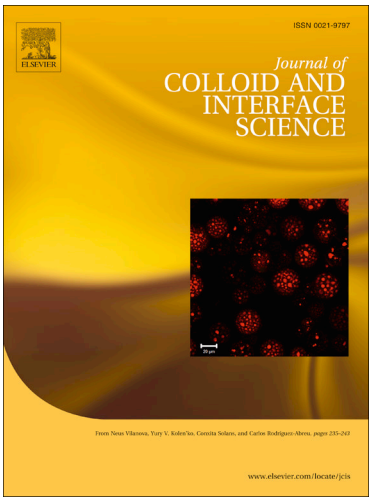

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Facile preparation of intercrossed-stacked porous carbon originated from potassium citrate and their highly effective adsorption performance for chloramphenicol

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Abstract

Recently, antibiotics pollution has attracted more interests from many researches which causes potential risks on the ecosystem and human health. Herein, the porous carbons (PCs) was prepared by directly simultaneous carbonization/self-activation of potassium citrate at 750-900 ^{o}C for chloramphenicol (CAP) removal from aqueous solution. The batch experiments were studied, which indicated that PCs prepared at 850 ^{o}C, namely PCPCs-850, possessed excellent adsorption ability for CAP with a maximum adsorption amount of 506.1 mg g^{-1}. Additionally, PCPCs-850 showed a large BET surface area of 2337.06 m^2 g^{-1} and microporosity of 89.11% by N_2 adsorption-desorption experiment. The Langmuir and pseudo-second-order model could more precisely describe the experimental data. And thermodynamic analysis illustrated that CAP adsorption onto PCPCs-850 was an endothermic and spontaneous process. Importantly, the adsorbent exhibited good stability and regeneration after four times cycles. Based on these excellent performance, it is potential that PCPCs-850 can be used as a promising adsorbent for treating contaminants in wastewater.

Keywords: Antibiotics, Porous carbons, Excellent adsorption ability, Stability, Regeneration