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Recent Advances in Biochar as Low Cost Biosorbent for Adsorption of Dyes and Heavy Metals

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Biochar

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Abstract

Lignocellulosic biomass has garnered an amazing amount of interest due to its great availability and cheap cost as one of the sustainable and renewable resources for manufacturing valuable products, such as biochar. In this work, the latest findings on the production of biochar by pyrolysis and its uses in the adsorption of dyes and heavy metals are examined. Technologies based on pyrolysis, such as gasification and mild and rapid pyrolysis, are effective methods for turning lignocellulosic biomass into products with a high added value (biochar, bio-oil, biogas, etc.). Biochar is considered as an outstanding candidate for the remediation of heavy metals, dyes from wastewater, enhance soil fertility, etc. By carbon sequestration, biochar can regulate climatic changes. The capacity of this substance to enhance soil, boost agricultural productivity, and raise soil fertility makes it one of a kind; as a result, soil fertility is highest where biochar is found. According to the research conducted on biochar production processes, the highest percentage of biochar with a percentage above 35 is related to the torrefaction process and after that pyrolysis and gasification with approximate percentages of 12–34 and 10%, respectively.

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