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MIDI tea for biochar, possible graphite candidacy? Let's explore.

From the rich soil of Tshivhase tea estate in Thohoyandou, blooms the green fields of Midi tea plantation and processing units. This delicious and locally produced black tea is largely available locally and open for market anywhere in the world. The increase in demand for storage devices prompted researchers to consider other possible, low cost and commercially viable alternatives to meet the demand. The synthesis and application of biomass as carbon have drawn attention due to the host of biomass available for conversion, sustainability, and cost-effectiveness. Graphite is the most popular substance used in lithium-ion batteries (LIB) as an anode material. Current LIB batteries require critical raw materials, efficient manufacturing, recycling processes and end of life management. To address the later factors, use of biodegradable materials such as biomass to produce useful products is of interest. Biomass conversion into useful materials is one of the contributing factors towards green energy techniques and achieving the 2030 sustainable development goals. The current work focuses on converting biomass wastes (MIDI tea) into synthetic graphite and analyse it for graphite-like material and application in LIB's. Heat is used to process biomass into desired carbon products. The results show that the obtained graphite-like crystallite-based nanomaterials with tunable dimensions and morphologies has remarkable features, such as high-degree of refined-graphitization.

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