CHAPTER 1 Introduction

Copper(II) 4-aminobenzoate (CAB) is a derivative of copper(II) benzoate, considered by some researchers as low dimensional material [1]. Thus it may also be similarly treated as potential molecular electronic material, due to the presence of aromatic benzoate ligand and central copper(II) ion which have planar structures. The unpublished conductivity of copper(II) benzoate, measured as compressed powder, is about 6.8×10^{-11} Scm^{-1} [2].

The current research is to study the effect of amino group ($-NH_2$) at the para-position of benzoate ligand on the structure and conductivity of CAB. The study is extended to see the effect of different amounts of iodine dopant and the effect of annealing on the structure and conductivity of CAB. The structural study employs Fourier Transform Infrared (FTIR) Spectroscopy.

The thesis covers reviews of molecular electronics namely charged-transfer complexes and ion-radical salts, organic polymers and coordination compounds in Chapter 2. The reviews centres on structure, conductivity and different models of electric conduction mechanisms. The theoretical concept of FTIR was also included.

Chapter 3 contains synthesis of copper(II) 4-aminobenzoate and copper(II) 4-aminobenzoate doped with different amounts of iodine, method of FTIR, annealing and conductivity measurements.

Chapter 4 presents the results and discussion of FTIR and conductivity of CAB, CAB doped with different amounts of iodine and CAB annealed at 50°C to 200°C. Various theories to ascertain the conduction mechanism of the materials are also presented.

Finally, Chapter 5 contains the conclusion and suggestions for further work.

Reference

1. H. J. Keller in *Low Dimensional Cooperative Phenomena* edited by H. J. Keller, (Plenum Press, New York and London, 1975)

2. Unpublished Results