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**Electronic Supplementary Information (ESI) for the article entitled:** 

## **CO<sub>2</sub>-Activated, Hierarchical Trimodal Porous Graphene Frameworks** for Ultrahigh and Ultrafast Capacitive Behavior

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## Characterization

All samples were analyzed by field emission scanning electron microscopy (FE-SEM, LEO SUPRA 55, 10kV), field emission transmission electron microscopy (FE-TEM, Tecnai  $G^2$  F30 S-Twin). X-ray photoelectron spectroscoty (XPS, AXIS Ultra DLD) was used to determine the chemical composition of rGO film, GFs, tGFs. Raman spectra were recorded from 100 to 2500 cm<sup>-1</sup> at room temperature using a Raman spectroscopy (RENISHAW inVia Raman Microscope, 785nm) equipped with a ×100 objective was used. The specific area and pore distribution of GFs and tGFs were obtained using a Brunauer-Emmett-Teller apparatus (BET, BELSORP-miniII).



Fig. S1. TEM image of tGF.



Fig. S2. (a) C1s and (b) O1s spectra of rGO film, GFs, and tGFs



**Fig. S3.** Pseudo-2<sup>nd</sup> order kinetics plots for the adsorption of methylene blue by AC, GFs, and tGFs.



Fig. S4. Langmuir plots for the adsorption of methylene blue by AC, GFs, and tGFs.



Fig. S5. CV curves of a) AC, b) GFs, and c) tGFs at a scan rate of  $5 \sim 100 \text{ mV/s}$ .



Fig. S6. GCD curves of (a) AC, (b) GFs, and (c) tGFs at the specific currents of 1, 2, 5, and 10 A/g.



Fig. S7. Nyquist plots of the a) AC, b) GFs, and c) tGFs.

Table S1. Organic solvent and Dye adsorption capacity of AC, GFs, and tGFs.

	Adsorptive	AC	GFs	tGFs
	Chlorobenzene	3.04	126.79	153.54
	Ch Land Game	2.04	02 (0	241.25
	Chloroform	3.24	92.69	241.25
	n-Hexance	1 71	38 93	89 49
	ii Hexuitee	1./1	50.75	09.19
Organic solvent adsorption capacity	Toluene	2.24	65.91	106.58
(g/g)	DMF	2.20	75.42	127.68
	A	2.09	72.05	110.00
	Acetone	2.08	12.25	119.98
	Methanol	3 21	88.92	107.02
	i i i i i i i i i i i i i i i i i i i	3.21	00.72	107.02
	Ethanol	2.29	63.22	116.97
Dye adsorption capacity				
	Methylene blue	98.09	181.02	230.39
(mg/g)				