

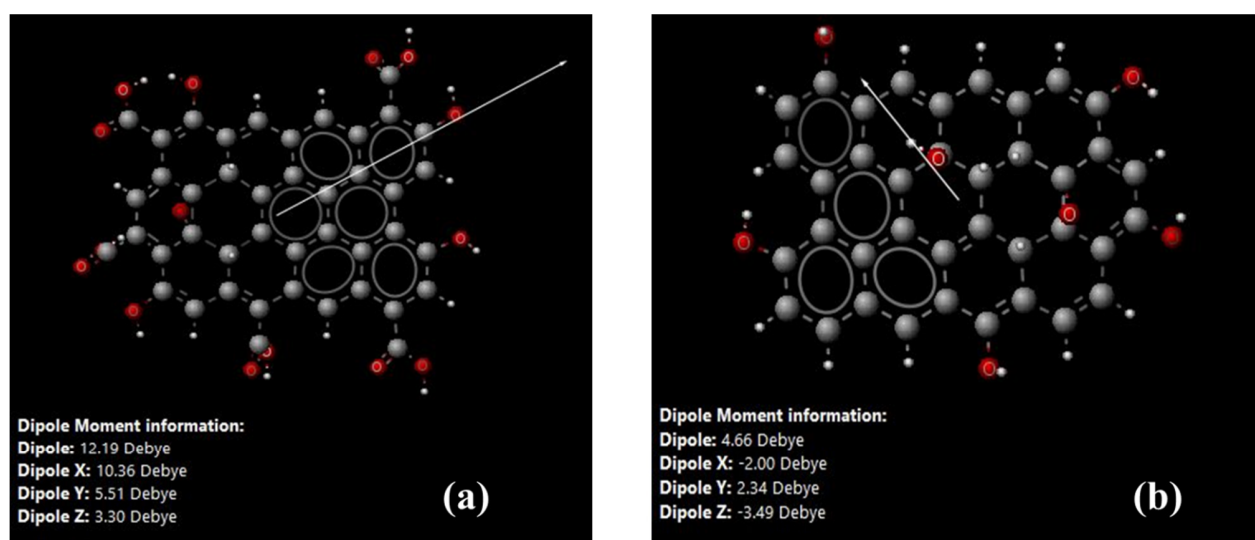
Supplementary Files

Effects of Graphene Oxide (GO) and Reduced Graphene Oxide (rGO) on Green-Emitting Conjugated Copolymer's Optical and Laser Properties Using Simulation and Experimental Studies

Saradh Prasad *, Raya H. Alhandel, Nassar N. Asemi and Mohamad S. AlSalhi

Research Chair on Laser Diagnosis of Cancers, Department of Physics and Astronomy, College of Science, P.O. Box 2455, King Saud University, Riyadh 11451, Saudi Arabia;
nassarasemi@gmail.com (N.N.A.); malsalhi@ksu.edu.sa (M.S.A.)

* Correspondence: srajendra@ksu.edu.sa; Tel.: +966-50-101-5786



Dipole moment of (a) GO and (b) rGO

Figure S1 Dipole moment calculation

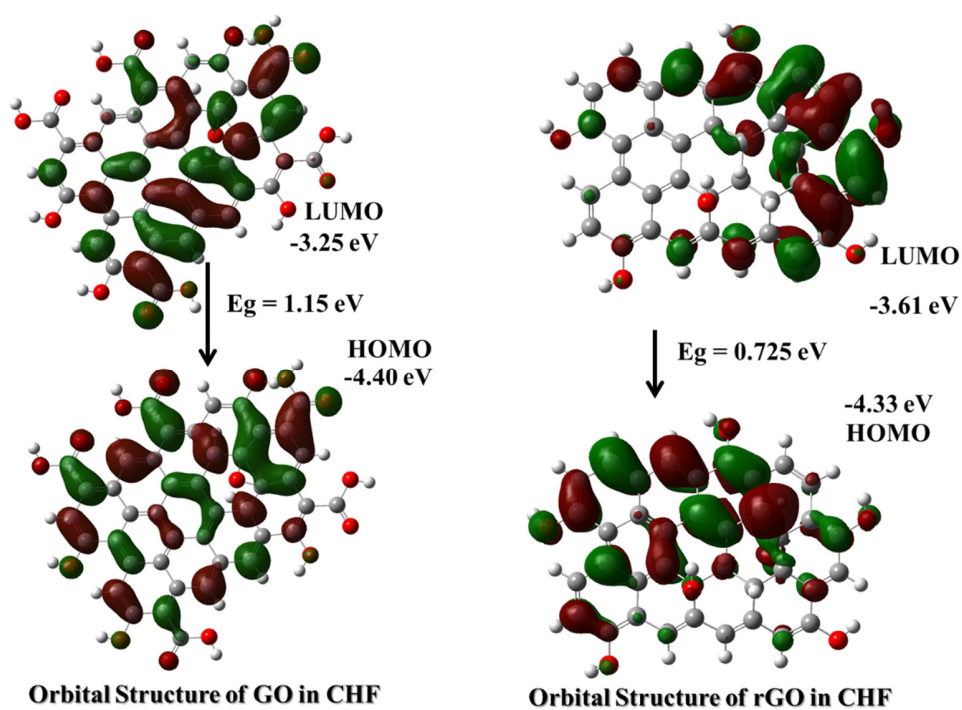


Figure S2 FMO of GO and rGO (approximated) in CHF

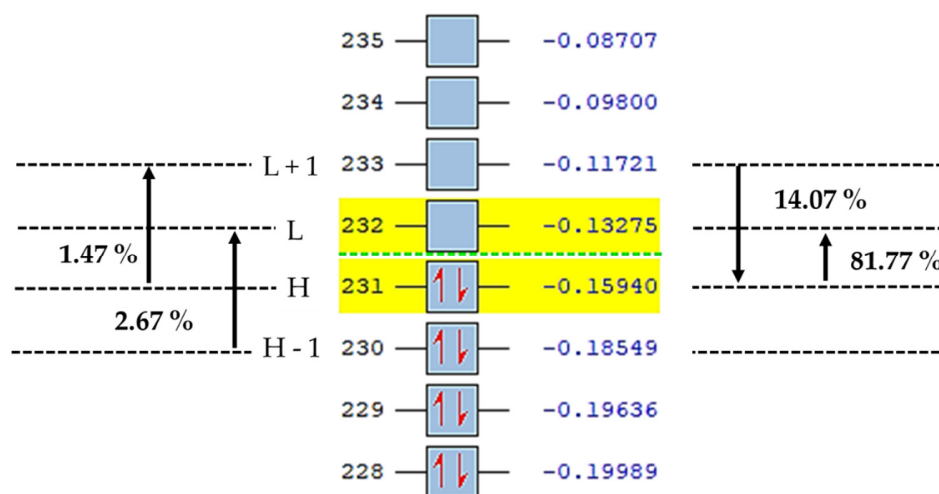


Figure S3 rGO orbital values in Hartrees and orbital numbers.

Table S1, vibrational transitions, its contributions, and the oscillator strengths of the first excited state of rGO from the simulation

Excited States	Contributions	Oscillator strengths
H \rightarrow L	81.77%	0.74734
(H-1) \rightarrow L	2.67%	0.13519
H \rightarrow (L + 1)	1.47%	0.10034
(L + 1) \rightarrow H	14.07%	0.31002

Table S2, the ASE's spectral broadening of CP with respect of rGO

rGO (Wt%) in CHF	FWHM start	FWHM end	FWHM
	(nm)		
0%	499 nm	530 nm	31 nm
2%	499 nm	532 nm	33 nm
3%	499 nm	532 nm	33 nm
5%	497 nm	534 nm	37 nm
20%	496 nm	535 nm	39 nm
30%	493 nm	535 nm	42 nm