

Abstract

Synthesis of barium and nickel doped iron oxide nanoparticles was done through the co-precipitation method. Under atmospheric conditions, with the average particle size of 39.59nm and 57.19nm, nickel and barium doped iron oxide nanoparticles were prepared respectively. The synthesis of Ba and Ni doped iron oxide nanoparticles is confirmed by many characterization techniques like UV-Vis spectroscopy, FTIR, SEM, and EDX. The removal efficiency of the methyl orange dye was determined with the synthesized nanoparticles under different pH conditions. Maximum degradation efficiency was observed at lower pH than the neutral pH conditions by the synthesized nanoparticles. 72.72% and 85% degradation was seen after 60 and 150 minutes of irradiation of UV light with the Ba-IONPs and Ni-IONPs respectively at pH 2. As compared to neutral pH, the fabricated nanoparticles show more efficient degradation of methyl orange at low pH.