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Project title: Wood-Based Organic Electronics: Sustainable Solutions and Prospective Implantation in Electrical Plants	
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Abstract (approx. 200 words)**:**

In today's digital era, the growing demand for electronics has posed many challenges in waste recycling and fossil resource depletion. As we transition to a sustainable era, electronics prioritize eco-friendly attributes and affordability, rather than solely high-performance. Wood, known for its renewability, unique 3D micro-nanostructure, and valuable components such as cellulose and lignin, becomes a crucial resource. To enable wood for electronic applications, it must exhibit electrical conductivity. In our research, we subjected wood to chemical treatment and then modified it using PEDOT:PSS, an electroactive polymer, resulting in conductive wood (CW) with an electrical conductivity of 203 S/m. CW was successfully employed in the development of supercapacitors, batteries, and transistors, serving not only as a template but also as the active electrode or material in these devices.

The successful development of these devices has revealed that CW enables electrical conductivity, utilizes native lignin for electricity storage (5.0 F/g capacitance), and especially can modulate electrical current (ON/OFF ratio of 50). These characteristics hold promise for basic electronic components and potentially complementary circuits in wood or even plants. While our focus is on sustainable electronics, envisioning electronic circuits integrated into plants, granting them intelligence similar to smartphones, raises intriguing possibilities.

Could plants communicate with us?

They might inform us about watering, feeding, and harvesting. Imagine a future where plants teach us to harvest solar energy from leaves, store electricity in wood, and provide alternate output currents. With billions of trees on Earth, energy demands could be secured.

Key words:
Wood, Organic electronics, Sustainable solutions, Implantation, Electrical plant.