

# Supporting Information

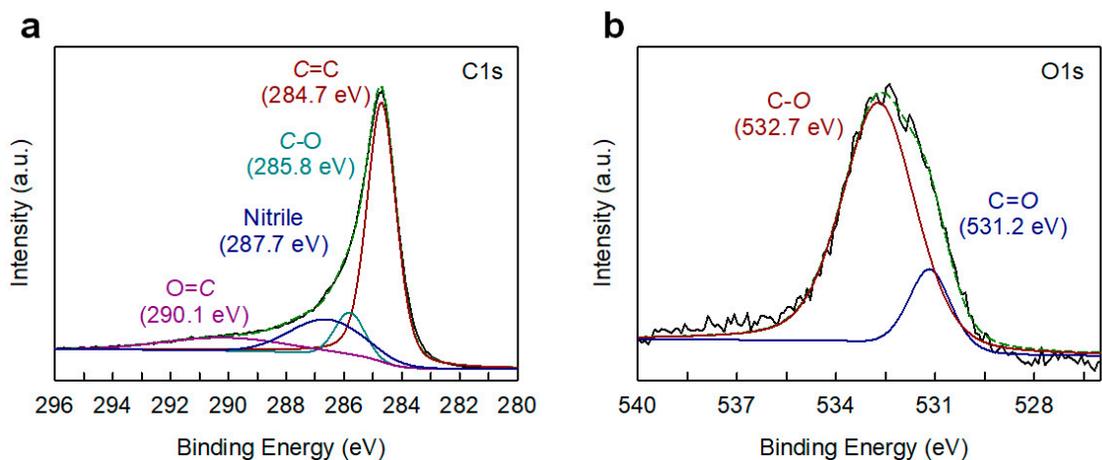
## Preparation and Properties of Cyano-Functionalized Graphitic Nanoplatelets for High-Performance Acrylonitrile Butadiene Styrene Resin

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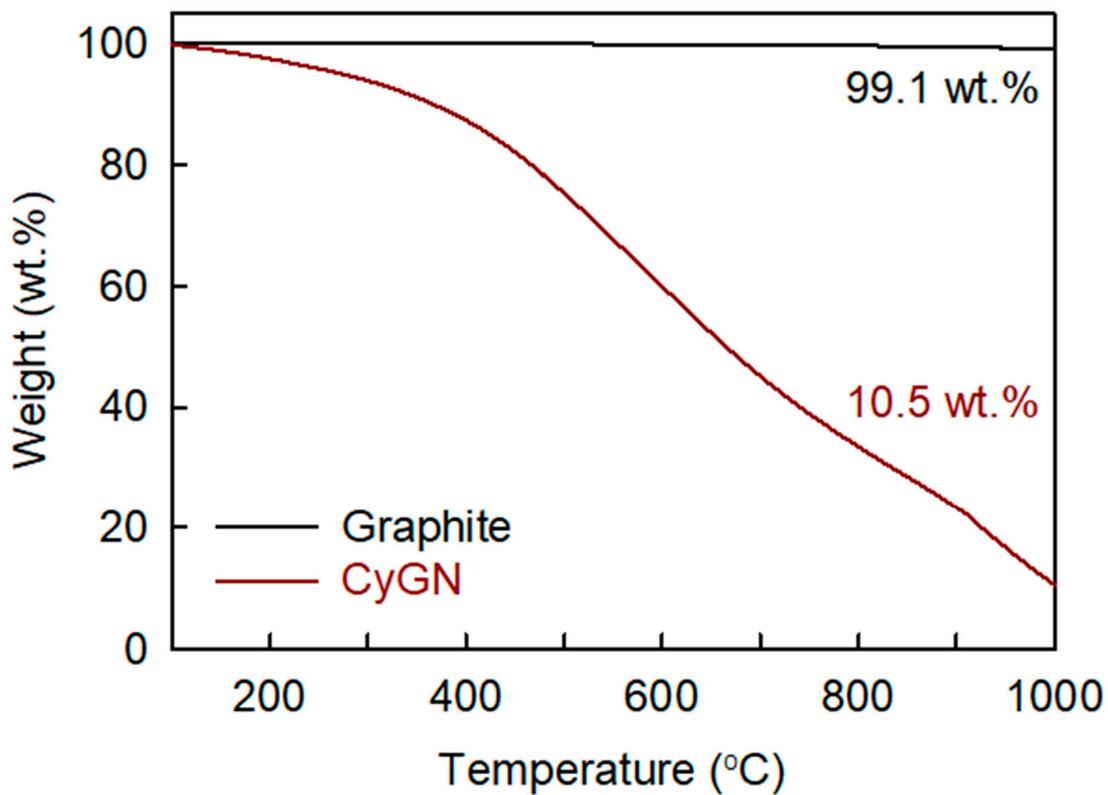
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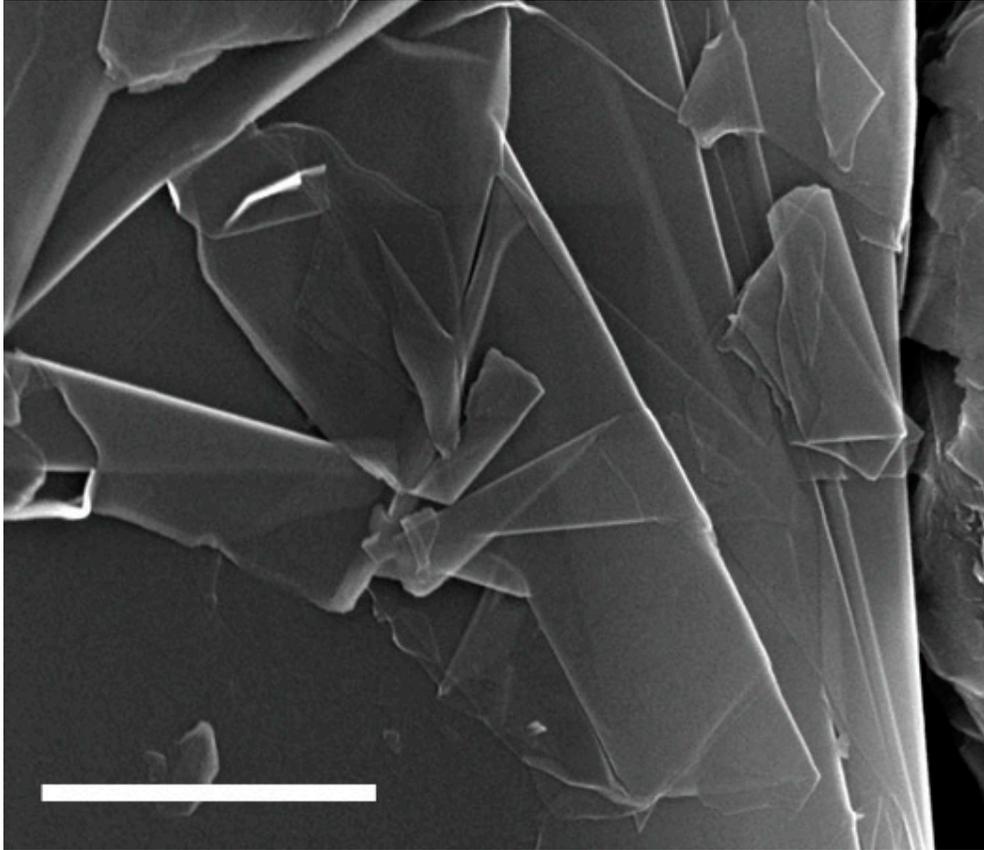
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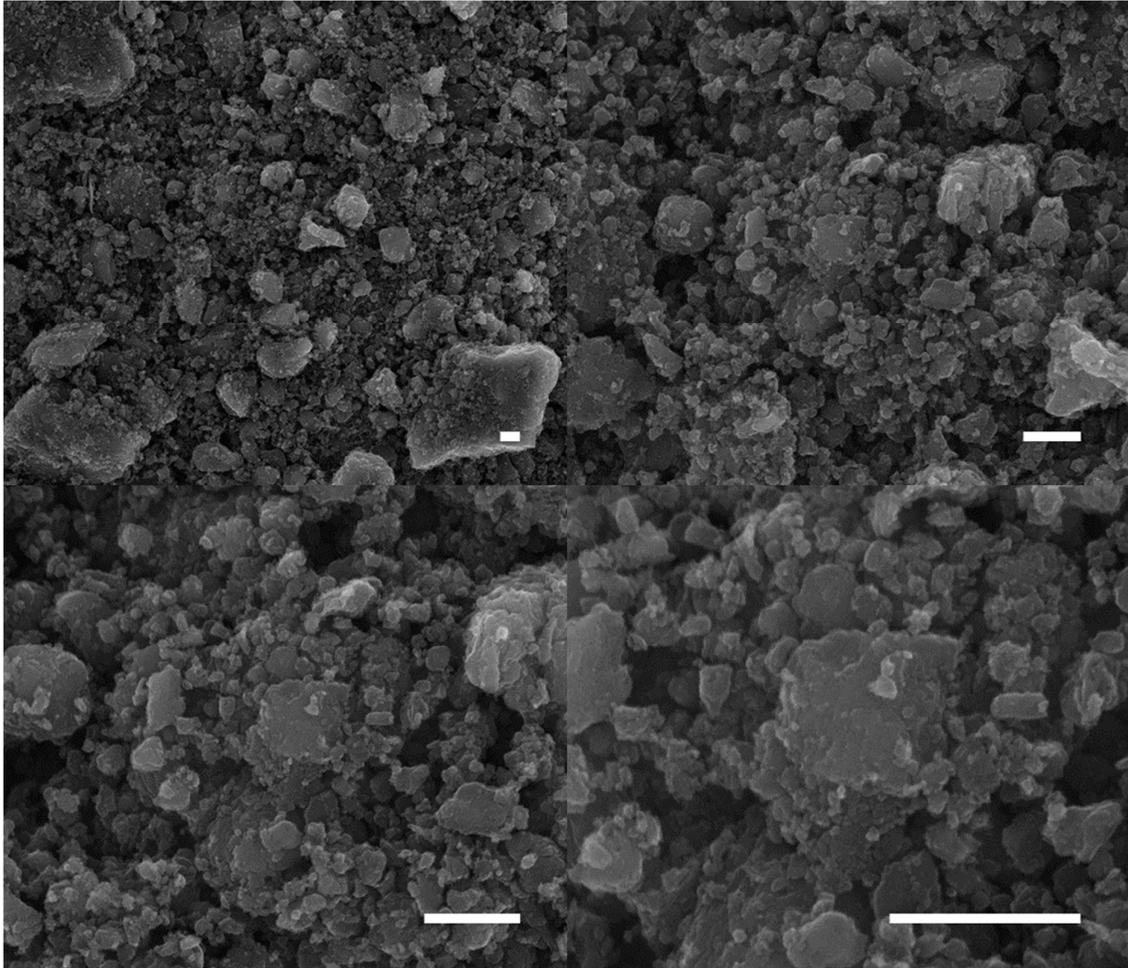
**Figure S1.** High-resolution XPS spectra of the CyGN: (a) C1s; (b) O1s.



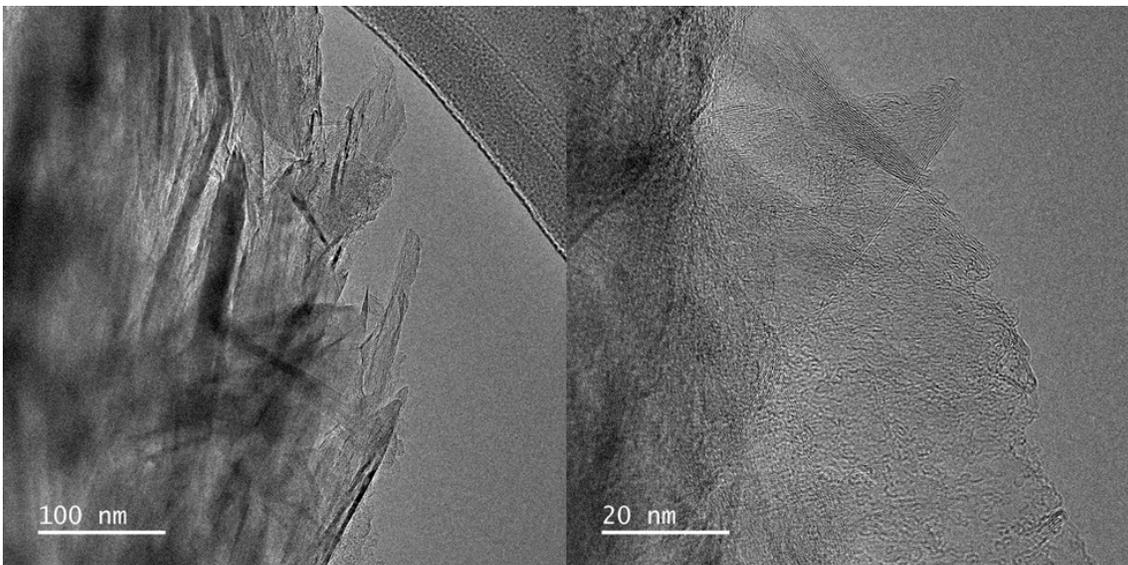
**Figure S2.** TGA curves of the pristine graphite and CyGN in N<sub>2</sub>.



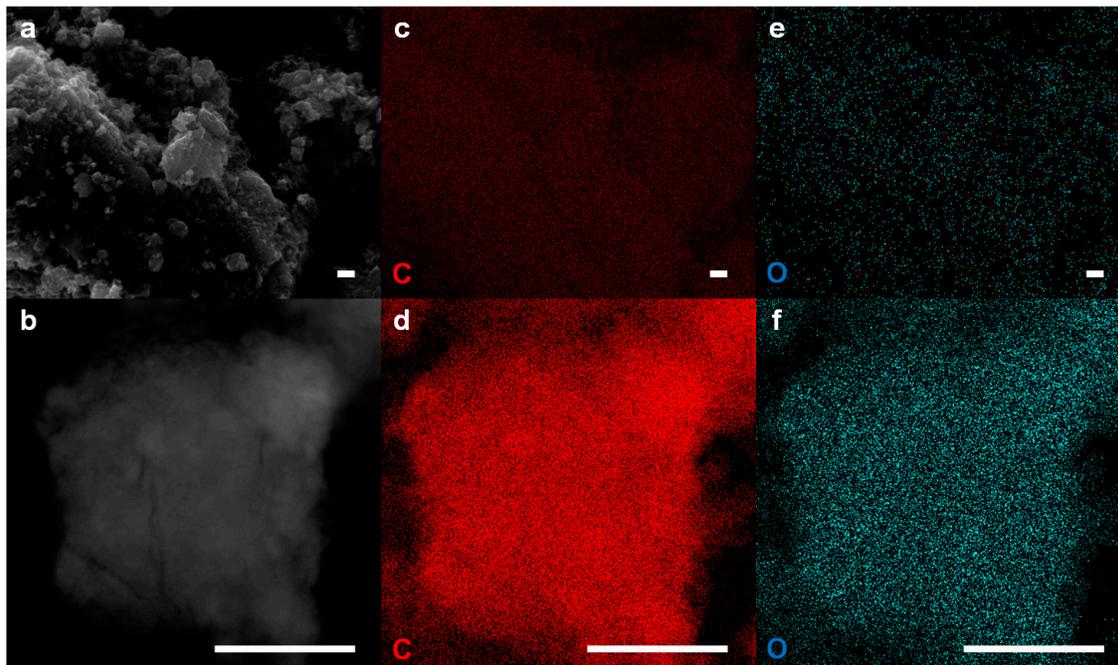
**Figure S3.** FE-SEM image of the pristine graphite. Scale bar is 1  $\mu\text{m}$ .



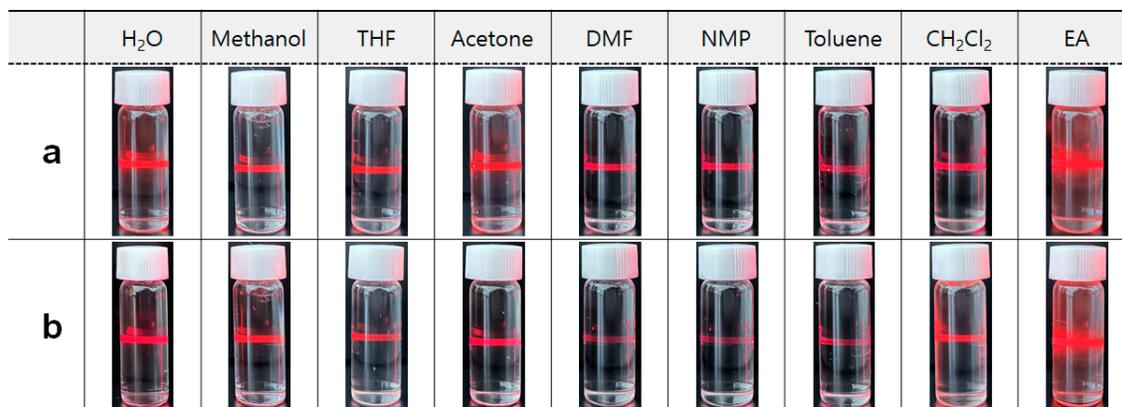
**Figure S4.** FE-SEM images of the CyGN. Scale bars are 1 μm.



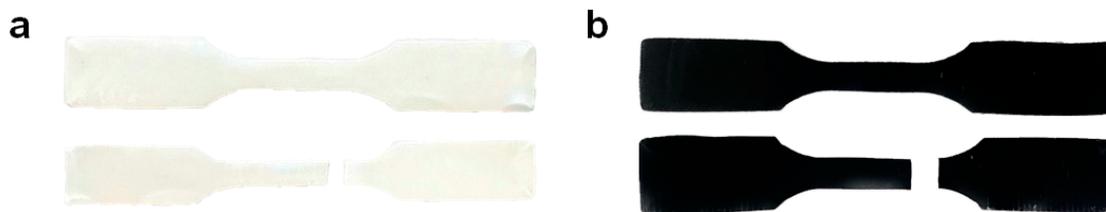
**Figure S5.** HR-TEM images of the CyGN.



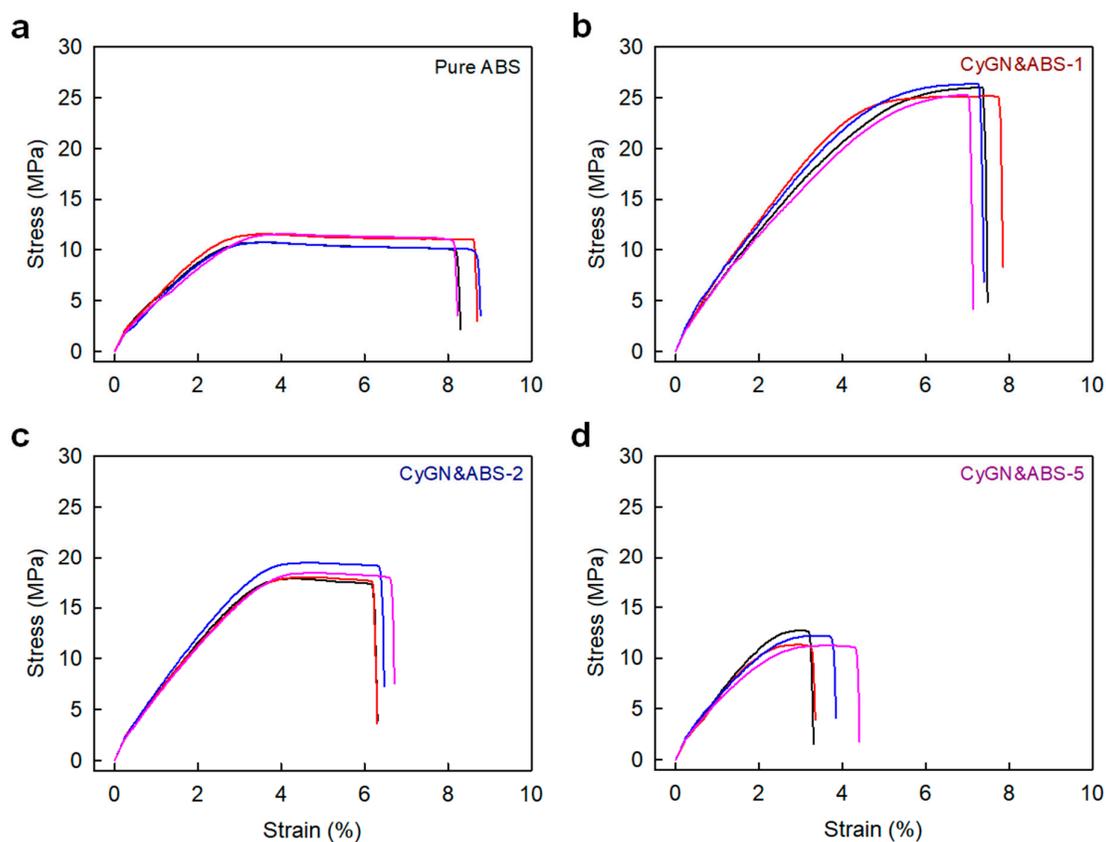
**Figure S6.** (a) FE-SEM and (b) HR-TEM images of the CyGN. Corresponding element mappings: (c and d) Carbon; (e and f) Oxygen. Scale bars are 1 μm.



**Figure S7.** Photographs of the CyGN dispersed solutions in various solvents on bench top in a normal laboratory condition: (a) after 30 seconds; (b) after 1 week.



**Figure S8.** Photographs images of dumbbell-shaped test specimen: (a) pure ABS; (b) CyGN&ABS-1.



**Figure S9.** The stress-strain curves of the pure ABS and CyGN&ABS-X.

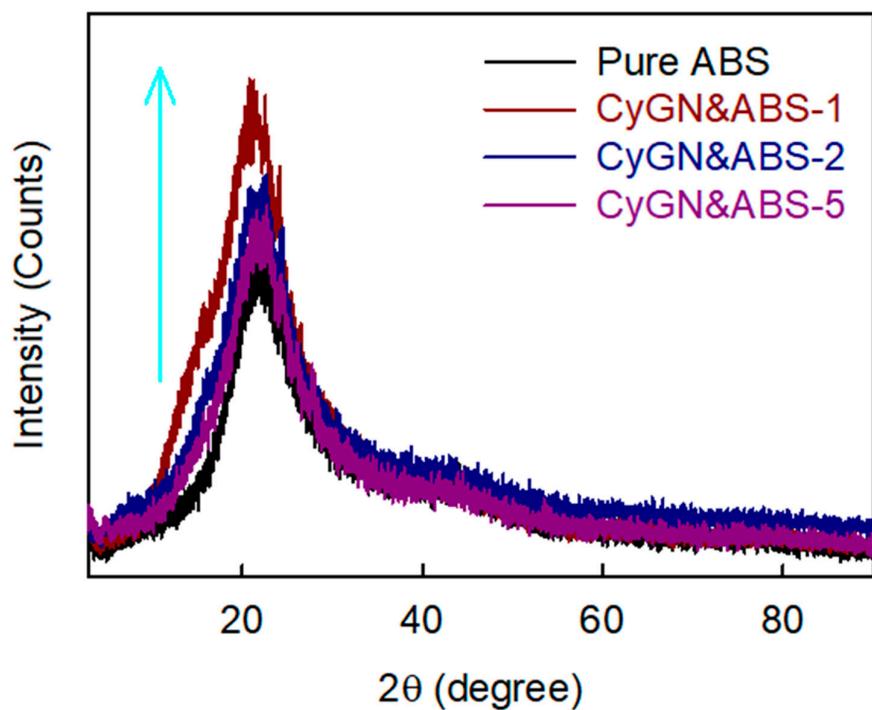


Figure S10. XRD patterns of the pure ABS and CyGN&ABS-X.

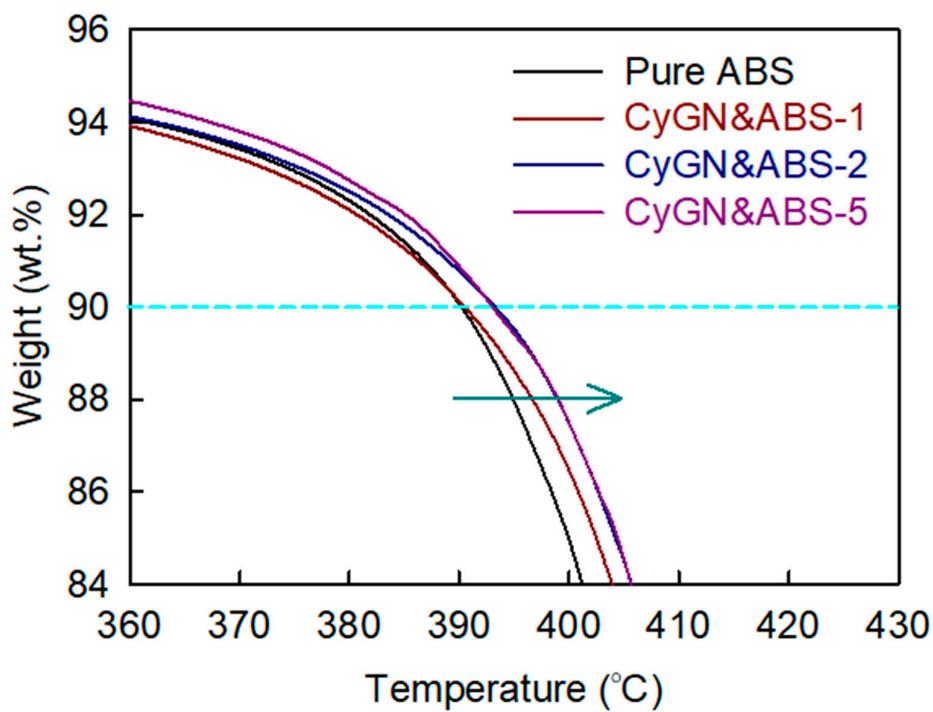


Figure S11. The magnified TGA curves of sky blue box in Figure 5a.

**Table S1.** TGA, EA, EDS, and XPS data of the pristine graphite and CyGN.

Sample	TGA		Element	EA (wt.%)	EDS (at.%)	XPS (at.%)
	Char Yield at 1000 °C					
	Air	N <sub>2</sub>				
Graphite	23.7	99.1	C	99.64	98.80	98.35
			O	0.13	1.20	1.65
CyGN	0.3	10.5	C	67.84	82.87	87.98
			O	19.14	6.70	5.73
			H	2.04	-	-
			N	6.82	10.43	6.29

**Table S2.** BET surface area, pore volume, and pore size of the pristine graphite and CyGN.

Sample	Surface Area (m <sup>2</sup> /g)	Pore Volume (mL/g)	Pore Size (nm)
Graphite	2.8	0.0016	2.27
CyGN	453.4	0.4626	4.08

**Table S3.** Thermal properties of the pure ABS and CyGN&ABS-X.

Sample	TGA (N <sub>2</sub> ) <sup>a</sup>	DMA <sup>b</sup>
	T <sub>d10%</sub> (°C)	T <sub>g</sub> (°C)
Pure ABS	390.2	102.7
CyGN&ABS-1	390.5	104.8
CyGN&ABS-2	393.2	105.1
CyGN&ABS-5	393.1	106.6

a. The temperature at which 10% weight loss occurred on TGA thermogram obtained with heating rate of 10 °C/min. b. Glass transition temperature (T<sub>g</sub>) determined by DMA.