Short Communication

Preparation and Electrochemical Performance of a Honeycomb-like Porous Anode Material

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Ground coffee is used to prepare a honeycomb-like porous anode material for Li-ion batteries. The microstructure and morphology of the as-prepared samples are characterized by X-ray diffraction and scanning electron microscopy. The material has a honeycomb-like porous morphology, a smaller specific surface area than graphitized coke, and a relatively low degree of graphitization. Electrochemical tests show as-prepared anode material to have good low-temperature performance, large rate capability, and good cycling performance. At -30 °C, the material delivers a discharge capacity of 52.1 mAh g⁻¹, which is more than three times that of graphitized needle coke artificial graphite anode material that is commercially available. Thus, it is suitable for high-power or energy storage batteries.

Keywords: Electrochemical performance; Coffee; Honeycomb-like; Li-ion batteries; Anode material

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