

Executive Summery

1. UGC Reference No. : F- 47-1202/09 (WRO) dated 17.11.09

2. Title of research project: "Effect of Dopant on Structural and Thermodynamic Properties of Polymer"

3. Name of the Principal Investigator & Co-investigator: Vijay V. Soman & Mrs G. N. Tumbde

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4. It is well known that doping the polymeric materials is also an approach of obtaining materials with desirable properties based on the commercially available polymers rather than to synthesize completely new polymer. This is mainly because polymer doping is a quick and economical alternative method for obtaining materials that have optimized properties. Poly(methyl methacrylate), poly(vinyl chloride), nylon-6 were doped with various dopants like copper chloride and lithium chloride and lithium acetate. The metal cations interact with the functional groups of polymers. It was confirmed through the analysis of FTIR spectra. The interaction of metal cations also change the structure of polymer matrix. As both the polymers are amorphous in nature, no much information from WXRd analysis could be established. The changes in structure was only confirmed. Some times the dopants may enhance the thermal stability of polymers. Therefore the DSC of doped polymers was also carried out. The DSC study helped to carry out the thermodynamic properties of these doped polymers. Dielectric behavior as well as DC electrical conductivity was also carried out.

As it was a project involving interdisciplinary activity involving the two faculties from Physics and Chemistry department better exchange of skills and knowledge was involved. Therefore in the present age of materials synthesis such research will always help researchers to have a better insight into the structure property co relationship.