

Synthesis of graphene aerogels using cyclohexane and n-butanol as soft template

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Supporting

Experimental methods

Synthesis of graphene oxide (GO): Graphene oxide was prepared by a modified Hummers method¹. Typically, a 9:1 mixture of concentrated H₂SO₄/H₃PO₄(270:30 ml) was added to a beaker with 3 g graphite flakes (80 mesh). The mixture was cooled to 2°C and stirred for 2h, then 13.5g KMnO₄ was added to the beaker in batches for about 1h. The reaction was then heated to 50°C and stirred for 6h, after that, 300 ml of water was slowly added to the beaker, producing a severe exotherm to 80-100°C. After the mixture was naturally cooled, the remaining KmnO₄ was removed by 10 ml H₂O₂(30%) and produced a lot of bubbles. For workup, the mixture was washed twice with 1 mol/l hydrochloric acid, then was washed with deionized water to neutrality and dried for use.

Characterization of graphene oxide

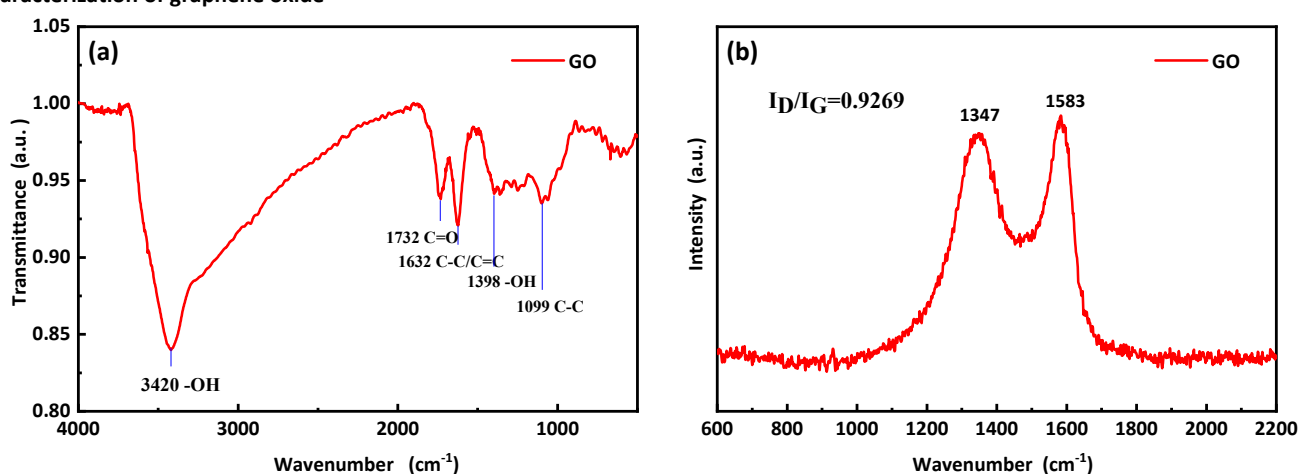


Fig. S1: (a) FTIR spectra of GO, (b) Raman spectra recorded using 514 nm laser excitation

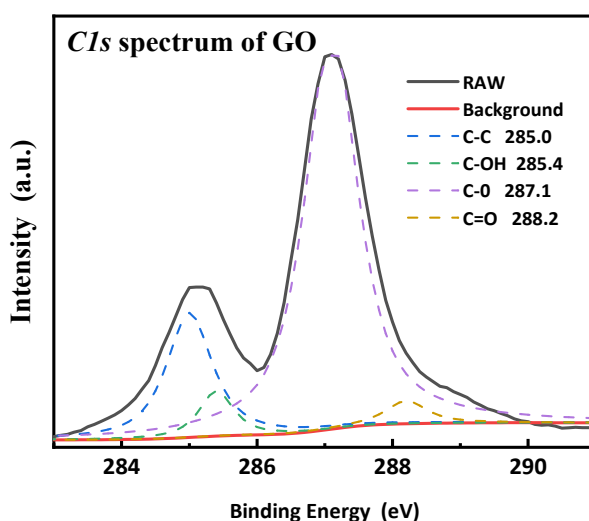
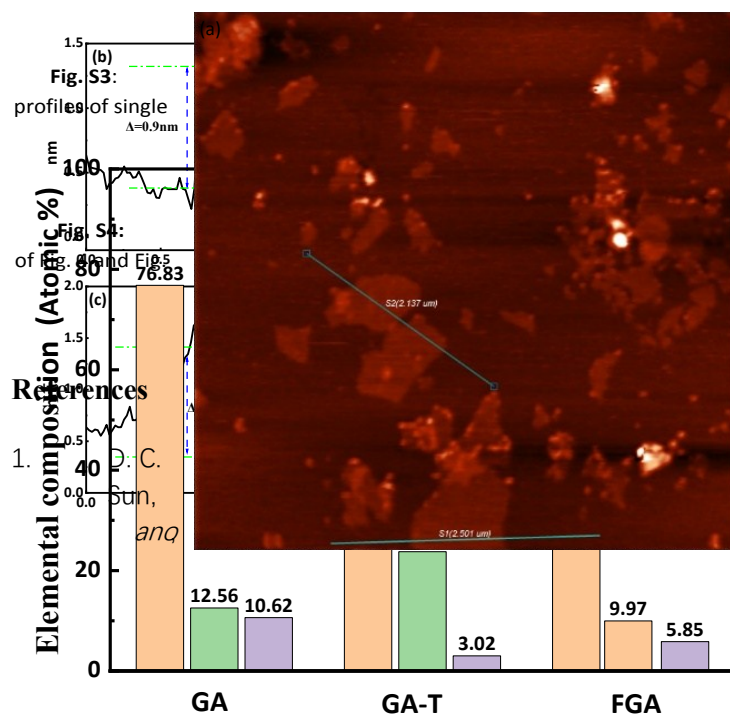


Fig. S2: C1s XPS spectra of GO

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(a) Tapping mode AFM topographic images, (b) and (c) height profiles of single GO sheets

elemental analysis of GA, GA-T and FGA (referred to XPS analysis 5 in the main document)

Marcano, D. V. Kosynkin, J. M. Berlin, A. Sinitskii, Z. Z. A. Slesarev, L. B. Alemany, W. Lu and J. M. Tour, *ACS* 2010, **4**, 4806-4814.