Supercondensatori per auto dalle bucce di tamarindo

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A new path for energy storage opens up thanks to the conversion of tropical fruit waste into carbon nanosheets

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Food waste and supercapacitors, a winning marriage

(Rinnovabili.t) - Country you go, resources you find. In India, the new push for electric mobility could come from a local food product. Or more precisely from its inedible waste. The University of Alagappa, led by Nanyang Technological University of Singapore (NTU Singapore) and in collaboration with Western Norway University, has used **tamarind peels** to produce a material for use in **supercapacitors** .

The tamarind is a tropical tree grown in many Asian areas, India in the first place. Its fruit has a carbon-rich shell that scientists used to make carbon nanosheets. " *Through a series of analyzes, we found that the performance of our tamarind shell-derived nanosheets was comparable to their industrially produced counterparts, in terms of porous structure and electrochemical properties,"* explains Professor **Cuong Dang** , of the School of Electrical and Electronic Engineering. of the NTU, at the head of the firm. " *And the process of making them is identical to that of obtaining activated carbon nanosheets."*

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A common material for making these elements is **industrial hemp** , but its fibers must be heated to over 180 ° C for 24 hours. The new recipe achieves the same result but with less energy and time. The researchers first washed the peels of the fruits then heated them to 100 ° C for about six hours, first reducing them to powder. Then they baked the powder in an oven for 150 minutes at 700-900 degrees Celsius in the absence of oxygen to convert it into ultra-thin sheets.

The final product also exhibits good thermal stability and electrical conductivity, making them promising options for energy storage as a key component of supercapacitors. *"The secret behind their ability to store energy lies in their porous structure which leads to a large surface area which helps the material to store large amounts of electrical charges,"* added Professor **Dhayalan Velauthapillai.** The group is now working to reduce the energy required for the manufacturing process, making it more environmentally friendly, to improve the electrochemical properties of nanosheets.