Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Supporting Information For:

Exploring the high efficient light conversion agents for agricultural film based on aggregation induced emission effects

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The procedure of chemical oxidation experiments for DTBC-DPK, TTBC-TPE and DTBC-TPE are same to TPE and the detail data are shown in Fig. S5, Fig. S6 and Fig. S7. It is very difficult to obtain the oxidation products of DTBC-TPE and TTBC-TPE due to the extraordinary low yields. Although we successfully obtained the oxidation product of DTBC-DPK, but the structure is still difficult to confirm, the MALDI/TOF MS spectrum of the purified oxidation products are shown in Fig. S19 (purified by column chromatography) and Fig. 20 (purified by recrystallization in solution).

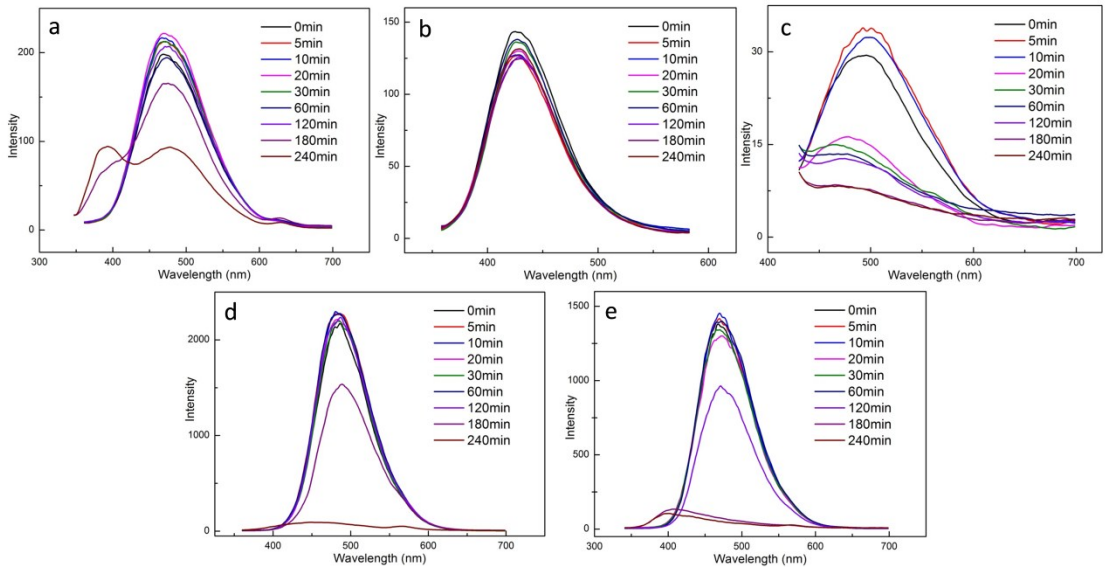

Fig. S1 Fluorescence spectra of TPE (a), TPA (b), DTBC-DPK(c), TTBC-TPE (d) and DTBC-TPE (e) in PVC films under photo irradiation at different times.

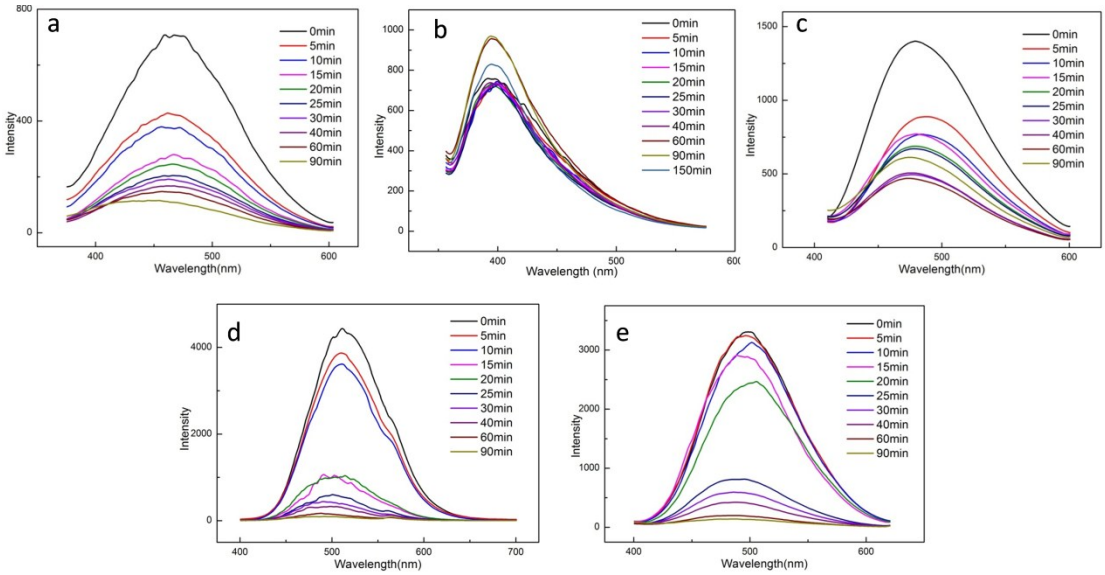

Fig. S2 Fluorescence spectra of TPE (a), TPA(b), DTBC-DPK(c), TTBC-TPE(d) and DTBC-TPE(e) in aggregate state(THF/Water, 1:9; 1×10^{-5} mol/L) under photo irradiation at different times.

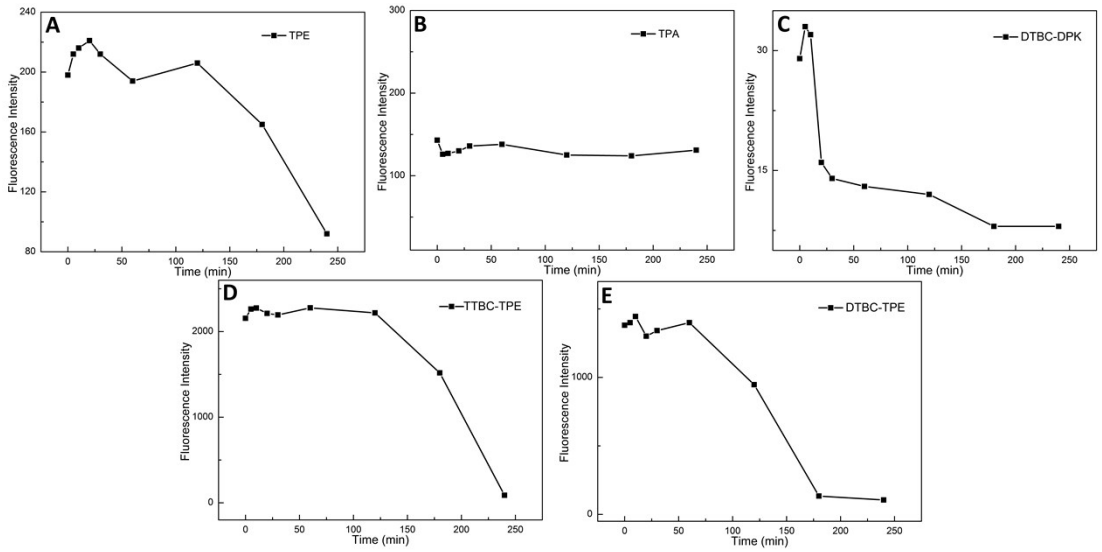

Fig. S3 Plot of maximum PL peak intensity vs. irradiated time of five luminogens in PVC film.

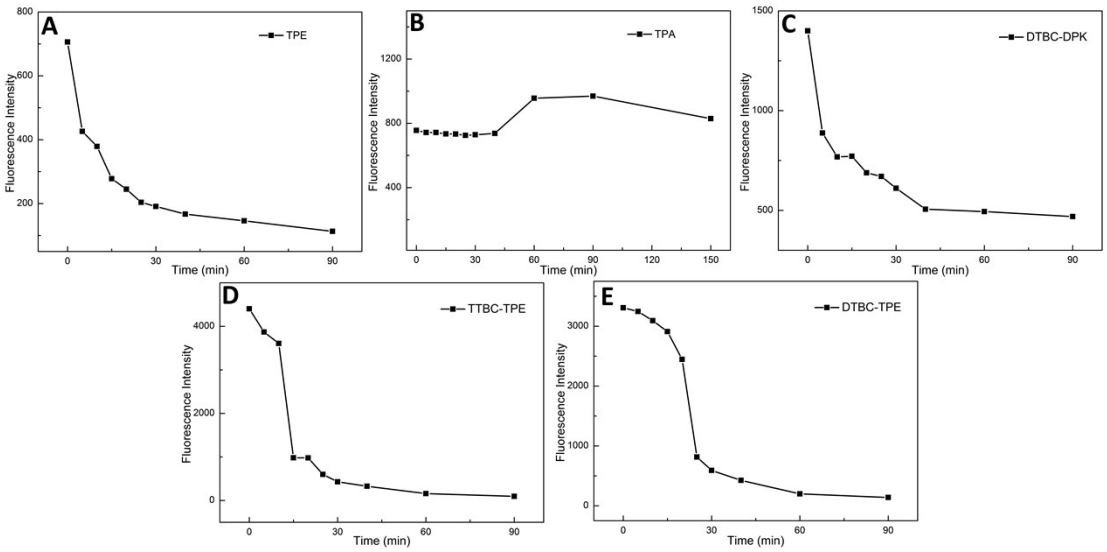

Fig. S4 Plot of maximum PL peak intensity vs. irradiated time of five luminogens in aqueous mixture.

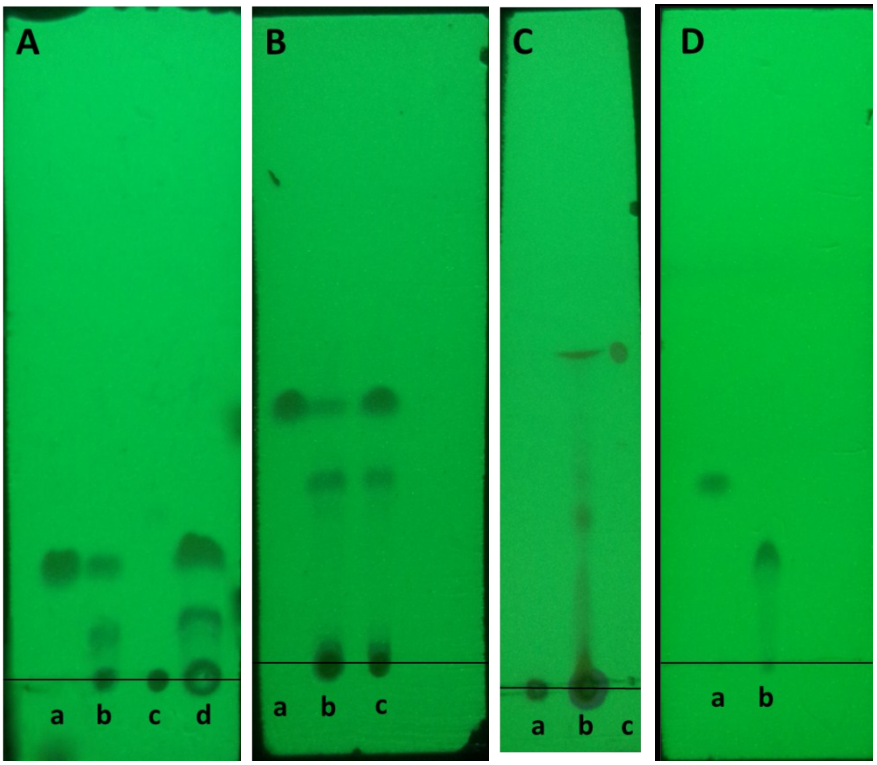

Fig. S5 TLC monitoring pictures of DTBC-DPK at (A) equivalent molar ratio of DDQ to luminogen (a position is reactant, b position is reaction mixture, c position is oxidant, d position is mixture of reactant and reaction mixture); (B) molar ratio of DDQ to luminogen is 2:1 (a position is reactant, b position is reaction mixture, c position is mixture of reactant and reaction mixture); (C) room temperature (a position is oxidant, b position is reaction mixture, c position is reactant); (D) purified oxidation product (a position is reactant, b position is purified oxidation product). Pictures are taken under 365nm UV illumination.

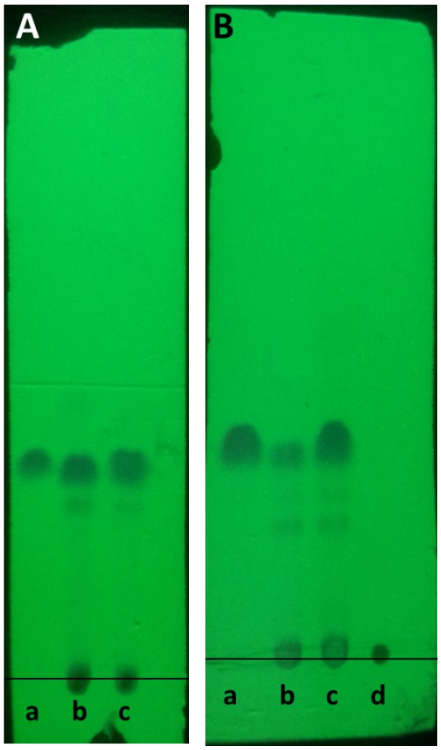

Fig. S6 TLC monitoring pictures of DTBC-TPE at (A) equivalent molar ratio of DDQ to luminogen (B) molar ratio of DDQ to luminogen is 2:1 (a position is reactant, b position is reaction mixture, c position is mixture of reactant and reaction mixture, d position is oxidant). Pictures are taken under 365nm UV illumination.

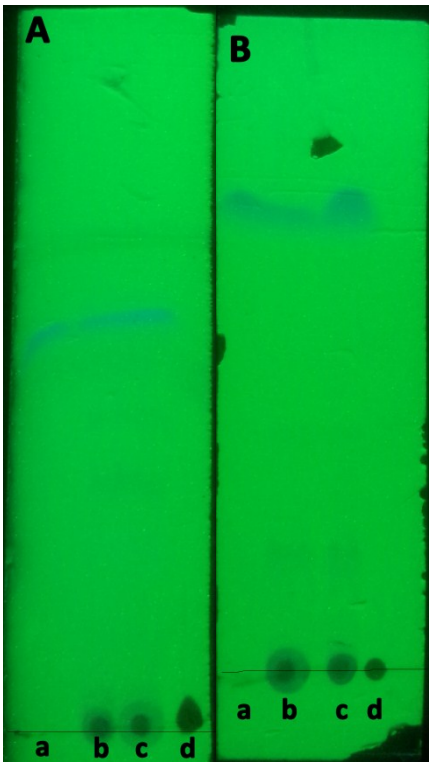

Fig. S7 TLC monitoring pictures of TTBC-TPE at (A) equivalent molar ratio of DDQ to luminogen (B) molar ratio of DDQ to luminogen is 2:1 (a position is reactant, b position is reaction mixture, c position is mixture of reactant and reaction mixture, d position is oxidant). Pictures are taken under 365nm UV illumination.

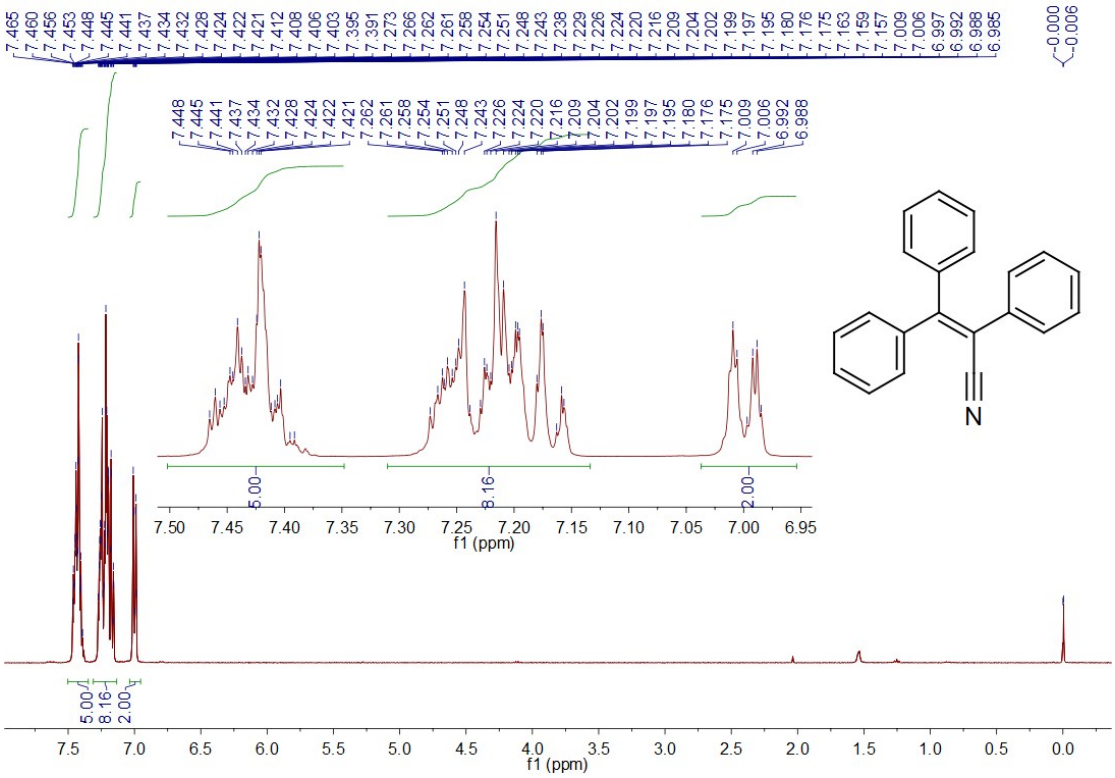

Fig. S8 ^{1}H NMR (400 MHz) spectrum of 2,3,3-triphenylacrylonitrile (TPA) in $CDCl_3$.

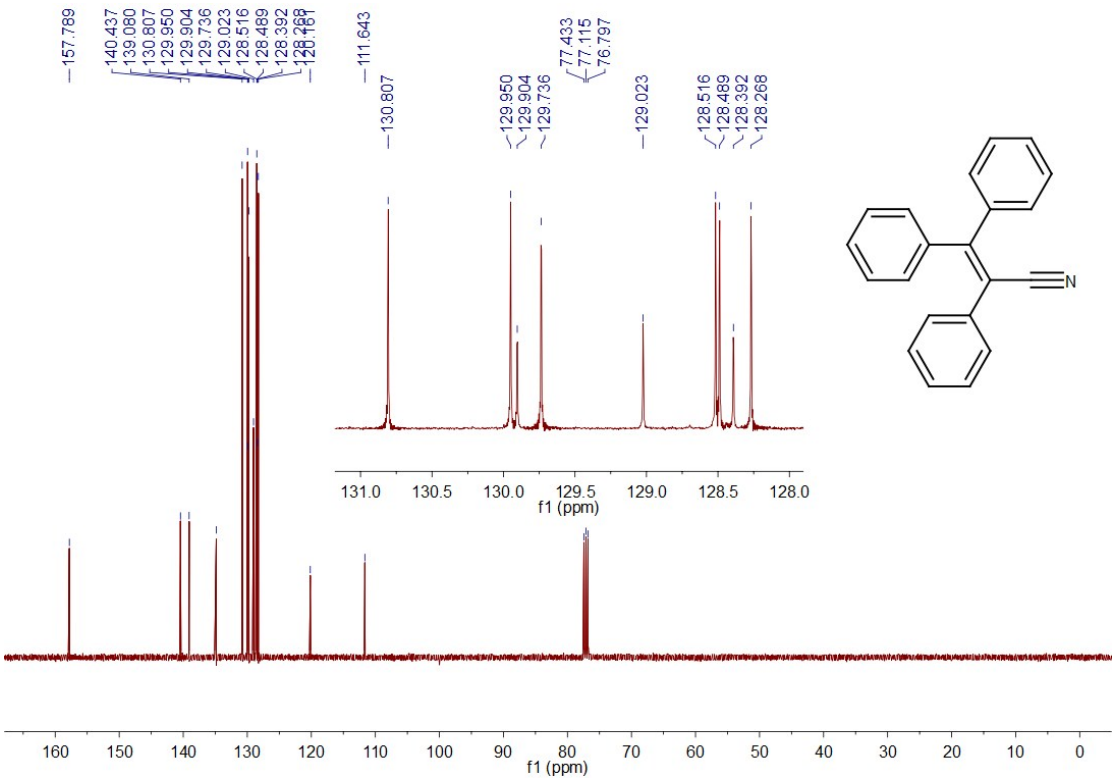

Fig. S9 ^{13}C NMR (100 MHz) spectrum of 2,3,3-triphenylacrylonitrile (TPA) in $CDCl_3$.

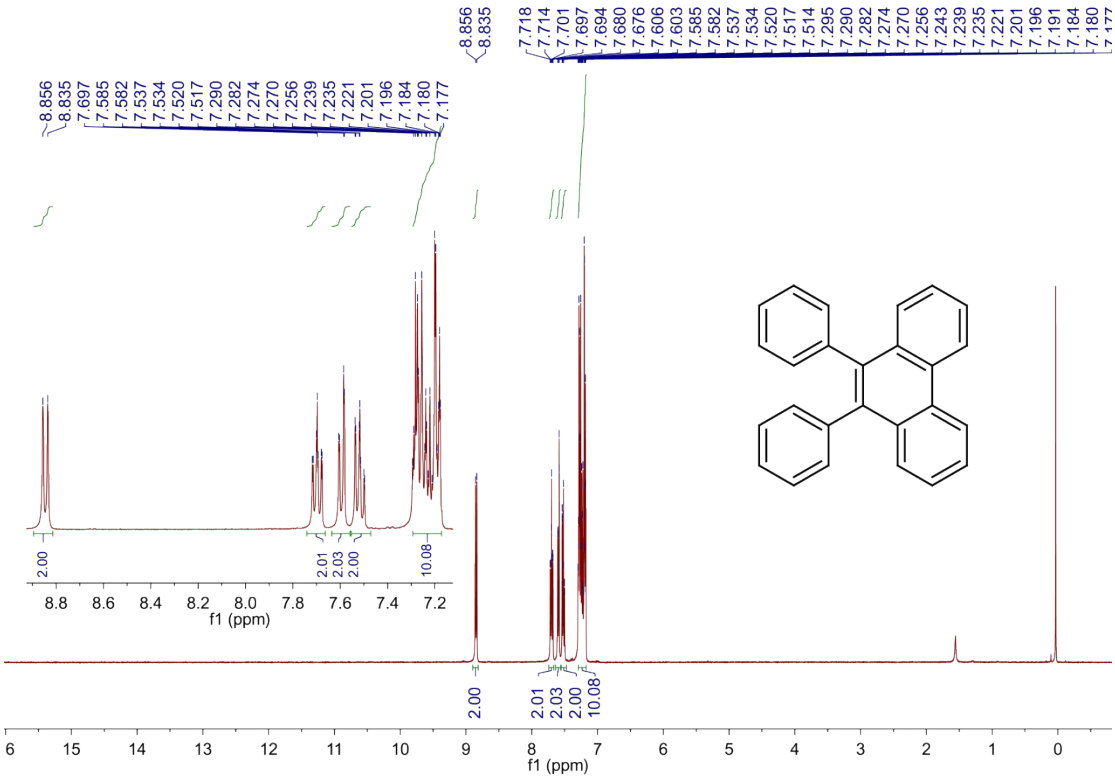

Fig. S10 ^{1}H NMR (400 MHz) spectrum of 9,10-diphenylphenanthrene (DPP) in $CDCl_3$.

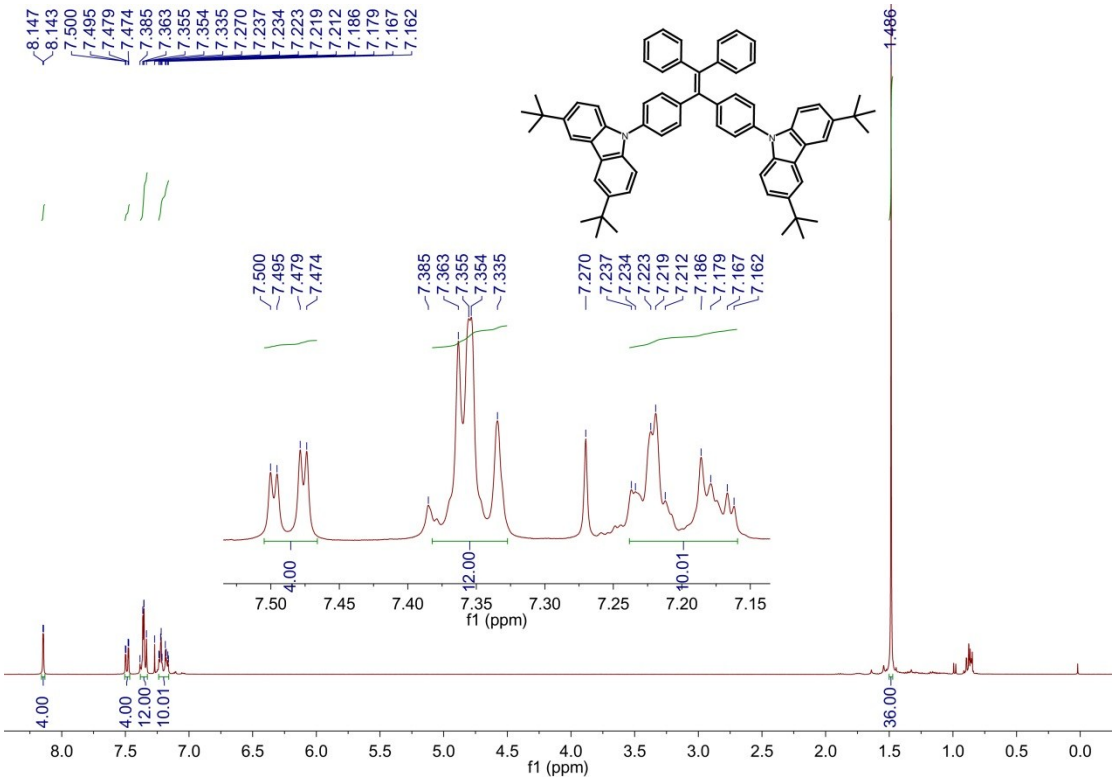

Fig. S11 ^{1}H NMR (400 MHz) spectrum of DTBC-TPE in $CDCl_3$.

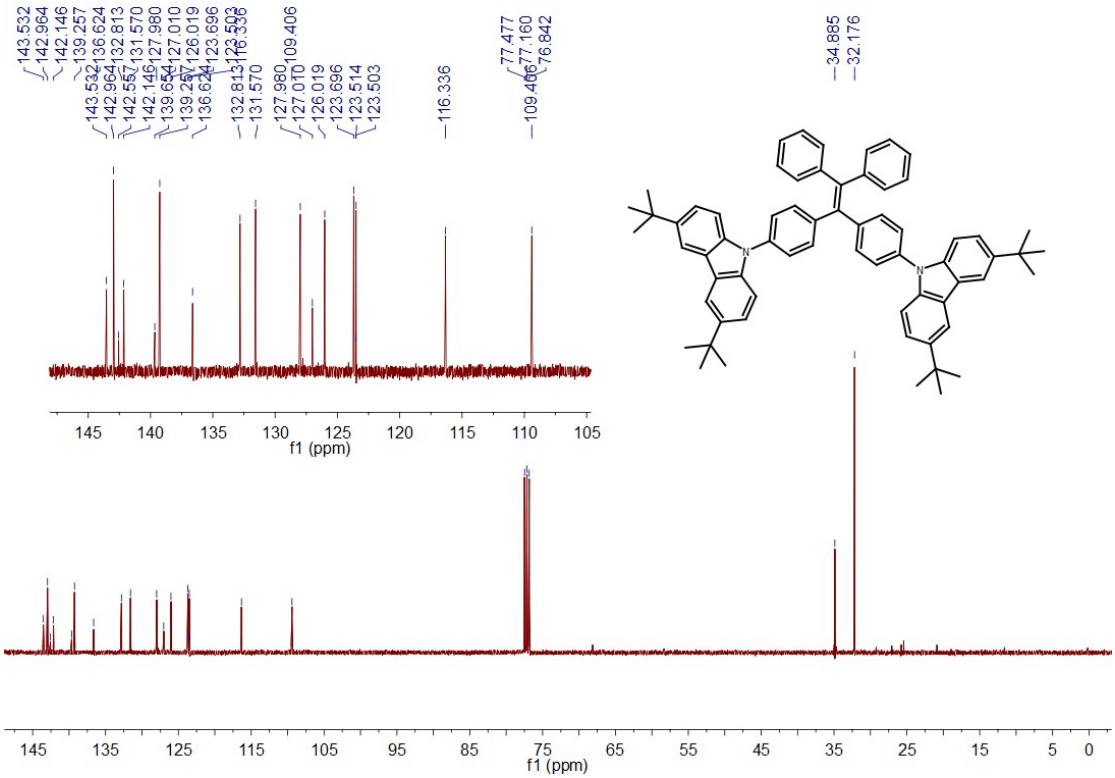

Fig. S12 ^{13}C NMR (100 MHz) spectrum of DTBC-TPE in $CDCl_3$.

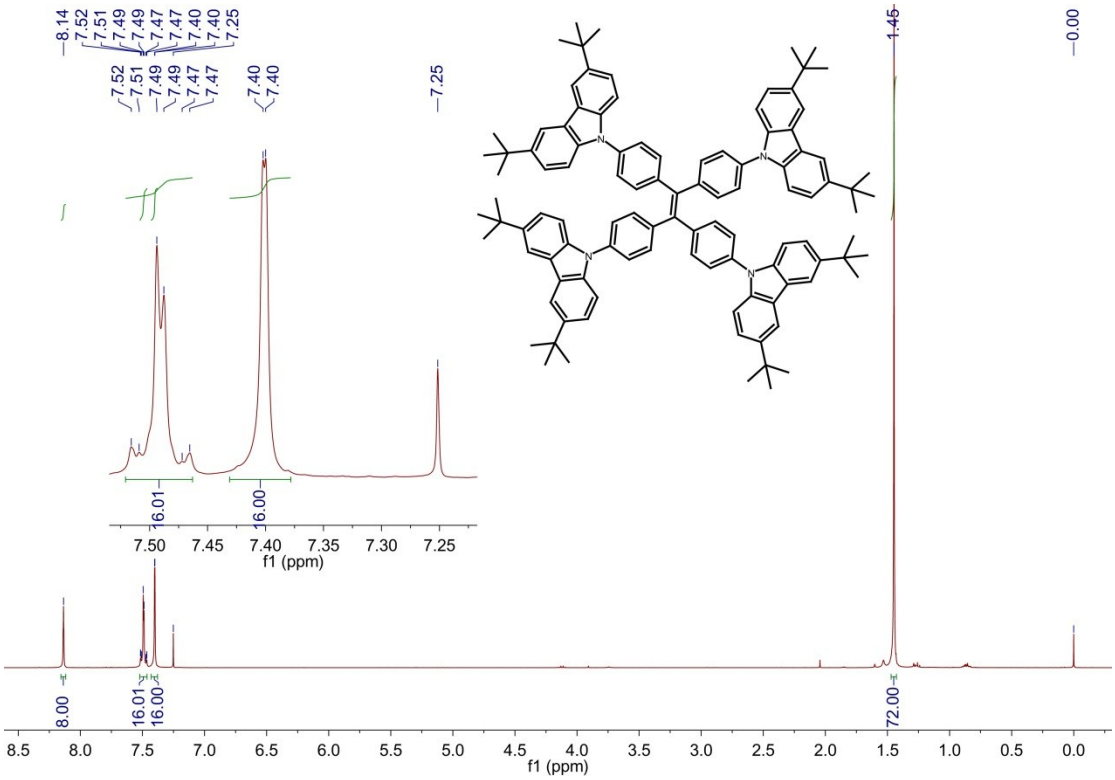

Fig. S13 ^{1}H NMR (400 MHz) spectrum of TTBC-TPE in $CDCl_3$.

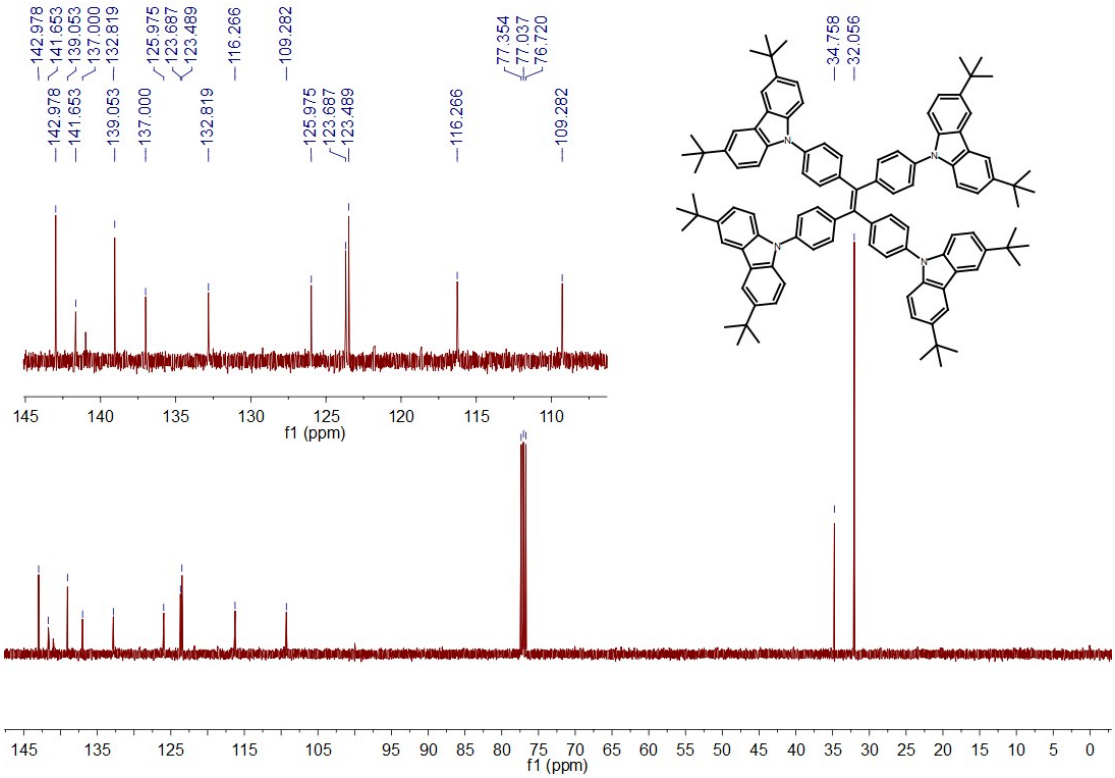

Fig. S14 ^{13}C NMR (100 MHz) spectrum of TTBC-TPE in $CDCl_3$.

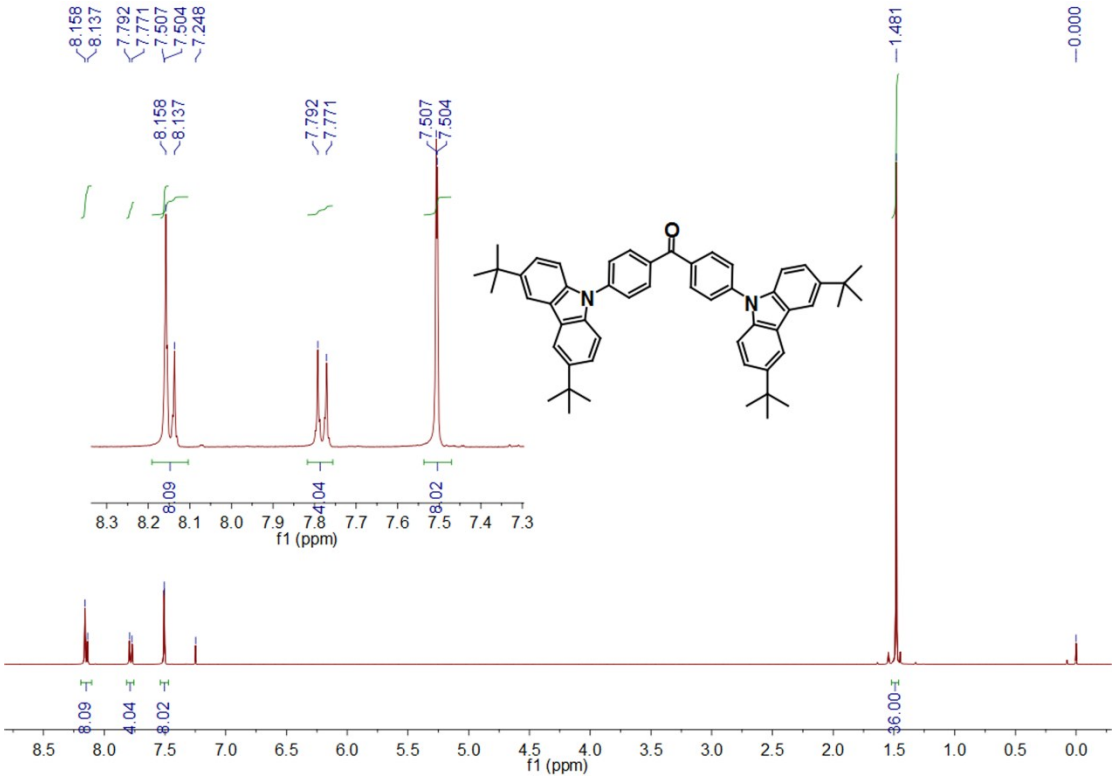

Fig. S15 ^{1}H NMR (400 MHz) spectrum of DTBC-DPK in $CDCl_3$.

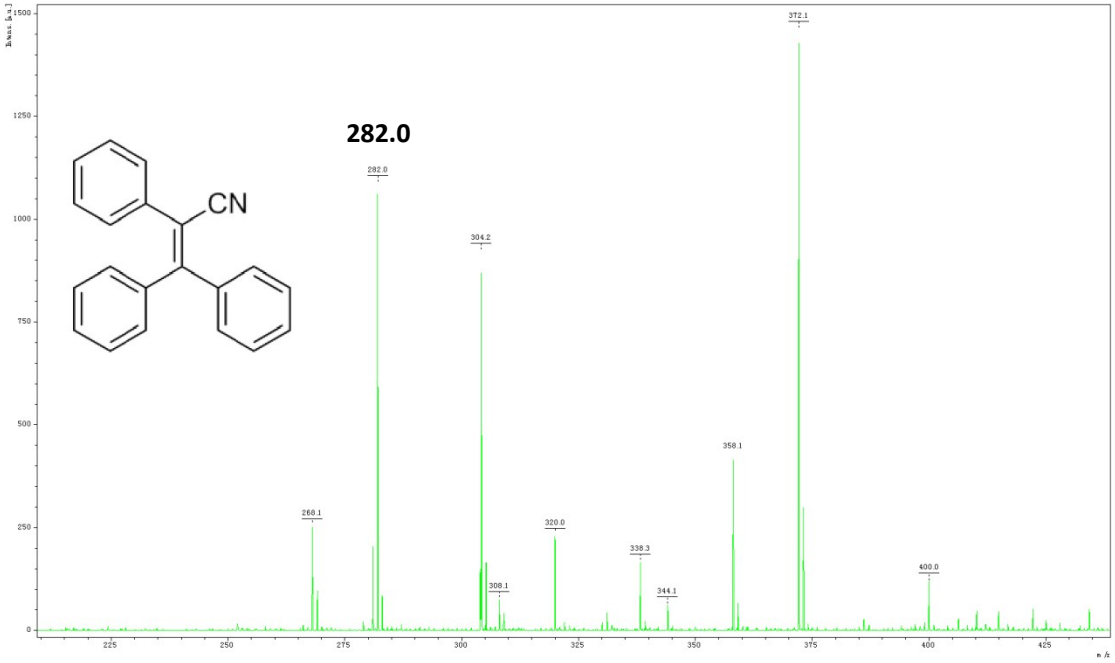

Fig. S16 MALDI/TOF MS spectrum of TPA.

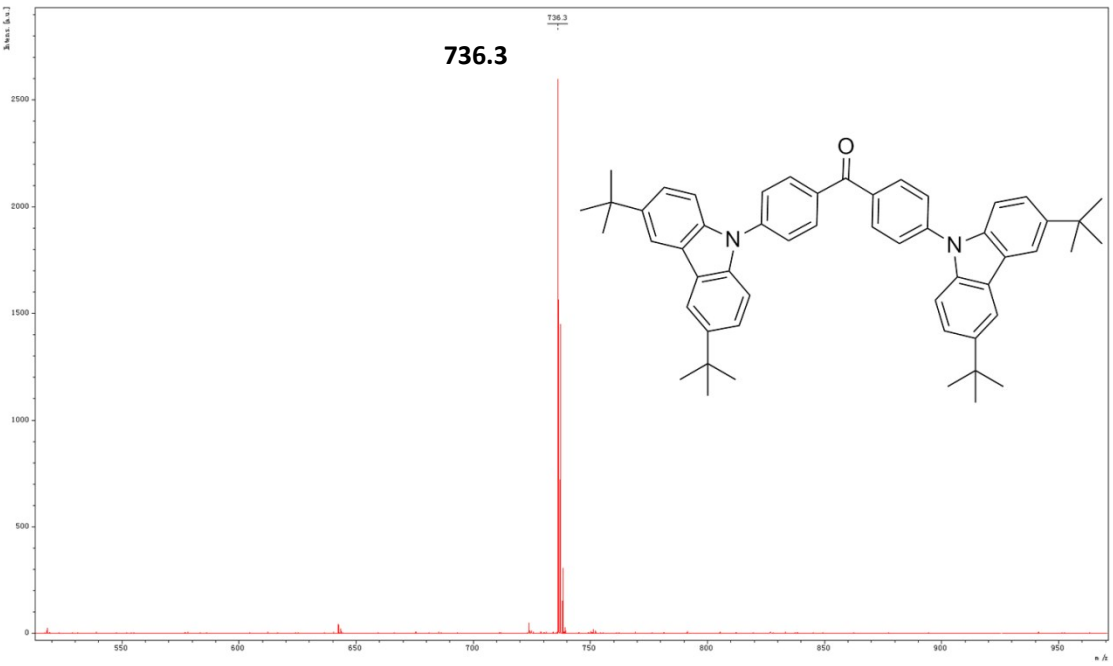

Fig. S17 MALDI/TOF MS spectrum of DTBC-DPK.

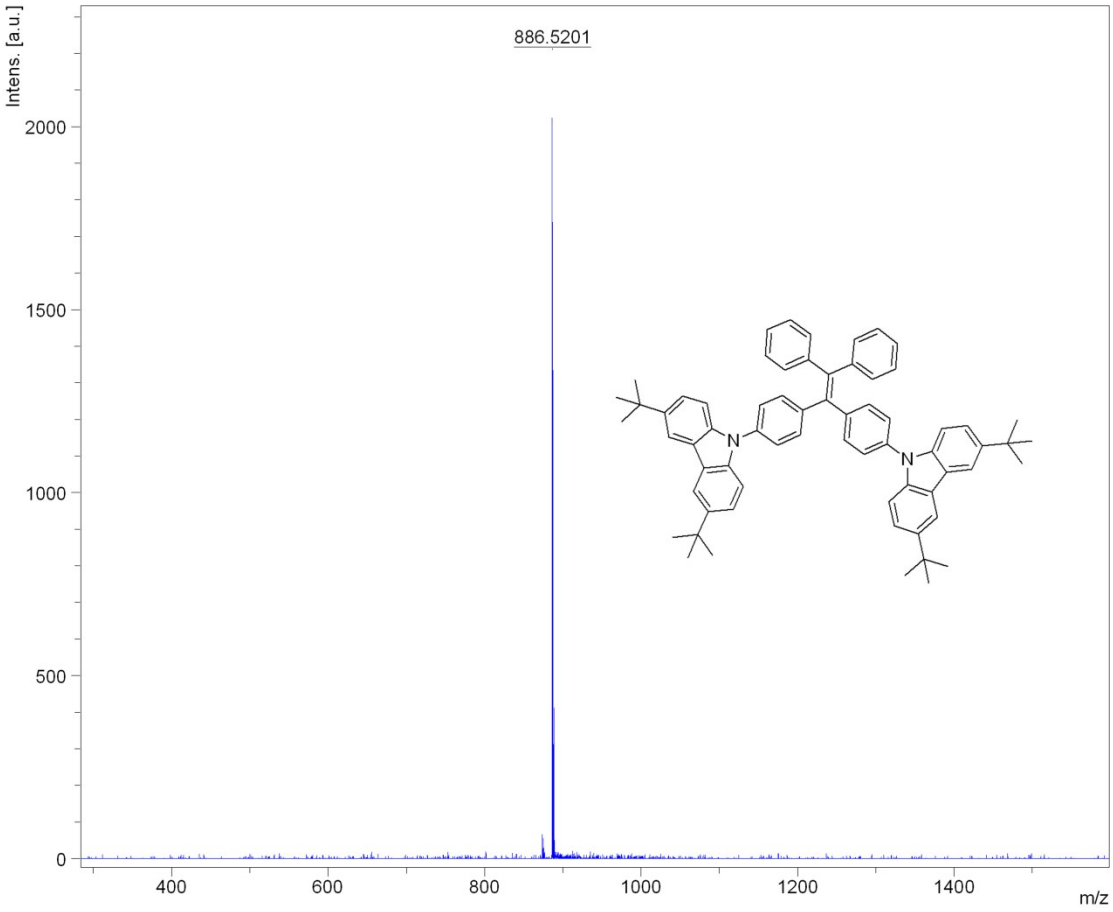

Fig. S18 MALDI/TOF MS spectrum of DTBC-TPE.

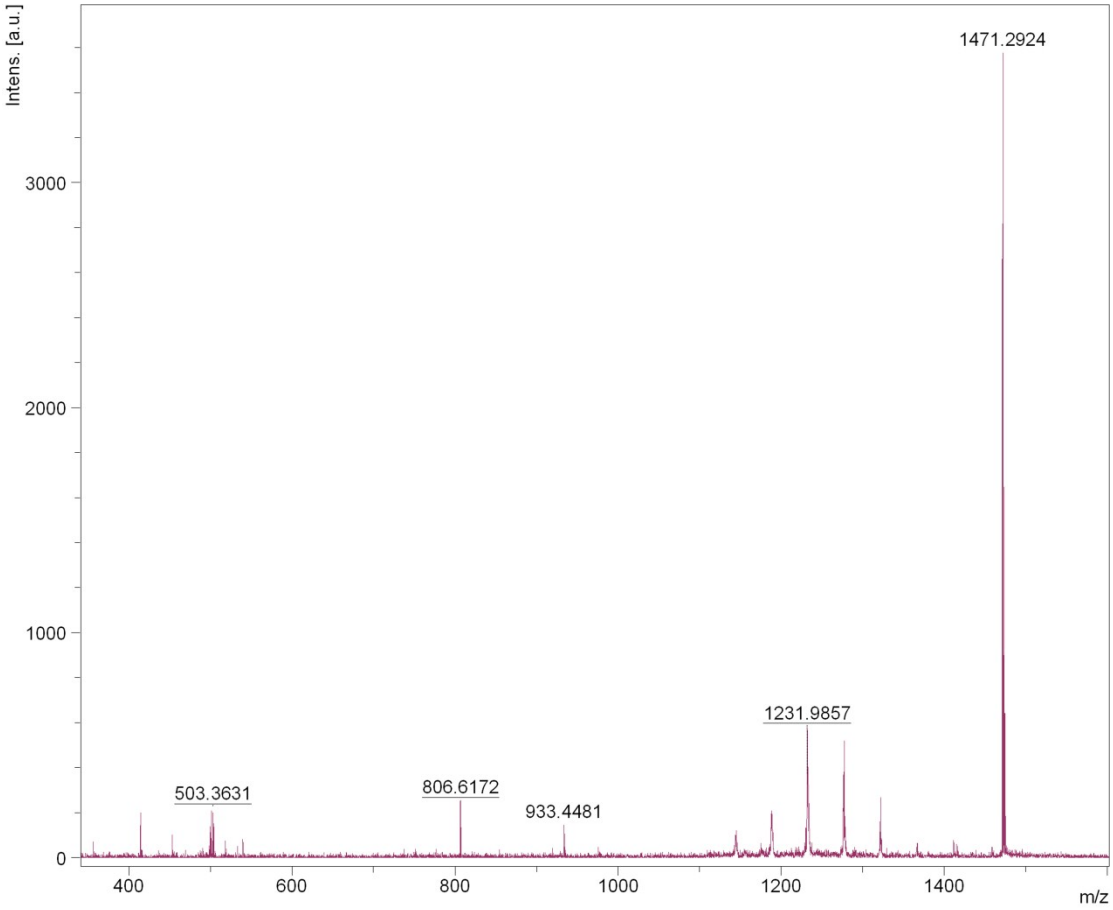

Fig. S19 MALDI/TOF MS spectrum of the purified oxidation products of DTBC-DPK (purified by column chromatography).

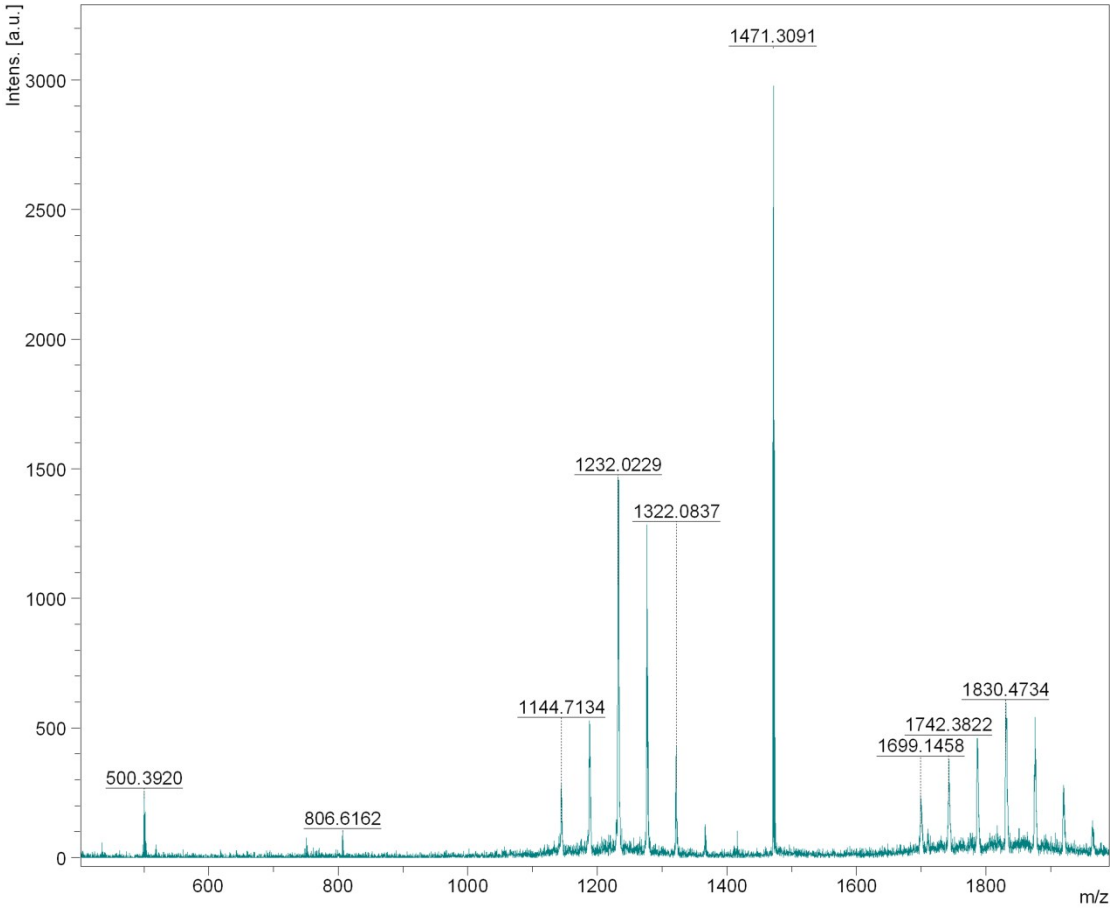

Fig. S20 MALDI/TOF MS spectrum of the purified oxidation products of DTBC-DPK (purified by recrystallization in solution)