CHAPTER 5 Conclusion and Suggestions for Further Work

The conductivity of copper(II) 4-aminobenzoate (CAB), measured as compressed powder, was 4.2×10^{-11} Scm^{-1}, while that of CAB doped with iodine reached a maximum value of 54×10^{-11} Scm^{-1} at 20% iodine.

Iodine was found to have no effect on the structure of CAB in the range up to 28%, but annealing at 100°C-150°C resulted in cross-linking of CAB at 100°C and 150°C.

CAB and CAB doped with 20% iodine followed Mott's Variable Range Hopping model at 276-300K and 147-300K respectively. The parameter calculated for CAB are: density of state, 2.65×10^{22} $(eV)^{-1}cm^{-3}$; hopping distance, 7.47×10^{-8} cm; hopping energy, 0.02 eV, and density of charge carrier, $6.87 \times 10^{20}cm^{-3}$. The same parameter calculated for CAB doped with 20% iodine are 2.31×10^{23} $(eV)^{-1}cm^{-3}$, 4.35×10^{-8} cm, 0.013 eV and $5.97 \times 10^{21}cm^{-3}$ respectively.

Annealing at 100°C caused cross-linking of CAB and increased the conductivity from 4.2×10^{-11} Scm^{-1} to 45.6×10^{-11} Scm^{-1}, while cross-linking did not occur in the presence of 20% iodine.

Further work that may be suggested to ascertain the structure of CAB include Scanning Electron Microscopy (SEM) and X-ray diffraction spectroscopy (XRD). It is useful also to know the thermal properties of CAB by mean of Thermogravimetric Analysis (TGA) and Differential Scanning Calorimetry (DSC). The conductivity of CAB as thin film and the effect of other dopants such as iron(III) chloride may also be done.