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COMBINE ROLE OF CERAMIC-CARBON FILTER FOR WASTEWATER TREATMENT

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In many developing nations, like Ghana, where poor sanitation and agricultural runoff lead to widespread water contamination, access to safe drinking water is still a major problem. The creation and efficacy of a ceramic-carbon composite filter for the elimination of paraquat, a hazardous pesticide frequently detected in wastewater, are examined in this work. Locally produced kaolin and Mfensen clay were formulated into a hollow filter and fired to a temperature of 650℃. The filters were filled with activated carbon made from coconut oil and sucrose and activated at 650℃ for activation and increased porosity.
UV-Vis spectrophotometry set at a wavelength of 260 nm was utilized to determine the removal efficiency of a 0.2 mg/L paraquat solution used in batch filtration tests. The results showed that the filters removed over 95% of the paraquat in 10 minutes, with the best-performing filter, B2 (85 wt.%:15 wt.%), achieving 99.8% removal efficiency. The filters were appropriate for point-of-use water purification in rural areas due to their strong structural integrity, low manufacturing costs, and regeneration potential.
This study shows that ceramic–carbon composite filters provide an economical, environmentally friendly, and efficient way to reduce herbicide contamination in water. They also have a great deal of potential for local manufacturing and implementation in low-resource environments.

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