Supporting Information

Hydroxyl-Yne Click Polymerization: A Facile Strategy toward Poly(vinyl amino ether ester)s with Color-Tunable Luminescence

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Supplementary Figures and Tables

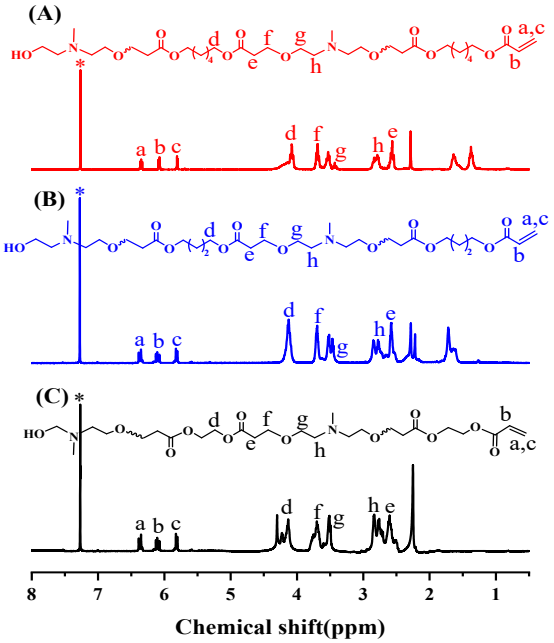

Fig. S1 ^{1}H NMR spectra of (A) PAEE1, (B) PAEE2, and (C) PAEE3. The solvent peaks are marked with asterisks.

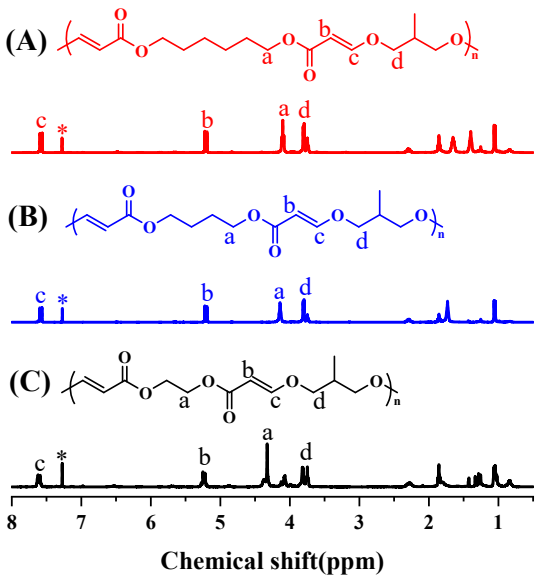

Fig. S2 ^{1}H NMR spectra of (A) PVEE1, (B) PVEE2, and (C) PVEE3. The solvent peaks are marked with asterisks.

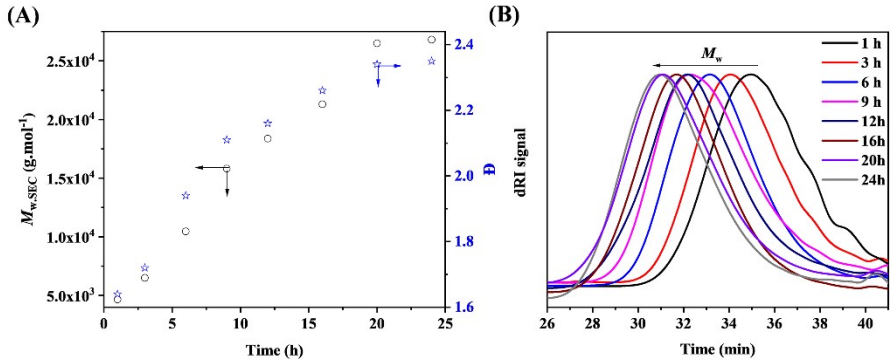

Fig. S3 (A) $M_{w.SEC}$ and PDI and (B) dRI-SEC curves of polymers at different polymerization times for catalyst-free and solvent-free hydroxyl–yne click polymerization of *N*-methyldiethanolamine and 1,6-hexanediol dipropiolate.

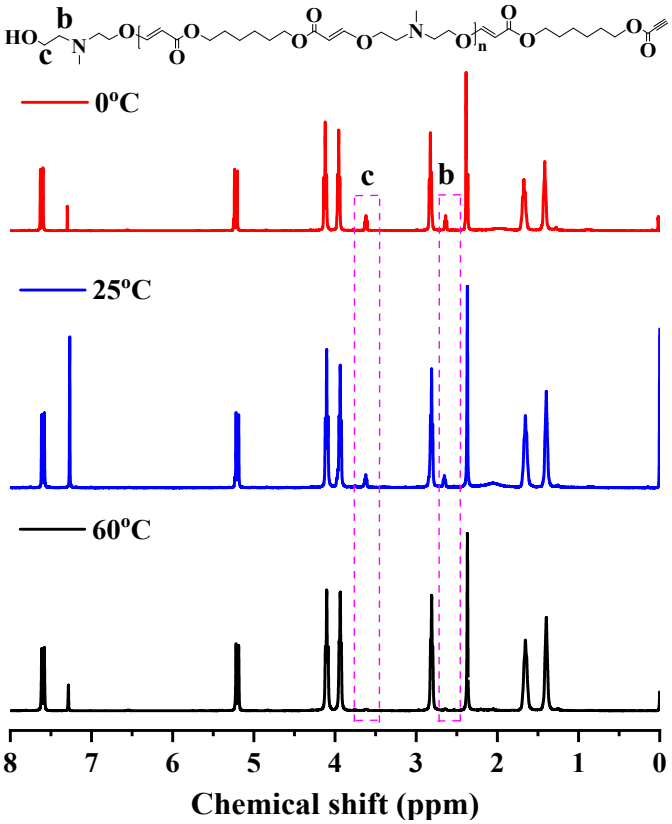

Fig. S4 ^{1}H NMR spectra of obtained poly(vinyl amino ether ester) (PVAEE1) prepared by at different temperature in $CDCl_3$. The solvent peaks are marked with asterisks.

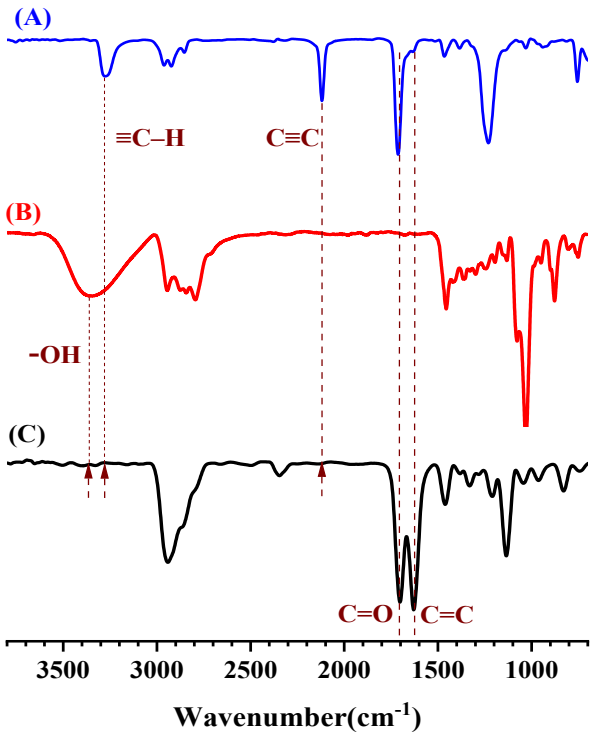

Fig. S5 FT-IR spectra of (A) BDDP, (B) MDEA, and (C) PVAEE2.

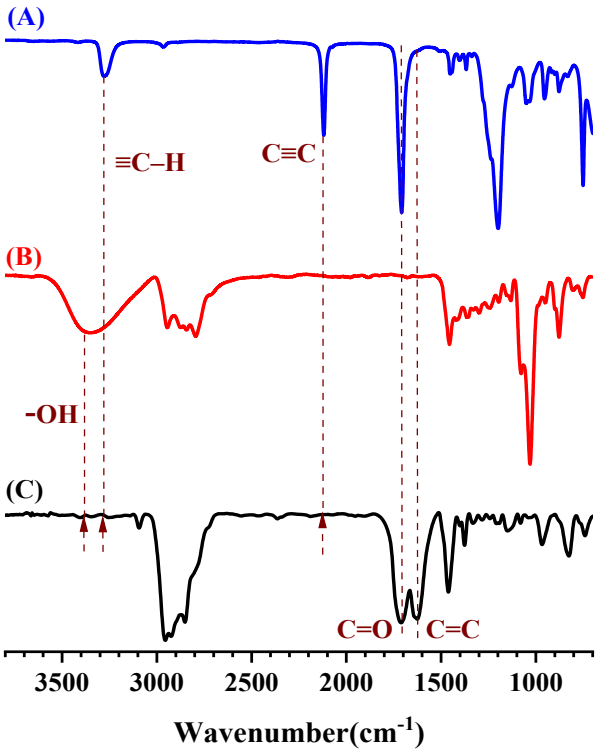

Fig. S6 FT-IR spectra of (A) EDDP, (B) MDEA, and (C) PVAEE3.

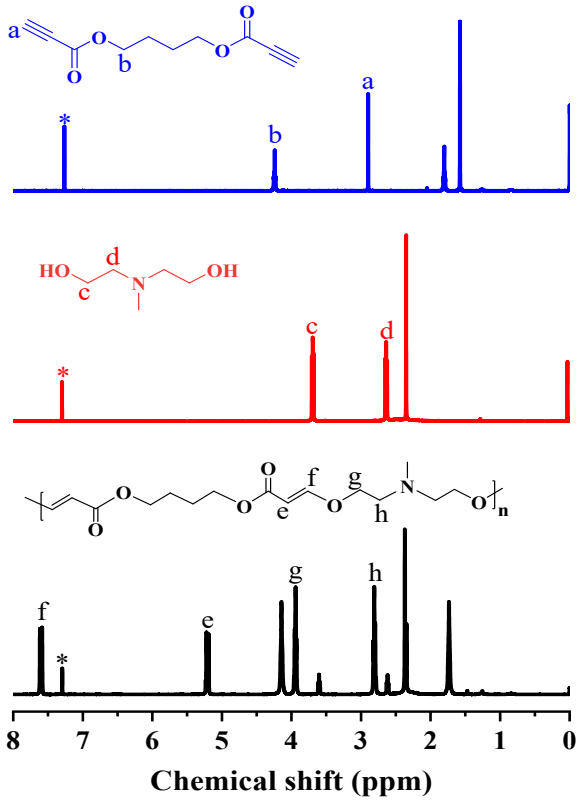

Fig. S7 ^{1}H NMR spectra of (A) BDDP, (B) MDEA, and (C) PVAEE2 in $CDCl_3$. The solvent peaks are marked with asterisks.

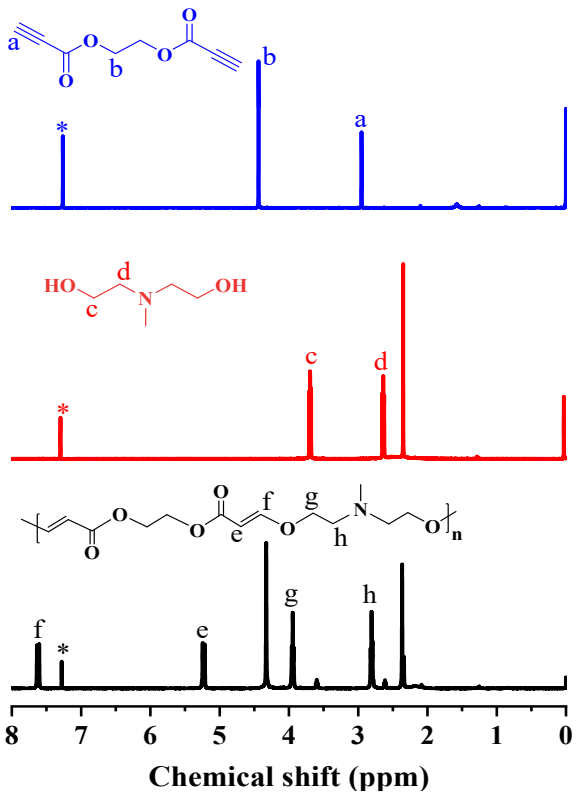

Fig. S8 ^{1}H NMR spectra of (A) EDDP, (B) MDEA, and (C) PVAEE3 in $CDCl_3$. The solvent peaks are marked with asterisks.

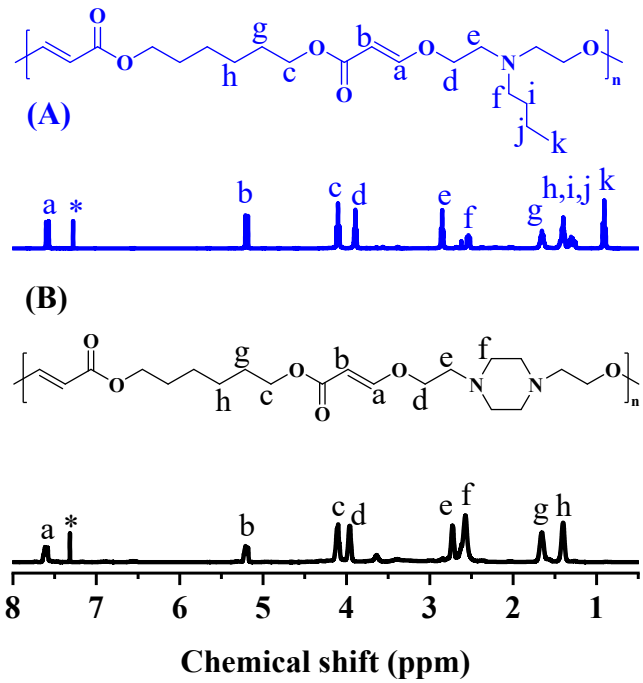

Fig. S9 ^{1}H NMR spectra of PVAEEs prepared from (A) *N*-butyldiethanolamine (BDEA) with HDDP, and (B) 1,4-*bis*-(2-hydroxyethyl)piperazine (BHEP) with HDDP. The solvent peaks are marked with asterisks.

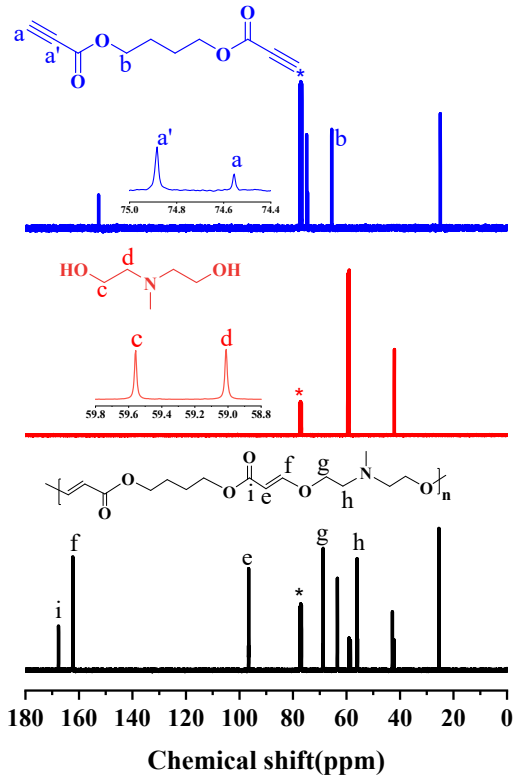

Fig. S10. ^{13}C NMR spectra of (A) BDDP, (B) MDEA, and (C) PVAEE2 in $CDCl_3$. The solvent peaks are marked with asterisks.

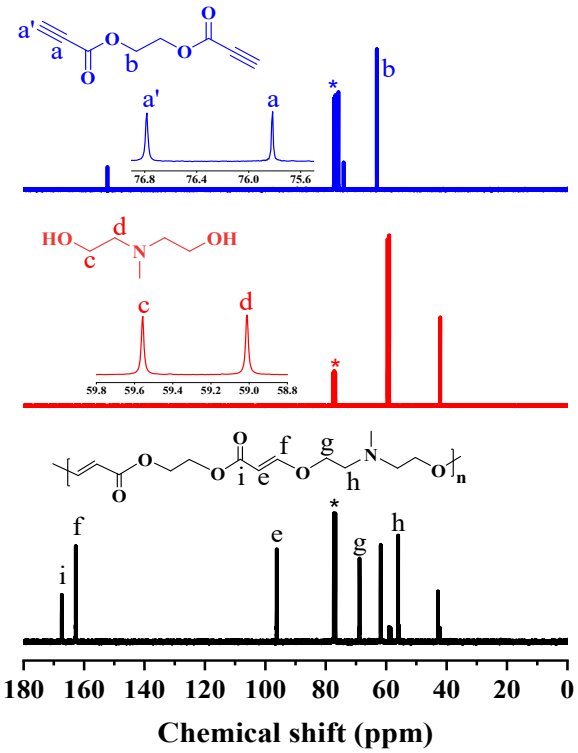

Fig. S11 ^{13}C NMR spectra of EDDP, (B) MDEA, and (C) PVAEE3 in $CDCl_3$. The solvent peaks are marked with asterisks.

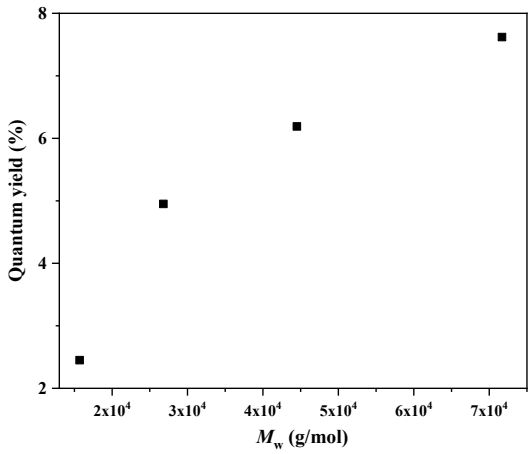

Fig. S12 The effect of the molecular weight of PVAEE1 on the quantum yield.

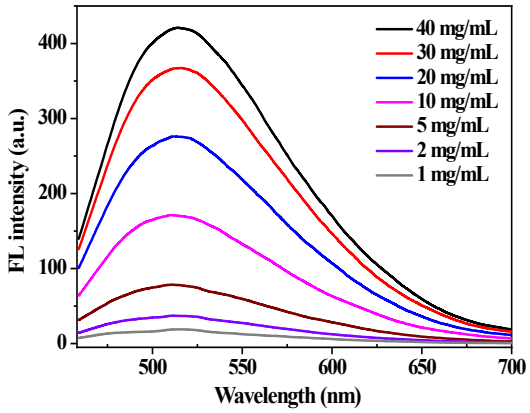

Fig. S13 FL spectra of (A) PVAEE2 in THF solutions at different concentrations with λ_{ex} = 440 nm.

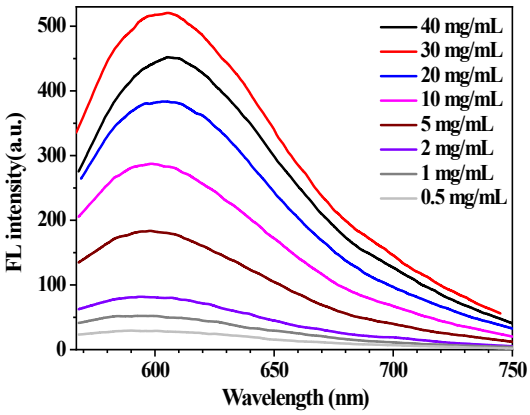

Fig. S14 FL spectra of (A) PVAEE3 in THF solutions at different concentrations with λ_{ex} = 560 nm.

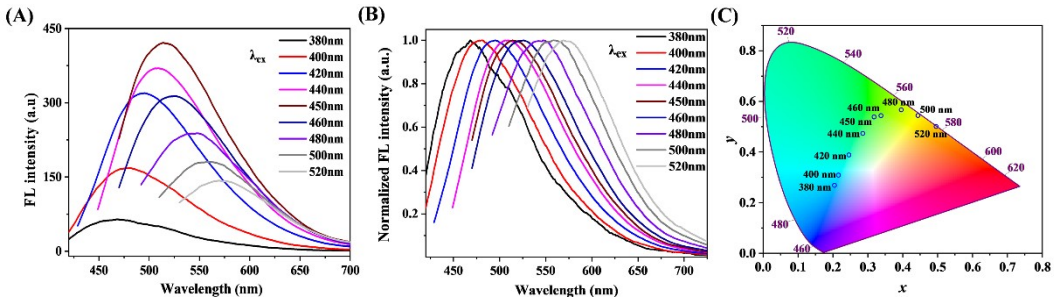

Fig. S15 (A) Emission spectra, (B) normalized emission spectra and (C) CIE coordinates of PVAEE2 at various excitation wavelengths. Concentration of 40 mg/mL.

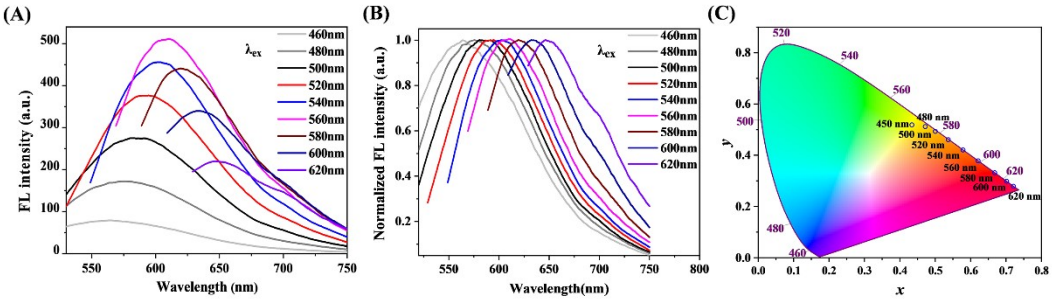

Fig. S16 (A) Emission spectra, (B) normalized emission spectra and (C) CIE coordinates of PVAEE3 at various excitation wavelengths. Concentration of 40 mg/mL.

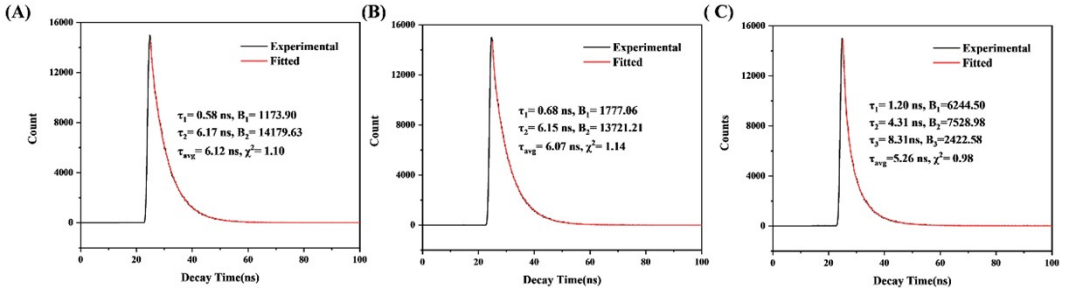

Fig. S17 Fluorescence decay curves of (A) PVAEE1, (B) PVAEE2, and (C) PVAEE3 in THF solution with the polymer concentration of 40 mg/mL.

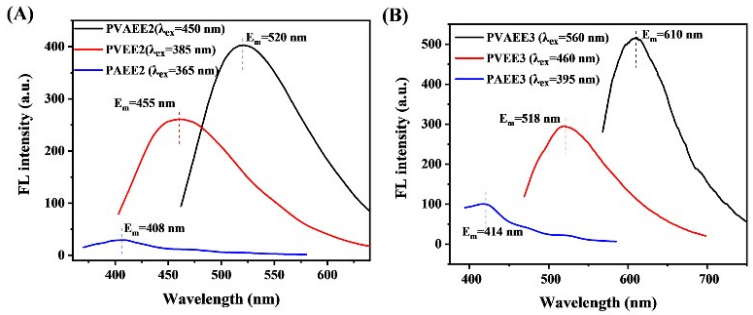

Fig. S18 FL spectra of (A) PVAEE2, PVEE2, and PAEE2; and (B) PVAEE3, PVEE3, and PAEE3 in THF solution with the concentration of 40 mg/mL excited at their optimal excitation wavelength (λ_{ex}).

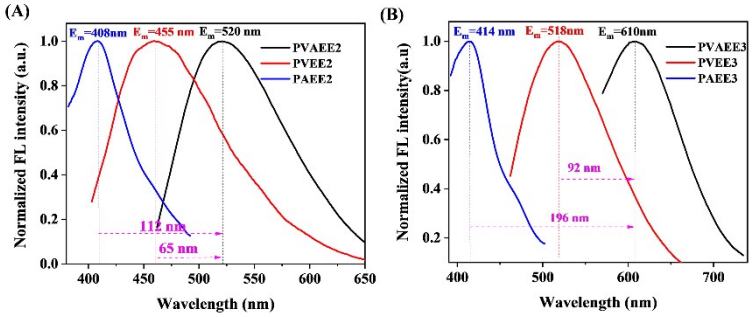

Fig. S19 Normalized maximum emission spectra of (A) PVAEE2, PVEE2, and PAEE2; and (B) PVAEE3, PVEE3, and PAEE3 in THF solution with the concentration of 40 mg/mL.

Table S1. The results of PVAEEs prepared by hydroxyl–yne click polymerization.[a]

Entry	*Temp.* (°C)	$M_{w\cdot SEC}$ /g/mol	Đ	λ_{ex} /nm[b]	λ_{em} /nm[b]	Φ(%)[c]
PVAEE 1	25	26800	2.35	380	456	4.8
PVAEE 2	25	22600	2.92	450	520	6.2
PVAEE 3	60	18600	1.99	560	610	11.8

[a] Conducted in air for 24 h; $[M]_{diols}=[M]_{diynes}$;

[b] Maximum excitation and emission wavelength measured by fluorescence spectrometer, PVAEEs in THF solution with the polymer concentration of 40 mg/mL;

[c] Quantum yield measured by excited at their optimal wavelength.