Electronic Supplementary Information (ESI)

Few-layer-graphene with high yield and low sheet resistance via mild oxidation of natural graphite

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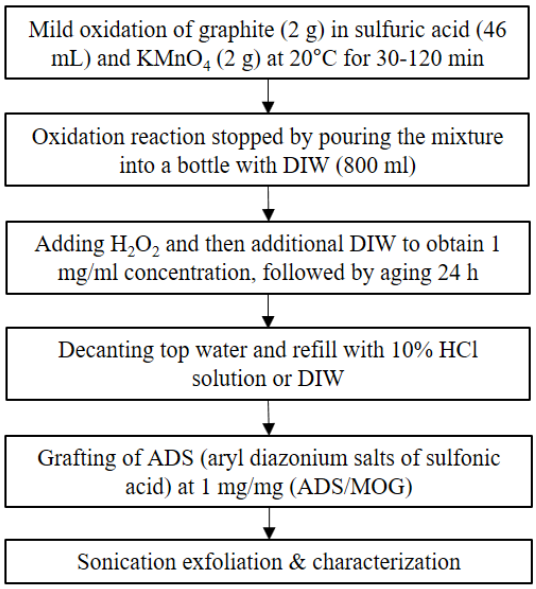

Fig. S1. Preparation process of MOG solutions

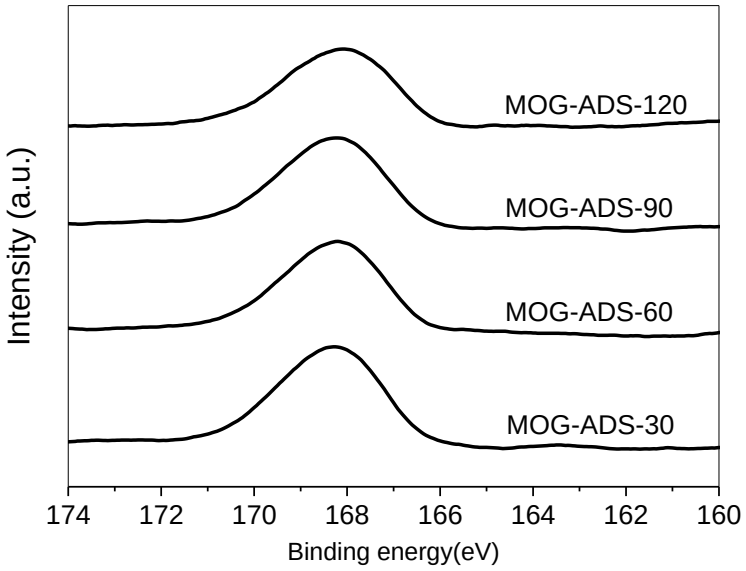

Fig. S2. XPS spectra of S_{2p} from MOG-ADS samples

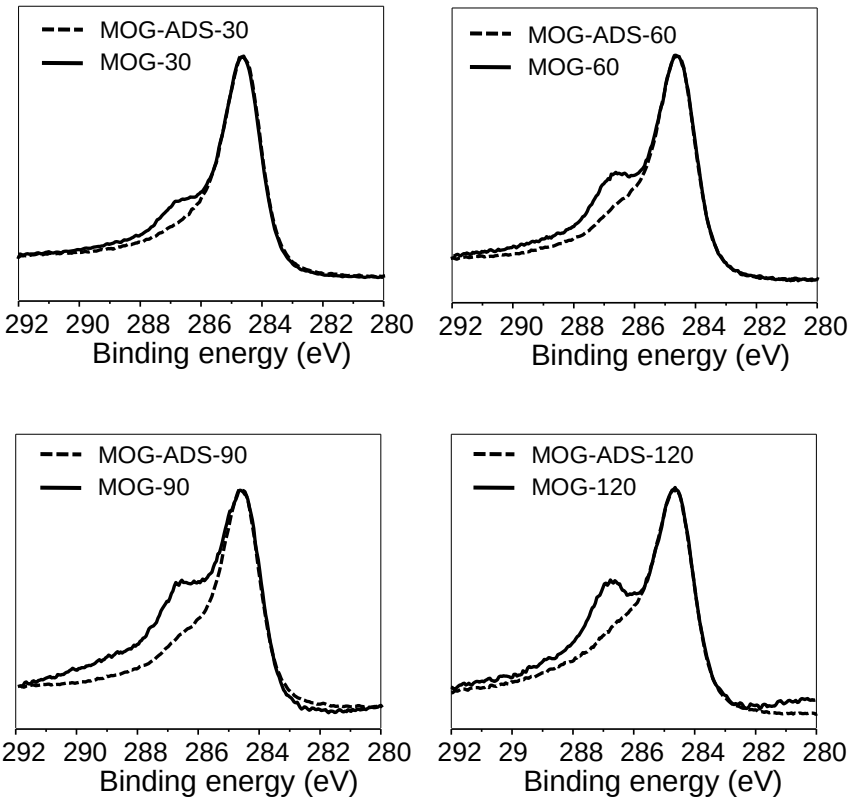

Fig. S3. Comparison of C_{1s} XPS spectra from MOG and MOG-ADS.

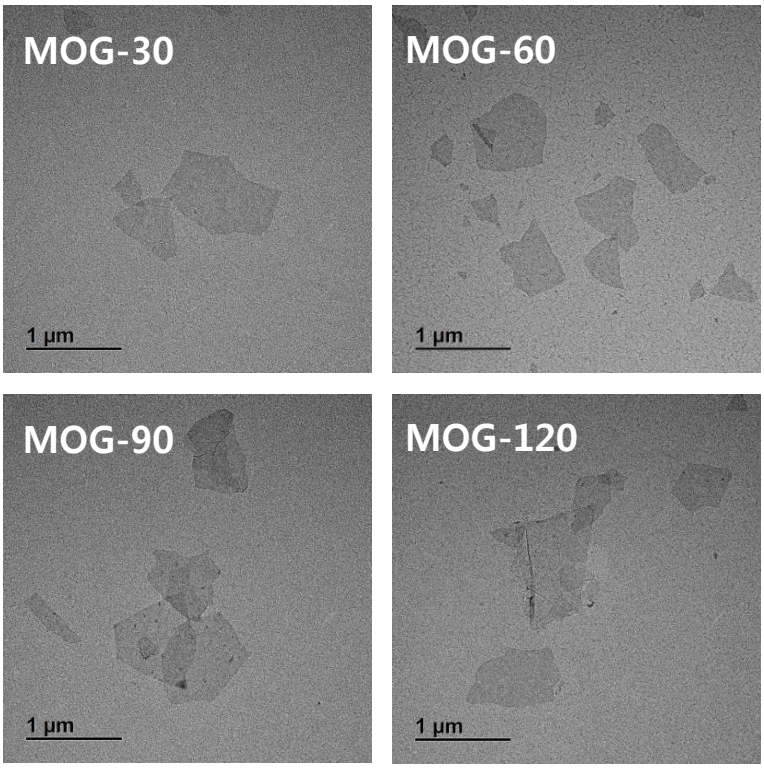

Fig. S4. TEM micrographs of MOG.

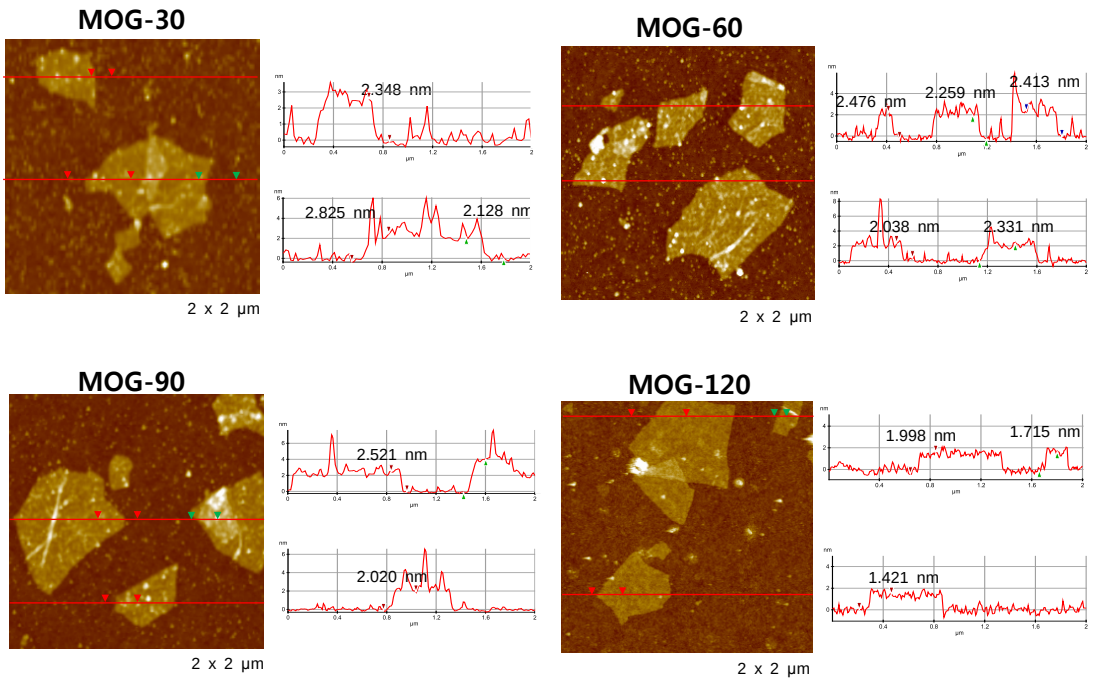

Fig. S5. AFM images of MOG

Table S1. Atomic concertation of C_{1s}, O_{1s} and S_{2p} of MOG and MOG-ADS.

	Oxidation time							
	30 min		60 min		90 min		120 min	
	MOG	MOG-ADS	MOG	MOG-ADS	MOG	MOG-ADS	MOG	MOG-ADS
C_{1s}	79.9	80.7	77.8	78.5	75.5	76.7	73.4	75.1
O_{1s}	19.3	17.1	21.5	19.6	23.8	21.7	25.8	23.4
S_{2p}	0.8	2.2	0.7	1.9	0.7	1.6	0.8	1.5
C/O ratio	4.1	4.7	3.6	4.0	3.1	3.5	2.8	3.2

Table S2. UV-vis absorbance of MOG-ADS solutions upon 1 and 36 h sonication exfoliation, and subsequent centrifugation at 1k rpm for 2h.

	Oxidation time			
	30 min	60 min	90 min	120 min
MOG-ADS	7.2	9.3	10.4	10.7
MOG-ADS-Sonication(1h)	10.3 (143%)	17.4 (187%)	16.2 (156%)	15.6 (146%)
MOG-ADS-Sonication(36h)	17.4 (242%)	22.7 (244%)	20.2 (194%)	18.3 (171%)
MOG-ADS-Sonication(36h)-Centrifugation(1k rpm/2h)	3.4 (20%)	8.4 (59%)	13.4 (75%)	15.5 (89%)

Table S3. Yield of FLG based on weight measurement upon filtering supernatant and precipitate after centrifugation

	MOG-30	MOG-60	MOG-90	MOG-120
Weight -supernatant (FLG) (mg/mL)	0.42	1.13	1.5	1.75
Weight -precipitate (mg/mL)	1.75	0.92	0.45	0.31
Total weight (mg/mL)	2.17	2.05	1.95	2.06
Yield of FLG (%)	19	55	77	85
Yield (%) from UV-vis	20	59	75	89

- Filtering 10mL solution

Table S4. Stability of MOG-based solutions via measuring UV-vis absorbance

	Oxidation time			
	30 min	60 min	90 min	120 min
MOG/MOG-ADS	7.2	9.3	10.4	10.7
MOG, 24h aging	0.3 (4%)	0.5 (5%)	0.5 (5%)	0.8 (8%)
MOG-ADS, 24h aging	2.5 (35%)	2.9 (37%)	2.9 (28%)	3.2 (30%)
MOG-ADS-Son(36h)-Centri(1k rpm/2h)	3.4	8.4	13.4	15.5
MOG-ADS-Soni(36h)-Centri(1k rpm/2h), 24h aging	3.2 (88%)	8.1 (97%)	13.1 (98%)	15.2 (98%)
MOG-ADS-Soni(36h)-Centri(1k rpm/2h), 4 week aging	2.7 (79%)	7.1 (85%)	11.5 (86%)	13.3 (86%)

Soni : sonication, Centri : centrifugation