

ABSTRACT

The present work demonstrates the synthesis of starch (St) and polyacrylic acid (PAA) doped tin ferrite (SnFe_2O_4) nanostructures (NSs) by co-precipitation route. This study investigates the influence of polymeric forms St and PAA to SnFe_2O_4 for the catalytic activity. The morphological, functional groups, structural and elemental properties of pure and doped samples were analyzed using systematic characterizations. Electronic spectra showed that absorption increases as dopant concentration rises and the utilization of St and PAA induced the spectra to shift to longer wavelengths. The shift corresponded to the decreased band gap energy (E_g). The hydrophilic characteristics of SnFe_2O_4 were facilitated by the existence of ($-\text{COOH}$ and OH^-) functional groups in polymers. Crystalline nature of synthesized material and multiple phases of SnFe_2O_4 were revealed by XRD patterns. The catalytic performance of 4% St/PAA- SnFe_2O_4 towards Rhodamine B (RhB) was 73.33% in a neutral medium.