Highly microporous activated carbon derived from biomass for energy storage and environmental application

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Nowadays, biomass conversion technologies are investigated intensively on various fields because of their characteristics such as abundance, ease of processing and environmental-friendly. In this study, we concentrated on a kind of biomass of agricultural waste which is oil palm empty fruit bunch (EFB). Our strategy is to convert carbon structures in EFB to porous carbon material with ultrahigh surface area and micro-size pore structures as an alternative material to existing activated carbon.
The activated carbon derived from EFB witch was chemically activated shows very high porosity. The KOH acts as an activating agent which can react with oxygen-contained functional group to results in highly microporous architecture.
EFB-derived activated carbon shows ultrahigh specific surface area and micro-size of average pore diameter. The activated carbon can show enhanced ion accessibility and also provides excellent electron percolation properties leading to high power delivery. In reference to their high surface area and porosity, the activated carbon exhibit superior carbon dioxide capture performance.