fitting the calculated EPR $g_i (i = x, y, z)$ factors to the observed values, the local release factor k_l which is introduced to characterize the release (or elongation) effect of impurity-ligand bonds along the rotational axis in the cubic-to-tetragonal phase transition of ABX_3 perovskites, is obtained for the Ni^+-II center in $RbCaF_3$ crystal. The result shows that, similar to the local rotational angle (or order parameter) ϕ, the local release factor is unlike that of the host crystal. It suggests that in the doped crystal the impurity can affect the local phase transition behaviour in the vicinity of impurity ions.

Key words: Local Phase Transition Behaviour; E. P. R.; Crystal-field Theory; Ni^+ ion; $RbCaF_3$.

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