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RESEARCH HIGHLIGHT

Tamarind shells to carbon nanosheets

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A team of international scientists has processed tamarind shells into carbon nanosheets[1], a key component of energy storage devices called supercapacitors, used in

automobiles, trains, and elevators.

Shells of tamarind, a tropical fruit consumed worldwide, are thrown away as agricultural waste. These shells are rich in carbon and porous in nature, making them an ideal material for the manufacture of carbon nanosheets.

The scientists, including from Alagappa University in Tamil Nadu, India, say this could be an eco-friendly alternative to industrially produced nanosheets.

To manufacture the carbon nanosheets, the researchers first washed tamarind fruit shells, dried them at 100°C for around six hours and ground them to powder. The powder was then baked in a furnace for 150 minutes at 700-900°C in the absence of oxygen to make ultrathin sheets of carbon. The tamarind shell-derived nanosheets also showed good thermal stability and electric conductivity, making them promising options for energy storage.

The team, with collaborators from Nanyang Technological University (NTU) in Singapore and the Western Norway University of Applied Sciences, says using waste tamarind shells may also reduce clogging of landfills, especially in India, one of the world's largest producers of tamarind.

References

1. Thirumal, V. *et.al*. Cleaner production of tamarind fruit shell into bio-mass derived porous 3D-activated carbon nanosheets by CVD technique for supercapacitor applications. *Chemosphere.* (2021) Doi: 10.1016/j.chemosphere.2021.131033