SUPPORTING INFORMATION

Dimethyl amino phenyl substituted Silver Phthalocyanine as UV- and Visible-Light Absorbing Photoinitiator: *In-situ* Preparation of Silver/Polymer Nanocomposites

Louise Breloy,[a] Yusuf Alcay,[b] Ismail Yilmaz*,[b] Martin Breza,[c] Julie Bourgon,[a] Vlasta Brezova,[c] Yusuf Yagci*,[b] Davy-Louis Versace*[a]

[a] Institut de Chimie et des Matériaux Paris-Est (ICMPE) – UMR-CNRS7182-UPEC, 2-8, rue Henri Dunant, 94320 Thiais, France

[b] Istanbul Technical University, Department of Chemistry, Maslak, Istanbul, 34469, Turkey

[c] Slovak University of Technology in Bratislava, Institute of Physical Chemistry and Chemical Physics, Department of Physical Chemistry, Radlinského 9, SK-812 37 Bratislava, Slovak Republic

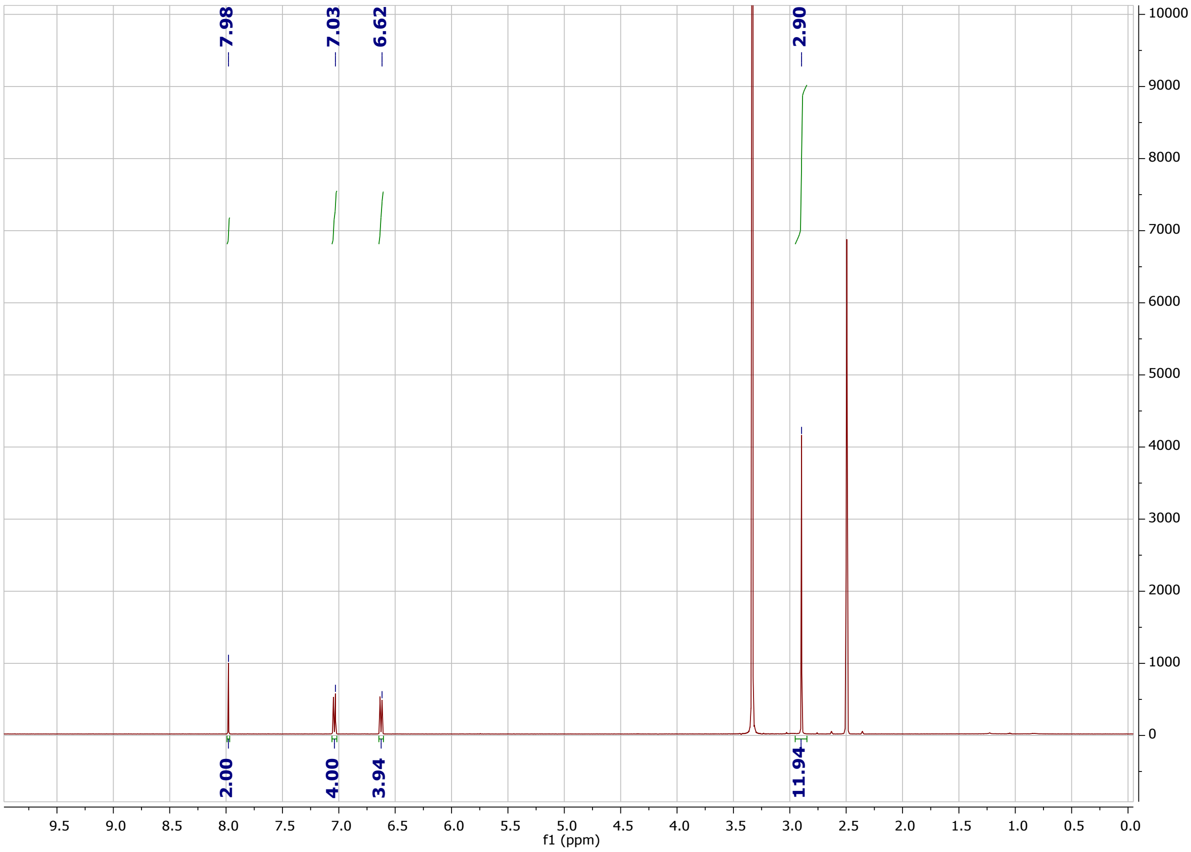


Figure S1. ^{1}H-NMR spectrum of **1**

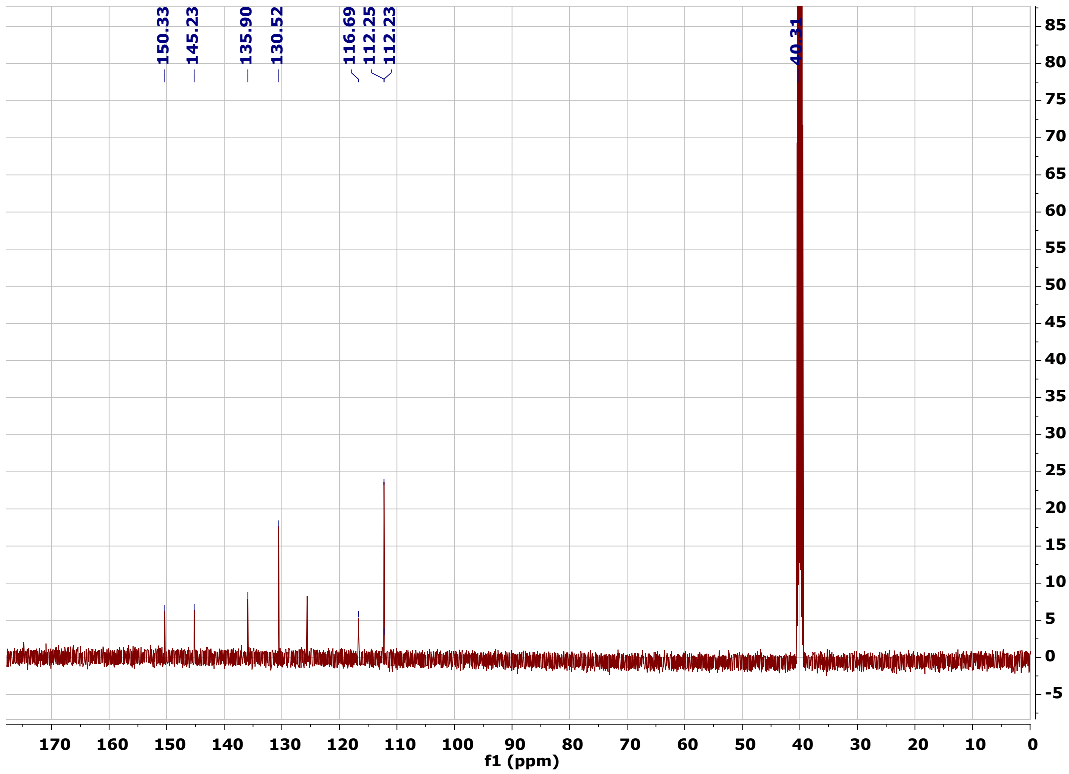


Figure S2. ^{13}C-NMR spectrum of **1**

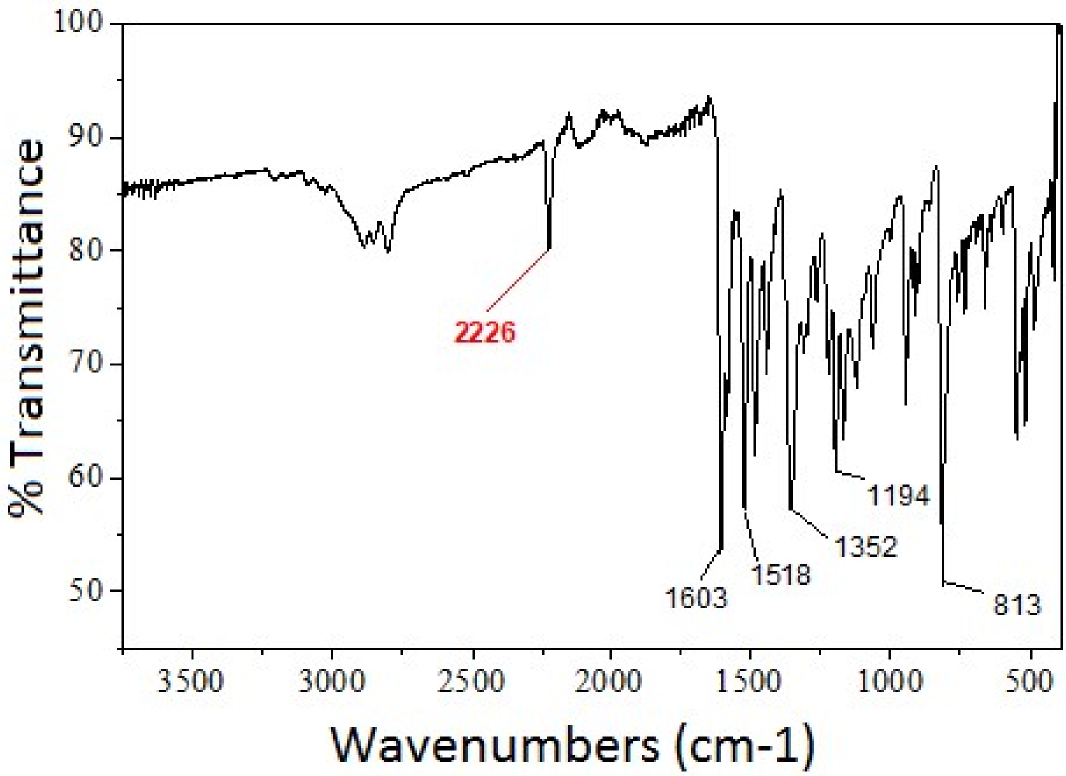


Figure S3. FT-IR spectrum of **1.**

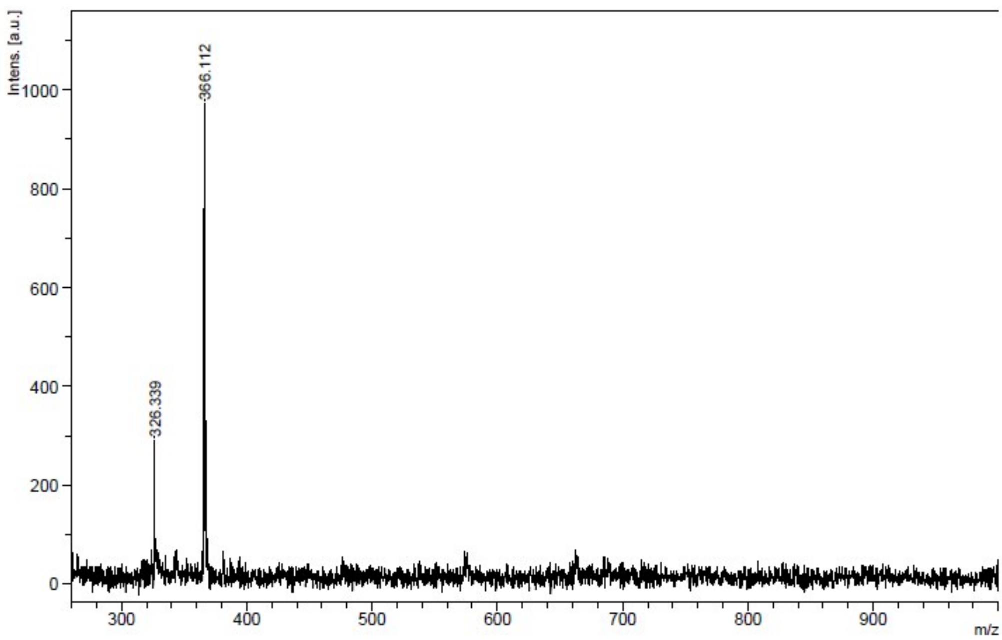


Figure S4. MALDI-TOF spectrum of **1**

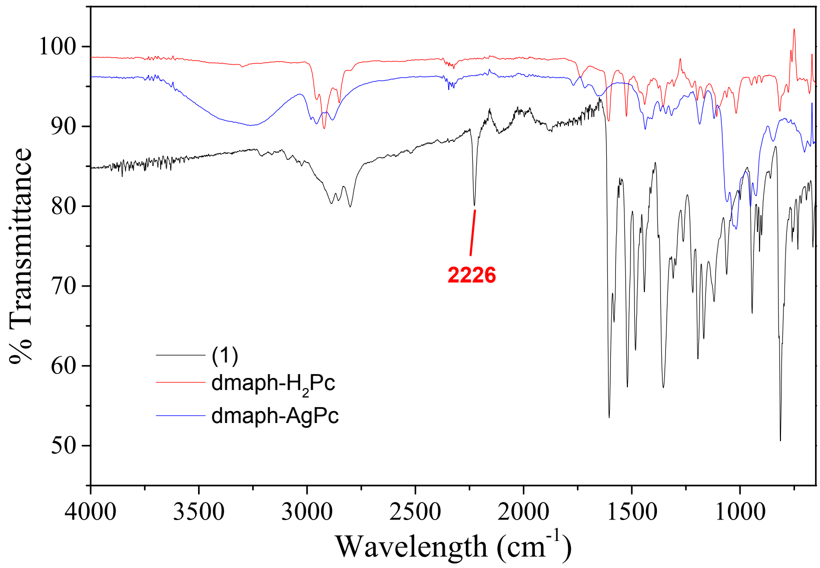


Figure S5. FT-IR spectra of (**1**), **dmaph-Ag$^{(II)}$Pc** and **dmaph-H_2Pc**.

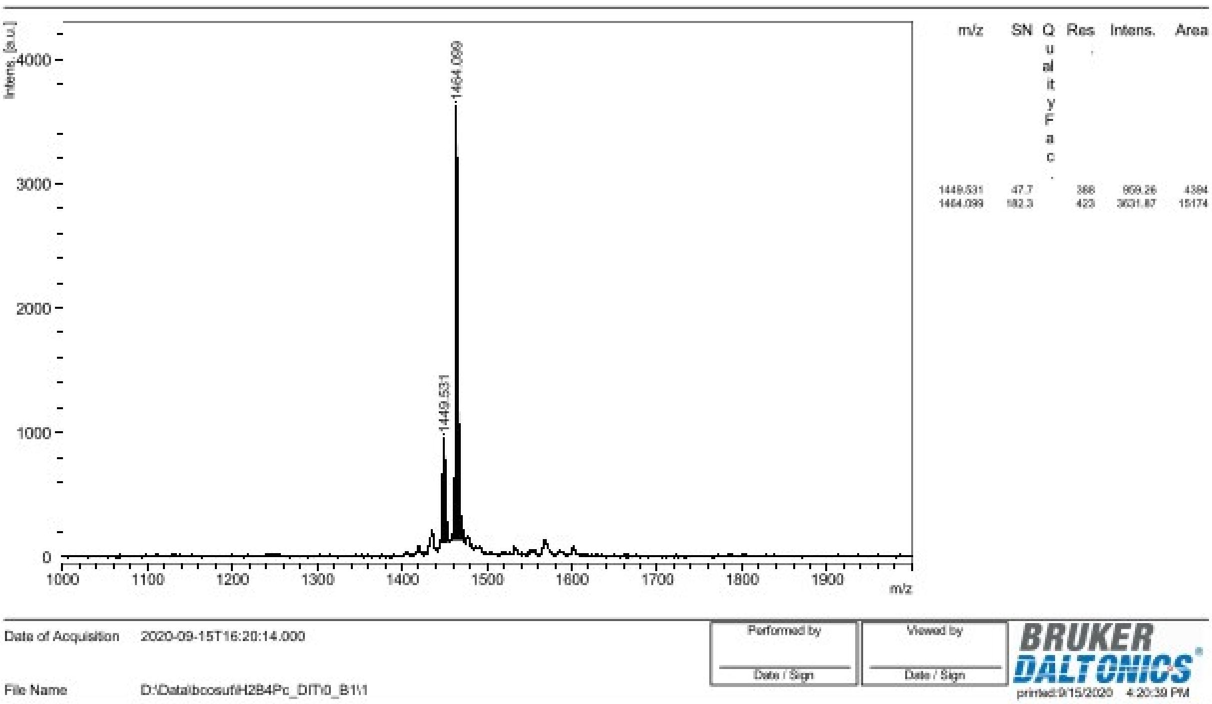


Figure S6. MALDI-TOF spectrum of **dmaph-H_2Pc**

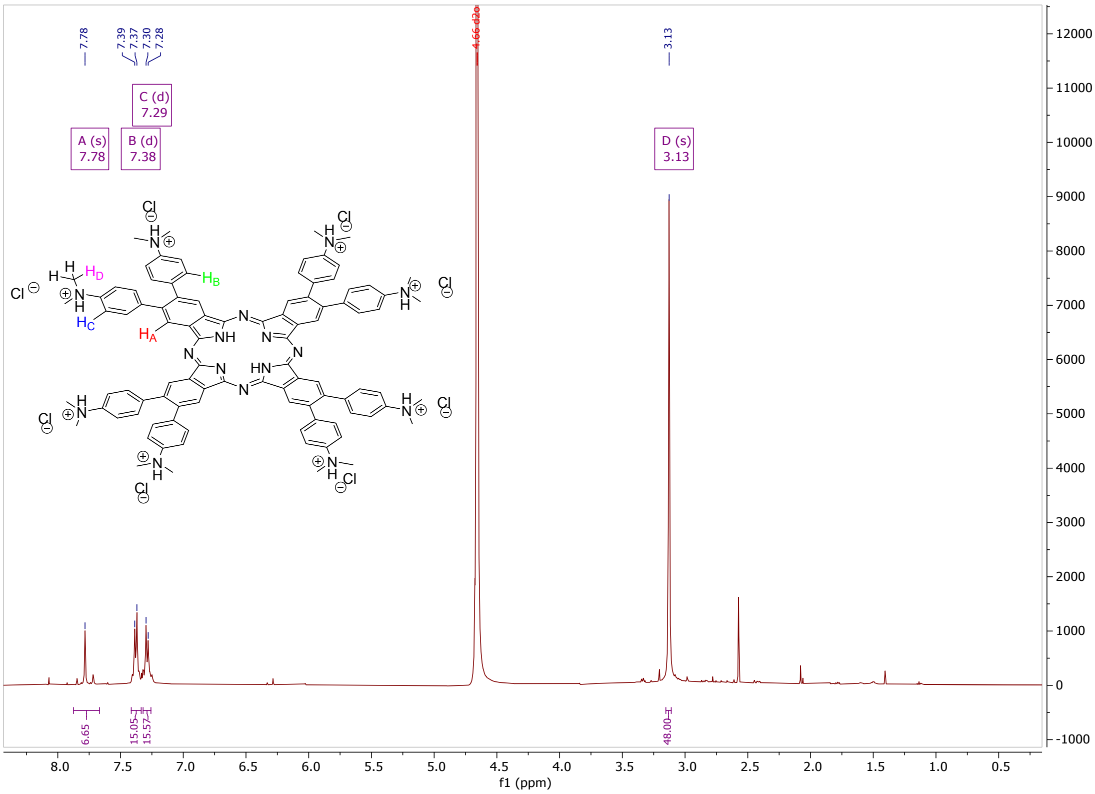
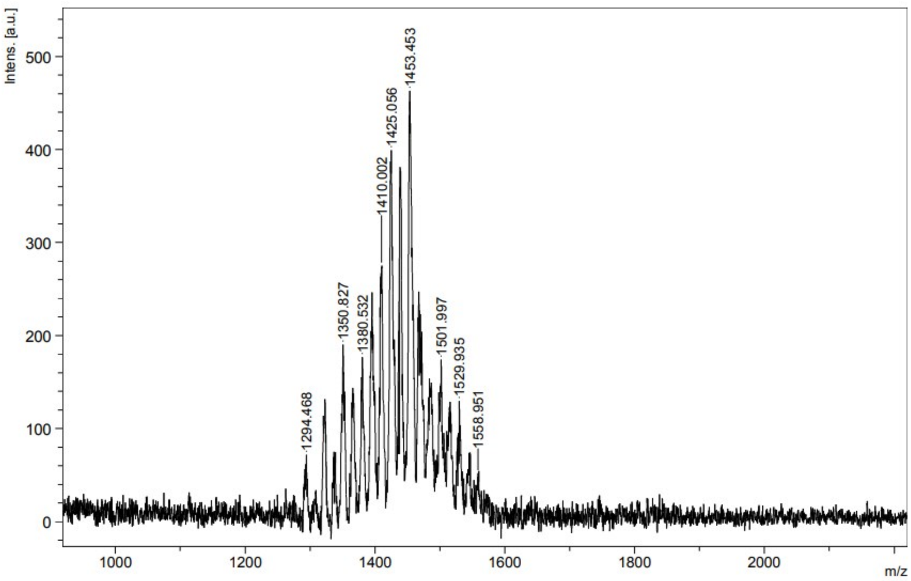


Figure S7. ^{1}H-NMR spectrum of **dmaph-H$_2$Pc-nHCl**



m/z	SN	Quality Fac.	Res.	Intens.	Area
1294.468	2.8		2066	72.51	79
1308.969	1.4		2001	36.41	26
1324.332	3.6		1710	94.34	106
1336.708	2.8		1869	74.46	80
1350.827	7.1		2201	189.50	195
1365.748	5.3		2694	143.10	113
1380.532	6.6		1481	176.26	315
1395.466	9.3		2095	246.00	330
1410.002	10.4		3158	273.07	198
1425.056	15.4		3649	398.73	289
1438.474	14.8		928	380.53	834
1453.453	18.2		6470	461.09	188
1467.646	9.8		993	246.61	440
1484.023	6.2		2866	153.37	131
1501.997	7.1		3423	173.61	121
1515.015	5.1		4821	123.38	66
1529.935	5.4		1993	129.17	140
1545.013	3.1		4416	73.26	50
1558.951	2.2		3032	51.43	38
1572.985	1.3		3165	28.90	21

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Figure S8. MALDI-TOF spectrum of **dmaph-Ag$^{(II)}$Pc.**

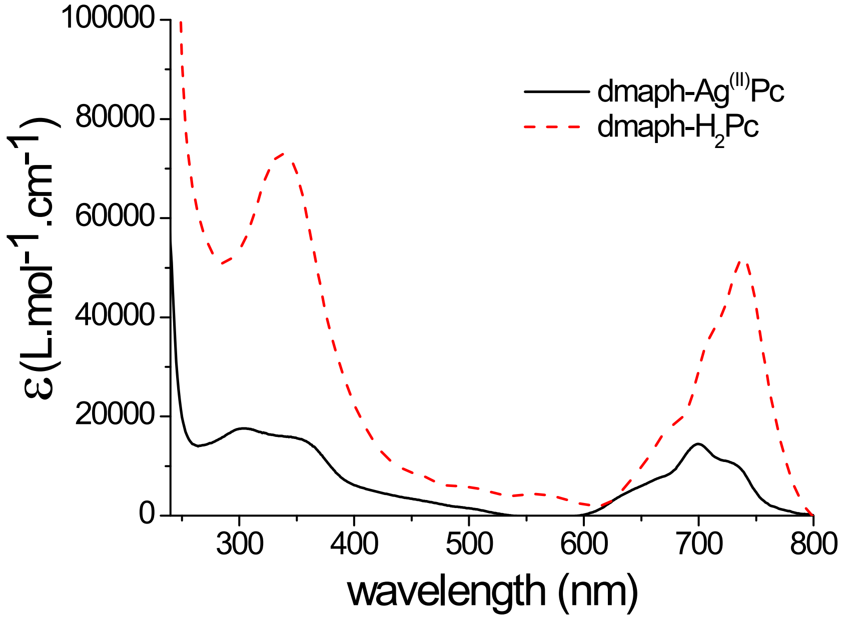


Figure S9. UV-Vis spectra of **dmaph-Ag$^{(II)}$Pc** and **dmaph-H$_2$Pc** in $CHCl_3$.

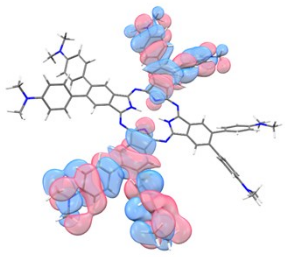
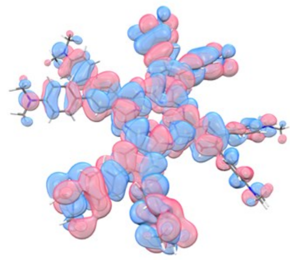
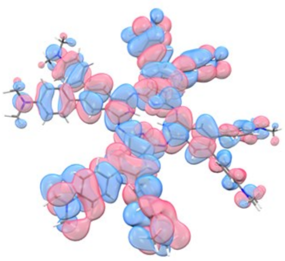
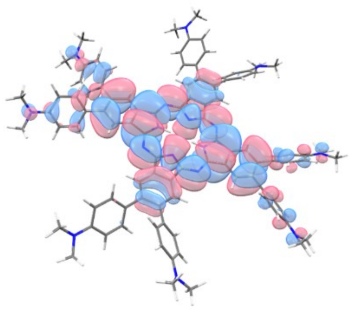
Transition	Occupied MO	Unoccupied MO
376 nm **(π – π*)** Oscillator strength = 0.19	 HOMO-2	 LUMO
736 nm **(π – π*)** Oscillator strength = 0.82	 HOMO	 LUMO+1

Figure S10. Selected MOs of **dmaph-H_2Pc** obtained by B3LYP method.

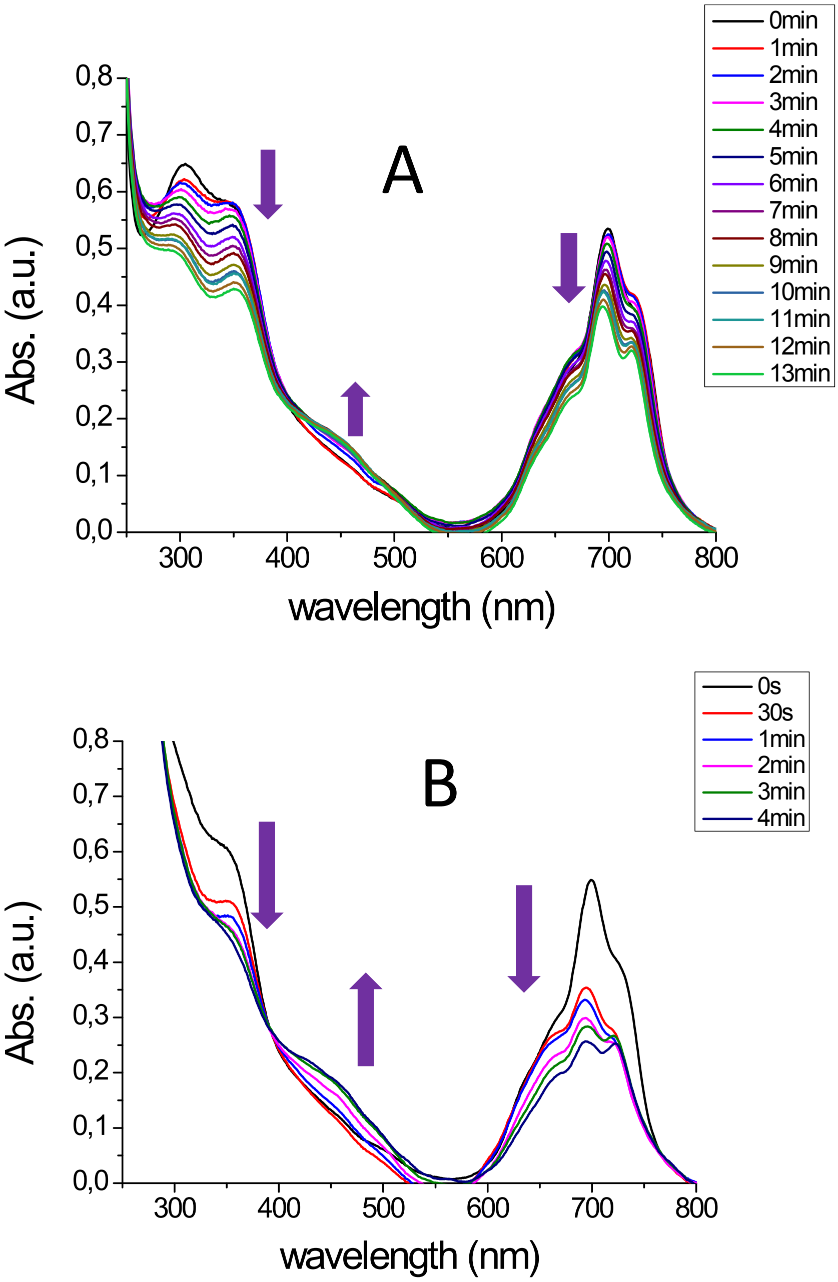


Figure S11. Photolysis of A) **dmaph-Ag$^{(II)}$Pc** and B) **dmaph-Ag$^{(II)}$Pc**/Iod under LED@405nm irradiation. LED@405 nm intensity = 390 mW/cm^2. [Iod] = 7.9×10^{-5} M, [**dmaph-Ag$^{(II)}$Pc**] = 3.8×10^{-5} M. Solvent = $CHCl_3$.

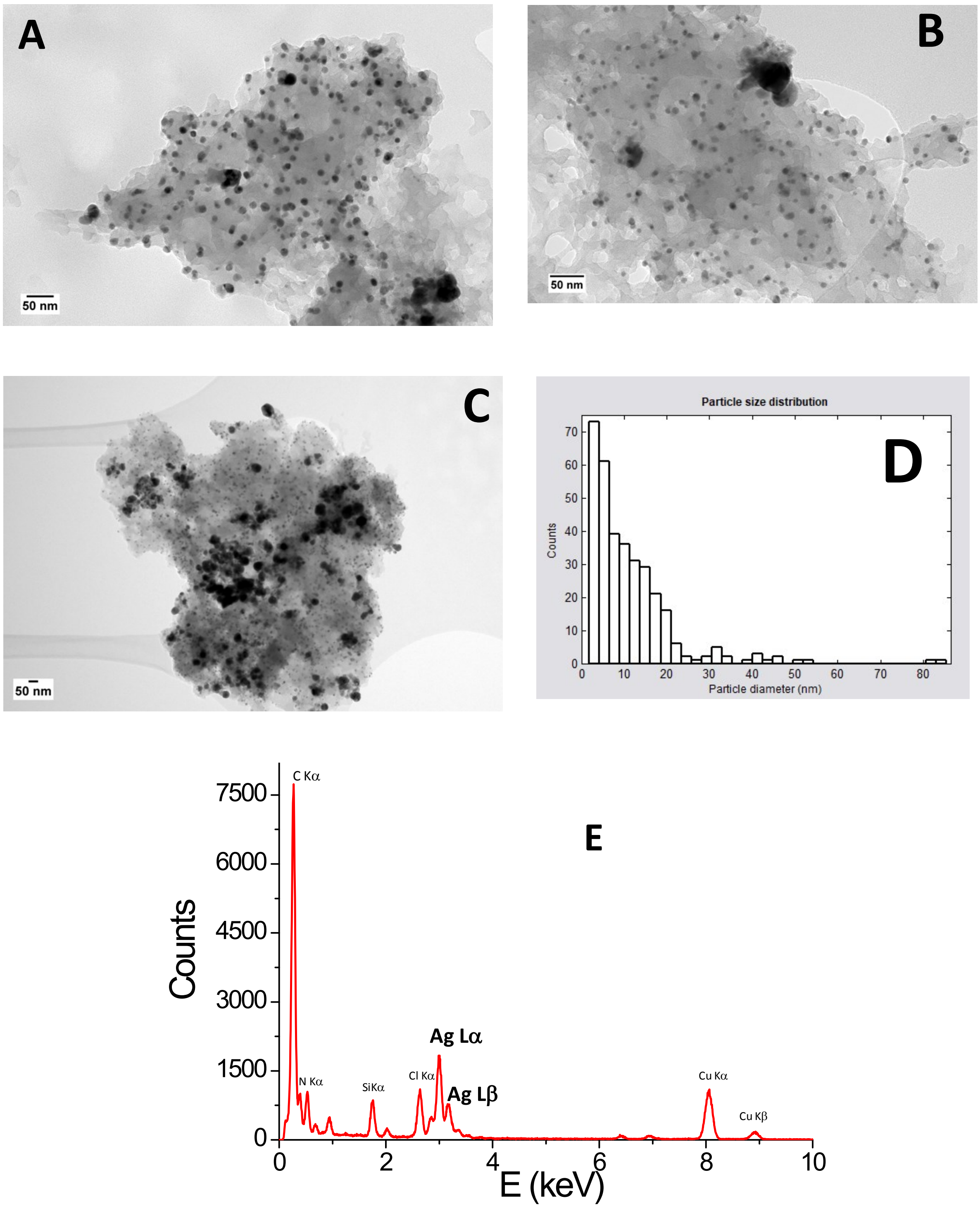


Figure S12. A), B) and C) TEM images of Ag NPs after irradiation (LED@385 nm) of **dmaph-Ag$^{(II)}$Pc**/Iod photoinitiating system in $CHCl_3$. D) Particule size diameter (in nm) and E) EDX spectrum of Ag NPs. [**dmaph-Ag$^{(II)}$Pc**] = 3.9×10^{-5} M and [Iod] = 8.4×10^{-5} M.

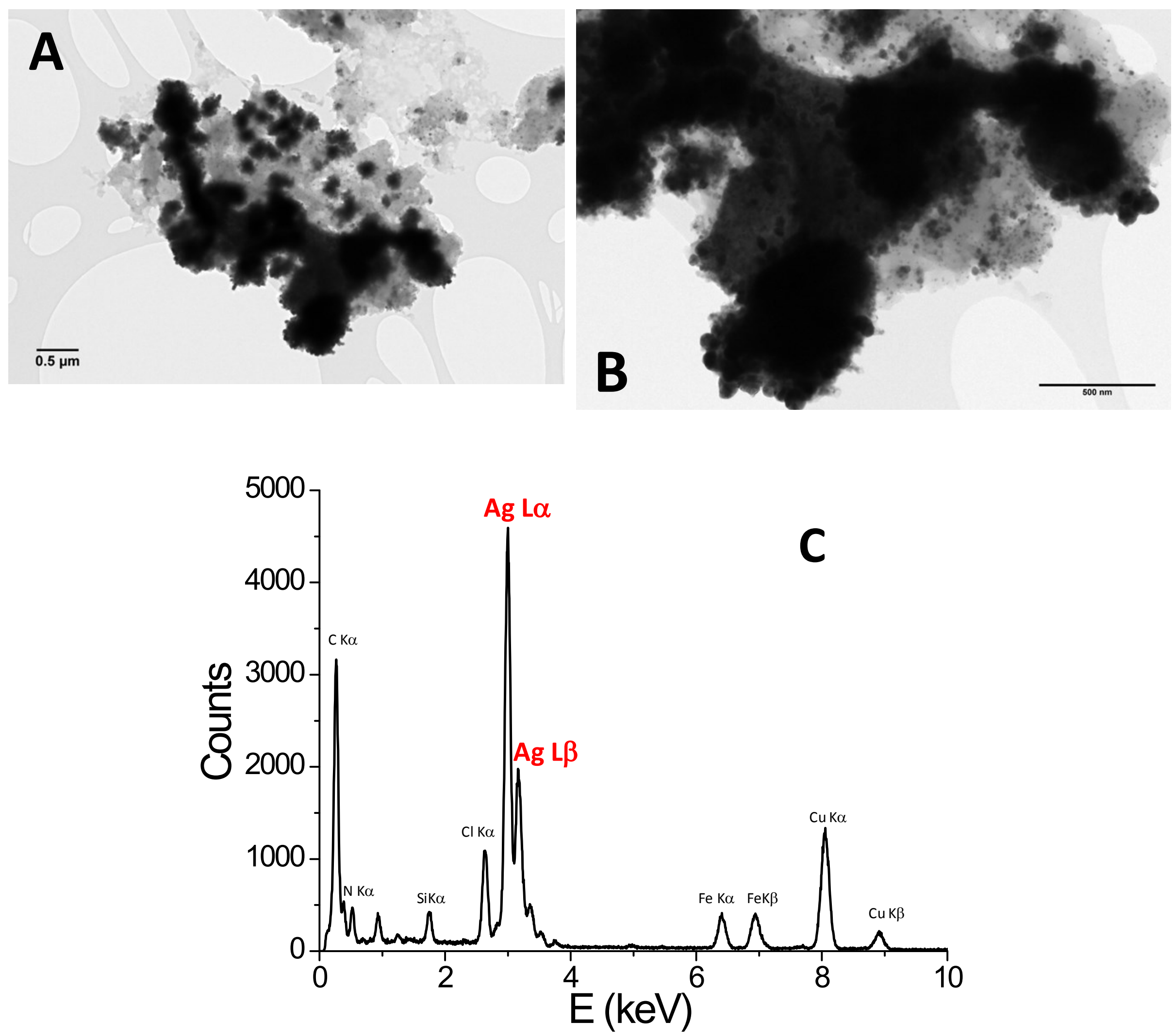


Figure S13. A) and B) TEM images of Ag NPs after irradiation (LED@385 nm) of **dmaph-Ag$^{(II)}$Pc** in $CHCl_3$. C) EDX spectrum of Ag NPs. [**dmaph-Ag$^{(II)}$Pc**] = 3.9×10^{-5} M.

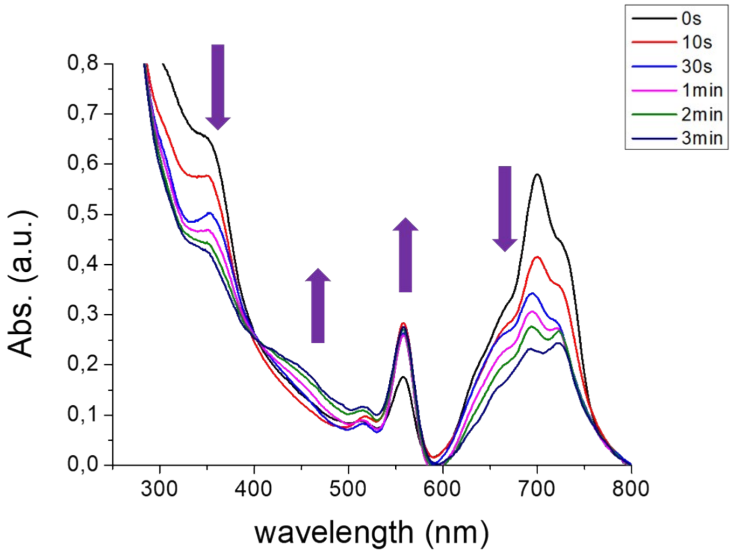


Figure S14. Photolysis of **dmaph-Ag$^{(II)}$Pc**/Iod/RhB under LED@385nm irradiation. LED@385 nm intensity = 470 mW/cm^2. [**dmaph-Ag$^{(II)}$Pc**] = 1.4 × 10^{-5} M. [Iod] = 7.9 × 10^{-5} M. [RhB] = 2.3 × 10^{-6} M. Solvent = $CHCl_3$.

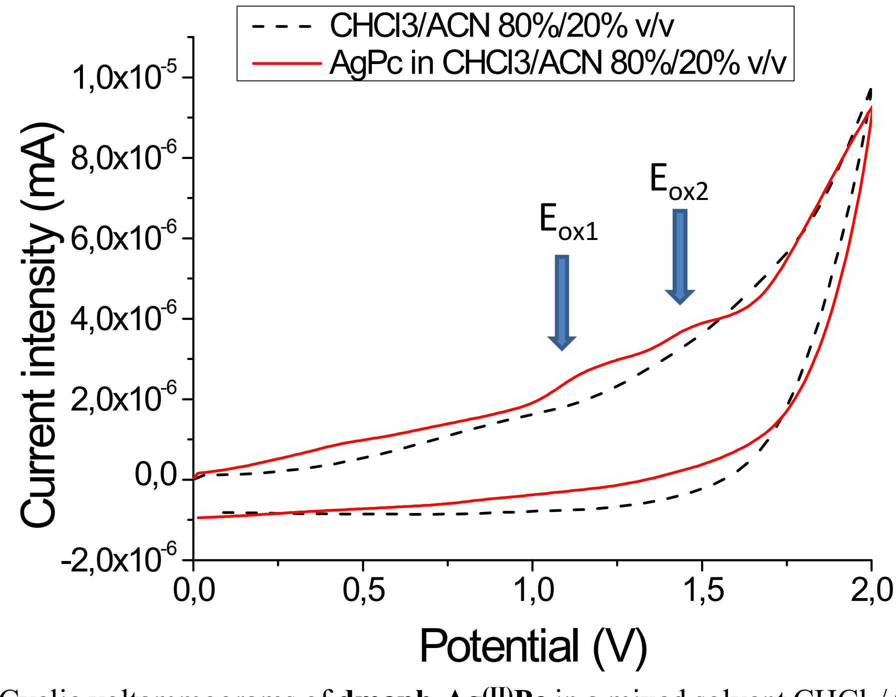


Figure S15. Cyclic voltammograms of **dmaph-Ag$^{(II)}$Pc** in a mixed solvent $CHCl_3$/ACN (80/20 v/v) + 5 × 10^{-2} M nEt$_4$BF$_4$ measured at a scan rate of 25 mV.s^{-1}. [**dmaph-Ag$^{(II)}$Pc**] = 10^{-4} M.

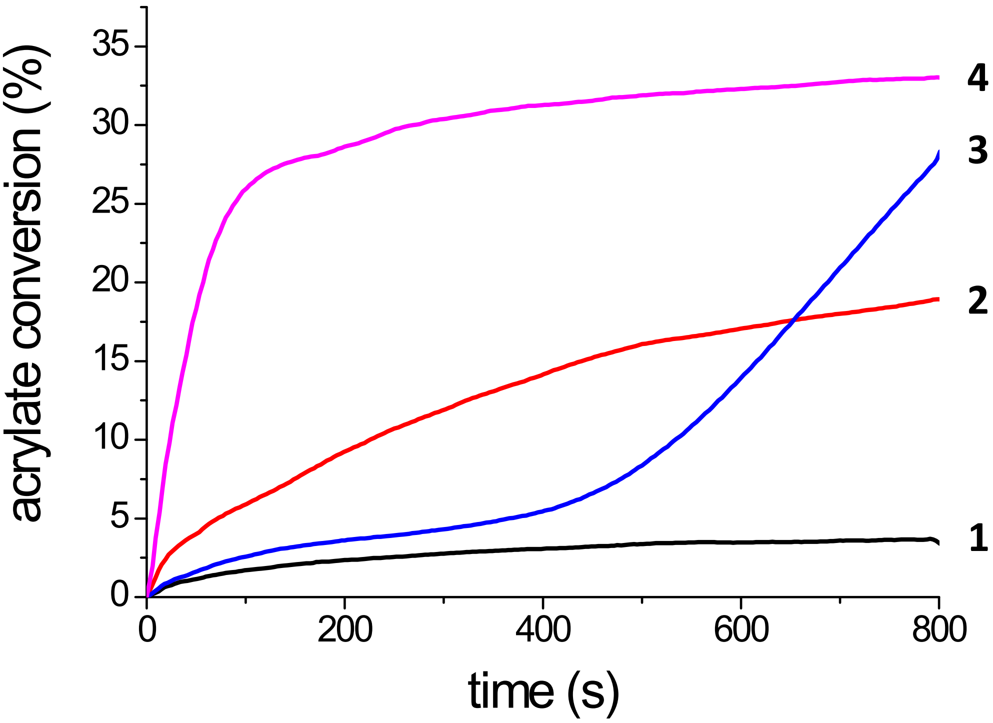


Figure S16. Kinetic profiles of TMPTA in laminate with **dmaph-Ag$^{(II)}$Pc** (0.25 wt%) and **dmaph-Ag$^{(II)}$Pc**/Iod (0.25%/2.5% w/w) under LED exposure. 1) **dmaph-Ag$^{(II)}$Pc**/TMPTA upon LED@385 nm, 2) **dmaph-Ag$^{(II)}$Pc**/TMPTA upon LED@405 nm, 3) **dmaph-Ag$^{(II)}$Pc**/Iod/TMPTA upon LED@385 nm and 4) **dmaph-Ag$^{(II)}$Pc**/Iod/TMPTA upon LED@405 nm.

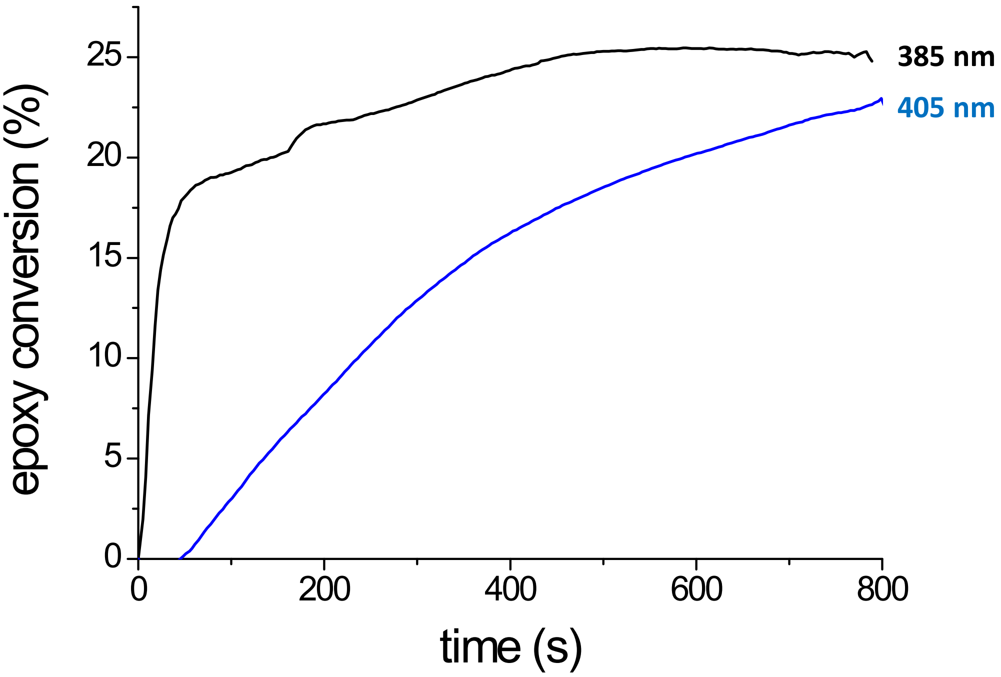


Figure S17. Kinetics of ring-opening polymerization of EPOX/CHO (50%/50% w/w) under air with **dmaph-Ag$^{(II)}$Pc** (0.25%wt) upon LEDs irradiation at 385 nm (130 mW/cm^2) and at 405 nm (160 mW/cm^2).

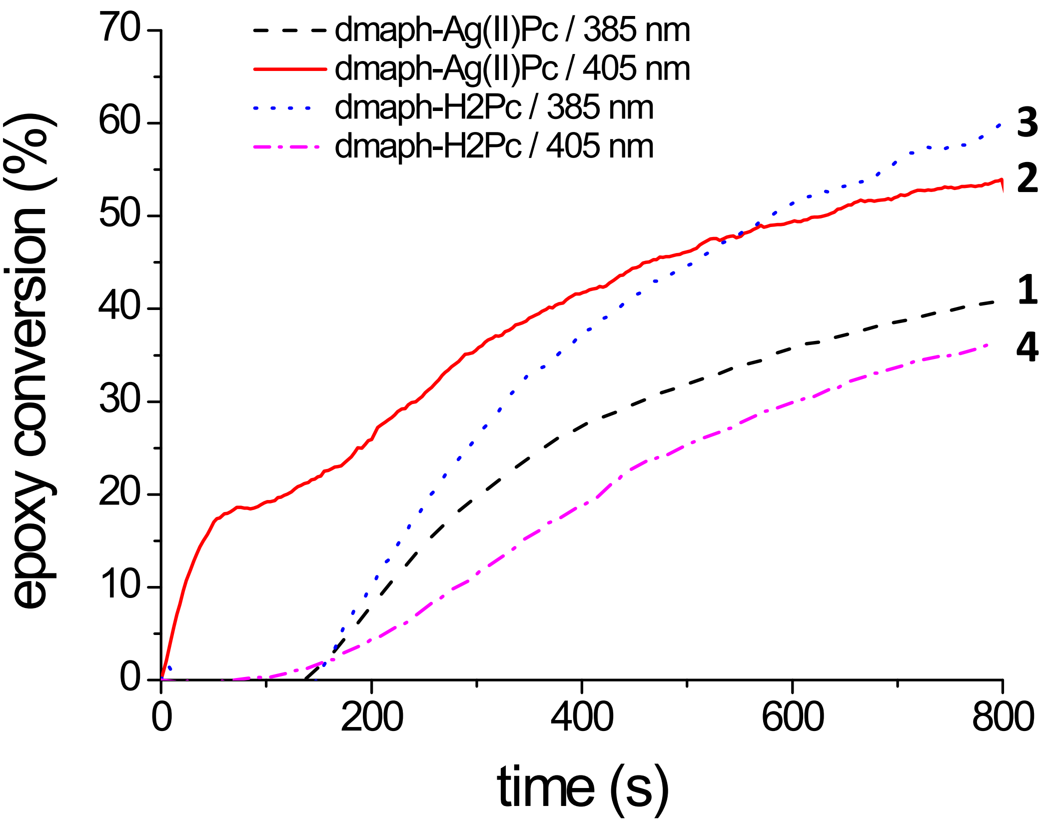


Figure S18. Kinetics of photopolymerization of EPOX/CHO (50/50 wt%) under air with **dmaph-Ag$^{(II)}$Pc**/Iod (0.25%/2.5% w/w) under 1) LED@385 nm, 2) LED@405 nm exposure and with **dmaph-H2Pc**/Iod (0.25%/2.5% w/w) under 3) LED@385 nm and 4) LED@405 nm. Intensities of LED@385 nm and LED@405 nm are respectively 130 and 160 mW/cm^2.

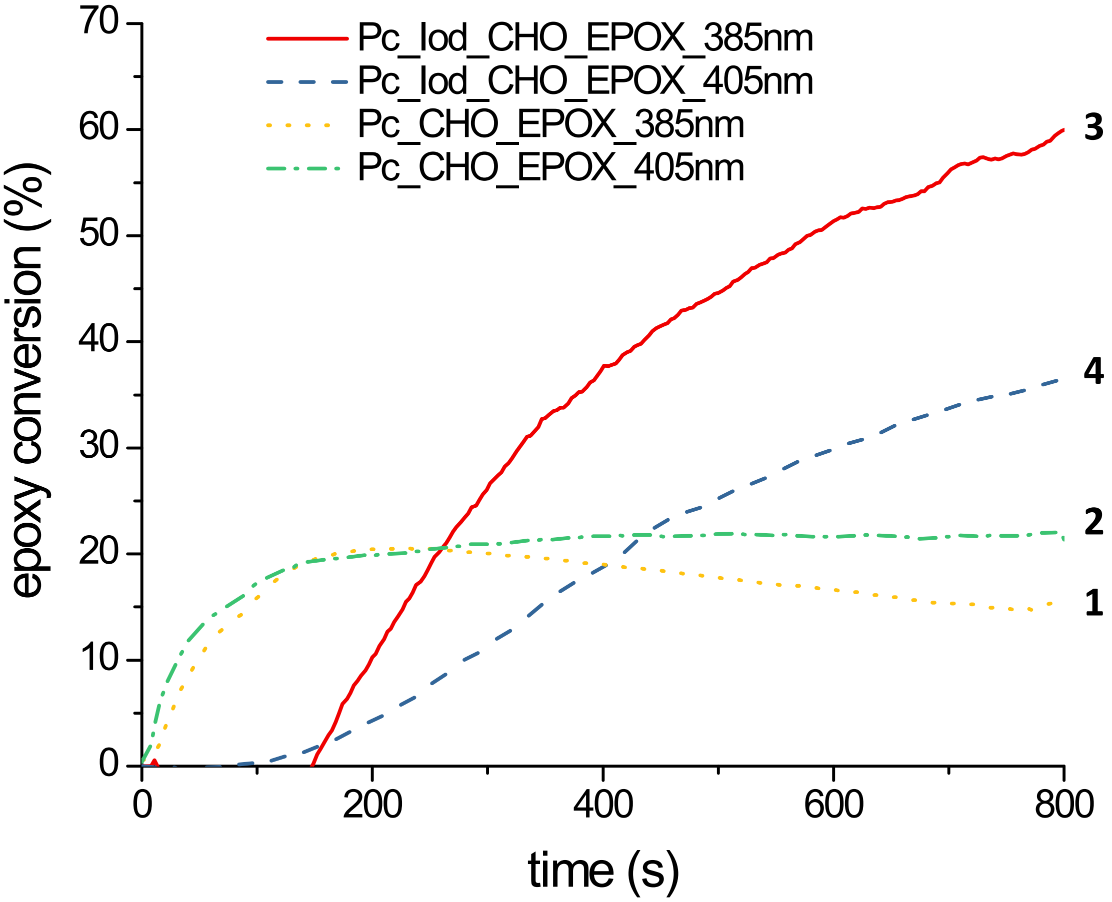


Figure S19. Kinetics of photopolymerization of EPOX/CHO (50/50 wt%) under air with **dmaph-H2Pc** alone (0.25 wt%) under 1) LED@385 nm, 2) LED@405 nm exposure and with **dmaph-H2Pc**/Iod (0.25%/2.5% w/w) under 3) LED@385 nm and 4) LED@405 nm. Intensities of LED@385 nm and LED@405 nm are respectively 130 and 160 mW/cm^2.

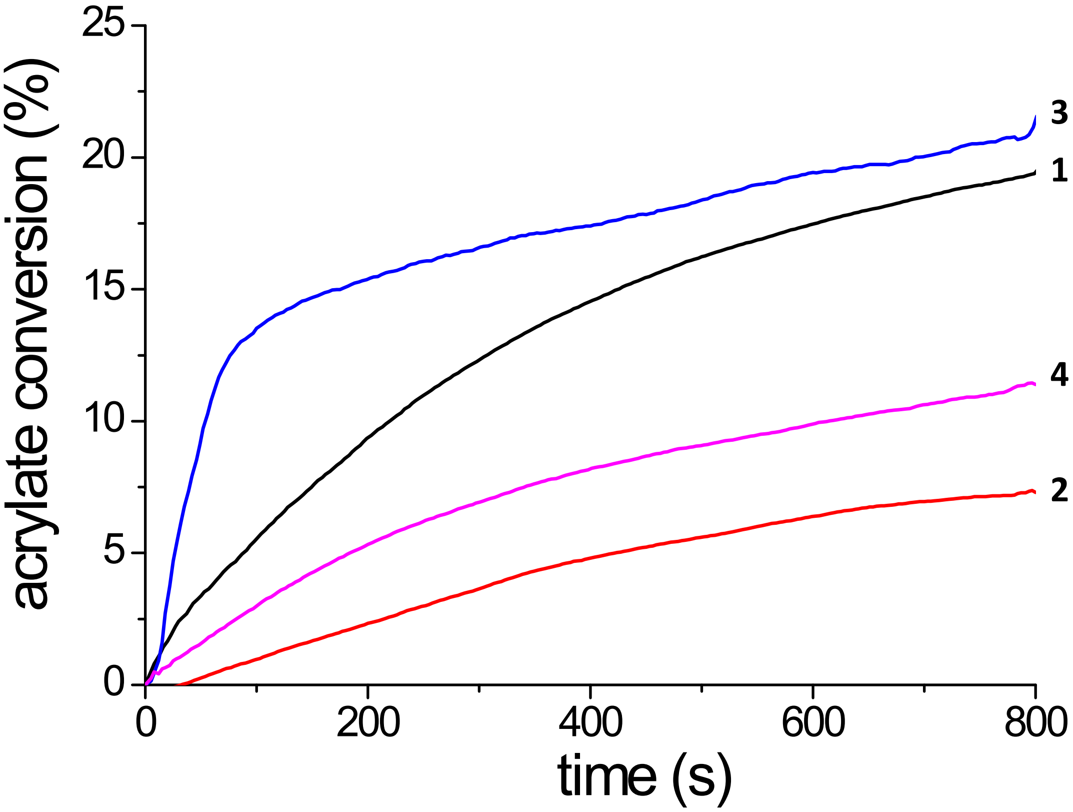


Figure S20. Kinetic profiles of TMPTA in laminate with **dmaph-H2Pc** (0.25 wt%) and **dmaph-H2Pc**/Iod (0.25%/2.5% w/w) under LED exposure. 1) **dmaph-H2Pc**/TMPTA upon LED@385 nm, 2) **dmaph-H2Pc**/TMPTA upon LED@405 nm, 3) **dmaph-H2Pc**/Iod/TMPTA upon LED@385 nm and 4) **dmaph-H2Pc**/Iod/TMPTA upon LED@405 nm. Intensities of LED@385 nm and LED@405 nm are respectively 130 and 160 mW/cm^2.

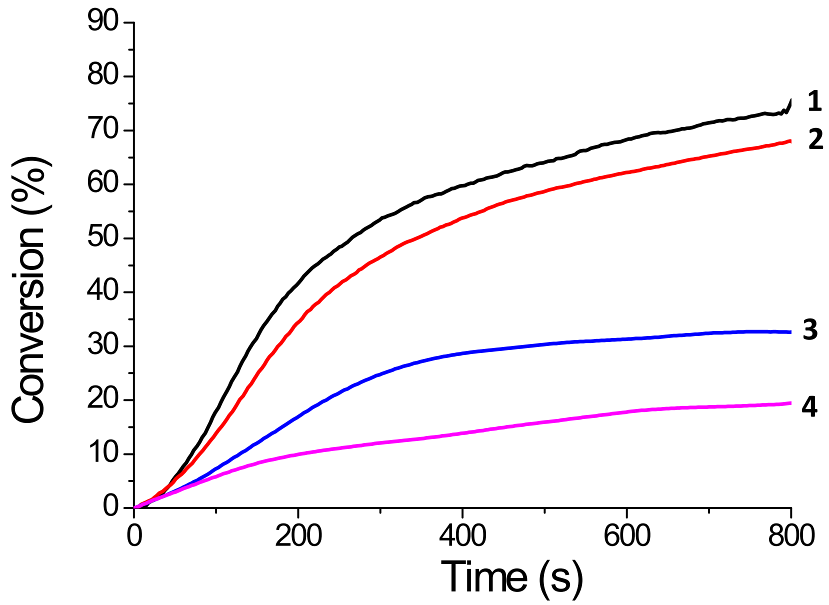


Figure S21. Kinetic profiles of the system **dmaph-Ag$^{(II)}$Pc**/Iod/EPOX/CHO/TMPTA (0.25%/2.5%/33%/33%/33% w/w/w/w/w) in laminate. Epoxy and acrylate conversions of EPOX/CHO (curves 1 and 2) and TMPTA (curves 3 and 4) respectively with **dmaph-Ag$^{(II)}$Pc**/Iod (0.25%/2.5% w/w) photoinitiating system upon LEDs irradiation at 385 nm (130 mW/cm^2, curves 1 and 3) and at 405 nm (160 mW/cm^2, curves 2 and 4).

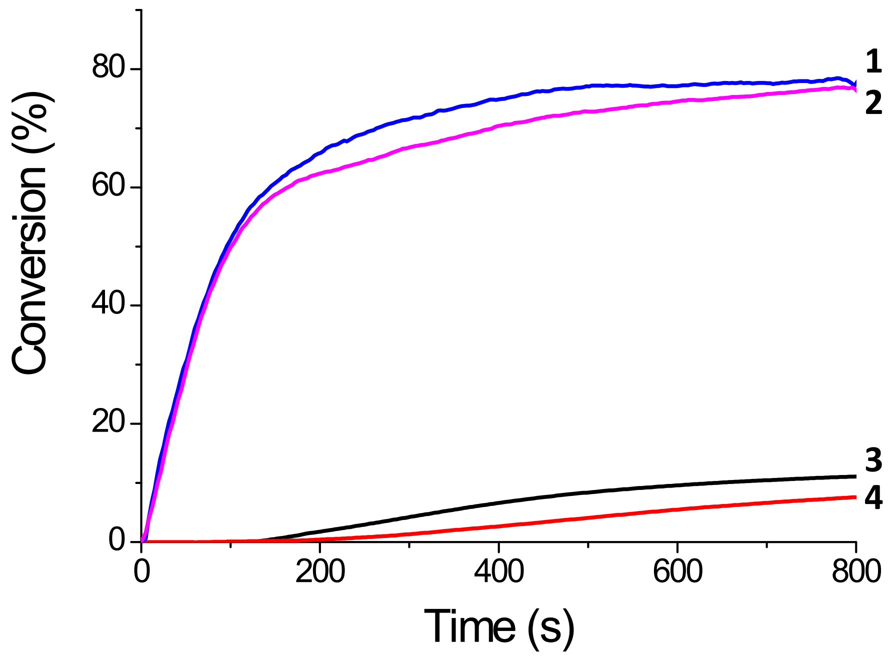
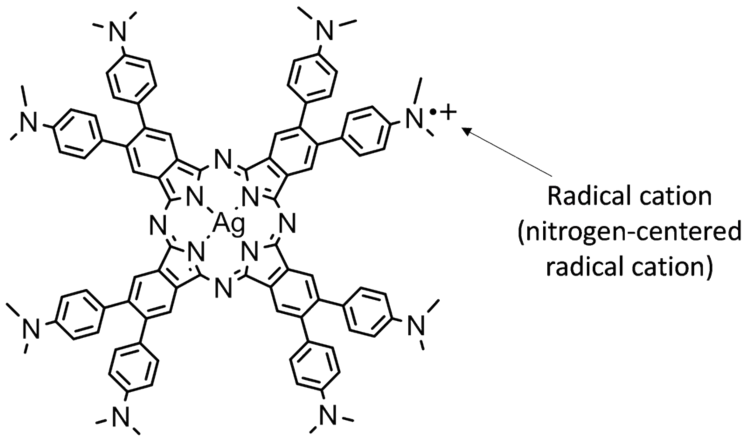


Figure S22. Kinetic profiles of the system **dmaph-Ag$^{(II)}$Pc**/Iod/EPOX/CHO/TMPTA (0.25%/2.5%/33%/33%/33% w/w/w/w/w) under air. Epoxy and acrylate conversions of EPOX/CHO (curves 1 and 2) and TMPTA (curves 3 and 4) respectively with **dmaph-**

Ag$^{(II)}$Pc/Iod (0.25%/2.5% w/w) photoinitiating system upon LEDs irradiation at 385 nm (130 mW/cm^2, curves 1 and 3) and at 405 nm (160 mW/cm^2, curves 2 and 4).



dmaph-Ag$^{(II)}$Pc$^{\bullet+}$

Figure S23. Structure of the radical cation **dmaph-Ag$^{(II)}$Pc$^{\bullet+}$**