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Th(IV) removal from aqueous solutions by oxidized biochar prepared from palm tree fibers

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Abstract
The removal of Th(IV) from aqueous solutions by oxidized biochar fibres derived from palm tree fibers (OBF) has been investigated at pH 3 and under ambient conditions by batch type experiments and FTIR spectroscopy. The experimental data have shown that the Th(IV) adsorption by OBF is well fitted by the Langmuir isotherm model (qmax= 0.18 mol kg-1 or 42 g kg-1), is an entropy-driven process and follows the 2nd order kinetics. Furthermore, FTIR spectroscopic data have indicated that the sorption occurs via formation of inner-sphere complexes between Th(VI) and the carboxylic surface moieties.
Keywords
Th(IV) adsorption; biochar fibers, qmax; kinetic parameters; mechanism

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