Supporting Information

Correlation between Molecular Structure and Interfacial Properties of Edge or Basal Plane Modified Graphene Oxide

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Table S1. *The formulation of the emulsions.*

	Abbreviation	Description	Concentration (w. t.%)
Emulsifier	GOs	Pristine GO and fGOs	0.01
	TW 20	Polyoxyethylene (20) sorbaitan monolaurate	4.00
Oil phase	PAO 8	Poly alpha olefin	3.00
Water phase	TR-1	Acrylates/C10-30 alkyl acrylate crosspolymer	0.15
	NaOH	Sodium hydroxide	q. s.
	H_2O	Pure water	to 100

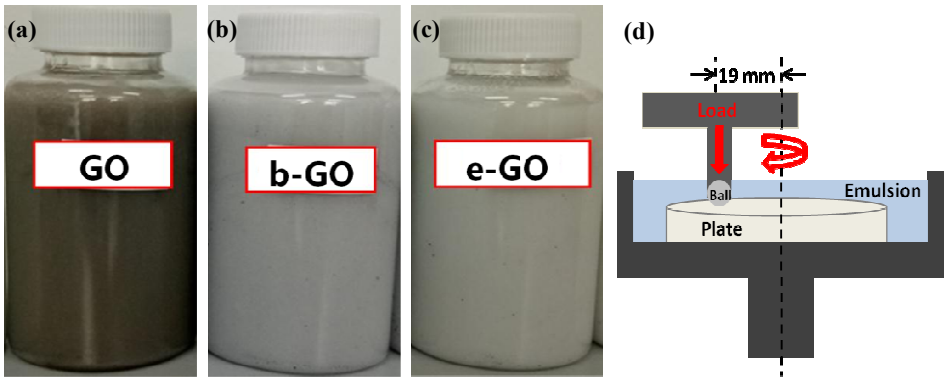

Figure S1. *Images of emulsions with (a)GO, (b)b-GO and (c)e-GO; (d)ball-on-disc friction testing model.*

Table S2. *Theoretical calculation of d-spacing of GO, b-GO and e-GO.*

Samples	**20 (°)**	***d*-spacing (nm)**
GO	10.6	0.75
b-GO	21.3	0.37
e-GO	22.9	0.34

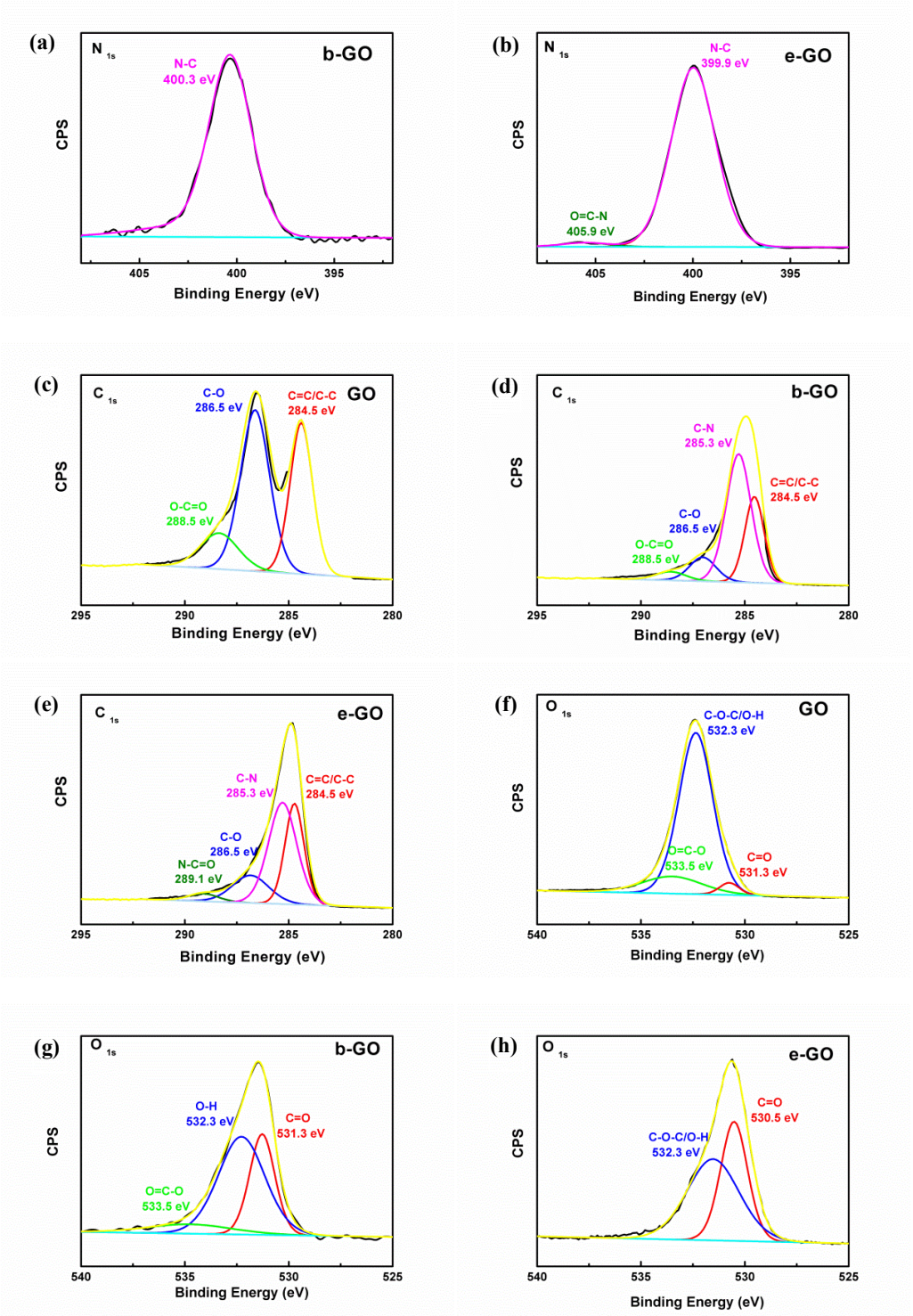

Figure S2. *XPS N 1s spectra of (a) b-GO and (b) e-GO. XPS C 1s spectra of (c) GO, (d) b-GO and (e) e-GO. XPS C 1s spectra of (f) GO, (g) b-GO and (h) e-GO.*

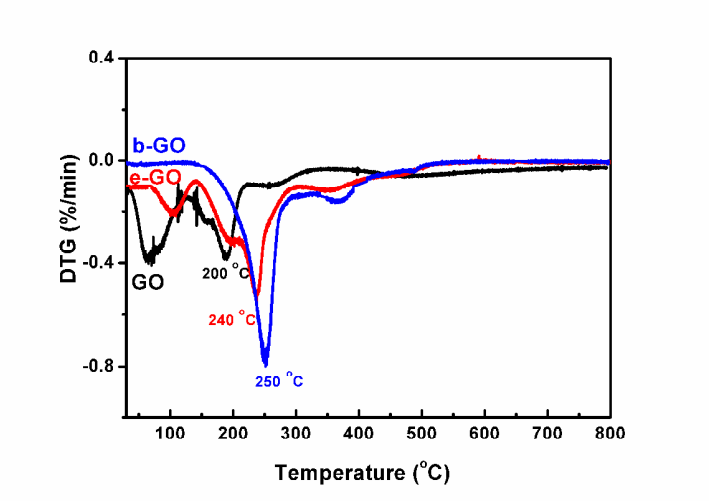

Figure S3. *The DTG of GO, b-GO and e-GO.*

Table S3. *Summary of the decomposition steps for GO, b-GO and e-GO. The table indicates the step number, the initial and final temperature (T_i and T_f), mass change (Δm) of the corresponding process[#] and the residue at 800 °C for each sample.*

Samples	Step	T_i (°C)	T_f (°C)	Δm(%)	Residue(%)
GO	1	25	134	26	26
	2	134	220	20	
	3	220	800	28	
b-GO	1	25	175	2	37
	2	175	270	36	
	3	270	508	25	
e-GO	1	25	142	19	23
	2	140	280	38	
	3	282	493	20	

[#]*Step 1: Water evaporation; Step 2: Decomposition of less stable groups; Step 3: Decomposition of more stable groups*