Supplementary Material (ESI) for RSC Advances

Surface modification and partial reduction of three-dimensional macroporous graphene oxide scaffolds for greatly improved adsorption capacity**

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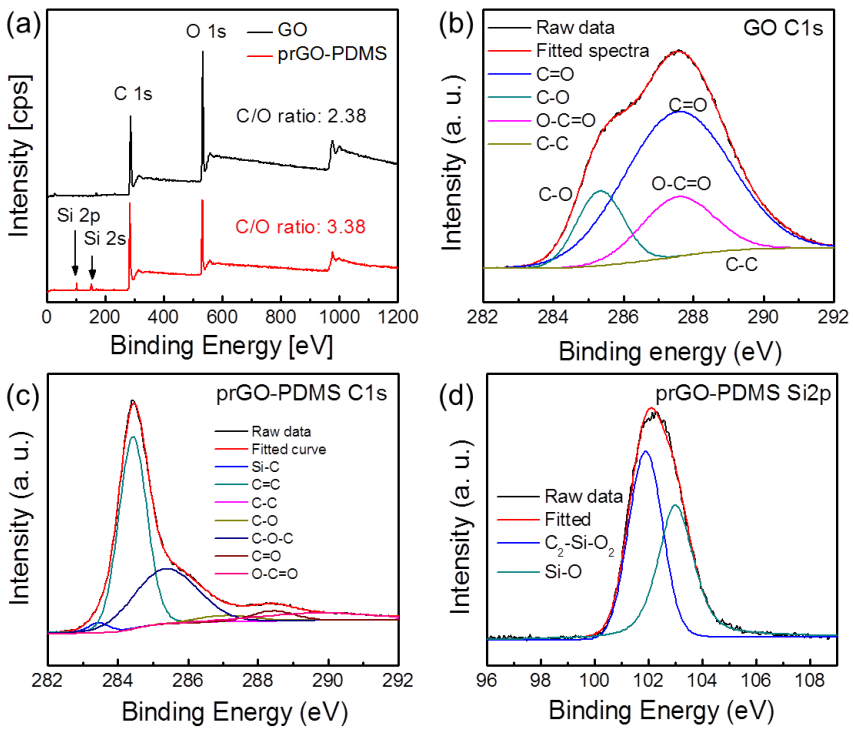

Fig. S1 (a) XPS survey spectra of the GO scaffold and the prGO-PDMS macrostructure with C/O ratios of both samples. XPS spectra and deconvolution of (b) C1s of GO, (c) C1s of prGO-PDMS, and (d) Si2p of prGO-PDMS. The peaks in the C1s of GO were assigned to the C-O, C=O, O-C=O, and C-C modes.[1] The C1s spectra of prGO-PDMS showed the peaks corresponding to Si-C, C-O, C-O-C, C=O, C=C, and C-C bonds. In the specific S2p XPS spectra of prGO-PDMS, Si-O and C_2-Si-O_2 bonds were detected.[2]

1. S. J. Yang, J. H. Kang, H. Jung, T. Kim and C. R. Park, *J. Mater. Chem. A*, 2013, **1**, 9427.

2. D. Lee and S. Yang, *Sensor. Actuat. B*, 2012, 162, 425.

Table S1. The adsorption capacities of GO scaffold and prGO-PDMS macrostructure for a series of oils and organic solvents related to the densities of adsorbates at room temperature.

*adsoprtion capacity, $k = (W_{\text{saturated weight}} - W_{\text{initial}})/(W_{\text{initial}})$

Adsorbate	Chloroform	Chlorobenzene	Toluene	Acetone	Ethanol	Si-oil	Motor oil	Diesel oil
k (GO)	50	32	21	39	40	44	22	29
k (prGO-PDMS)	151	113	65	62	56	117	30	33
density (g/cm^3)	1.483	1.11	0.87	0.791	0.789	0.93	0.89	0.72
$k_{\text{prGO-PDMS}}/k_{\text{GO}}$	3.02	3.53	2.95	1.59	1.4	2.65	1.36	1.13

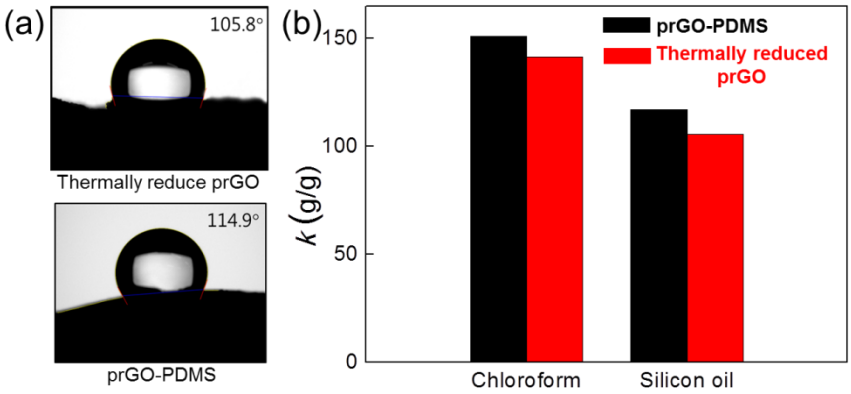

Fig. S2 (a) Contact angles of the thermally reduced prGO and the prGO-PDMS structures. (b) Comparison of the adsorption capacities of thermally reduced prGO structure with those of the prGO-PDMS structure. $k_{\text{chloroform}}$ in the prGO-PDMS and the prGO is 151 and 141 and $k_{\text{silicon-oil}}$ in the prGO-PDMS and the prGO is 117 and 105, respectively.