



Abstract

Nitrated Aromatic Compounds (NAC) are being used in bomb blast activities. They are highly acute and toxic in nature, which cause a lot of diseases like skin and eyes diseases, liver malfunction and tumor formation. Now a days, degradation of explosive compounds/hazardous compounds is a big issue. For this purpose solvent controlled synthesis of MgO nanoparticles and Zn/MgO nanoparticles was done using hydrothermal methods. MgO nanoparticles and Zn/MgO nanoparticles were synthesized by varying concentration of solvent. In MgO synthesis effect of varying base was also observed by using two different bases i.e. NaOH and Urea. All the nanoparticles were characterized by using Scanning Electron Microscope (SEM), Energy dispersive X-ray microanalysis (EDX), Transmission Electron Microscope (TEM) and Fourier transform infrared spectroscopy (FTIR), Thermo gravimetric Analysis (TGA) and X- Ray Diffraction (XRD). The catalytic effect of MgO nanoparticles were studied by degradation of Picric Acid (NAC) using spectrophometric method in presence of UV-light. Degradation of picric acid was confirmed by High Performance Liquid Chromatography (HPLC) and Gas-Chromatography Mass Spectrometer (GC-MS). HPLC and GC-MS shows that there is no picric acid remained in the degraded sample. MgO nanoparticles that were synthesized by using urea as a base shows much better "k" value than MgO nanoparticles that were synthesized using NaOH. Zinc deposited magnesium oxide (Zn/MgO) was applied to study in the presence or absence of UV-light. It shows maximum 45% degradation of picric acid.