Libya

Ministry of Higher Education and Scientific Research

AL-Asmarya Islamic University

Faculty of Engineering

ADSORPTION OF METHYLENE BLUE DYE FROM AQUEOUS SOLUTION ONTO CHEMICALLY ACTIVATED CARBON PREPARED FROM ORANGE CHARCOAL

A graduation project is submitted to the Chemical Engineering Department in partial fulfillment of the requirements for the degree of Bachelor of Science in

Chemical Engineering

by

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Abstract

Dyes are widely used in the textile industry, as well as paper, leather, rubber, cosmetics, the plastics industry, and tanning. Furthermore, it can be used in research to detect fine transparent structures using microscopy. The presence of industrial dye in the effluent has released a large amount of toxicity into the water system, affecting both humans and flora and fauna, one of these dyes is methylene blue dye. In this study, we used orange charcoal prepared from orange trees wood which can be found in local markets in libya as a lot and low cost, to remove methylene blue dye from aqueous solution was removed using orange charcoal as an adsorbent. The effects of pH, contact time, adsorbent dosage, concentration, agitation speed, adsorbent particle diameter and chemical activation by HCL were all investigated in batch process and 25°C in this study. Finally, the experimental data were fit to both the Langmuir and Freundlich isotherms, the equilibrium adsorption capacity of the adsorbents for methylene blue was obtained by Freundlich isotherm. The results showed that orange charcoal activated by HCL can be an effective adsorbent for methylene blue removal.