Abstract

Surfactant controlled synthesis of $MgO\text{-}SnO_2$ nanocatalysts, fabricated via hydrothermal method, for this purpose, concentrations of sodium dodecyl sulfate (SDS) were varied by keeping all other reaction conditions same. Furthermore, $MgO\text{-}SnO_2$ were also prepared by changing the precursor's concentrations; hexa hydrated magnesium nitrate $Mg(NO_3)_2.6H_2O$ and penta hydrated tin chloride ($SnCl_4.5H_2O$), although reaction parameters other than this were kept constant. The influence of these reaction parameters on the sizes of particles and morphology of these nanocatalysts were searched out by using Fourier transform infrared (FTIR) spectroscopy, Scanning electron microscopy (SEM)-Energy dispersive x-ray (EDX), X-ray diffraction (XRD), Transmission electron microscopy and Thermo gravimetric analysis (TGA) The catalytic efficiency of $MgO\text{-}SnO_2$ nanocatalysts was checked against explosive chemicals; 2,4-dinitrophenylhydrazine (DNPH) by preparing its solution in acetone. $MgO\text{-}SnO_2$ nanocatalysts found to act as a good catalyst to disintegrate the 2,4-dinitrophenylhydrazine. Catalytic activity of $MgO\text{-}SnO_2$ nanocatalysts was measured by using UV-spectrophotometer method. $MgO\text{-}SnO_2$ nanocatalysts showed its efficiency against explosive compound (DNPH) up to 19.13%.