

1.5 Summary

The chief conclusions resulting from the present study are (i) that in order for the newly and rapidly emerging area of conductive polymers to develop efficiently to the stage where such polymers can be used technologically it is necessary to study selected aspects of the model conducting polymers, polyacetylene, poly(p-phenylene) and polyaniline and certain of their derivatives. These polymers represent three distinctly different types of conducting polymers - those consisting of a totally aliphatic backbone, those consisting of a totally aromatic back-bone and those consisting of an aromatic/non-carbon alternating backbone.

(ii) The proposed method of study of these polymers also applies to other types of conducting polymers.

(iii) Of prime importance in all cases is the determination of the chemical purity, uniformity of composition and structure and overall homogeneity of the doped and undoped polymers before they are subjected to detailed chemical and physical examination.

(iv) Only by gaining a detailed understanding of the nature of the interdependency of (a) the chemical and physical properties and (b) the conductivity of conducting polymers as outlined in this report, can the scientific significance and potential technological application of this challenging new area of non-classical solid state science be realized.