

عنوان مقاله:

Banana-peel derived activated carbon for microwave absorption at X-band frequency

محل انتشار:

فصلنامه سنتز و تفجوشی، دوره 2، شماره 3 (سال: 1401)

تعداد صفحات اصل مقاله: 5

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خلاصه مقاله:

The rapid advancement in information technology, communication, and electronic devices elevates the need to develop suitable materials for microwave absorption (MA) which should have the properties of an ideal microwave absorber. Porous activated carbon from agricultural wastes has piqued the interest of MA researchers due to their distinct properties such as good specific surface area, high dielectric loss, good electrical conductivity, and low density. Herein banana peel activated carbon was prepared by activating banana peel precursor with KOH and carbonizing at different temperatures. The difference in the porous structure with varying carbonization temperature was visible in the FESEM image, validated by BET analysis. The Banana Peel Activated carbon samples exhibited good microwave absorption performance, with BP-ACY⁰⁰ displaying a minimum Reflection Loss (RL) of -40.62 dB at 10.72 GHz & 3.0 mm thickness. In addition, the obtained effective absorption bandwidth of 3.5 GHz spanned through the X band frequency. This exceptional microwave absorption was attained due to the sample's good conductive loss and Porous favourable morphology. This study inspires the development of future facile functional agricultural waste-derived microwave absorbers.

کلمات کلیدی:

Microwave absorbing materials (MAMs), Banana peel-activated carbon (BP-AC), Reflection loss (RL), Porous material, Microwave absorption mechanism

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