

Thermal activation of conducting polymer polypyrrole/zeolite

ABSTRACT

In this paper the influence of dopant on the electrical properties of polymer prepared by chemical oxidative polymerization method is investigated using the four point probe technique. Polymers are formed by using Pyrrole and Iron (III) Chloride Hexahydrate ($\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$) as well as Zeolite as dopant. The current-voltage was measured from 20 to 300 K. The current-voltage characteristic of all samples shows that the measured voltage increased linearly with current. It was found that conductivity increases with temperature and concentration of the dopant. As expected, the D.C. conductivity of Polypyrrole/Zeolite was found slightly higher than Polypyrrole which to be considered that Zeolite have altered and enhanced the conductivity of the samples. The increase in conductivity may be considered have to improved the thermal stability of the blends. An explanation is proposed based on the character and conduction mechanism of FeCl_3 /Polypyrrole/Zeolite.

Keyword: Polypyrrole; Iron (III) chloride hexahydrate; Zeolite; Conductivity