

ACTIVATED GRAPHENE OXIDE FOR REMOVAL OF METHYLENE BLUE FROM WASTEWATER

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Lately, activated oxidized graphene has sparked a lot of attention in the fields of wastewater treatment and water filtration. Here, the possibility for using activated graphene oxide (AGO) to remove methylene blue (MB) from water systems was investigated. Commercially available Graphene Oxide (GO) was obtained, and it was further modified by alkali-activation method to obtain AGO. The resulting AGO was tested as an adsorbent for methylene blue removal. Activation time was varied to optimize the MB removal of the adsorbent and then the adsorbents were characterized by using FTIR, SEM, BET and XRD analysis. Synthesized AGO shows prominent MB adsorption characteristics due to H-bonding, and electrostatic interactions. To evaluate the adsorption capacity, batch adsorption experiments were carried out and the effect of pH and temperature on dye adsorption were investigated. Maximum adsorption capacity of 123.47 mg/g was obtained for AGO sample which was activated for 1.0h and the data were well fitted to Langmuir isotherm model. These findings demonstrate the possibility for cationic dye removal from wastewater systems using an economically viable AGO.

Keywords: Methylene Blue, Graphene Oxide, Adsorption