Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Supporting Information

Molecular Pillars Supported Graphene Oxide Framework:

Conformational Heterogeneity to Tunable d-Spacing

Harshal P Mungse, Raghuvir Singh, Hiroyuki Sugimura, N. Kumar and Om P Khatri*

Table S1: Infrared vibration frequencies of GO and GOFs with their vibrational assignment

GO	GOFs				Vibrational Assignment
	GO-BA	GO-OA	GO-DDA	GO-ODA	
-	3452_b	3452_b	3455_b	3442_b	ν(N-H) / ν(O-H)
3419.2	-	-	-	-	ν(O-H)
-	2954.3, 2924.1, 2854.9	2949.4, 2921.8, 2850.8	2953.0, 2920.3, 2850.3	2954.3, 2920.0, 2850.2	ν_a & ν_s(C-H), CH_2 / CH_3 groups
1731.8	-	-	-	-	ν(C=O), carboxyl groups
1621.8	-	-	-	-	δ(H_2O) / ν(C=C)
-	1616.4	1616.6	1616.4	1619.7	δ(N-H)
-	1581.2	1580.8	1581.1	1581.9	ν(C=C), graphitic domains
-	1461.8	1463.1	1466.1	1467.4	δ(C-H), methylene groups
1373.0	-	-	-	-	δ(O-H), hydroxyl groups
	-	-	1361.7	1367.5	δ(C-H), methyl groups
1263.1	-	-	-	-	ν(C-O) phenols / ethers / epoxy
-	1220.8	1218.1	1221.0	1232.7	ν(C-N) / ν(C-O) phenols / ethers / epoxy
1064.5	-	-	-	-	ν(C-O) hydroxyl groups

Figure S1

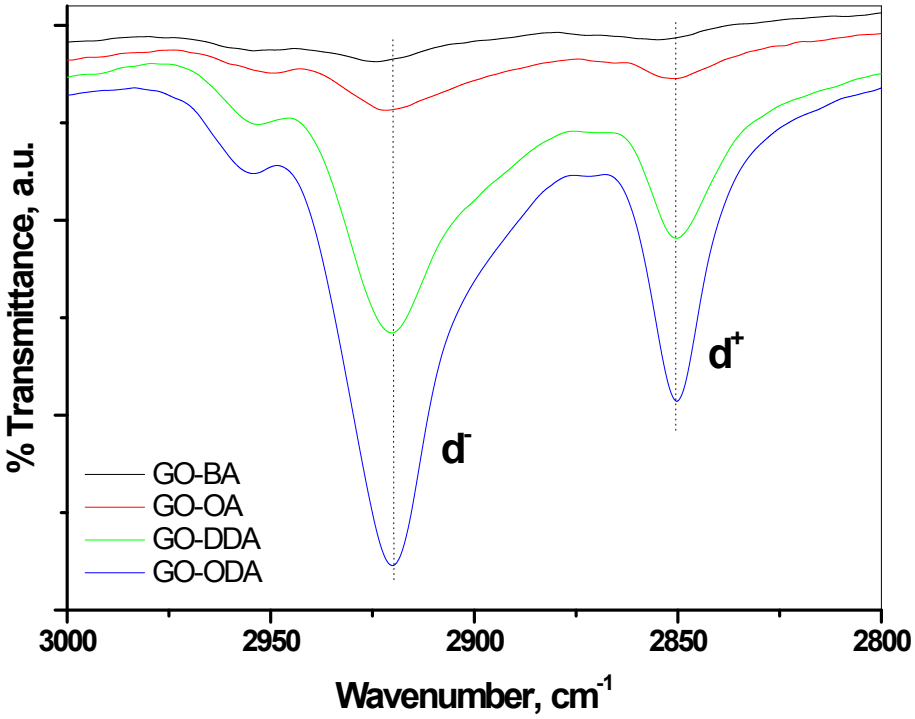

Figure S1. FTIR spectra of GOFs, illustrating the shifts in C-H stretches as a function of alkyl chain length.

Figure S2

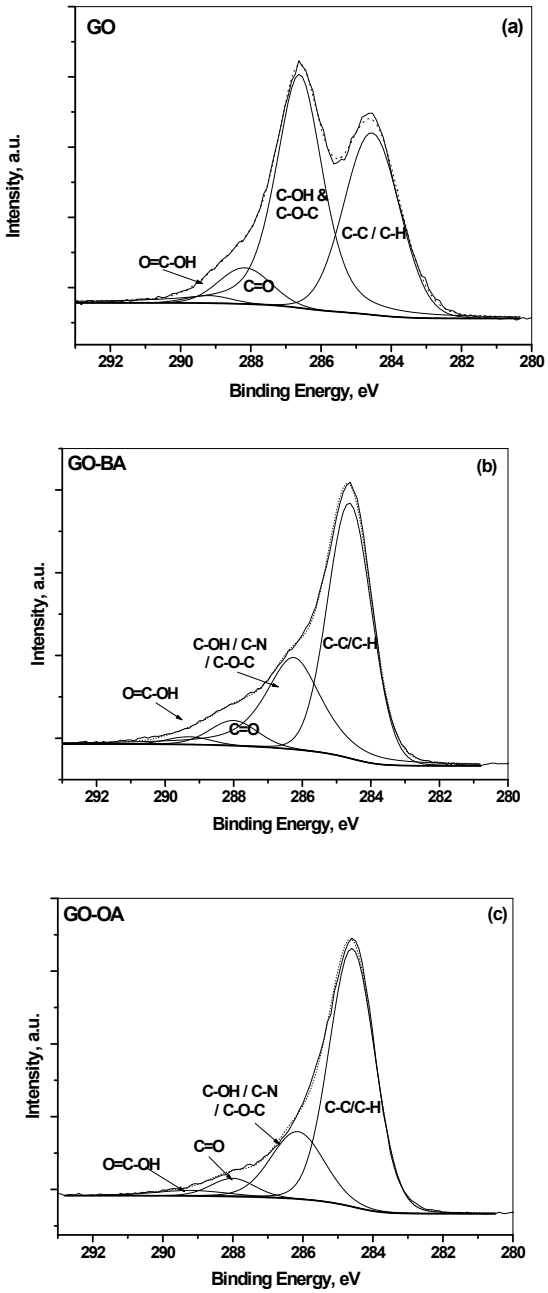

Figure 2. High resolution C1s XPS spectra for (a) GO, (b) GO-BA, and (c) GO-ODA samples along with their deconvoluted peak components.

Figure S3

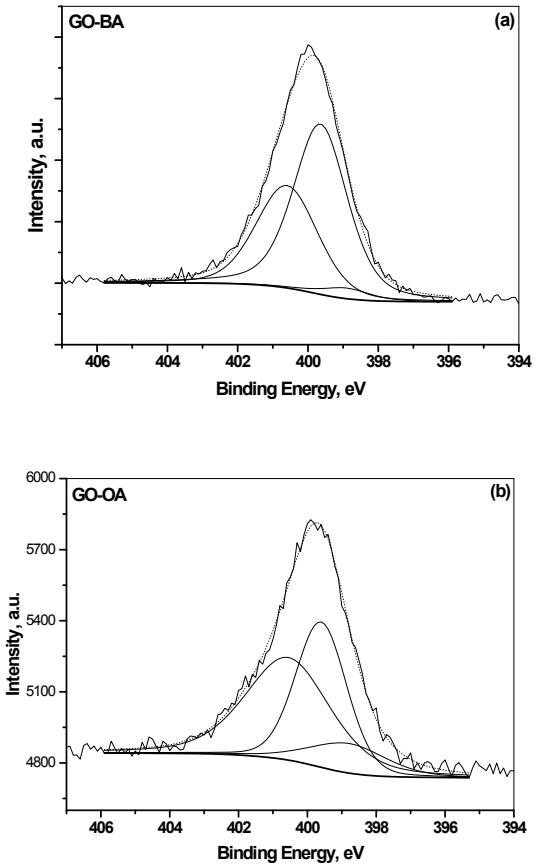

Figure S3. High resolution N1s XPS spectra for (a) GO-BA and (b) GO-OA samples along with their deconvoluted peak components.

Figure S4

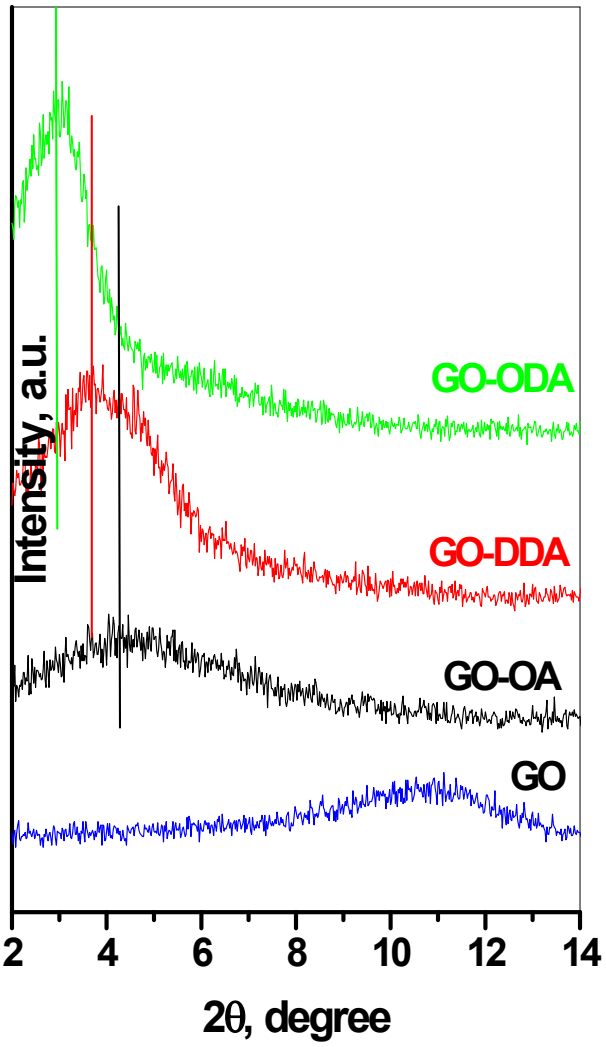

Figure S4. Powder XRD spectra of GO and GOFs (OA, DDA, ODA) over the range of 2θ = 2 to 14 °, demonstrating characteristics intercalated features.

Figure S5

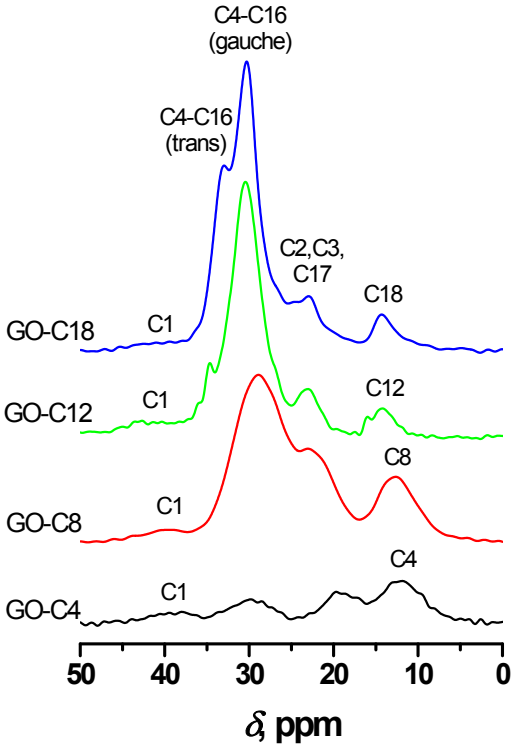

Figure S5. ^{13}C CPMAS SS NMR spectra of GOFs as a function of variable alkyl chain length of *n*-alkylamines.