

Mathematical modeling method for optimal conditions determination of copper(II) dynamic ion-exchange concentration onto composite sorbent

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Abstract

Copper(II) sorption dynamics onto composite sorbent based on cation exchanger CU-2×8 and iron(III) hydroxide has been studied. Equilibrium and kinetic sorption process characteristics were determined. Activation energy and temperature coefficient of copper(II) diffusion onto sorbent were computed. It was defined that film diffusion kinetic model describes the sorption dynamic output curves. The calculation example of dynamic ion-exchange concentration optimal conditions with respect to given removal extent and distribution coefficient of metal ion under investigation is shown. The composite sorbent capability to remove copper(II) is compared with the same value of ion-exchanger set.