Supplementary materials

S1. Methodology of copper coating on graphite electrodes

1) The graphite electrode surfaces were cleaned with mild sodium hydroxide, 0.4 % (w/v) to remove the dust and stains.

2) The electrode surfaces were sensitised (Step1 electrode) by dipping in a bath solution containing stannous chloride ($SnCl_2$. $2H_2O$), 10 g/L and concentrated hydrochloric acid, 40 mL/L.

3) Step 2: processed electrodes were then dipped in a solution mixture, consisting of silver nitrate (A) and formaldehyde (B) at the ratio of 5:1 (A: B). The concentrations of silver nitrate (A) and formaldehyde (B) were 120 g/L and 40 % (v/v) respectively.

4) Step 3: processed electrodes were initially dipped in the bath solution containing copper sulphate ($CuSO_4$. $5H_2O$), 75 g/L and concentrated sulphuric acid, 2.5 g/L. Then the electrodes were placed in the electro chemical cell (Potential, 5 V; Current, 1 A) containing copper sulphate ($CuSO_4$. $5H_2O$), 250 g/L and concentrated sulphuric acid, 40g/L.

S2. Preparation of mesoporous activated carbon (MAC)

Mesoporous activated carbon (MAC) was prepared from rice husk by two stages process: (1) precarbonisation; (2) chemical activation. The precarbonisation of rice husk was carried out by combustion at 400 ºC in a fully rice husk loaded crucible and closed with porcelain lid to avoid direct air contact, followed by chemical activation, using phosphoric acid at 800 ºC in order to render mesoporous structure of activated carbon. The resulted material was sieved to 600μm size and several times washed with hot water to remove the excess phosphorus compounds. The washed MAC was dried at 110 ºC for 6 h to obtain the final product, and labeled as MAC.

S3. Characterisation of mesoporous activated carbon

The C, H, N contents of the MAC were determined, using CHNS 1108 model Carlo-Erba analyzer. The pH of the point of zero charge, pHPZC i.e. the pH above which the total surface of carbon particles are negatively charged, was measured by the pH drift method. The surface area and pore size distribution were derived from the N_2 adsorption–desorption isotherms. The N_2 adsorption–desorption isotherms of MAC were measured, using Quanta chrome Corp. Nova-1000 gas sorption analyzer. Prior to measurement, MAC was degassed at 150 ºC overnight. The nitrogen adsorption–desorption data was recorded at liquid nitrogen temperature 77 K. The surface area was calculated using BET equation, which is the most widely used model for determining the specific surface area (m^2/g).

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53 **Table S1: characteristics of MAC**

Parameters	Values
Carbon, %	45.4
Hydrogen, %	0.9
Nitrogen, %	0.1
Moisture content, %	5.2
Ash content, %	36.4
Bulk density, g/cc	0.52
Apparent density, g/cc	0.11
Average pore diameter, Aº	11.43
Matter soluble in acid, %	4.35
Point of zero charge (PZC)	6.4
Decolorizing capacity, mg/g	44
Phenol number, mg/g	4.31
Ion exchange capacity, mg/g	0.062
Surface area, m^2/g	220

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