

A Dissertation Report
on
**Conducting Polypyrrole Globular and Polypyrrole
Nanotubes Epoxy Based Paints on Low Carbon Steel
for Corrosion Protection**

Submitted in partial fulfilment of the requirement
Of the degree of

Master of Technology

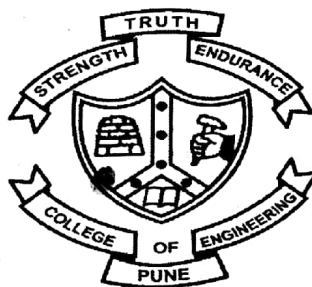
(Physical Metallurgy)

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ABSTRACT

Polypyrrole globular and nanotubes were synthesized from pyrrole by chemical oxidation method and were used as pigment in paint preparation. The products obtained from the synthesis were characterized by Fourier Transform Infrared Spectroscopy (FTIR), Scanning Electron Microscopy (SEM). The epoxy based paint containing 2 wt % polypyrrole pigment was prepared and applied on low carbon steel samples. Corrosion protection performance of the painted low carbon steel samples in 3.5 wt % sodium chloride (NaCl) solution was evaluated using electrochemical technique. The corrosion rate of polypyrrole nanotubes painted low carbon steel was found to be 0.0016 mpy about 5000 times lower than that of uncoated low carbon steel. The corrosion rate of polypyrrole globular painted low carbon steel was found to be 0.09 mpy about 91 times lower than that of uncoated low carbon steel. The study reveals possibility of using conducting polypyrrole as a pigment for corrosion protection.