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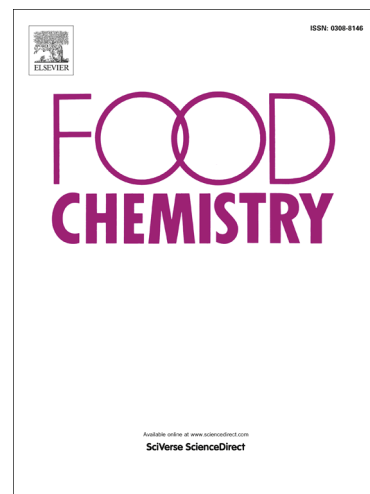
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High Effective Adsorption/Removal of Illegal Food Dyes from Contaminated Aqueous Solution by Zr-MOFs (UiO-67)

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Abstract:

UiO-67, a bifunctional adsorbent, was successfully applied to remove illegal food dyes (Congo red and Malachite green) from aqueous solution. The relevant adsorption conditions were optimized: pH 6, 120 min for contact time, and 10.0 mg L⁻¹ adsorbent dose for Congo red. Adsorption behavior of UiO-67 exhibits a better fitting to pseudo-second-order kinetic model and Langmuir model. Moreover, the maximum adsorption capacities of Congo red (1236.9 mg g⁻¹) and Malachite green (357.3 mg g⁻¹) are higher than that of the most reported adsorbents. Thermodynamic analysis reveals that adsorption processes are spontaneous and endothermic in nature. Powder X-ray diffraction patterns, Fourier-transform infrared spectra and the X-ray

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