Electronic Supplementary Material (ESI) for Nanoscale Advances.

One-pot carboxyl enrichment fosters water-dispersibility of reduced graphene oxide: a combined experimental and theoretical assessment

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SUPPLEMENTARY MATERIAL

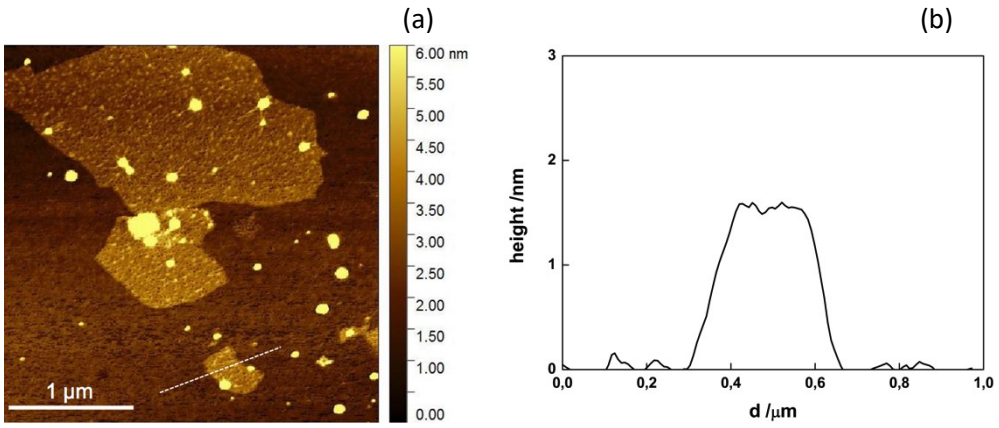

Figure S1. (a) AFM-tapping mode image of GO. (b) Height profile of the dashed line of figure a.

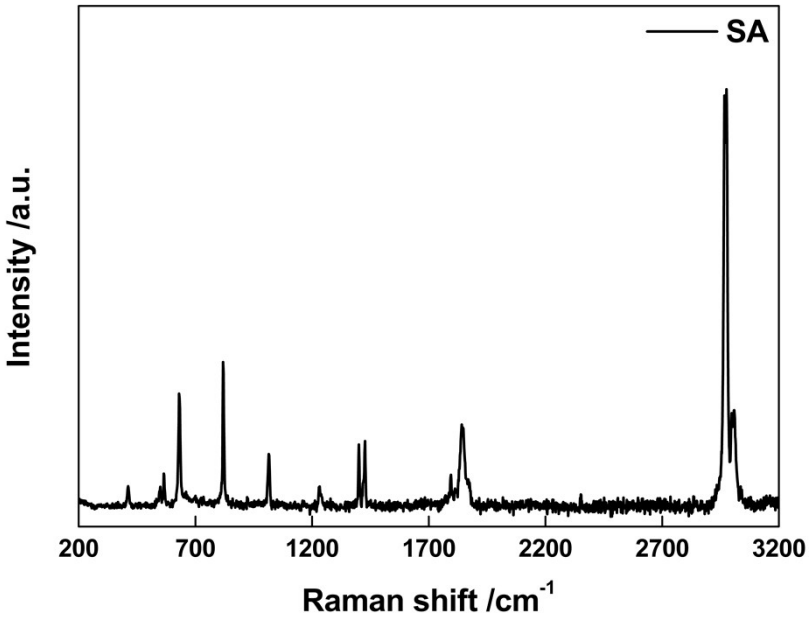

Figure S2. Raman spectrum of succinic anhydride

Table S1. Position (eV)/FWHM (eV) values of peaks resulting from curve-fitting of C 1s XPS spectra of GO, C-GO, F-GO, C-RGO and RGO.

Sample	C=C	C-OH	C-O-C	C=O + COO^-	COOH	$-CH_2-$	$-CF_2-$
GO	284.8/1.6	286.4/1.0	287.0/1.1	288.1/1.3	289.2/1.6	-	-
C-GO	284.8/1.3	286.6/1.1[a]	287.1/1.3	288.2/1.2	289.3/1.3	285.4/1.5	-
F-GO	284.8/1.4	286.5/1.2[a]	287.0/1.2	288.3/1.5	289.2/1.3	-	290.0/1.5
C-RGO	284.8/1.3	286.3/1.3[a]	286.8/1.3	288.3/1.2	289.5/1.2	285.5/1.4	-
RGO	284.8/1.2	286.3/1.4	286.8/1.5	288.0/1.8	289.0/1.6	-	-

[a]In C-GO, F-GO and C-RGO the C-OH signal is also contributed by the estereal *C*-O(C=O)- atoms of graphene oxide bound to the succinate moiety, which display the same BE as C-OH.

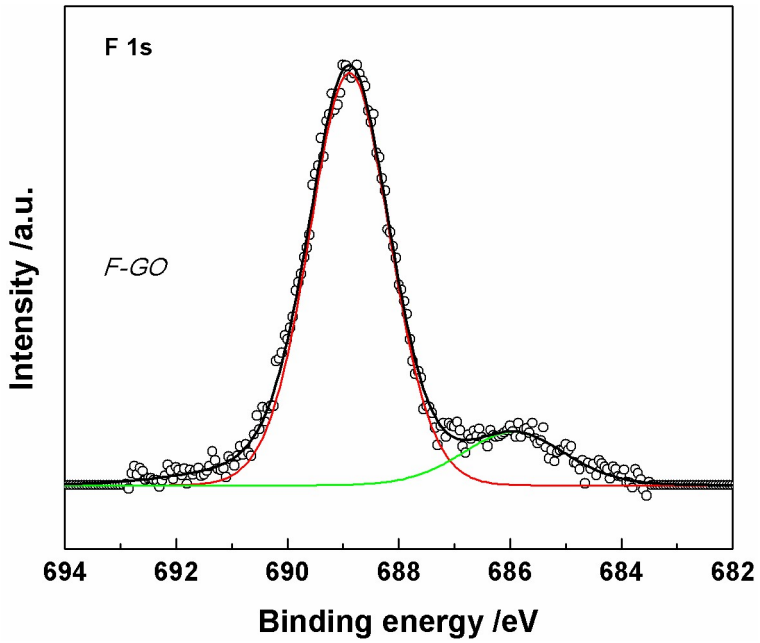

Figure S3. XPS spectrum in the F 1s region of F-GO. Predominant component at 689.0 eV is attributed to $–CF_2–$ groups in succinate moieties appended to GO sheets. Minor component at 686 eV is compatible with ionic F atoms, its origin is uncertain.

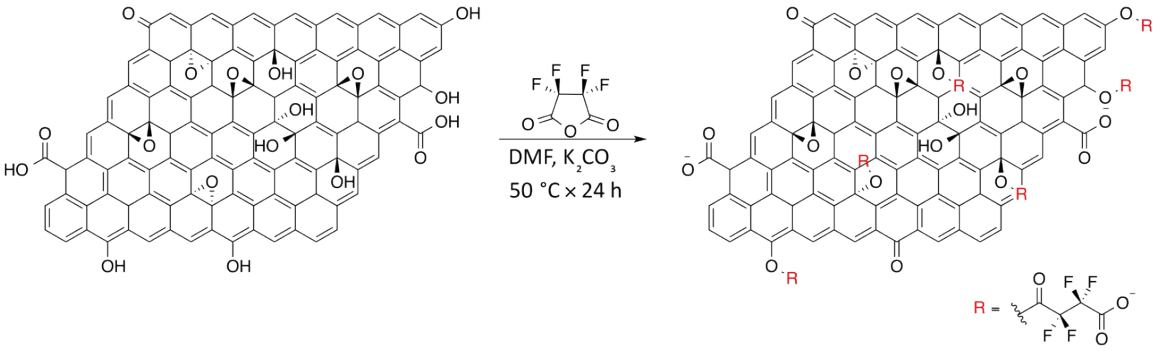

Figure S4. Reaction scheme for the synthesis of F-GO.