

Conduction Mechanism study of Polyphenylene Sulfide doped with Ferric Chloride

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Abstract:

An investigation was carried out to examine the conduction mechanism in poly phenylene sulfide doped with Ferric Chloride [PPSFC] Films of (674 μ m) thickness. The electrical properties were measured for aluminum / polymer / aluminum structure over temperature range (20-70 $^{\circ}$ C) .At Low Field region, ohm's Law was obeyed. According to the conductivity versus ($10^3/T^{1/4}$ & $10^3/T^{1/3}$) Characteristics which indicate that the mechanism of conduction is hopping mechanism. While at the high Fields schottky effect mechanism was observed. The activation energy was estimated to be (0.35eV).

Introduction:

Nowadays the electrical properties studies are important because of their wide range of applications in technology and industrial. An analytical technique, namely transmission electron microscopy (TME), has been widely used for studying the form and structure polymers or composite systems containing polymers [1].

Polymeric materials are well known as insulating materials suitable for many industrial applications, [2,3] such (coatings, adhesions, composites, fibers, ..., etc) .conduction in polymers has been extensively studied with some conflict of interpretation. The conduction mechanism in polymers has been determined at both low and high field strength [4]. Conduction mechanism in polymer is a complex process and still not fully understood until now. Many experiments have been performed to identify the type of