Electronic Supplementary Information for

Combinatory Approach Towards Organic Polymer Luminescent Materials Design

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Supplementary Figures and Tables

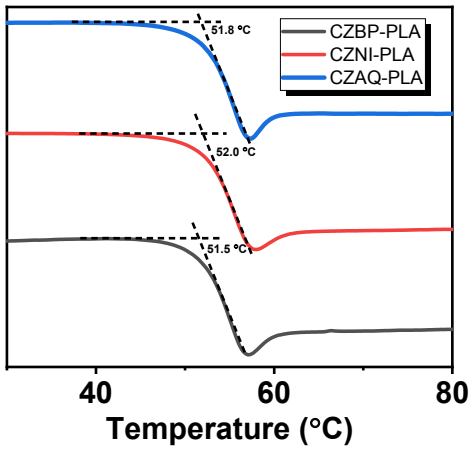


Figure S1. DSC curves of CZBP-PLA, CZNI-PLA, CZAQ-PLA measured at 10 °C/min under N_2 atmosphere.

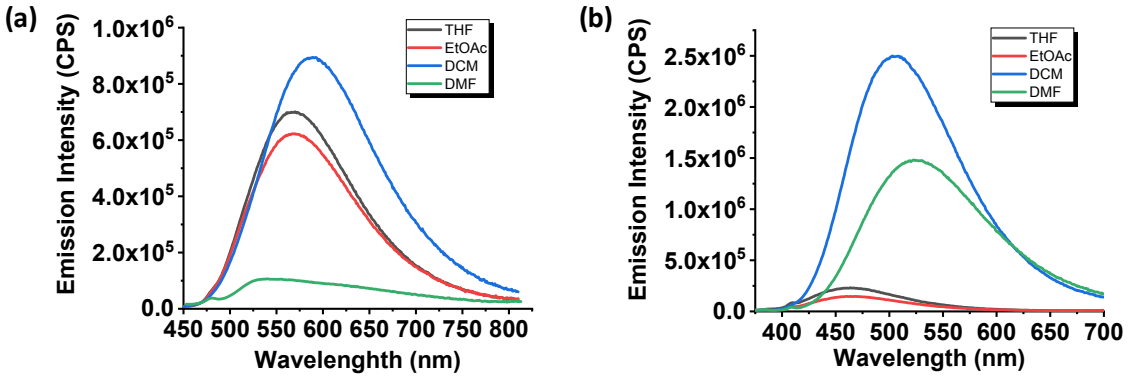


Figure S2. Steady-state emission spectra of CZNI-PLA (a, Ex slit 6 nm, Em slit 6 nm) and CZBP-PLA (b, Ex slit 3 nm, Em slit 4 nm) in THF, EtOAc, DCM and DMF, respectively.

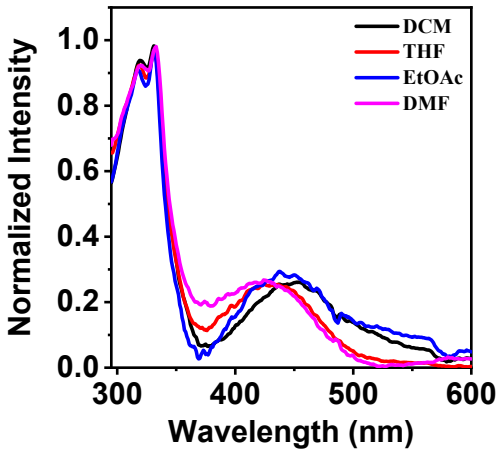


Figure S3. Normalized UV-vis absorption of CZAQ-PLA in dichloromethane (DCM), tetrahydrofuran (THF), ethyl acetate (EtOAc), and N, N'-dimethyl formamide (DMF).

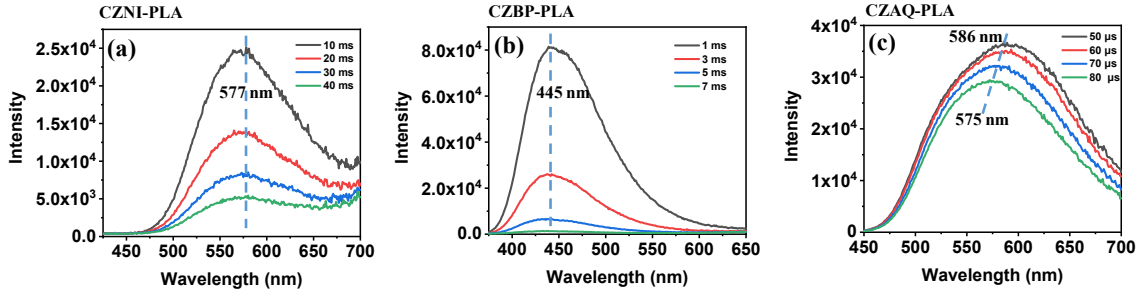


Figure S4. Delayed emissions of CZNI-PLA (a), CZBP-PLA (b), and CZAQ-PLA (c) at 298 K in vacuum with various delayed time.

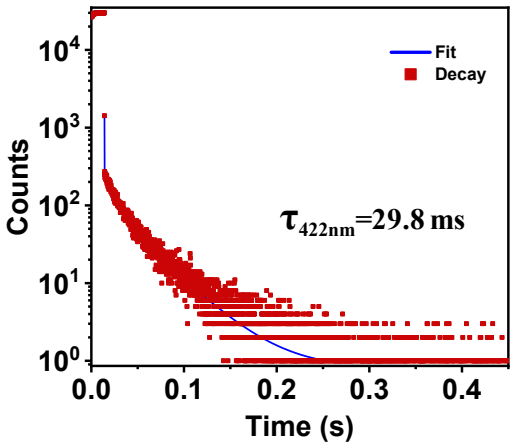


Figure S5. Time-resolved PL decay curves of CZBP-PLA measured at 422 nm in vacuum at 77 K.

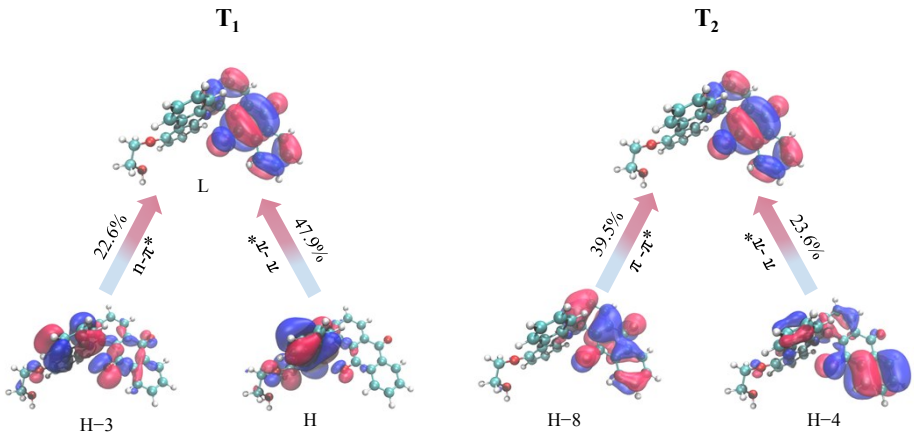


Figure S6. Calculated frontier molecular orbitals of CZAQ-OH for electronic transition of T_1 and T_2 based on optimized T_1 structure at ωB97XD/6-311G* level.

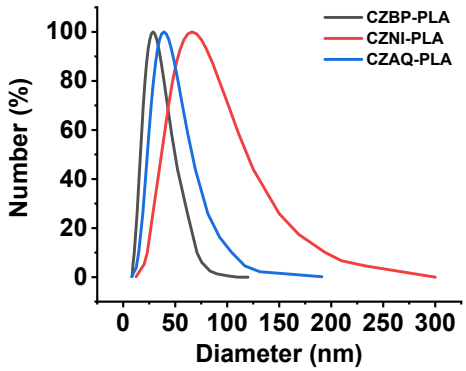


Figure S7. Particle diameters of CZBP-PLA, CZNI-PLA, and CZAQ-PLA nanoparticles, respectively.

Table S1. Lifetime data for CZBP-PLA, CZNI-PLA, CZAQ-PLA films.

	λ^a_{air} (nm)	λ^b_{vacuum} (nm)	λ^c_{77k} (nm)	λ^e_{delay} (nm)	τ^e_{air} (S)	τ^f_{vacuum} (S)	τ^g_{77k} (S)	τ^h_{delay} (S)
CZBP-PLA	445	445	445	484	7.276084×10^{-5} (58.47%) 4.26353×10^{-7} (0.98%) 2.546773×10^{-4} (40.54%)	8.40563×10^{-3} (40.95%) 0.0280176 (35.08%) 1.842482×10^{-3} (15.87%)	1.638874×10^{-2} (4.97%) 5.017509×10^{-2} (58.58%) 0.1238015 (36.45%)	1.767273×10^{-2} (5.05%) 0.0545019 (55.58%) 0.1446192 (39.37)
CZNI-PLA	512	526	518	576	8.420017×10^{-9} (18.23%) 6.484133×10^{-10} (1.68%) $1.868194\times10^{-}$	1.269748×10^{-2} (9.72%) 7.683653×10^{-2} (90.10%) $9.417504\times10^{-}$	1.921746×10^{-8} (85.89%) 2.983466×10^{-8} (14.11%)	0.1151937 (7.40%) 0.2265507 (92.60%)

CZAQ-PLA	576	577	580	582	^{8} (80.09%) 1.131978×10^{-5} (28.12%) 4.611181×10^{-5} (70.99%) 6.488263×10^{-8} (0.89%)	^{5} (0.18%) 1.28672×10^{-5} (31.37%) 6.496668×10^{-8} (0.58%) 4.893768×10^{-5} (68.05%)	1.575559×10^{-2} (9.47%) 0.1179909 (90.26%) 1.068068×10^{-4} (0.27%)	1.768052×10^{-2} (9.13%) 0.1218552 (90.63%) 7.803662×10^{-5} (0.24%)

a. steady-state emission maxima under air at 298 K (λ_{ex} = 365 nm);

b. steady-state emission maxima under vacuum at 298 K (λ_{ex} = 365 nm);

c. steady-state emission maxima under vacuum at 77 K (λ_{ex} = 365 nm);

d. delayed emission maxima under vacuum at 77 K (λ_{ex} = 365 nm);

e. measured lifetimes of steady-state emission in air at 298 K;

f. measured lifetimes of steady-state emission in vacuum at 298 K;

g. measured lifetimes of steady-state emission in vacuum at 77 K;

h. measured lifetimes of delayed emission in vacuum at 77 K.

Table S2. Nanoparticle sizes of PLAs.

PLA	Diameter (nm)
CZBP-PLA	30
CZNI-PLA	66
CZAQ-PLA	39

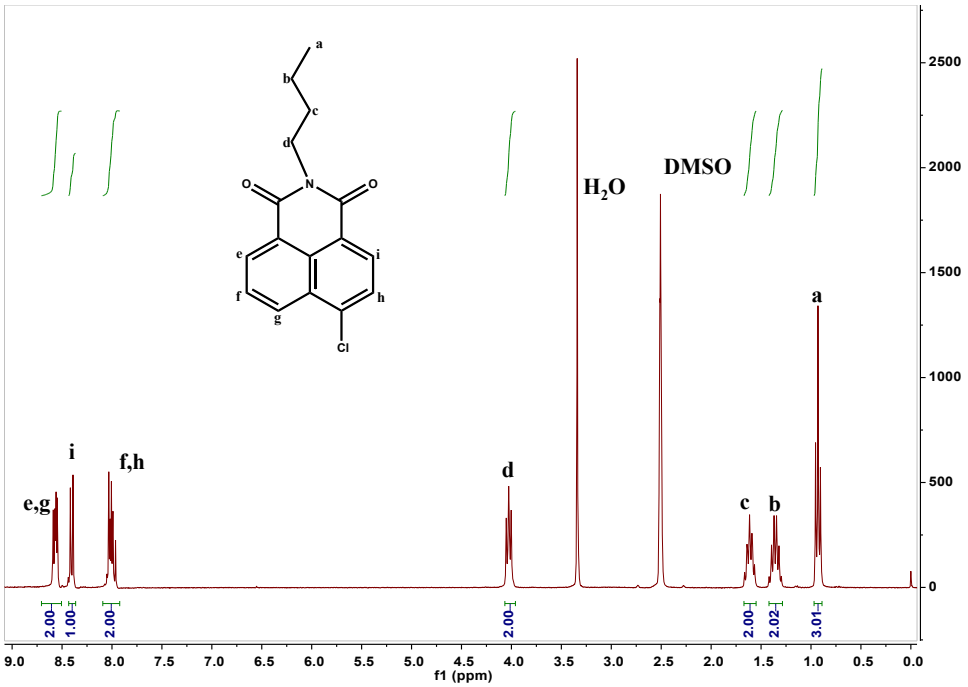


Figure S8. [1]H NMR spectrum of **ClNNI** in d_6-DMSO.

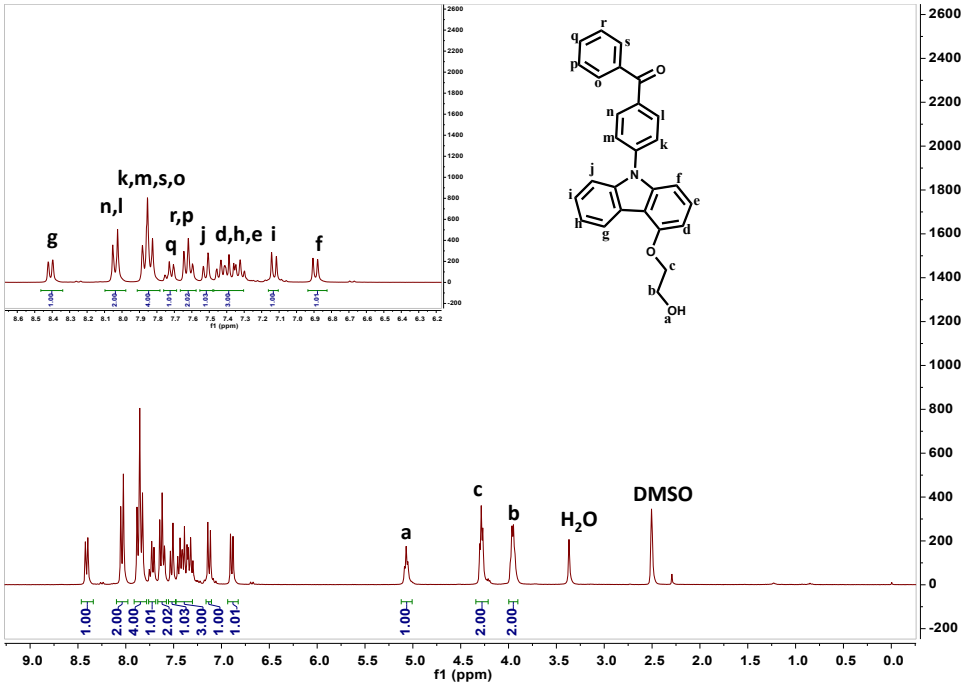


Figure S9. [1]H NMR spectrum of **CZBP-OH** in d_6-DMSO.

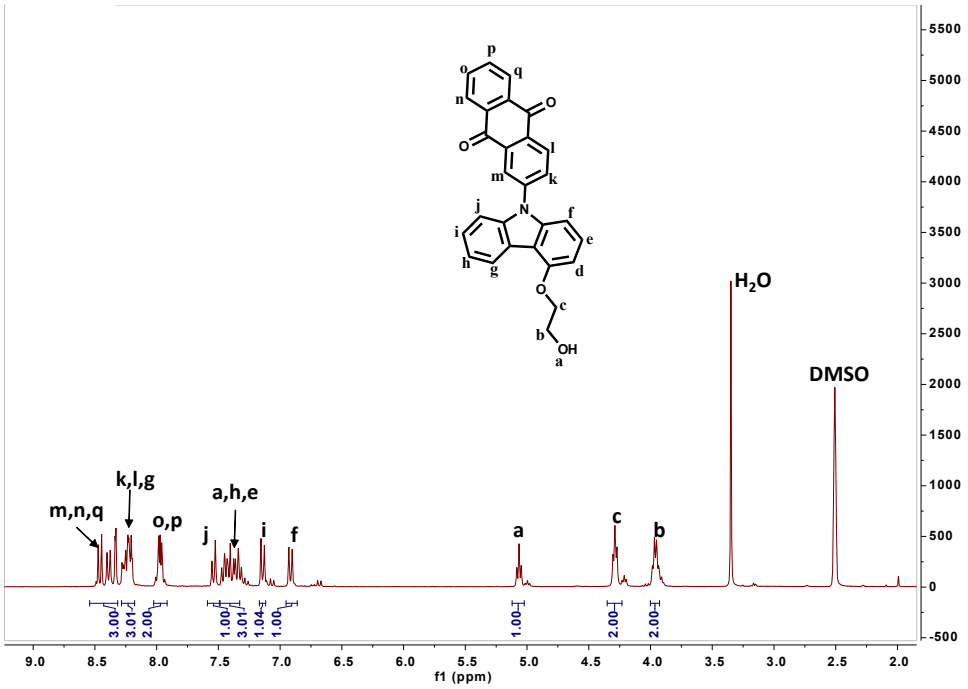


Figure S10. ^{1}H NMR spectrum of **CZAQ-OH** in d_6-DMSO.

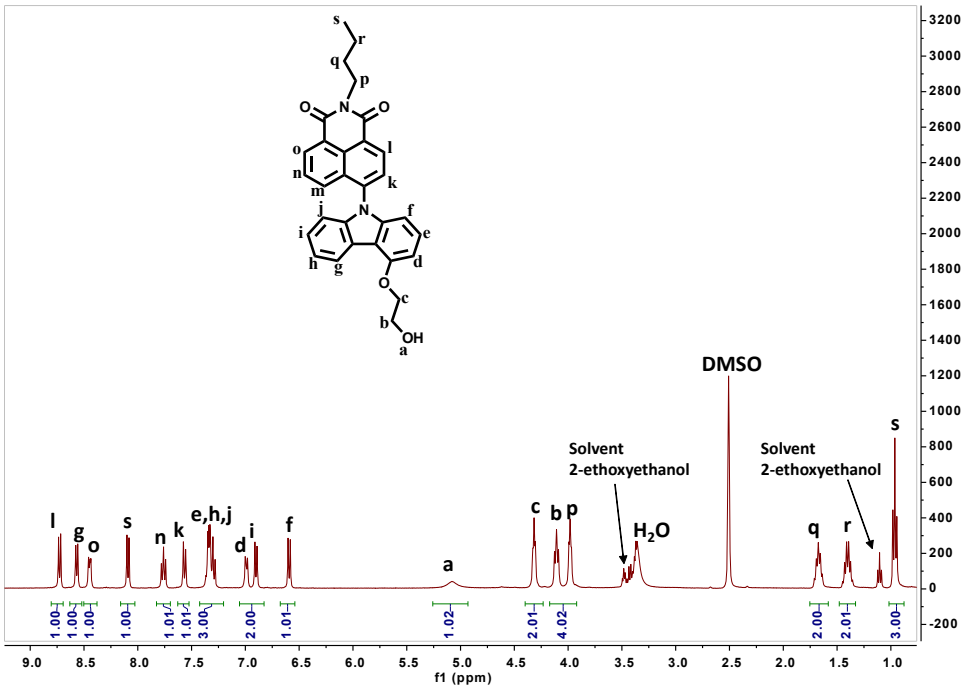


Figure S11. ^{1}H NMR spectrum of **CZNI-OH** in d_6-DMSO.

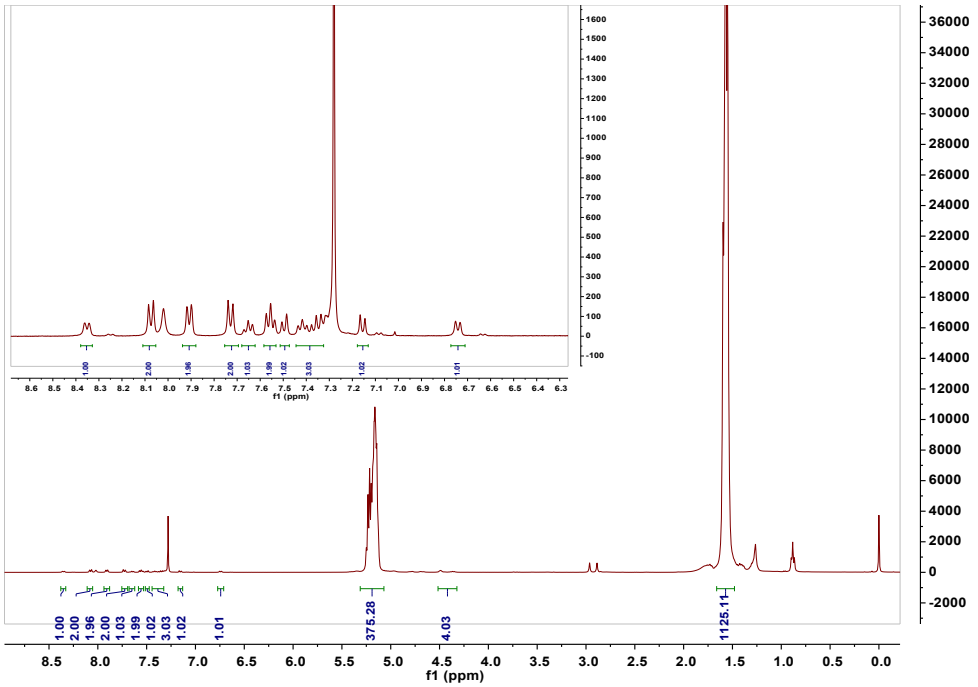


Figure S12. ^{1}H NMR spectrum of **CZBP-PLA** in $CDCl_3$.

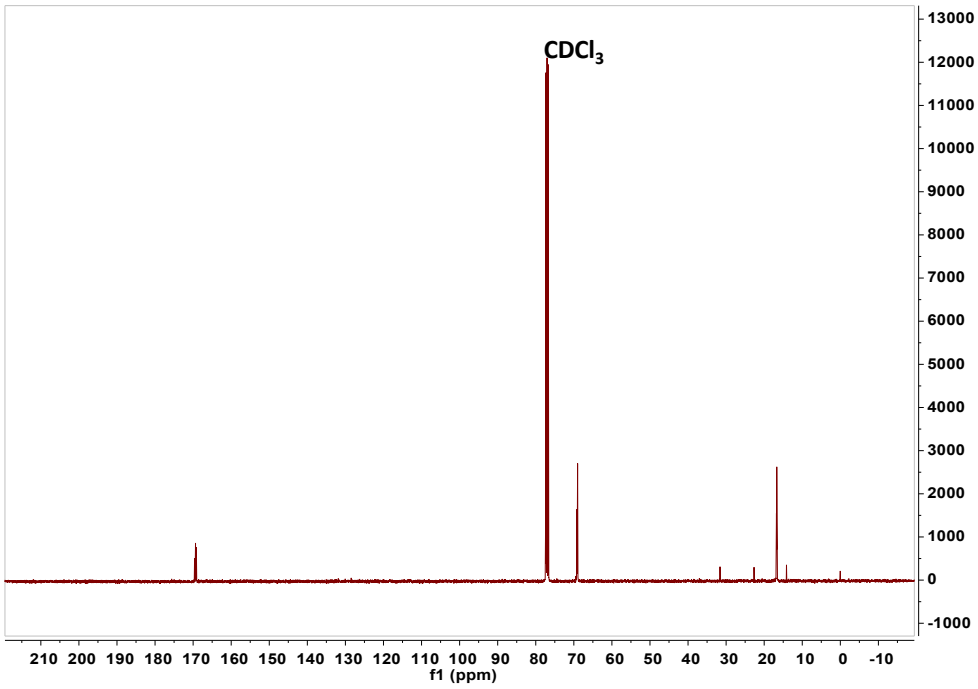


Figure S13. ^{13}C NMR spectrum of **CZBP-PLA** in $CDCl_3$.

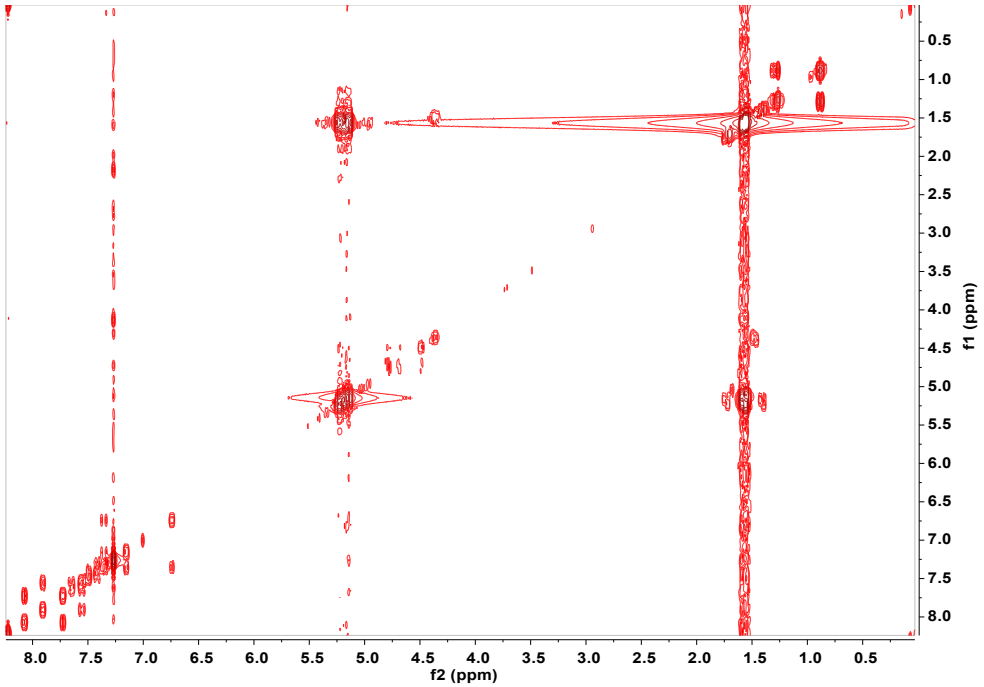


Figure S14. Section of ^{1}H-^{1}H COSY NMR spectrum of **CZBP-PLA** in $CDCl_3$.

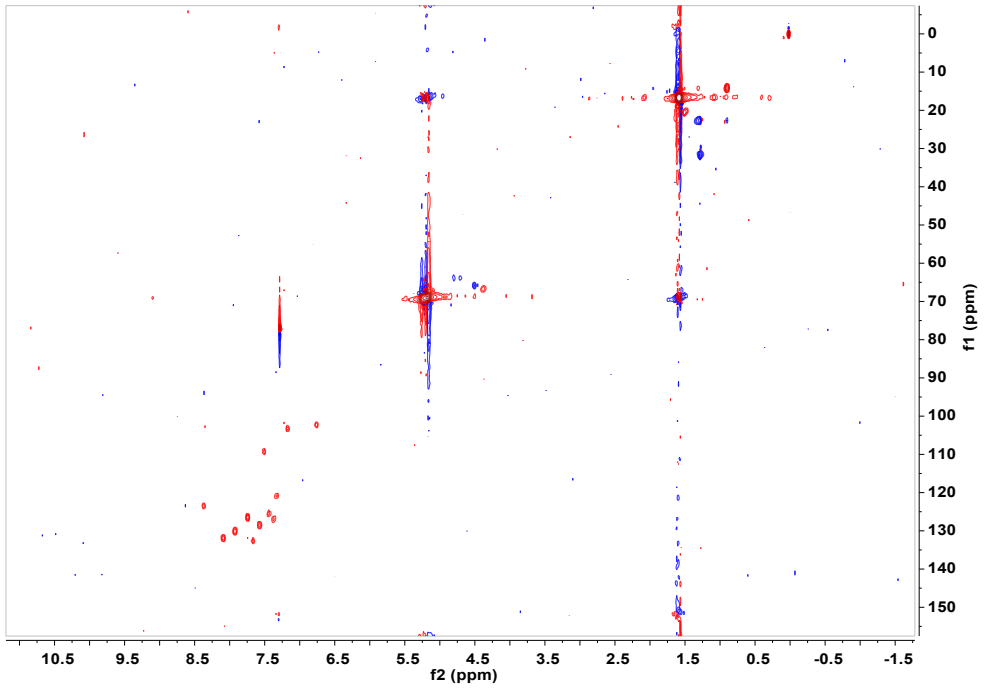


Figure S15. Section of ^{1}H-^{13}C COSY NMR spectrum of **CZBP-PLA** in $CDCl_3$.

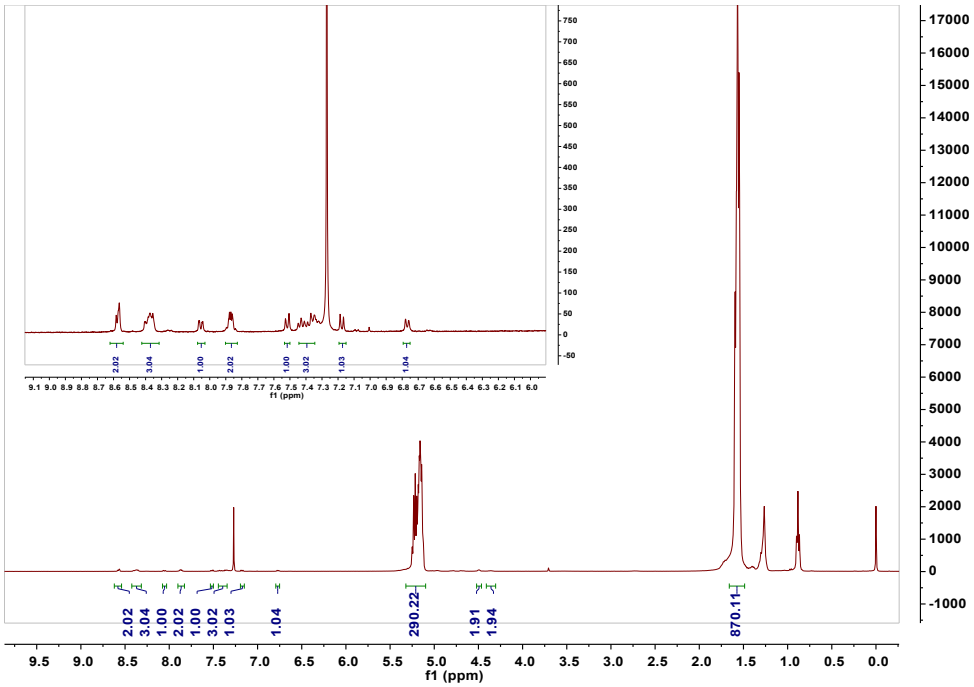


Figure S16. ^{1}H NMR spectrum of **CZAQ-PLA** in $CDCl_3$.

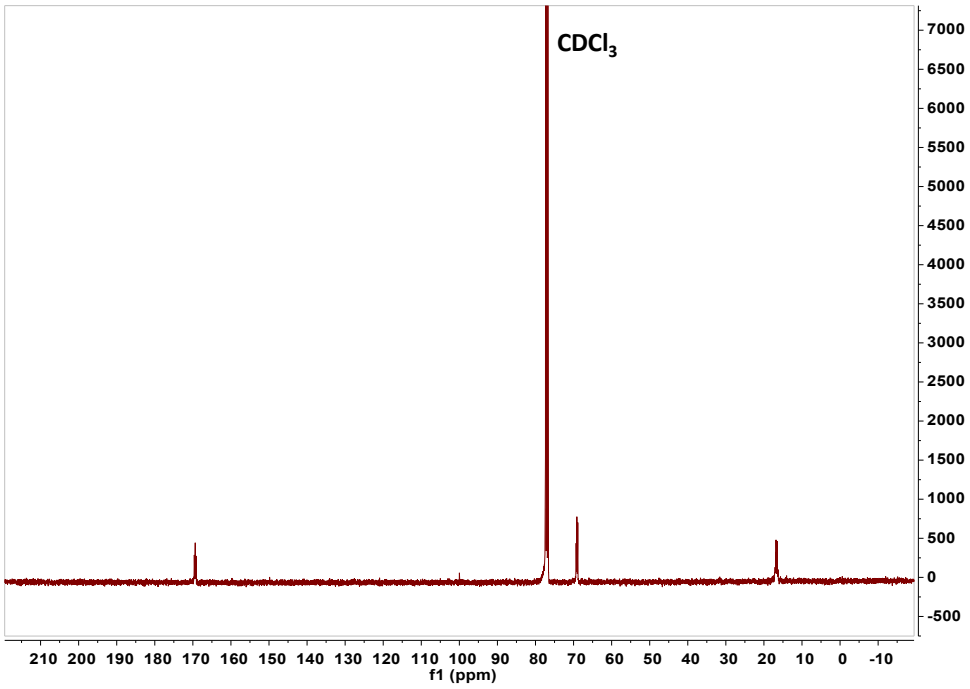


Figure S17. ^{13}C NMR spectrum of **CZAQ-PLA** in $CDCl_3$.

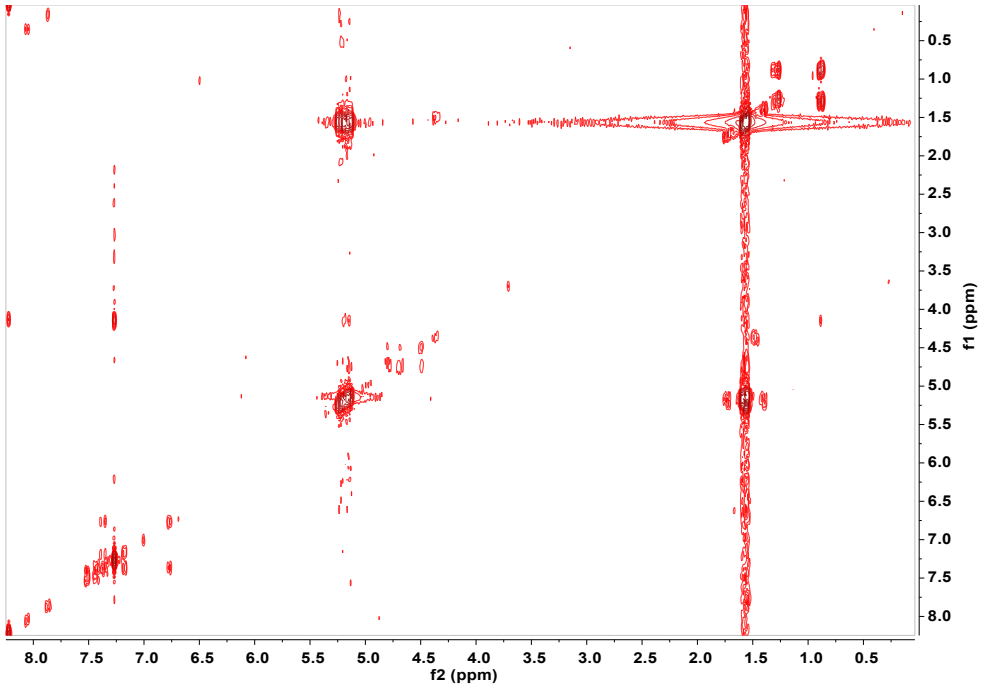


Figure S18. Section of ^{1}H-^{1}H COSY NMR spectrum of **CZAQ-PLA** in $CDCl_3$.

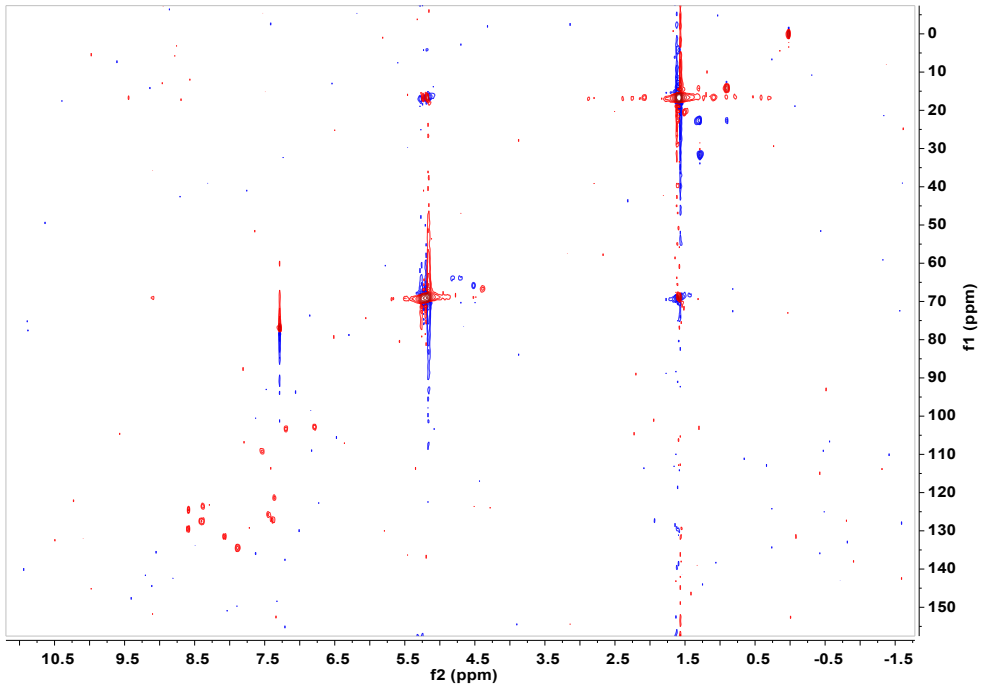


Figure S19. Section of ^{1}H-^{13}C COSY NMR spectrum of **CZAQ-PLA** in $CDCl_3$.

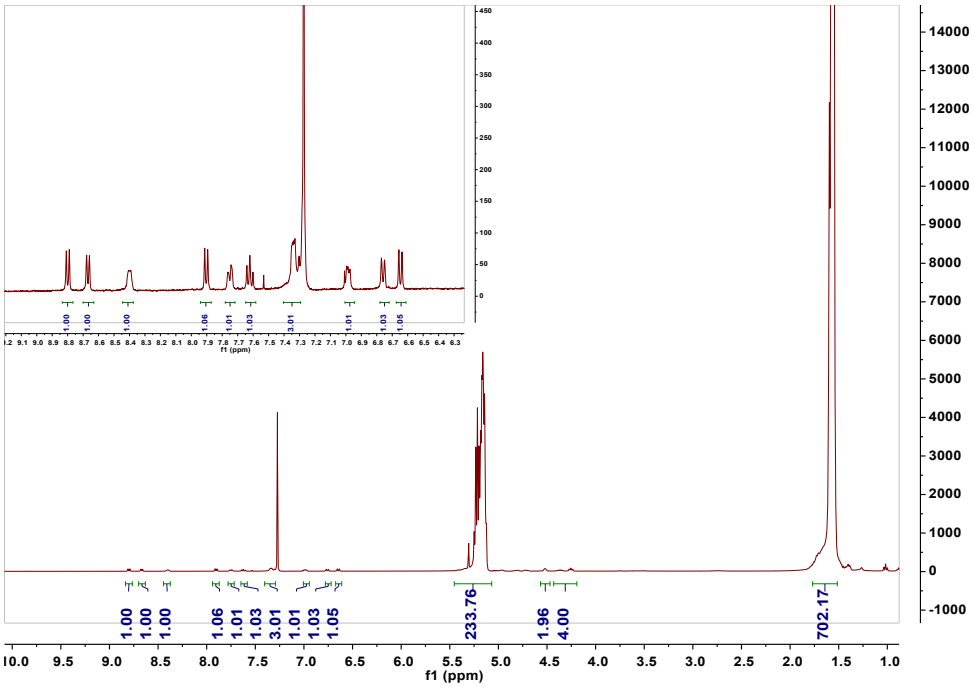


Figure S20. ^{1}H NMR spectrum of **CZNI-PLA** in $CDCl_3$.

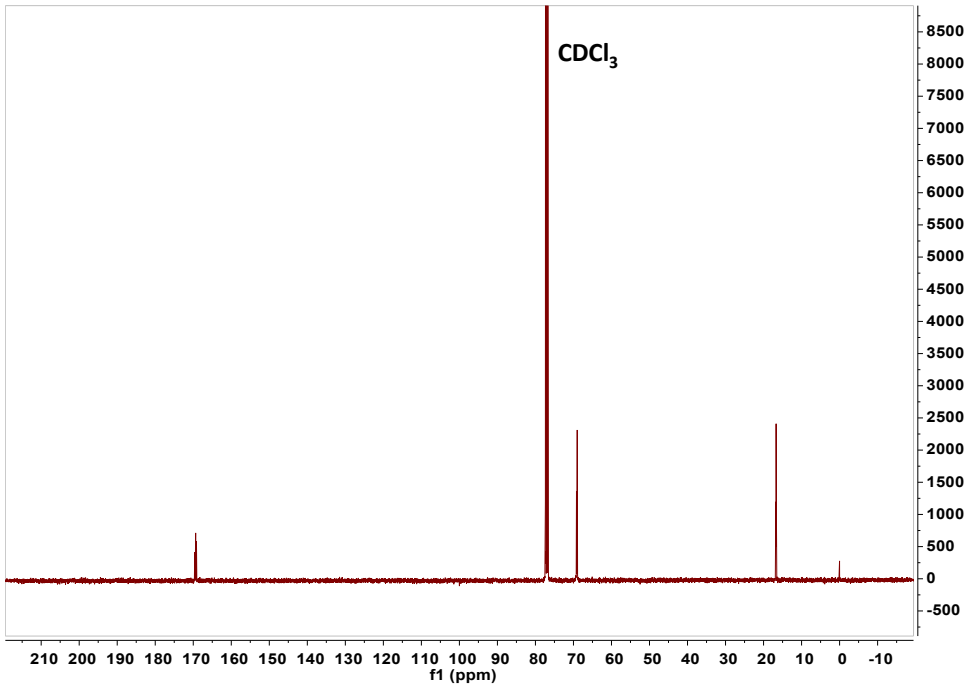


Figure S21. ^{13}C NMR spectrum of **CZNI-PLA** in $CDCl_3$.

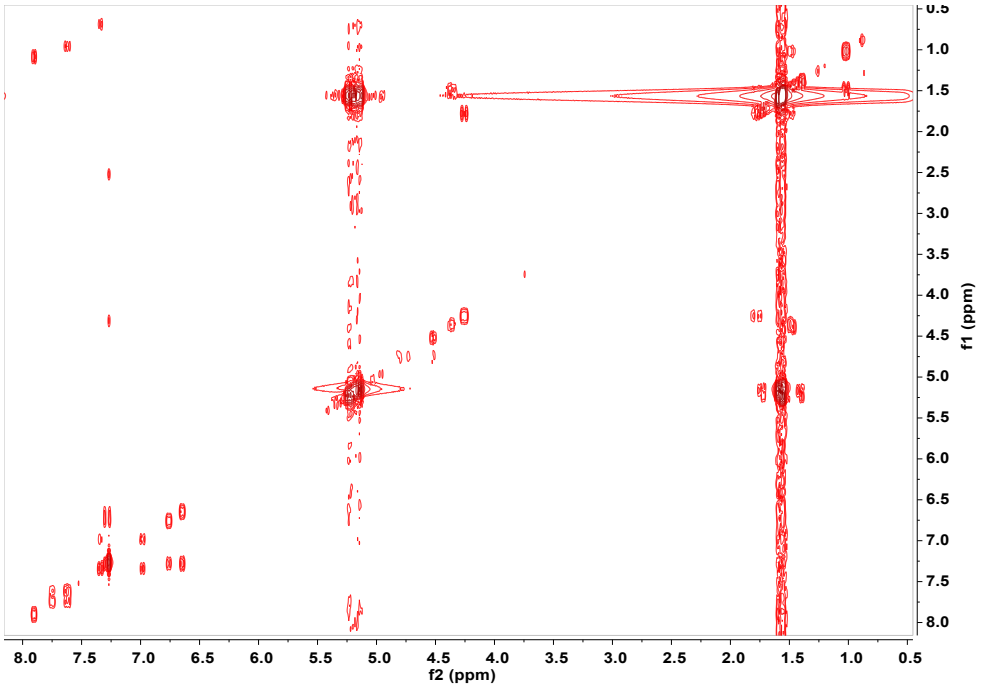


Figure S22. Section of ^{1}H-^{1}H COSY NMR spectrum of **CZAQ-PLA** in $CDCl_3$.

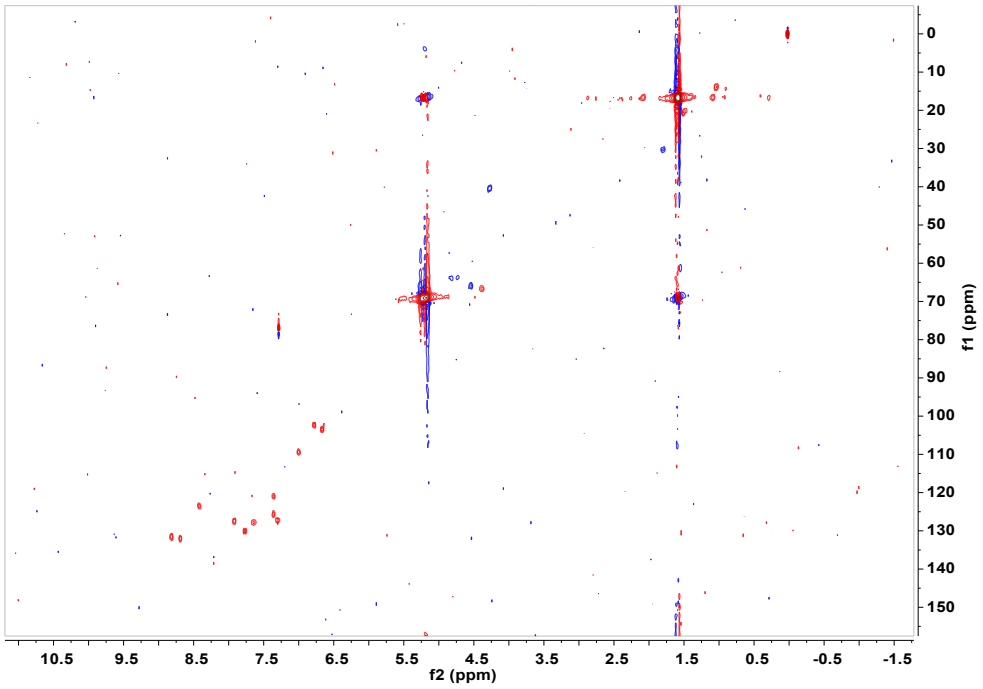
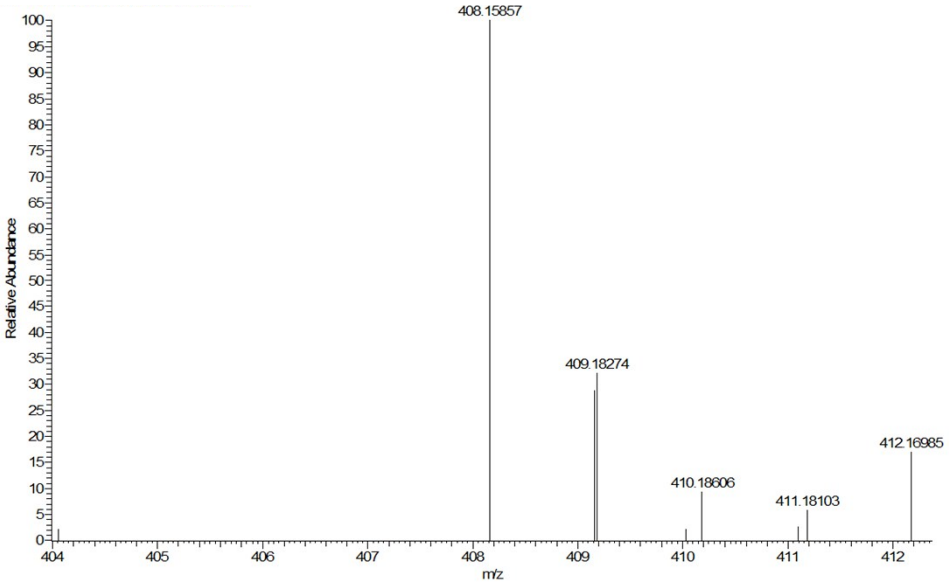
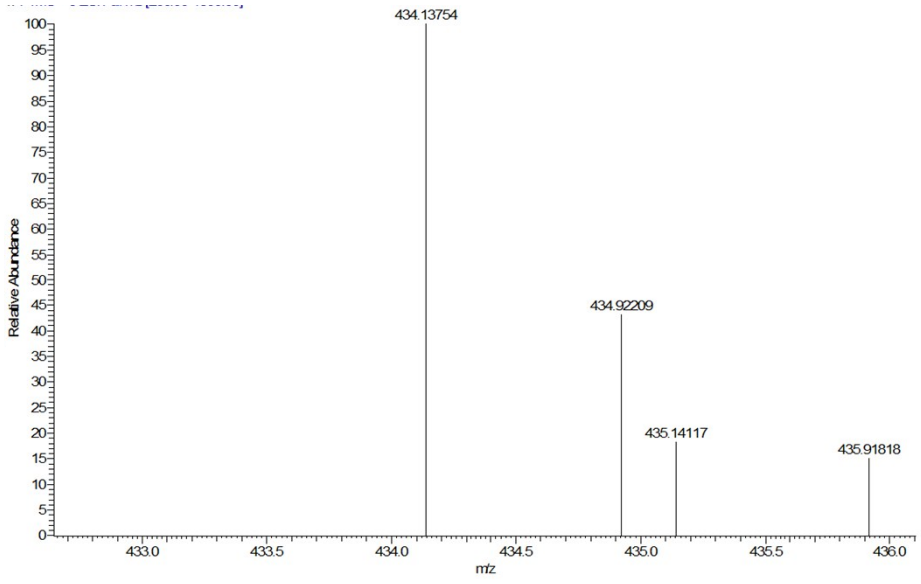


Figure S23. Section of ^{1}H-^{13}C COSY NMR spectrum of **CZAQ-PLA** in $CDCl_3$.



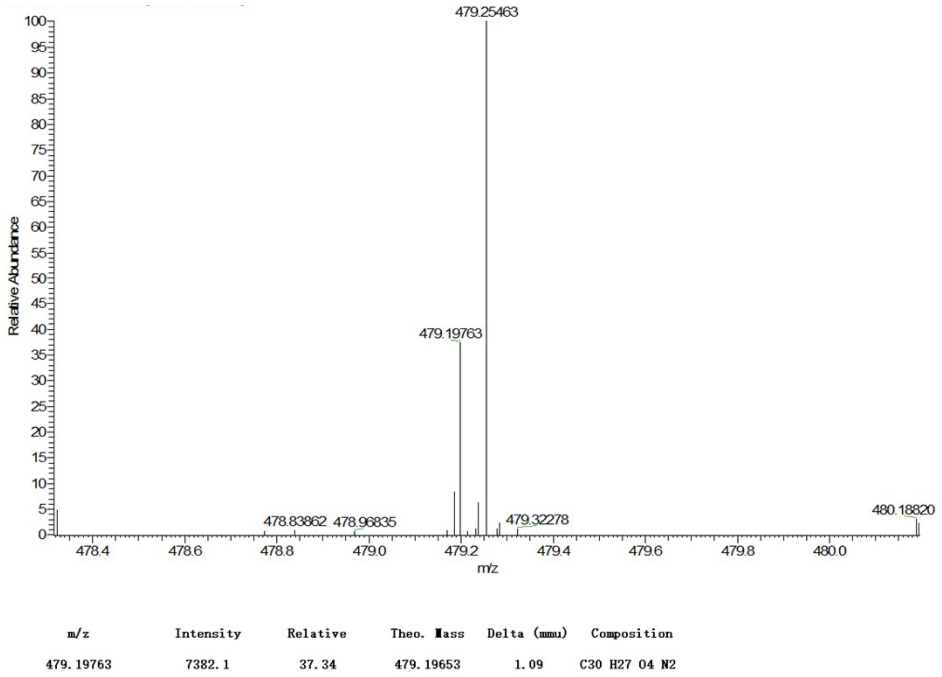
m/z	Intensity	Relative	Theo. Mass	Delta (mmu)	Composition
408.15857	68275.9	100	408.15942	-0.85	C27 H22 O3 N

Figure S24. ESI mass spectrum of **CZBP-OH**.



m/z	Intensity	Relative	Theo. Mass	Delta (mmu)	Composition
434.13754	17750.3	100	434.13868	-1.12	C28 H20 O4 N

Figure S25. ESI mass spectrum of **CZAQ-OH**.



m/z	Intensity	Relative	Theo. Mass	Delta (mmu)	Composition
479.19763	7382.1	37.34	479.19653	1.09	C30 H27 O4 N2

Figure S26. ESI mass spectrum of **CZNI-OH**.

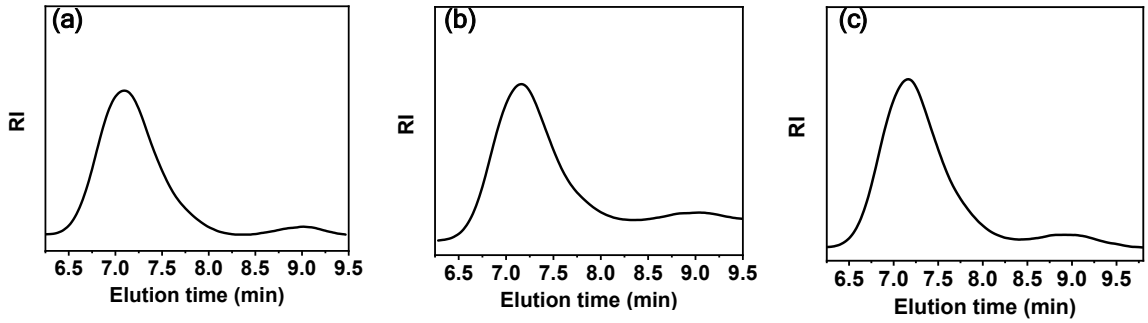


Figure S27. GPC traces for CZBP-PLA (a), CZNI-PLA (b), CZAQ-PLA (c).