International Journal of Applied and Natural Sciences (IJANS)
ISSN(P): 2319-4014; ISSN(E): 2319-4022
Vol. 5, Issue 5, Aug – Sep 2016; 79-86

International Academy of Science, Engineering and Technology
Connecting Researchers; Nurturing Innovations

A NEW FAST AG^+ ION CONDUCTING COMPOSITE ELECTROLYTE SYSTEM: DIELECTRIC INVESTIGATIONS

R. K. NAGARCH

Department of Physics, SVN University, Sagar, (M.P.), India

ABSTRACT

A fast Ag^+ ion conducting composite electrolyte system: $0.9[0.75AgI:0.25AgCl]: 0.1TiO_2$ has been prepared by quenching route of material preparation. At this particular composition the system exhibits better ionic conductivity and can be used in solid state battery fabrication as an electrolyte. Some basic dielectric parameters such as: dielectric constant (ε'), dielectric loss (ε") and tangent loss (tanδ) were studied as a function of temperature and frequency. Frequency dependence of dielectric constant (ε') and dielectric loss (ε") exhibit frequency dispersion, which is due to polarization effect and contribution of charge accumulation at the electrode-electrolyte interface. The observed behavior of ε' & ε" in the present study may be associated with space charge effect arising from the electrode. The variation of ε" and tanδ with temperature indicated that present system shows space charge polarization and dipole relaxation character of system.

KEYWORDS: Composite Electrolyte, Dielectric Constant, Dielectric Loss, Dispersion