Synthesis and Characterization of a New Activated Carbon from Scenedesmus SP. Grown in Agro-Industrial Wastewater

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Abstract:

The main objective of this research is to synthesize a new activated carbon using the microalgal biomass of Scenedesmus sp. grown in agro-industrial wastewater. The approach used was to take advantage of the high organic load presented by the wastewater to provide it with the ideal growth conditions to obtain a biomass production rate that was used as a precursor to activated carbon, the biochar synthesis was chemical with 60% H3PO4 and physical by carbonization in an inert nitrogen atmosphere at 300 ° C, optimal conditions for the synthesis of carbon according to thermogravimetric analysis for the elimination of volatile organic compounds and functional groups that mean interferences in the subsequent application of carbon, in turn higher yield in carbon production during synthesis. As a result, the carbon was characterized as highly porous with an iodine index of 799, it has a mesoporous structure according to SEM and BET with a pore range of 2–50nm, according to FTIR it presents oxygenated functional groups (CO) such as ethers, phenols and carboxyls which favors its adsorbent capacity or subsequent application. The research allows to conclude that the biochar obtained from Scenedesmus sp. It is feasible as activated carbon.

Keywords:

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Scenedesmus sp. ,TGA, FTIR, SEM, BET, iodine index.

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