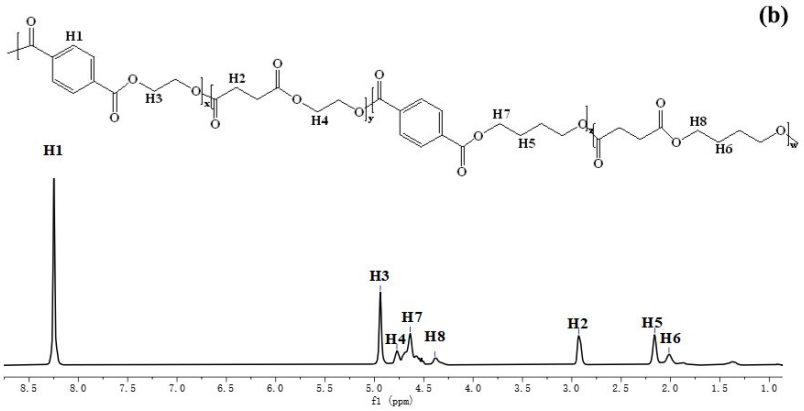
The detailed calculation process of the molar content of each component

Take $PE_{60}BT_{70}A_4$ for example:



As can be seen from Figure 1(b), the peak at δ4.94 ppm was assigned to the hydrogen atom (H3) on ethylene glycol unit connected to terephthalic acid; The peak at δ4.77 ppm was belonged to hydrogen atom (H4) on ethylene glycol unit connected to succinic acid; The peaks of butanediol unit at δ 2.16、δ 2.02、δ 4.64、δ 4.37ppm were assigned to hydrogen atoms 5,6,7,8 and those peaks at δ 8.25 and δ 2.93ppm were assigned to terephthalic acid unit and succinic acid unit respectively.

We use A to represent the integral area corresponding to the peak of each hydrogen atom. The molar content of each component is calculated from the ratio of the characteristic hydrogen atom integral area to the total integral area. The detailed calculation process is as follows:

$$\text{TPA (mol \%)} = A_{H1} / (A_{H1}+A_{H2})$$
$$\text{SA (mol \%)} = A_{H2} / (A_{H1}+A_{H2})$$
$$\text{BDO (mol \%)} = (A_{H5}+A_{H6}) / (A_{H3}+A_{H4}+A_{H5}+A_{H6})$$
$$\text{EG (mol \%)} = (A_{H3}+A_{H4}) / (A_{H3}+A_{H4}+A_{H5}+A_{H6})$$

Figure S1 UV absorption spectra of copolyesters(solid)

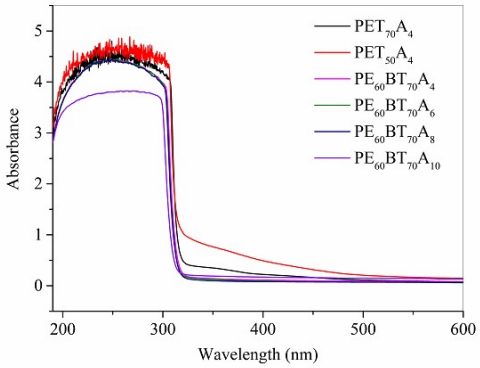


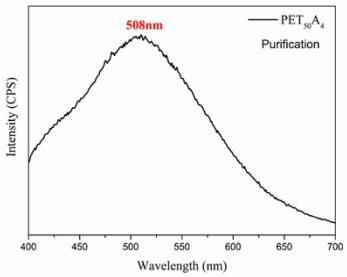
Table S1 Quantum yield (QY) of copolyesters (solid)

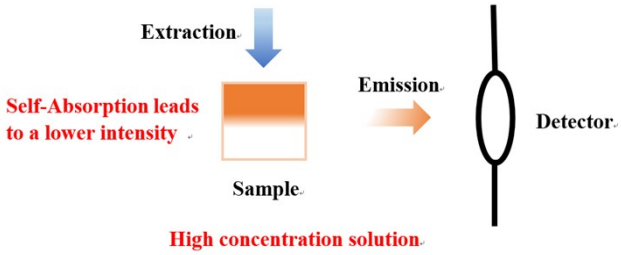
	$PET_{70}A_4$	$PET_{50}A_4$	$PET_{30}A_4$	$PE_{60}BT_{70}A_4$	$PE_{60}BT_{70}A_6$	$PE_{60}BT_{70}A_8$	$PE_{60}BT_{70}A_{10}$
QY (%)	7.4	5.3	2.9	6.5	4.2	3.5	5.8

Figure S2 Fluorescence lifetime (solid)

Figure S3 Fluorescence emission spectra of the purified copolyesters(solid)

Figure S4 The schematic diagram of self absorption phenomenon





"When the excitation light irradiates the sample with too high concentration, photo absorption wavelengths of molecules overlap with those of emission, and thus some emitted photons are absorbed by other solute molecules in solution before reaching detectors. And the wavelengths of the peaks of emission spectra are often shifted toward a longer wavelength ~red shift."

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