Improved microwave absorption traits of coconut shells-derived activated carbon

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Abstract	Novel multi-functional materials with very high microwave (MW) absorbance in the X-band became demanding for varied high-sensitive electronic applications. To meet this goal, a new type of activated carbon sample containing fullerene-C70 was derived from coconut shells using the combined physical activation and milling process for the first time. The effects of various milling times (50, 75, and 100 min) on the structure, morphology, and MW reflection traits of these samples were examined. The crystalline phase of the activated fullerene-C70 was found to alter from cubic to rhombohedral structure at the milling time of 100, displaying a specific surface area of 946.499 m(2)/g and mean pore diameter of 3.42 nm. It was shown that by tuning the surface area and fullerene contents in the sample, the MW reflection loss of such activated carbon can be controlled. It is established that fullerene-C70 derived from the proposed activated carbon may be useful to produce low-cost and efficient MW absorption materials needed for diverse electronic devices with reduced electromagnetic interference.
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