

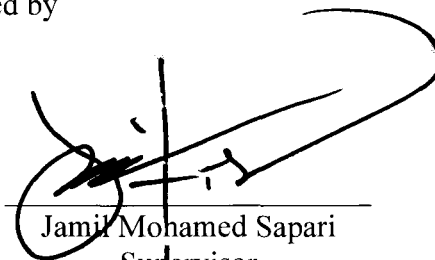
**SYNTHESIS AND CHARACTERIZATION OF MAGNETIC
NANOPARTICLES (MNPs) COATED WITH POLYPYRROLE (PPy)
FOR REMOVAL OF 2,4-DINITROPHENOL (2,4-DNP)**

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**Final Year Project Report Submitted in
Partial Fulfilment of the Requirements for the
Degree of Bachelor of Science (Hons.) Chemistry
in the Faculty of Applied Sciences
Universiti Teknologi MARA (UiTM)**

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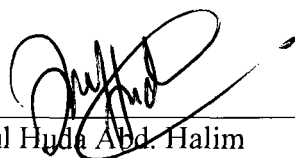
This Final Year Project Report entitled “**Synthesis and Characterization of Magnetic Nanoparticles (MNPs) Coated with Polypyrrole (PPy) for the Removal of 2,4-Dinitrophenol (2,4-DNP) in**” was submitted by Nor Azean Nadhirah Binti Mohamed Sani, in partial fulfilment of the requirements for the Degree of Bachelor Science (Hons.) Chemistry, in the Faculty of Applied Sciences, and was approved by



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ABSTRACT

SYNTHESIS AND CHARACTERIZATION OF MAGNETIC NANOPARTICLES (MNPs) COATED WITH POLYPYRROLE (PPy) FOR REMOVAL OF 2,4-DINITROPHENOL

Magnetic nanoparticles coated with Polypyrrole (MNPs-PPy) was successfully synthesized in this study. The characterization of MNPs-PPy was determined by using Fourier Transform Infrared Spectroscopy (FTIR) analysis, Scanning Electron Microscope (SEM) and X-ray Diffraction (XRD). MNP has been coated with PPy was shown by the results of FT-IR, SEM and XRD. The result of FT-IR has showed the peak of Fe-O at 580 cm^{-1} . SEM result has showed the morphology of the surface of MNPs-PPy which have globular structure. In addition, XRD result has showed the MNPs-PPy is in the crystalline form. The removal efficiency was determined by using Ultra violet Visible Spectroscopy (UV-Vis). The synthesized MNPs-PPy was successfully removed the 2,4-Dinitrophenol (2,4-DNP) under several conditions. The first step is to determine the level of performance of the MNPs-PPy for the removal of 2,4-DNP. When the MNPs-PPy performance can reach up to 85 % removal, the next step can be proceed. The next step is to find the best condition for the removal to occur. There are several parameters that need to be done such as the effect pH, temperature and concentration, contact time, amount of adsorbent, interfering ions and reusability. The result showed 98.67 % removal of analyte at pH 6, 318 K, 10 ppm analyte, 75 minutes and 50 mg of adsorbents.