Removal of Dissolved Heavy Metal Pollutant Using Tropical Peat Soils of Indonesia

Aziza, Alfy Fathnur

Peat soils are natural resources that have high adsorption capacity to remove heavy metal in polluted water. In this work, peat soils from Indonesian tropical forest were used to investigate the removal of lead (II) ion from industrial wastewater. The capability of metal removal from tropical peat soils were characterized at various pH value, amount of adsorbent, metal ion concentration and soaking time. Various amount of humic acid derived from peat soils was added to lead (II) ion aqueous solution. Higher degree of heavy metal removal was obtained at higher amount of adsorbent. Humic acid derived from Indonesian tropical peat soils were soaked with lead (II) ion aqueous solution at various soaking time (1 hour, 5 hours, 24 hours and 168 hours). The highest removal of lead (II) ion was obtained at 24 hours soaking time, pH 6.6 and initial Lead (II) concentration of 100 ppm. The interaction mechanism between humid acid derived from tropical peat soils with lead (II) ion was determined based on the UV-Vis, Fourier-Transformed Infra Red (FTIR) and Nuclear Magnetic Resonance (NMR) spectroscopy. Keywords: tropical peat soil, humic acid, metal removal, adsorption, wastewater

Awards Won: