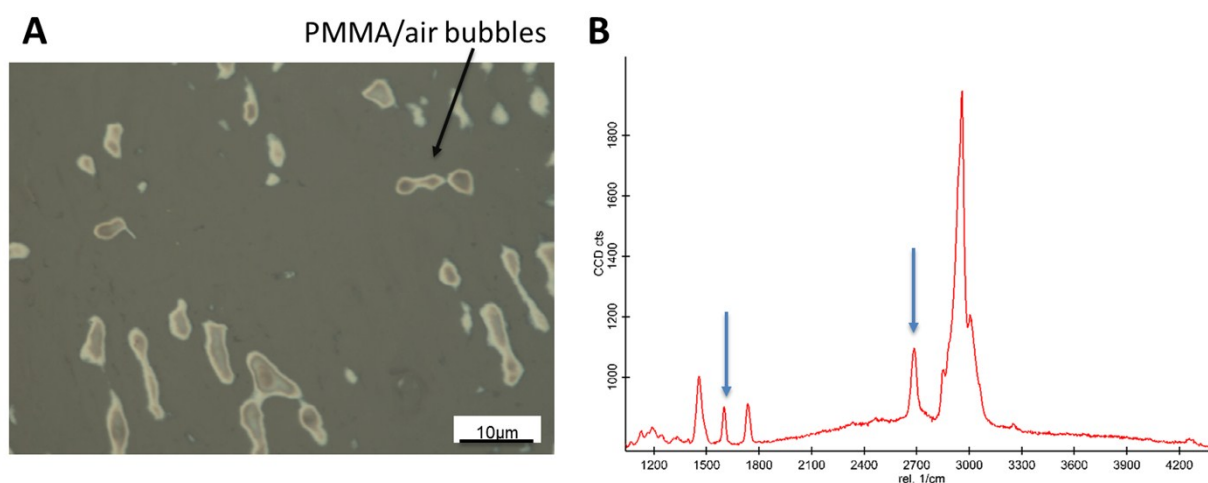


Supplementary information

Supplementary figure S1. Characterization of disks of CVD-graphene monolayers by optical microscopy (A) and Raman spectroscopy (B).



Supplementary figure S2. Assessment of technical proficiency on RhE, testing the ten Proficiency substances (PS) according to the OECD TG 431. The table reports the % of RhE viability after PS exposure following the SkinEthic™ Skin Irritation Test^{42bis} and are the mean \pm SE of three independent experiments. Irritancy classification was defined on the basis of the threshold given by the OCED TG 439.

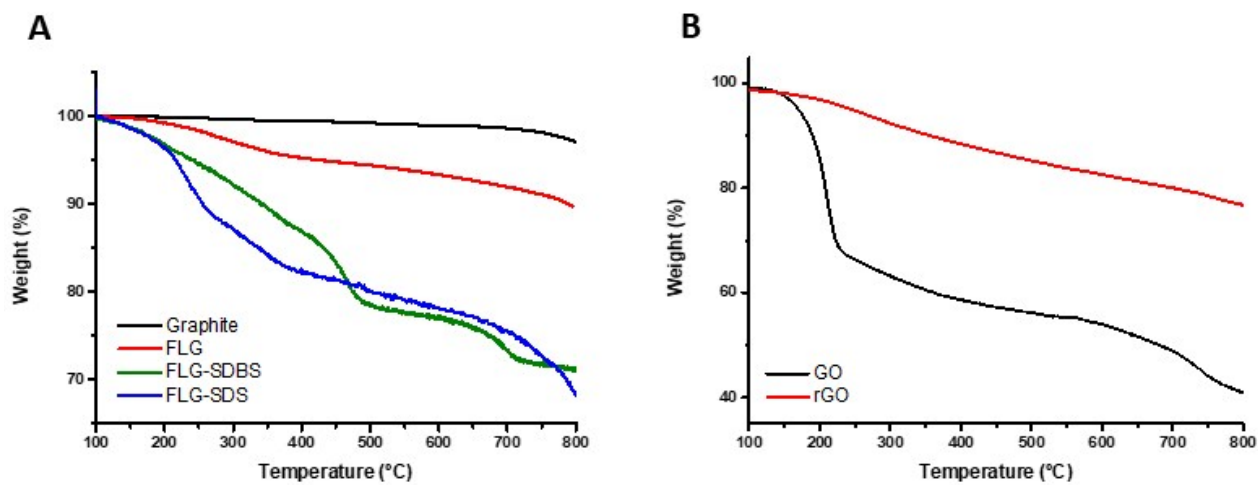
	% viability (mean \pm SE)	Viability reduction (%)	Irritancy classification
naphthalene acetic acid	102 \pm 1	-2	NI
isopropanol	92 \pm 4	8	NI
methyl stearate	99 \pm 5	1	NI
heptyl butyrate	91 \pm 3	9	NI
hexyl salicylate	85 \pm 8	15	NI
cyclamen aldehyde	2 \pm 1 ***	98	I
1-bromohexane	14 \pm 7 ***	86	I
potassium hydroxide	1 \pm 1 ***	99	I
1-methyl-3-phenyl-1-piperazine	2 \pm 1 ***	98	I
heptanal	2 \pm 1 ***	98	I

Statistical differences vs vehicle controls: ***, $p < 0.001$ (One-way ANOVA and Bonferroni's post test).

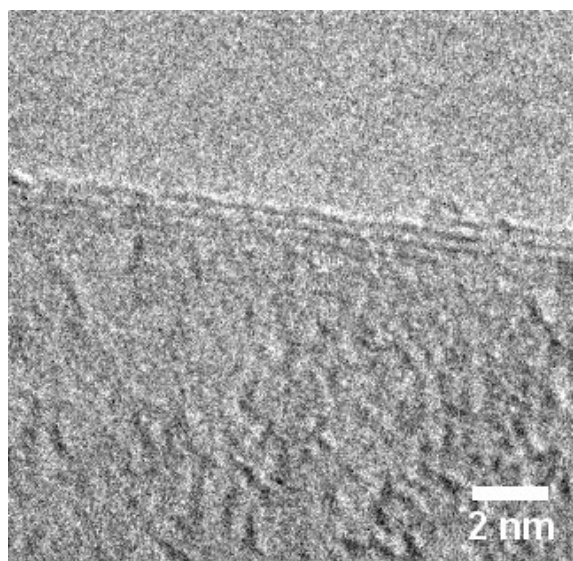
NI = Non-irritant substance

I = Irritant substance

Supplementary figure S3. TGA analyses for the starting graphite, FLG, FLG-SDS and FLG-SDBS (A) and for GO and rGO materials (B).



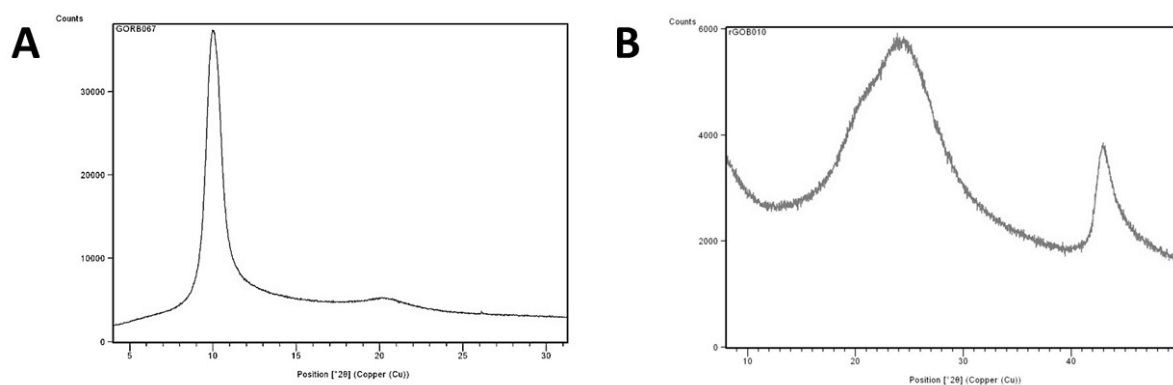
Supplementary figure S4. HRTEM picture of FLG.



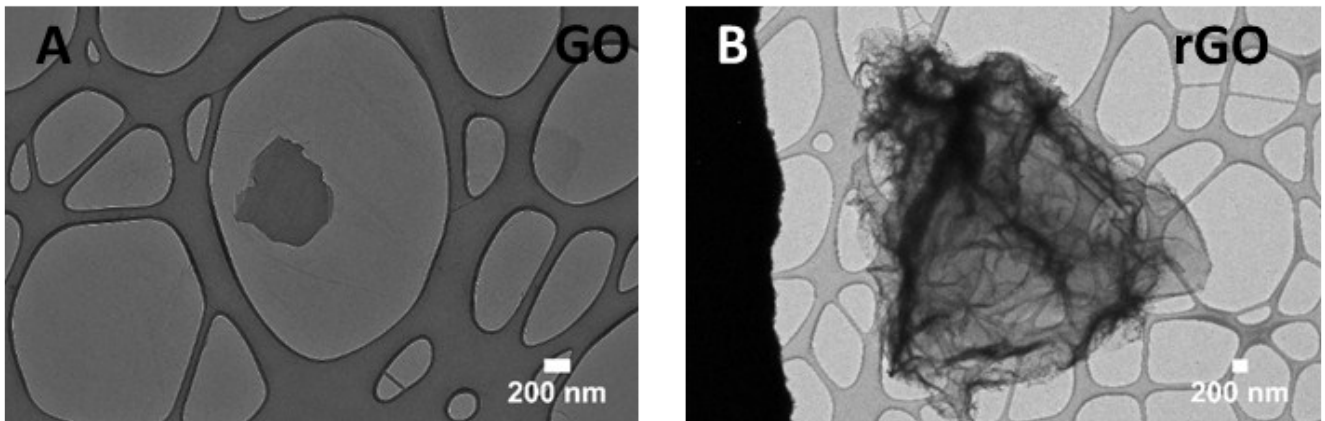
Supplementary figure S5. Total reflection X-Ray fluorescence (TXRF) of FLG.

Element	Line	Conc./ mg/l	Sigma/ mg/l	RSD/ %	LLD/ mg/l	Net area	Backgr.	Chi
Si	K12	37.76	0.25	0.7	0.15	28305	1347	2.83
S	K12	1.262	0.029	2.3	0.040	3473	1320	0.99
Cl	K12	0.075	0.012	16.1	0.024	342	1329	1.45
K	K12	0.205	0.007	3.4	0.011	2030	1240	1.12
Ca	K12	0.830	0.010	1.2	0.009	9952	1175	1.68
Ti	K12	4.214	0.016	0.4	0.005	96502	1311	1.70
V (IS)	K12	4.000	0.014	0.3	0.004	115466	1399	1.46
Fe	K12	0.074	0.001	1.8	0.001	4102	580	1.19
Co	K12	0.024	0.001	3.3	0.001	1602	575	0.80
Ni	K12	0.004	0.000	11.4	0.001	347	596	0.90
Cu	K12	0.016	0.001	3.6	0.001	1562	741	1.12
Zn	K12	0.055	0.001	1.5	0.001	6084	858	0.89
Br	K12	0.003	0.000	7.1	0.000	588	571	0.88

Supplementary figure S6. XRD analysis of GO (A) and rGO (B).



Supplementary figure S7. Representative TEM images of GO (A) and rGO (B).



Supplementary figure S8. MTT interference with GBMs-exposed RhE media. RhE tissues were exposed to GBMs for 42 minutes followed by 42 hours post-incubation without the materials. After treatment, RhE media were collected and 100 μ L of each was exposed to 10 μ L of MTT reagent (5 mg/mL) for 3 hours at 37°C and the absorbance read at 570 nm. As a comparison, 100 μ L of the same RhE media were exposed to 10 μ L of the WST-8 reagent for 3 hours at 37°C and the absorbance read at 450 nm. Results are the mean \pm SE of three independent experiments.

