Activated carbons prepared from oil palm shells: application for column separation of heavy metals

Abstract

Physically and chemically activated carbons from oil palm shell, which is an agro-industrial waste, were prepared using CO2, H 3PO4, K3PO4 and KOH. A horizontal Carbolitc Tubular Electric Furnace at a constant temperature of 500° for 4 h was used for pyrolysing and activating the oil palm shells in inert atmosphere. The activated carbons were ground into 500-1000 µm sizes prior to the packing. Separation of a mixture of 3 heavy metal ions, that is, Pb 2+, Zn2+ and Fe3+ metal ions were carried out successfully. Two commercial activated carbons, AC 4050 and AC 7080, were used for comparative study. Comparisons of adsorption capacity at different pH and column chromatography studies were carried out in this study.