Supporting Information

Synthesis of High Surface Area Porous Carbon from Anaerobic Digestate and it’s Electrochemical Study as an Electrode Material for Ultracapacitor

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SI Table S1. Comparison chart for various bio-waste derived carbons on multiple parameters like specific capacitance at the particular current density, specific surface area achieved, the electrolyte used and activation method employed.

| Sr.No. | Carbon source | Specific capacitance (F/g) | Current density/Scan rate | Specific surface area (m²/g) | Electrolyte | Activation method | References |
|--------|----------------|----------------------------|---------------------------|-------------------------------|-------------|-------------------|------------|
| 1      | Coffee shell   | 150                        | 1 mV/s                    | 842                           | KOH         | ZnCl₂             | [1]        |
|   | Material                  | RM     | Current Density | Mass (g) | Frequency (Hz) | Electrolyte 1 | Electrolyte 2 | Reference |
|---|---------------------------|--------|-----------------|----------|----------------|---------------|---------------|-----------|
| 2 | Rice Husk                 | 210    | 0.2 mA/g        | 1886     | KCl            | NaOH          |               | [2]       |
| 3 | Banana fibers             | 74     | 20 mA/g         | 686      | Na$_2$SO$_4$   | ZnCl$_2$      |               | [3]       |
| 4 | Corn grains               | 257    | 1 mA/cm$^2$     | 2936-3420| KOH            | KOH           |               | [4]       |
| 5 | Coconut shell (melamine)  | 368    | Vs Frequency    | 3000     | KOH            | KOH           |               | [5]       |
| 6 | Dead neem leaves          | 400    | 0.5 A/g         | 1230     | H$_2$SO$_4$    | None          |               | [6]       |
| 7 | Dead ashoka leaves        | 250    | 0.5 A/g         | 705      | H$_2$SO$_4$    | None          |               | [6]       |
| 8 | Sugarcane bagasse         | 280    | 1 A/g           | 1260     | KOH            | KOH           |               | [7]       |
SI Fig S1. Deconvoluted XPS spectra of Carbon C1s for all DDHPC-kh samples.
SI Fig S2. Deconvoluted XPS spectra of Oxygen O 1s for all DDHPC-\(kh\) samples.
SI Fig S3. TEM Images for DDHPC-4 (a, b, c), DDHPC-4k (d, e, f), and DDHPC-4kh (g, h, i)
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