Preparation of Activated Carbon Derived from Tobacco and its Electrochemical Properties

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Received: 14 June 2021 / Accepted: 4 August 2021 / Published: 10 September 2021

Tobacco was carbonized two steps in KOH as an activator to produce high-performance carbon materials for supercapacitors. To make bio-carbon, tobacco was pre-carbonized at 400°C to build a preliminary carbon skeleton, then activated with KOH and carbonized at 800°C for 1 hour. SEM, XPS, Raman, and BET were used to check the physicochemical properties of the tobacco porous carbon materials. In contrast, GCD, CV, and EIS were used to determine electrochemical properties. PC3's outstanding electrochemical performance is due to its vast surface area (1728.5 m²/g), shortening ion diffusion routes and allowing for rapid electron migration. The tobacco porous carbon PC3's specific capacitance is 324F/g. Thus, tobacco can be used as a material for supercapacitors and electrodes.

Keywords: Tobacco; Carbonization; electrochemical performance.

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