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# Using tamarind shell as energy storage material

SINGAPORE— Tamarind shells are rich in carbon, with high porosity, and scientists have created carbon nanosheets capable of accumulating electricity.

The research team of Nanyang Technological University, Singapore fabricated carbon nanosheets to store charge in the capacitors of electric vehicles and electric motorcycles.



Tamarind peel is used by the group to increase value. Photo: *Science Daily*.

In the pre-treatment stage, the scientists washed the tamarind shells and dried them at 100 degrees Celsius for about 6 hours. The shells are then ground into powder and calcined at 700 to 900 degrees Celsius under oxygen-poor conditions for 150 minutes. This method can convert the powder into ultra-thin carbon nanosheets.

Professor Dhayalan Velauthapillai, who led the research, said that carbon nanomaterials consist of layers of carbon atoms arranged in hexagons linked together like a honeycomb. Their ability to store energy lies in their porous structure which helps to store a large amount of charge." The advantage of tamarind shell porosity increases the surface area of carbon in the nanosheet and allows more electricity to be stored. ", he said.

In addition, the carbon nanosheet from the tamarind shell has good electrical conductivity and thermal stability. Compared with the manufacturing process of hemp nanosheets, the tamarind shell method is more energy-efficient.

So, the team hopes to be able to work with agricultural partners to develop carbon nanosheets on a larger scale than the laboratory by reducing the energy in the manufacturing process to make them more environmentally friendly. The team also explored the possibility of using different types of fruit peels in this area.

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