Preparation, characterization of activated carbon fiber from luffa and its application in CVFCW for rainwater treatment

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ACF preparation from different materials has been attached with great attention during these years. This study was conducted to prepare activated carbon fiber (ACF) from luffa through the processes i.e pre-treatment, pre-oxidation and carbonization activation. Besides, this study also characterizes the ACF and its effect, i.e effect of pre-oxidation time and temperature also activation time and temperature on the compressive strength of ACF were investigated. The results from SEM, BET, FTIR and XRD show that the ACF is very efficient. The products under the optimum conditions had a specific surface area of 478.441 m2 /g with an average pore diameter of 3.783nm, and a pore volume of 0.193 cm3 /g. The surface of the luffa fiber is degummed and exposed, which is beneficial to the subsequent process and the increase of product properties. The compressive strength of HP-ACF was prepared under the optimum conditions, which can reach 0.2461 MPa. ACF is rich in micro-pores and has a good application prospect in the field of environmental protection.

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