Electronic Supplementary Information

N-acetyl cysteine biocompatibly reduces graphene oxide and persists at the surface as a green radical scavenger

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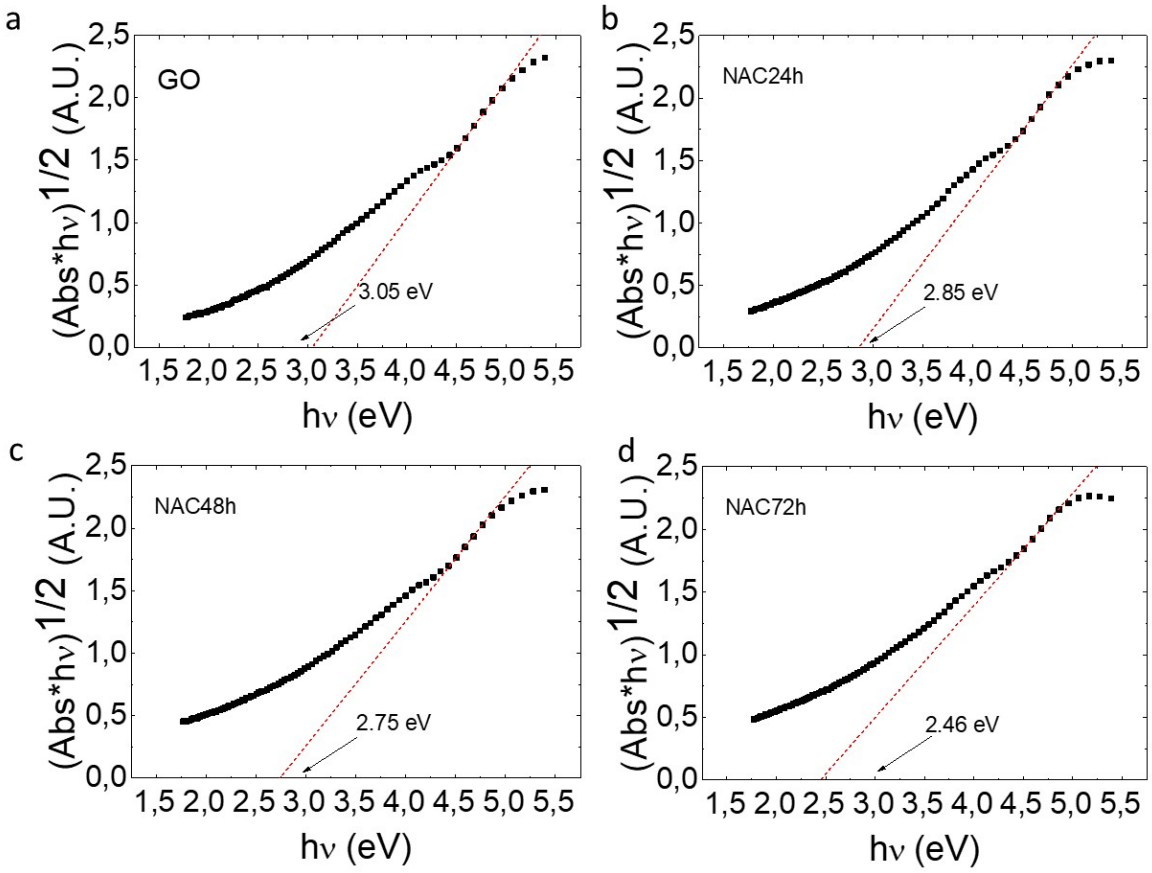

Figure S1. Tauc plots for indirect optical bandgap energy determination of GO (a) and reduced GO after 24 hours (NAC24h) (b), 48 hours (NAC48h) (c) and 72 hours (NAC72h) (d).

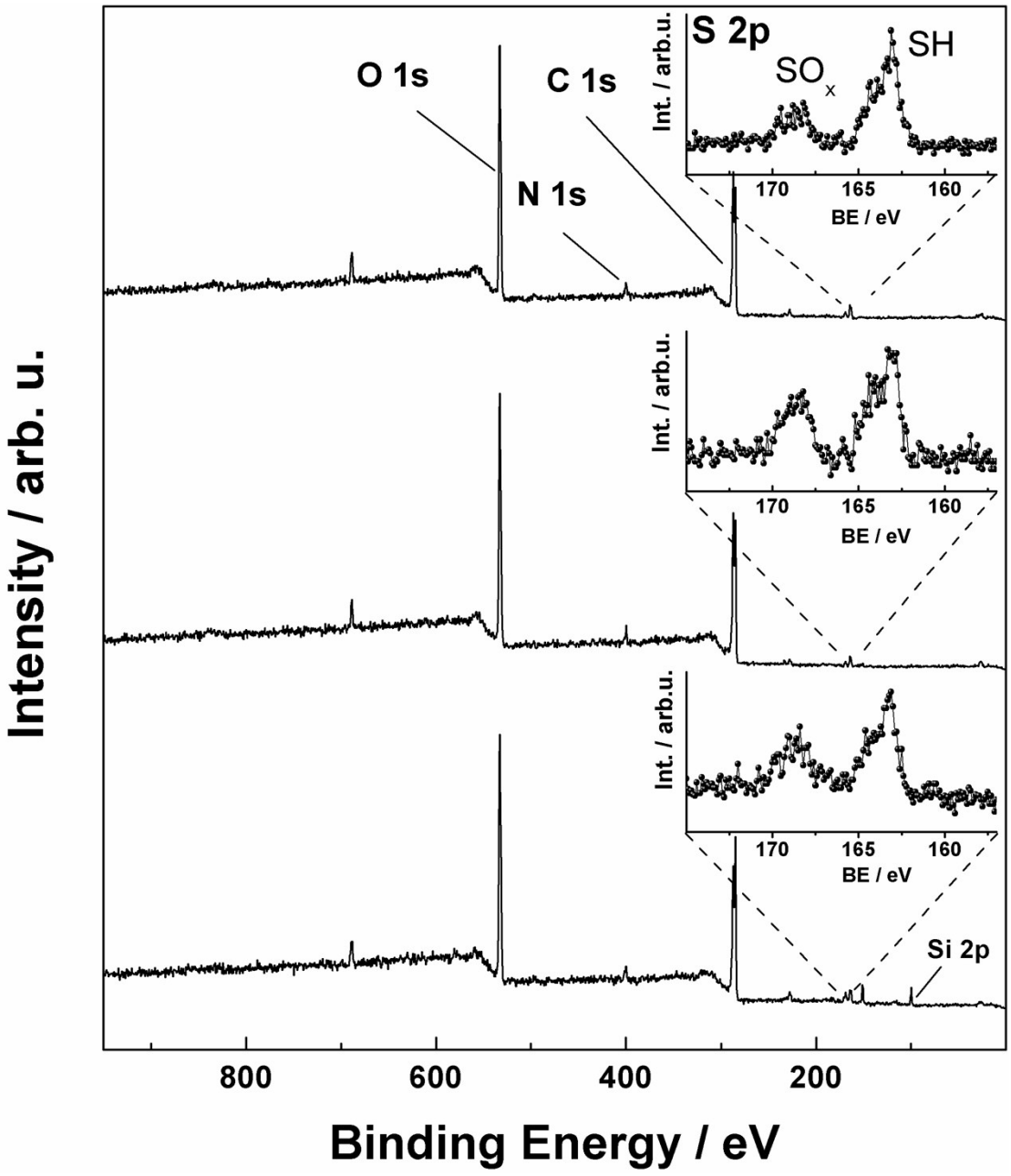

Figure S2 Wide XP spectra for the (top) NAC16h, (middle) NAC24h and (bottom) NAC72h samples. Main photoemission peaks are labeled and insets show S 2p region reporting both SH and SO_x contributions (see main text).

Table S1. XPS atomic ratios associated to sulphur species with respect to total carbon.[a]

	S_{TOT}[b]/C	S_H[c]/C	S_{ox}[d]/C
GO	0.022	-	0.022
NAC16h	0.046	0.032	0.014
NAC24h	0.035	0.023	0.012
NAC72h	0.053	0.029	0.024

[a] Total carbon from C 1s region.
[b] $S_{TOT} = S_H + S_{ox}$, from S 2p region.
[c] S_H from peak around 163 eV in S 2p region.
[d] S_{ox} from peak around 169 eV in S 2p region

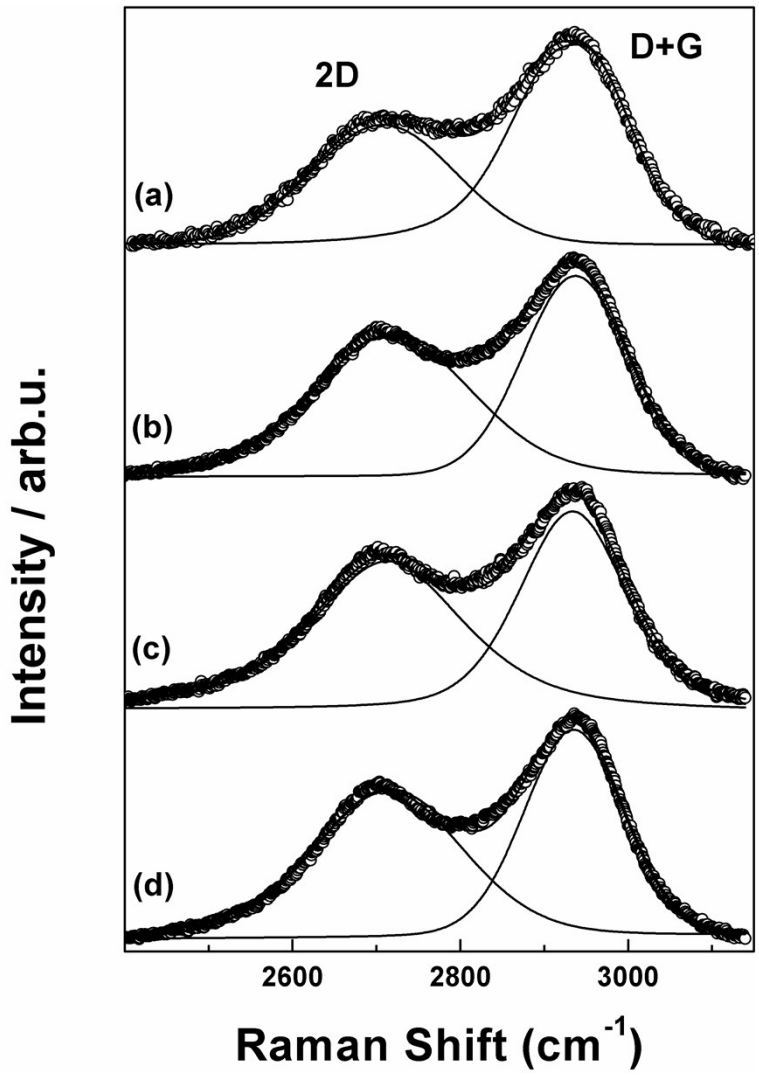

Figure S3 Raman spectra in the high wavenumber region of the (a) GO, (b) NAC16h, (c) NAC24h and (d) NAC72h samples. Experimental data (empty circles) are overlapped with theoretical fitting results (continuous curves).

Experimental Procedures for glutathione reduction evaluation

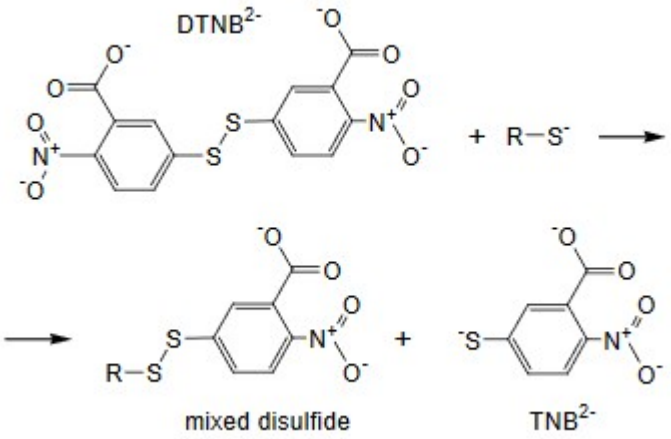

Figure S4 Scheme of Ellman's reagent reduction from manufacturer manual (Termofisher) To quantify GO and NAC72h samples ability to oxidize glutathione (GSH) we used Ellman's Reagent (Termofisher). According to manufacturer's conditions we mixed 2.5 ml of Reaction Buffer (0.1M sodium phosphate, pH 8.0, 1mM EDTA), 50µL of Ellman's Reagent Solution (4 mg of 5,5'-dithio-bis-(2-nitrobenzoic acid), DTNB, in 1 ml of Reaction Buffer) and 250 µL of each test sample. Test samples were obtained by mixing a fixed quantity of GO/NAC72h (final concentration 50 $\mu g mL^{-1}$) and glutathione (GSH) at final concentration of 0,8 mM. Blank consisted in Reaction Buffer alone. Diamide (TMAD) has been used as the positive control for complete oxidation of GSH at a 10 nM concentration.