

**SYNTHESIS AND CHARACTERIZATION OF MAGNETIC
NANOPARTICLES COATED WITH POLYANILINE FOR
REMOVAL OF 2,4-DINITROPHENOL**

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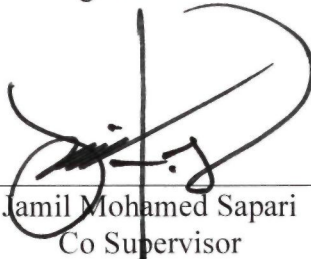
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ABSTRACT

SYNTHESIS AND CHARACTERIZATION OF MAGNETIC NANOPARTICLES COATED WITH POLYANILINE FOR REMOVAL OF 2,4-DINITROPHENOL

Magnetic nanoparticles (MNPs) coated polyaniline (PANI) was successfully synthesized and further used for removal of 2,4-dinitrophenol. The presence of PANI coatings on the surface of MNPs was confirmed by using Fourier Transform Infrared (FT-IR) Spectroscopy, Scanning Electron Microscopy (SEM) and X-ray Diffractometry (XRD) analysis. MNPs coated PANI (MNPs/PANI) showed higher capabilities to remove 2,4- dinitrophenol (2,4-DNP) via spectrophotometry at 358 nm by using Ultraviolet Visible (UV-Vis) Spectrophotometer. Different parameters such as pH, contact time, initial concentration and temperature, amount of adsorbent, interfering ions were investigated to optimize the performance of MNPs/PANI in removal of 2,4-DNP. In addition, the reusabilities of MNPs/PANI was also studied to add up its economic value. The best performance of MNPs/PANI to remove 2,4-DNP molecules was found at pH 7, 105 minutes contact time, 10 ppm initial concentration of 2,4-DNP with 298.15 K temperature and 10 mg of adsorbent amount. The percentage removal (%R) of 2,4-DNP was still up to 90% in the presence of chloride (Cl⁻) ions, nitrate (NO₃⁻) ions and sulfate (SO₄²⁻) ions. Lastly MNPs/PANI was used up to five cycles.