

Study The Electrical Properties of PS-CaO Composites

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Abstract

(PS-CaO) composites have been prepared by using casting method with different weight percentages of CaO. The A.C electrical properties (dielectric constant, dielectric loss factor and A.C electrical conductivity) of PS-CaO composites have been studied. The results show that the dielectric constant and dielectric loss factor decreases with increasing of frequency while A.C electrical conductivity increase with increasing of frequency . Also , dielectric constant , dielectric loss factor and A.C electrical conductivity of composites increases with increasing of weight percentage of CaO .

keywords : polystyrene , composite , electrical properties

Introduction

Plastics are the most versatile materials used indifferent chemical industries , such as aircraft , packaging , electrical equipment and as electrical insulators. They have increasing important role in the manufacture of satellites , space researches and thermal barriers. Plastics have replaced metals in many application. they have superseded steel and many other metals in being erosion resistant and chemically inert. Having higher temperature extension and specific heat than metals[1,2]

Poly styrene is a thermoplastic made from the aromatic monomer styrene as its basic unit. It is a transparent glass -like substance which does not dissolve in acids or alcohol , but dissolve in aromatic hydro carbons , benzene and esters . it is melting point is 239 C, glass transition temperature is 100 C and density is 1.05 gm/cm³ [3,4,5]

Polystyrene is synthesized under different polymerization condition depending on the final application of the polymer[6]. It is does not stretch or shrink , used in the manufacture of plates and cables because it is a good electrical insulator, it is also used in the manufacture of rubber and household articles [2,4].