

Local Lattice Distortion near Co^{2+} in SrLaAlO_4 Crystal

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The local tetragonal distortion in the vicinity of substitutional Co^{2+} impurities in SrLaAlO_4 crystal is studied by fitting the calculated EPR parameters g_{\parallel} , g_{\perp} , A_{\parallel} and A_{\perp} to the observed values. The result shows that the local distortion is mainly due to the elongation of metal-ligand distance R_{\perp} perpendicular to the C_4 axis. This point is consistent with the expectation based on the consideration of ionic radius sum. This smaller tetragonal distortion of the oxygen octahedron surrounding the Co^{2+} impurity than that in the host crystal is supported by the result obtained in Cr^{3+} -doped SrLaAlO_4 crystal. – Pacs: 61.70Rj; 76.30Fc; 71.70Ch

Key words: Defect structure; Electronic Paramagnetic Resonance (EPR); Crystal Field Theory; SrLaAlO_4 Crystal; Co^{2+} Ion.