ABSTRACT

Identification, quantification and remediation of explosives have become an extremely noteworthy task in forensics, anti terrorist operations and worldwide demining projects. Nitroexplosives (2, 4, 6- trinitrophenol) have become a major threat for us as these are widely used in metallurgical industries for etching of iron and magnesium alloys, and as primary explosive in military.

Calcium oxide nanoparticles have unique property of high adsorption and catalytic ability. They were prepared by hydrothermal method, in sodium dodecyl sulphate (SDS) surfactant as templating agent. The as-synthesized nanoparticles were further used as precursors for synthesis of aluminium doped calcium oxide nanoparticles via deposition-precipitation method. The nanoparticles were characterized by EDX, SEM, TEM, TGA, FTIR and XRD. The catalytic properties were studied by UV-VIS Spectrophotometer, and HPLC.

The effect of surfactant and temperature on nanoparticles was studied by varying temperature and concentration of surfactant. The smallest particle size and percentage degradation was observed at critical micelle concentration of sodium dodecyl sulphate.