**Use of Waste Wood Biomass As a Sustainable Precursor For Activated Carbon Production and Application**

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*Abstract:* The use of biomass waste has been extensively explored as an alternative to costly methods of producing activated carbon. In this work, we performed the adsorption of Methyl Orange (MO) on activated carbon prepared from olive waste wood. The study focus on the elimination of an acidic dye, Methyl Orange, by the material previously synthesized as a function of the different process parameters that affect the performance of this process, as well as contact time, pH of the solution and mass of adsorbent. Langmuir and Freundlich adsorption models were employed to provide a description of the equilibrium isotherm Furthermore, the pseudo-first-order and pseudo-second-order kinetic models were conducted to investigate the mechanism of dye adsorption by the obtained adsorbent. The results show that the adsorption of MO follows the pseudo-second-order model kinetics. Also, the adsorption process was enothermic, spontaneous and correlated with Langumir model.

*Keywords:Waste Wood, biomass, activated carbon, precursor*