

EPR TRANSITION METAL IONS IN SOME FLUORIDE GLASSES

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Aluminium and indium trifluorides are known to be good glass progenitor compounds. Recently different aluminium trifluoride-based glasses have been prepared and an approach to the local structure has been proposed (1, 2). EPR is known to be a valuable source of information with respect to the local environment of some transition elements which are introduced in the glass as local probes. EPR results of Mn²⁺, Cu²⁺, Cr³⁺, Fe³⁺ doping agents in glasses and corresponding crystallized compounds will be given in the case of aluminium. More recent EPR studies of Mn²⁺ and Cr³⁺ will be given in the case of indium.

1) Aluminium compounds

For Mn²⁺, Cr³⁺ and Fe³⁺ a big difference exists between the EPR spectra of the glass and the crystallized compound CaAlF₅. The glasses present spectra corresponding to distorted fully "rhombic" sites whereas the crystals present nearly axial symmetry sites.

The spectra of Cu²⁺ are governed by the Jahn-Teller character of the ion (anisotropic g and hyperfine structure).

2) Indium compounds

In this case also the spectra of the glass and the crystallized compounds (BaInF₅ and Ba₃In₂F₁₂) are quite different. Nevertheless it seems that the sites of Cr³⁺ in the glass are closer to the one in BaInF₅ (strings of corner sharing octahedra) than in Ba₃In₂F₁₂ (ramified chains).

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