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Equilibrium and kinetic

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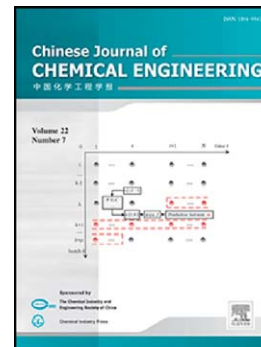
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Materials and product engineering**MODELLING OF ADSORPTION OF TEXTILE DYES OVER MULTI-WALLED CARBON NANOTUBES: EQUILIBRIUM AND KINETIC**

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Abstract

The paper deals with the application of multiwall carbon nanotubes (CNTs) to the adsorption of dyes from wastewater. Textile dyes are dangerous and diffused pollutant in wastewater, and the paper results confirmed the good adsorption ability of CNTs, with respect to classic active carbon, even for different dye types. The effect of surface treatments of CNTs was primarily investigated, revealing that neither the presence of residual catalyst nor common surface treatment (oxidation) affects the CNT's performances. Therefore less expensive non-purified CNTs were assessed as good and economically convenient alternative for the process. In order to gain in generality in adsorption kinetic modelling, the parameters of the "best fitting" pseudo- second order model have been correlated to the main process variables (the dye initial concentration and the specific mass of CNTs.) setting-up a predictive kinetic model useful design new application of these materials in currently operating industrial operations for adsorption. In addition, isothermal data were used to screen all the relevant adsorption isotherms models and the Temkin model was confirmed as the more effective to accurately fit equilibrium data for any of the considered different dye types.

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