Supporting Information

Bio-based aerogel based on bamboo, waste paper and reduced graphene oxide for oil/water separation.

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Section1. Aerogel photos

Section2. Determination of specific area of samples and the adsorption capacity in various organic liquid.

S1. AEROGEL PHOTOS

The image of 20%-WBGA placing on the bamboo leaf, the image for the as-prepared aerogel varied with the mass ratios of WP to BGA, the specific surface area of WBGA measured by methylene blue adsorption, SEM images of 10%-WBGA, 20%-WBGA and 30%-WBGA, the density and viscosity of nine kinds of oils and organic liquids.

Figure S1. The image of 20%-WBGA placing on the bamboo leaf.

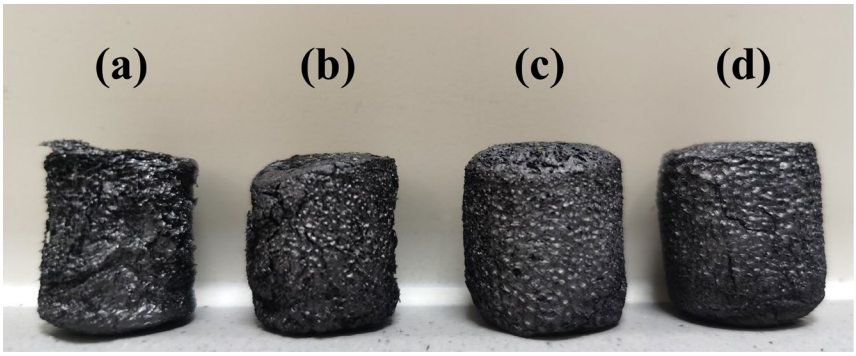

Figure S2. The image of aerogel with (a) BGA; (b) 10%-WBGA, (c) 20%-WBGA and (d) 30%-WBGA, respectively.

S2. DETERMINATION OF SPECIFIC SURFACE AREA OF SAMPLES AND THE ADSORPTION CAPACITY IN VARIOUS ORGANIC LIQUID

Because the sample prepared in this paper was a lightweight non-granular carbon material, the adsorption-desorption process of nitrogen would be hindered during the BET test, resulting in a deviation in the results[1-3]. Therefore, as a supplement, the specific surface area of the sample was determined using the methylene blue (MB) adsorption method by UV-Vis spectroscopy (Hitachi 330).

Methylene blue (MB) adsorption is a commonly used method to evaluate the specific surface area of material[4-5]. The sample with a mass of 0.025 g was put into the 50 ml of MB solution (100 mg/L). After oscillation at room temperature for 24 h to achieve the adsorption-desorption equilibrium, the mixture was then centrifuged to remove suspended matter. The MB concentration was subsequently determined by analyzing the supernatant through UV-vis spectroscopy at a wavelength of 664 nm compared with the initial standard concentration. The value of specific surface area could be calculated from the amount of adsorbed MB according to the following equation:

$$SSA = \frac{N_A A_{MB}(C_0 - C_e)V}{M_{MB} m_s}$$

where N_A is Avogadro number (6.02×10^{23} mol^{-1}), A_{MB} is the covered area of per MB molecule (typically assumed to be 1.35 nm^2), c_0 and c_e are the initial and equilibrium concentrations of MB, respectively, V is the volume of MB solution, M_{MB} is the relative molecular mass of MB, and m_S is the mass of the sample.

Table S1. The specific surface area of 10%-WBGA, 20%-WBGA and 30%-WBGA measured by methylene blue adsorption.

Samples	Initial Concentration (mg/L)	Equilibrium Concentration (mg/L)	Weight(g)	SSA(m^2/g)
10%-WBGA	100	63.57	0.025	178.52
20%-WBGA	100	54.71	0.025	221.93
30%-WBGA	100	63.07	0.025	180.98

Table S2. The adsorption capacity of samples and the density and viscosity of nine kinds of oils and organic liquids

	Liquids	Adsorption Capacity ($g\ g^{-1}$)	Density (g/cm^3)	Viscosity (mPa·s)
high-viscosity oil	Pump oil	87	0.8795	72.36
	Engine oil	79	0.7789	43.86
low-viscosity oil	Soybean oil	98.7	0.9170	7.670
	Mineral oil	77	0.8770	18.18
organic solvents	Carbon tetrachloride	121	1.5950	0.9690
	Ethyl acetate	67	0.9020	0.4260
	Petroleum ether	77	0.6700	0.3350
	Ethanol	83	0.7830	1.074
	N-hexane	60	0.6627	0.2651

References:

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