

## Electron paramagnetic study of $\text{Fe}^{3+}$ and $\text{Gd}^{3+}$ in $\text{Na}_2\text{Zn}(\text{SO}_4)_2 \cdot 4\text{H}_2\text{O}$

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### Abstract

The epr of  $\text{Fe}^{3+}$  and  $\text{Gd}^{3+}$  in single crystals of  $\text{Na}_2\text{Zn}(\text{SO}_4)_2 \cdot 4\text{H}_2\text{O}$  was studied at liquid nitrogen temperature using a Q band spectrometer. For each ion, two spectra superimposed in the (010) plane and along b were observed. The spectra were described by the most general spin Hamiltonian, the constants of which were obtained for both ions. Analysing the pseudo-symmetry of the fourth-order term of the spin Hamiltonian, it is found that  $\text{Fe}^{3+}$  only modifies the orientation of the local structure slightly and that the charge defect is probably balanced by a Na- vacancy. It is shown that the local structure around  $\text{Gd}^{3+}$  is very different from the one around  $\text{Fe}^{3+}$ . © 1986 The Institute of Physics.

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