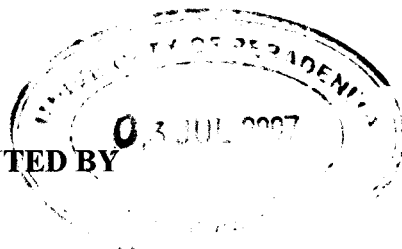


**SYNTHESIS AND CHARACTERIZATION OF
POLY(3,4-ETHYLENEDIOXYTHIOPHENE) INTERCALATED IN
BENTONITE CLAY**

A PROJECT REPORT PRESENTED BY

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SYNTHESIS AND CHARACTERIZATION OF POLY (3,4-ETHYLENEDIOXYTHIOPHENE) INTERCALATED IN BENTONITE CLAY

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In this thesis the intercalation of PEDOT layer in the interlayer space of Bentonite was developed. The p-conjugated conducting polymer, PEDOT intercalated Bentonite samples are prepared by incorporating the monomer EDOT within the intergalleries of Iron(III)ion or Copper(II) ion exchanged Bentonite clay. The monomer gets oxidized chemically in situ due to the presence of Iron(III) ions in the interlayer of Bentonite.

The conductivity of the PEDOT-Bentonite composite material was found to be improving with the increase of the PEDOT concentration and with the increases with the number of electrically conducting polymer layers incorporated. The intercalation of the PEDOT in the interlayer of Bentonite was studied mainly by using X-Ray Diffraction analysis and by using FT-IR spectrophotometer. According to the XRD analysis the d-spacing values of Iron(III) or Copper(II) ions exchanged Bentonite clay has increased even at elevated temperatures after the intercalation of polymer material inside the interlayers of Bentonite. The decrease of the intensity of Si-O bond and appearance of new bonds in FT-IR spectrum of PEDOT-Bentonite composite also confirm that the PEDOT has intercalated inside the interlayers of Bentonite clay.