

Influence of Chromium Ions on the Dielectric Properties of the PbO-Ga₂O₃-P₂O₅ Glass System

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PbO-Ga₂O₃-P₂O₅ glasses containing different amounts of Cr₂O₃, ranging from 0 to 1.0 mol%, were prepared. The dielectric properties (viz., constant ϵ' , loss $\tan \delta$, ac conductivity σ_{ac} over a wide range of frequencies and temperatures, dielectric breakdown strength) have been studied as a function of the concentration of chromium ions. An anomaly has been observed in the dielectric properties of these glasses, when the concentration of Cr₂O₃ is about 0.4 mol%. This anomaly has been explained in the light of different oxidation states of chromium ions with the aid of data of differential thermal analysis and optical absorption spectra of these glasses.

Key words: PbO-Ga₂O₃-P₂O₅ Glass; Dielectric Properties; Cr₂O₃.