Dielectric properties of ternary (ZnO)30(MgO)x(P2o5)70-x (x =5, 8, 13) glasses

ABSTRACT

(ZnO)30(MgO)x(P2O5)70-x glasses of the composition x = 5, 8 and 13 mol % have been prepared by melt quenching technique. The dielectric permittivity (ε′) and loss factor (ε″) were measured in the frequency range from 0.01 Hz to 1 MHz and in the temperature range 303 to 573 . From the results there are evidence of dipolar relaxation occurring between 103 – 106 Hz while at low frequency the spectrum is dominated by dc conduction which manifested by the 1/ω slope of loss factor plot. Value of the relaxing frequency (ωp) plotted against 1/T shows one electrical transportation mechanism. The empirical data was sufficiently fitted by using Harviliak-Negami equation.

Keyword: Dielectric relaxation; Complex permittivity; Phosphate glasses