

Sorption kinetics for the removal of cadmium and zinc onto palm kernel shell based activated carbon

ABSTRACT

The kinetics and mechanism of cadmium and zinc adsorption on palm kernel shell based activated carbons (PKSAC) have been studied. A series of batch laboratory studies were conducted in order to investigate the suitability of palm kernel shell based activated carbon (PKSAC) for the removal of cadmium (cadmium ions) and zinc (zinc ions) from their aqueous solutions. All batch experiments were carried out at pH 7.0 and a constant temperature of $30 \pm 1^\circ\text{C}$ using an incubator shaker that operated at 150 rpm. The kinetics investigated includes the pseudo first order, the pseudo-second order and the intraparticle diffusion models. The pseudo-second order model correlate excellently the experimental data, suggesting that chemisorption processes could be the rate-limiting step.

Article

Keyword: Adsorption; Cadmium; Kinetics; Palm kernel shell; Zinc