

## **INVESTIGATION ON THE EFFECT OF MICROWAVE FIELD ON THE RHEOLOGICAL BEHAVIOR OF POLYANILINE: POLYVINYLALCOHOL BLENDS**

Rinku Mariam Thomas<sup>1</sup>, Honey John<sup>1</sup>, Rani Joseph<sup>1</sup> \*K.T.Mathew<sup>2</sup>

1-Department of Polymer Science and Rubber Technology

2-Department of Electronics

Cochin-682 022, INDIA

Tel: +91 484 2576418, Fax: +91 484 2575800

e-mail: [ktm@cusat.ac.in](mailto:ktm@cusat.ac.in) , URL: <http://www.doe.cusat.edu>

Polymer blends have been investigated for their good mechanical properties and intriguing electronic properties, which indicated their possible use in many electronic applications. Our paper is devoted to conducting blends comprising of polyaniline in an insulating medium such as polyvinyl alcohol. We have prepared electrically conducting polyaniline: polyvinylalcohol blends prepared by in-situ polymerization technique [method 1] and simple solution blending [method 2]. The proportion of polyaniline was varied in the feed. The concentration of polyvinyl alcohol in the blend was optimized. These blends were then subjected to microwave field for different duration of time. Variations in properties have been observed at different resonant frequencies. The dielectric properties were measured using a HP vector network analyzer. Cavity perturbation technique was employed for the study. The measurements have been carried out in the frequency range of 2-4 GHz. The polymers synthesized by method 1 and method 2 also showed variations in properties. Blends prepared by method 1 have higher crystallinity and better homogeneous morphology than blends prepared by method 2. In addition to the study on rheological characteristics, the thermal properties have also been studied.