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## PERFORMANCE AND MECHANISMS OF MALACHITE GREEN DYE ADSORPTION USING INDUSTRIAL SOLID WASTE AS ADSORBENT

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### Abstract

In this research, the adsorption of malachite green using atermit factory solid waste as an adsorbent was studied. Atermit factory solid waste was used without any pre-treatment. Scanning electron microscope (SEM) was used for investigation of physical characteristics of atermit factory solid waste. After adsorption, surface of adsorbent was covered by malachite green molecules. The effect of adsorption parameters such as adsorption time, initial dye concentration and pH were studied. The maximum adsorption capacity of atermit factory solid waste for malachite green (pH=8) was 10.058 mg/g. Also, Freundlich and Langmuir Isotherm models were studied and as a result Langmuir Isotherm Model presents the best fit ( $R^2=1$ ). Moreover, pseudo second order isotherm model was studied. After adsorption experiments data have the highest  $R^2$  for pseudo second order kinetic model. From the investigations, atermit factory solid waste was promised adsorbent to remove the cationic dye from waste water.

**Keywords:** adsorption, industrial waste, isotherm, malachite green, SEM

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