Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Supplementary Information

Novel nano–dyad of homoleptic sandwich–type phthalocyanines with nitrogen doped graphene quantum dots for nonlinear optics

David O. Oluwole*, Nwaji Njemuwa, Lindokhuhle C. Nene, Lesedi Mokone, Edith Dube and Tebello Nyokong*

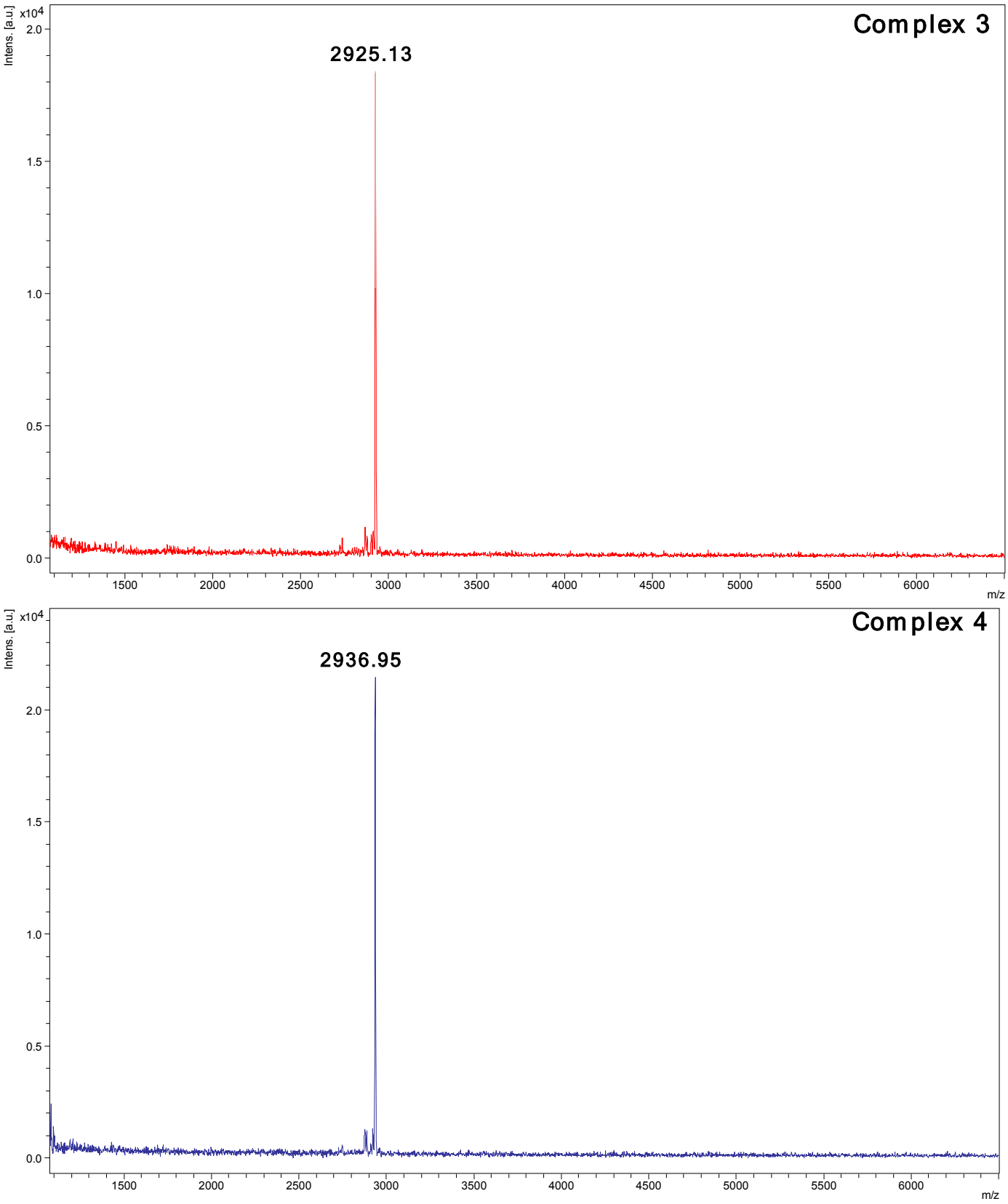
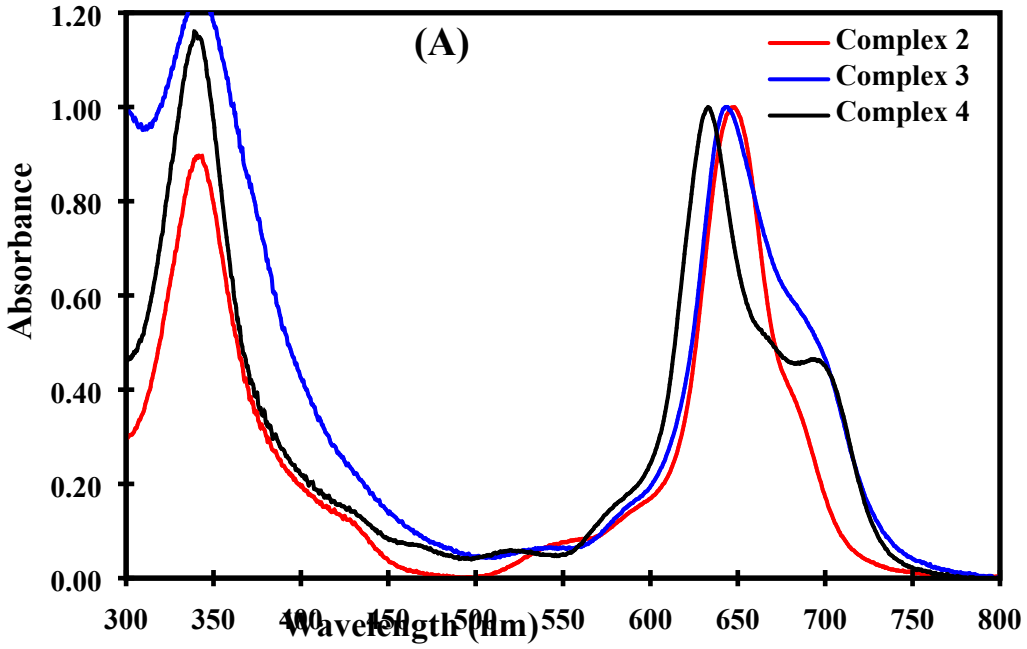
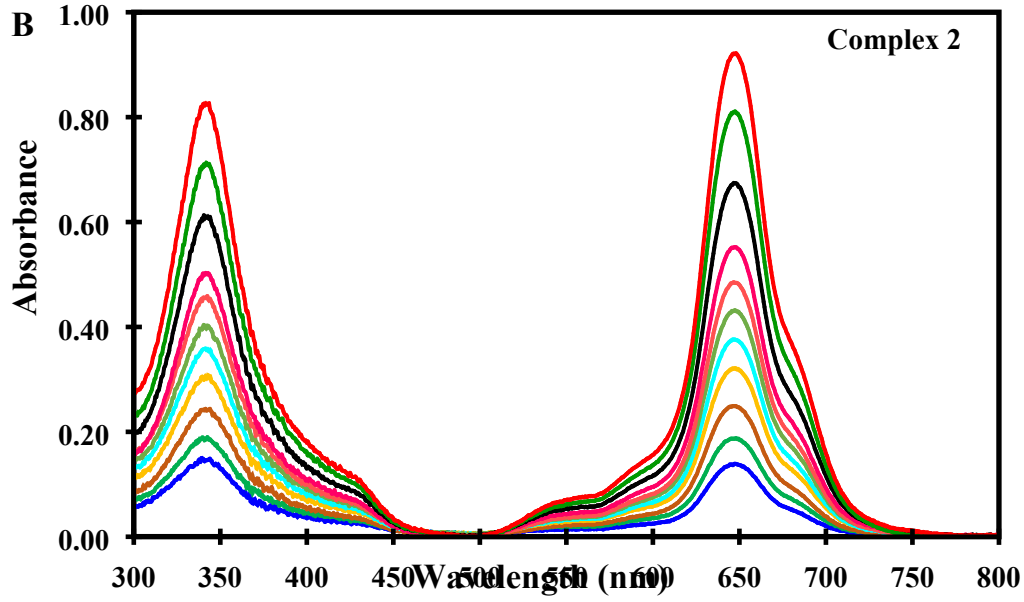


Figure S1. Mass spectra for complexes 3 and 4


(A)
Complex 2
Complex 3
Complex 4
Absorbance
1.20
1.00
0.80
0.60
0.40
0.20
0.00
300
350
400
450
500
550
600
650
700
750
800
Wavelength (nm)


B
Complex 2
Absorbance
1.00
0.80
0.60
0.40
0.20
0.00
300
350
400
450
500
550
600
650
700
750
800
Wavelength (nm)

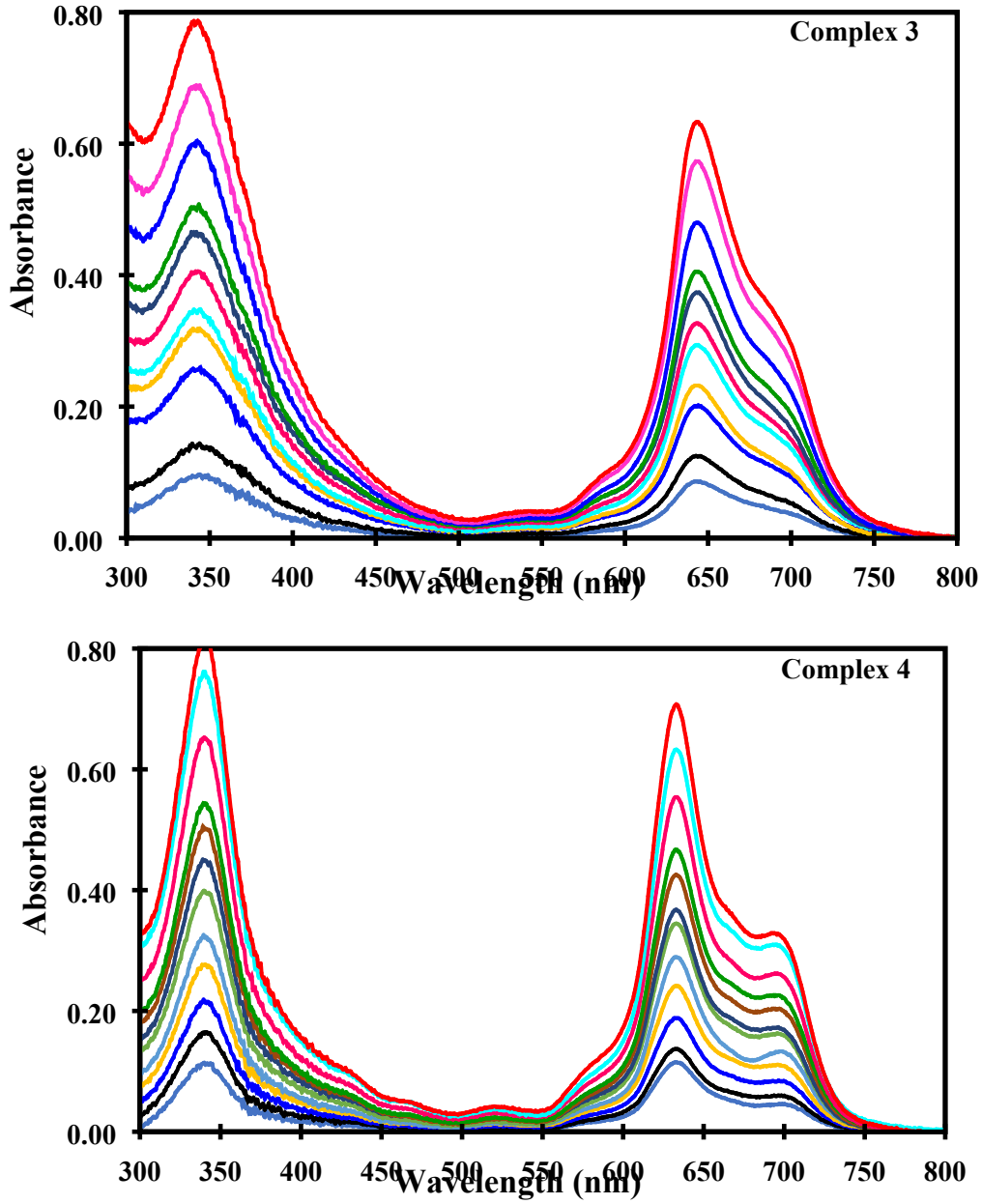


Figure S2. (A) Ground state electronic absorption spectra for complexes 1 to 4 in DMSO and (B) Concentration dependent absorption spectra for complexes 2 to 4 used for the determination of the molar absorptivity in DMSO.

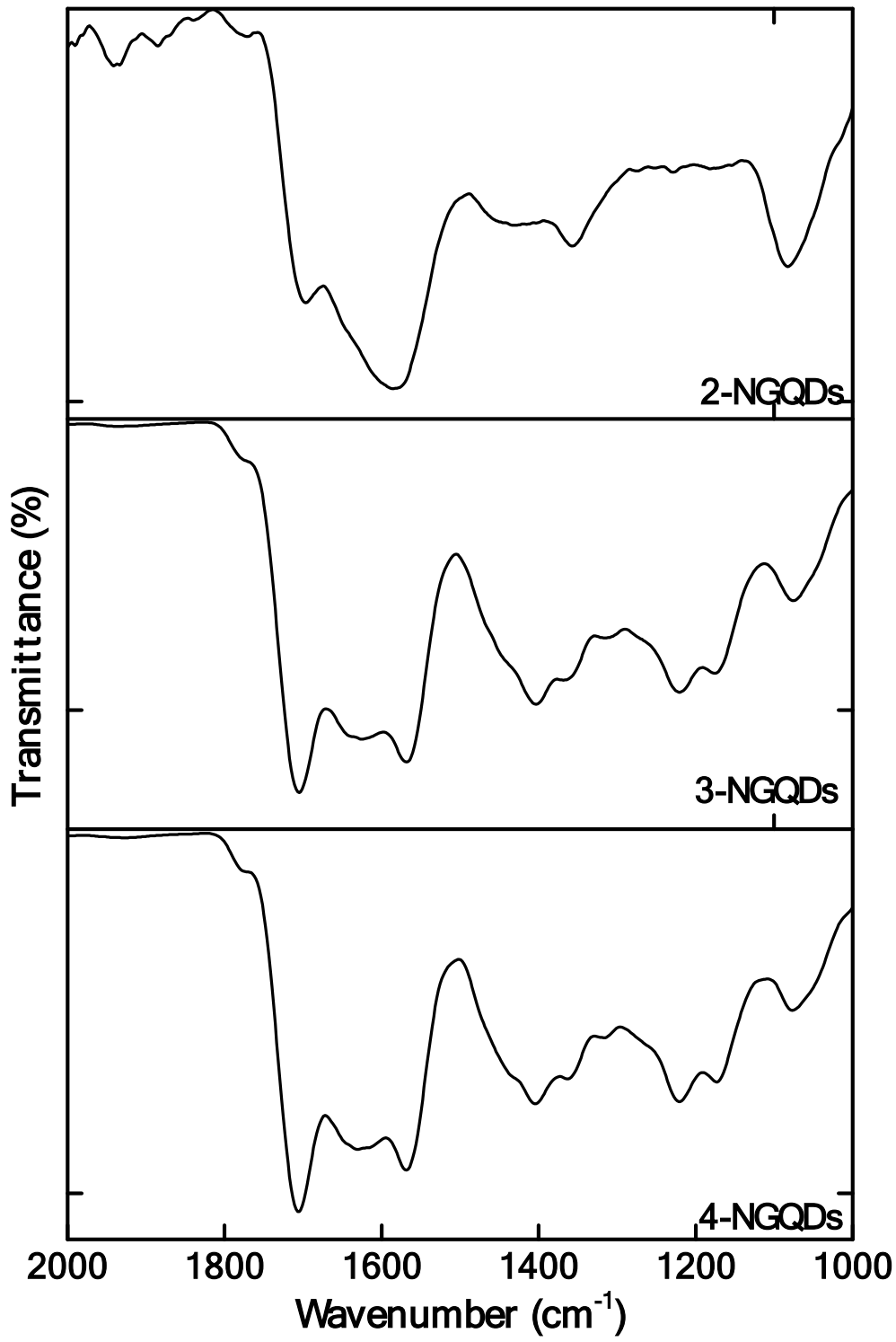


Figure S3. FT–IR spectra for the conjugates.

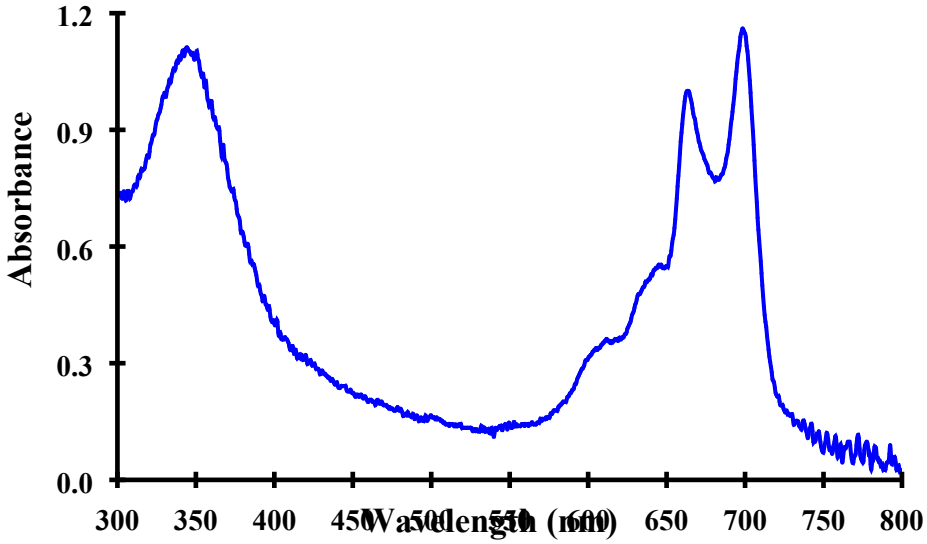


Figure S4. UV – Vis spectrum of NGQDs and complex 2 as an example

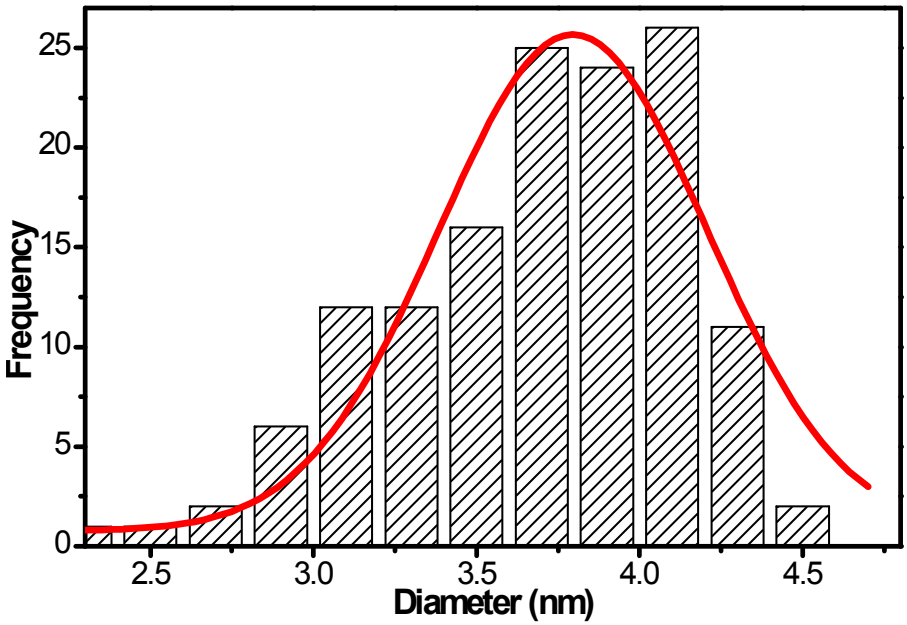


Figure S5. Histogram of the size distribution for NGQDs

Table S1: Optical limiting parameters for complexes and their conjugates

Samples	Wavelength (nm)	β_{eff} (cm/GW)	Ref
Zn Pcs	532	47.74	[36]
40 diff. Pcs	532	0.073-85	[33]
LaPc	532	95.46	[37]
$Eu(Pc)_2$	532	85.2	[37]

$Eu(Pc)_2$	532	44.1	[37]
$Nd(Pc)_2$	532	42	[38]
Alkyl Pc1	532	310	[39]
Alkyl Pc2	532	420	[39]
Alkoxy Pc1	532	1600	[40]
Alkoxy Pc1	532	1800	[40]
GaPc dimer	532	32-35	[41]
GO-PcZn	532	51	[7]
Pc-GQDs	532	231	[13]
Pc-NGQDs	532	287.6	[13]
Pc-SGQDs	532	319.8	[13]