

Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

EPR Studies of orthorhombic Jahn-Teller effect in single crystal of ferroelectric Cu(II):Cd₂(NH₄)₂(SO₄)₃ YERIMA BENSON, Department of Physics, Covenant University, Ota, Ogun State, Nigeria, DILIP DE, Department of Physics, Modibo Adamawa University of Technology, Yola, Nigeria — In this paper we report the first EPR observation and theoretical explanation of orthorhombic Jahn-Teller effect in Cu(II) doped single crystal of ferroelectric cadmium ammonium sulphate: Cu(II):Cd₂(NH₄)₂(SO₄)₃. The isotropic EPR spectra of the ²D ion (in regular octahedral symmetry) at higher temperature becomes anisotropic at low temperature with clear manifestation of orthorhombic g and hyperfine tensors at 15 K. The static Jahn-Teller(JT) effect can only be explained theoretically by assuming the three JT potential wells energetically inequivalent, unlike the potential wells in most of the Cu(II) doped crystalline materials where JT effect manifests. The measured splitting of the JT potential wells in this ferroelectric crystal fall in the sub millimeter wave region pointing to possible application of the material.

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Date submitted: 20 Oct 2014

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