



Natural adsorbents of dyes from aqueous solution

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Contamination of natural waters is a current environmental problem and lot of work has been done to find methods for its, prevention and remediation such as ionic exchange, adsorption on active carbon, filtration, electrolysis, biodegradation ...etc. Adsorption is one of the most applied methods according to its effectiveness and easy management. Some adsorbents with good properties such as active alumina, zeolites, crop residues ... etc, are suitable to substitute usual active carbon.

This study aimed at the removal of dyes using oil shale as natural support, and its optimization by factorial experiment. Three factors were considered namely: pollutant concentration, pH and weight of the adsorbent. Tests have been performed with cationic and anionic dyes. Experimental results show that pseudo-first-order kinetic model provided the best fit to the experimental data for the adsorption by the oil shale. Langmuir, Freundlich and Temkin isotherm models were tested to fit experimental data, the adsorption equilibrium was well described by Freundlich isotherm for methylorange and Temkin for methyl blue. Analysis were completed by oil shale characterization educing XRD, IR, XRF techniques, and cationic exchange capacity.