

### **E1-13 Electrochemical behaviour of poly N methylpyrrole prepared in aqueous medium**

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The study of doped, organic polymers with high electronic conductivities has been a favourite field of research among scientists around the world. Among them, polypyrrole is a widely studied organic polymer which has electrical conductivities of about  $500 - 7500 \text{ Scm}^{-1}$ . However, there has been limited work reported on pyrrole with substituted side groups which are commonly referred to as branched pyrroles. In this paper, work on N-methyl pyrrole, a branched pyrrole, is reported. Experiments were carried out to investigate how the change in the conditions used during the polymerization affects the *in-situ* electrical conductivity of poly N methyl pyrrole. Films were prepared in aqueous media by galvanostatic electro polymerization using the standard three electrode method. Factors such as electrolyte concentration, pH value of the electrolyte, size of the dopant anion, current density and the electrolyte temperature were changed and their effects were examined. Concentration and pH value of the electrolyte showed a negative influence on the conductivity with conductivity

values decreasing with increasing values of pH and concentration. On the other hand, the size of the dopant anions had a positive influence with conductivity values increasing with the size of the anions. The current density used during polymerization seemed to have the largest influence on the electrical conductivity. The temperature of the electrolyte during the polymerization also seemed to affect the conductivity of the film to some extent.

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