

Photocatalytic Activity of Green Mixed Matrix Membranes for Degradation of Anionic Dye

Gabriel Opeoluwa Oladipo, Samson Oluwagbemiga Alayande, Opeyemi O. Ogunyinka, Anuoluwa Abimbola Akinsiku, Oyesolape Basirat Akinsipo-Oyelaja

Summary

Anionic dye is a notable constituent of textile effluent, which renders water unsafe for human and animal use. A notable approach to mitigating effluent is the use of membranes. In this study, a mixed matrix technique was adopted for the preparation of composite membranes. The composite membranes consist of crumb rubber filled with nanoparticles, respectively. The membranes were characterized by Fourier transform spectroscopy, scanning electron microscopy coupled with energy dispersive x-ray, thermogravimetric analyser, and drop shape analyzer. The photocatalytic activities of the mixed matrix membranes were investigated with anionic dye in the UV/visible region. Photocatalytic activity of composite membranes showed high degradation with an apparent rate constant. This study presents a rubber-based membrane for wastewater treatment.