

Superior Supercapacitive Performance in Porous Nanocarbons

Gomaa A.M. Ali^{a, b}, Shoriya Aruni Abdul Manaf^b, Divyashree A^c, Kwok Feng Chong^b, Gurumurthy Hegde^c

^a Chemistry Department, Faculty of Science, Al-Azhar University, Assiut 71524, Egypt

^b Faculty of Industrial Sciences and Technology, Universiti Malaysia Pahang, 26300 Gambang, Kuantan, Malaysia

^c BMS R and D Centre, BMS College of Engineering, Basavanagudi, Bangalore 560019, India

ABSTRACT

Porous nanocarbons with average particle size 20–40 nm were developed using biowaste oil palm leaves as a precursor. Simple pyrolysis was carried out at 700 °C under nitrogen atmosphere. Obtained porous nanocarbons showed excellent porous nature along with spherical shape. Symmetric supercapacitor fabricated from porous nanocarbons showed superior supercapacitance performance where high specific capacitance of 368 F/g at 0.06 A/g in 5 M KOH were reported. It also exhibited high stability (96% over 1700 cycles) and energy density of 13 Wh/kg. Low resistance values were obtained by fitting the impedance spectra, thus indicating the availability of these materials as supercapacitors electrode. The presented method is cost effective and also in line with waste to wealth approach.

KEYWORDS: Porous carbon nanoparticles; Supercapacitor; Catalyst free; Biowaste

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