Supporting Information

Synthesis of biodegradable polyester composites based on the Biginelli reaction and their properties

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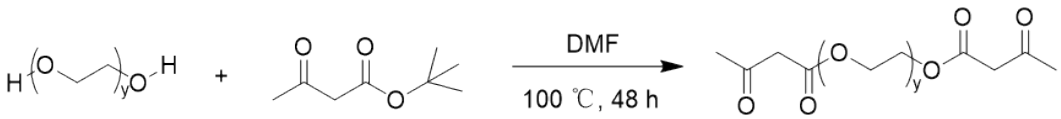
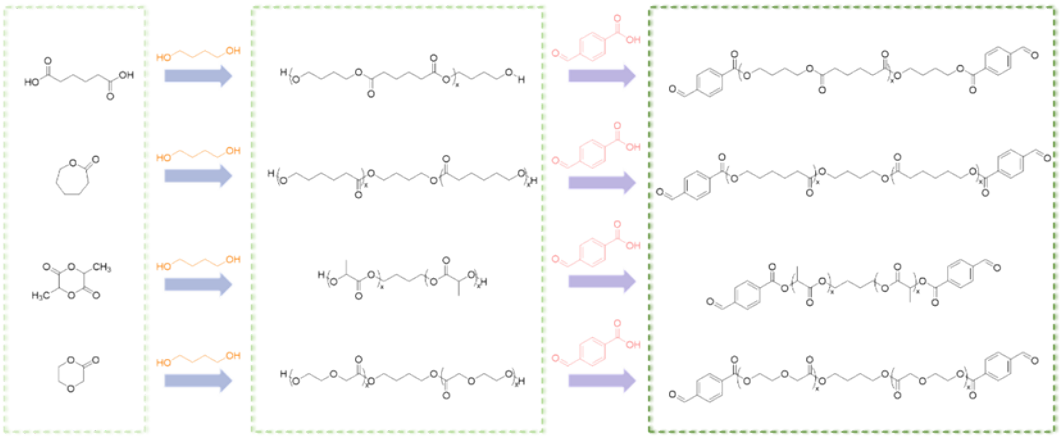
Synthesis of PEG-AA.



Scheme S1. synthesis process of PEG-AA.

Synthesis of functionalized segments.



Scheme S2. synthesis process of PBA-Bz, PCL-Bz, PLA-Bz, and PPDO-Bz.

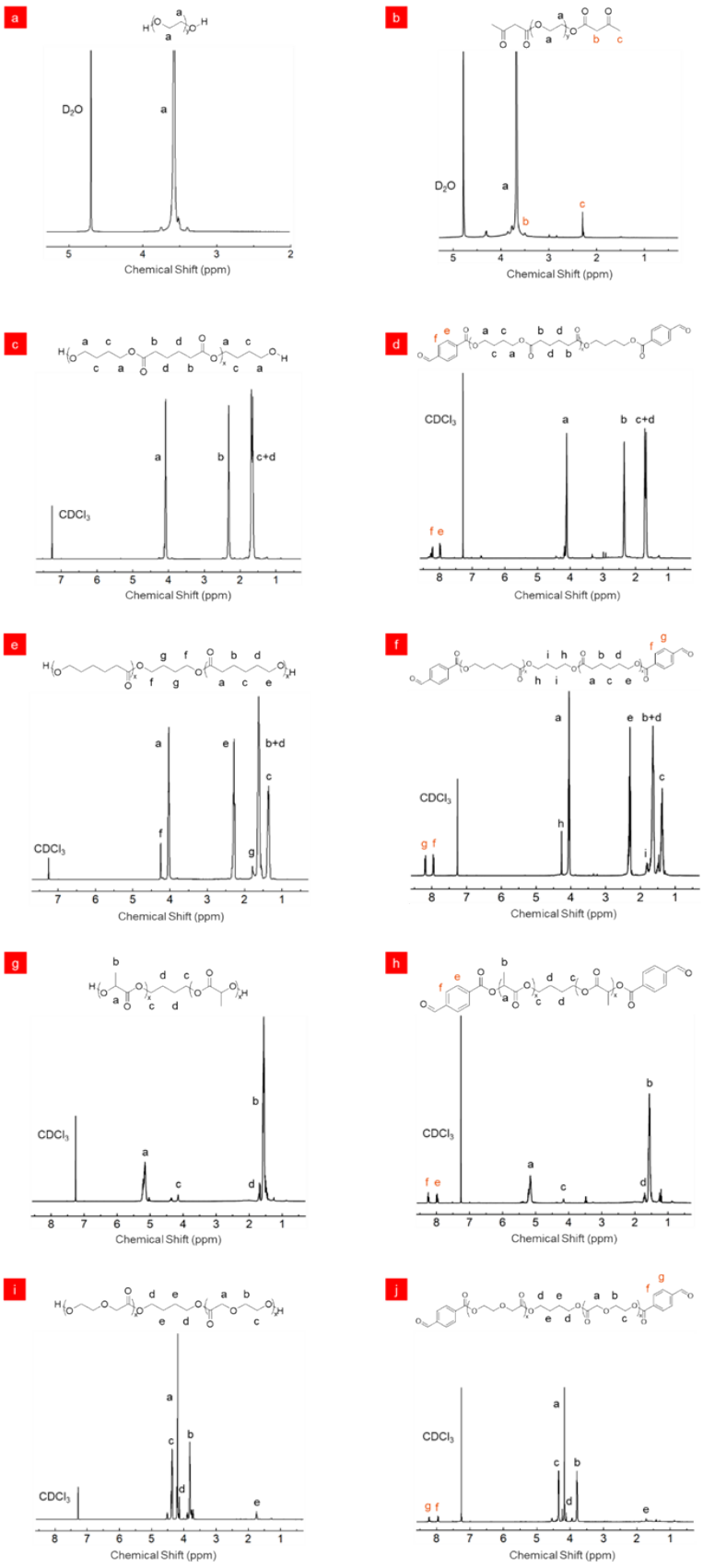


Figure S1. ^{1}H NMR of PEG (a), PEG-AA (b), PBA (c), PBA-Bz (d), PCL (e), PCL-Bz (f), PLA (g), PLA-Bz (h), PPDO (i), and PPDO-Bz (j).

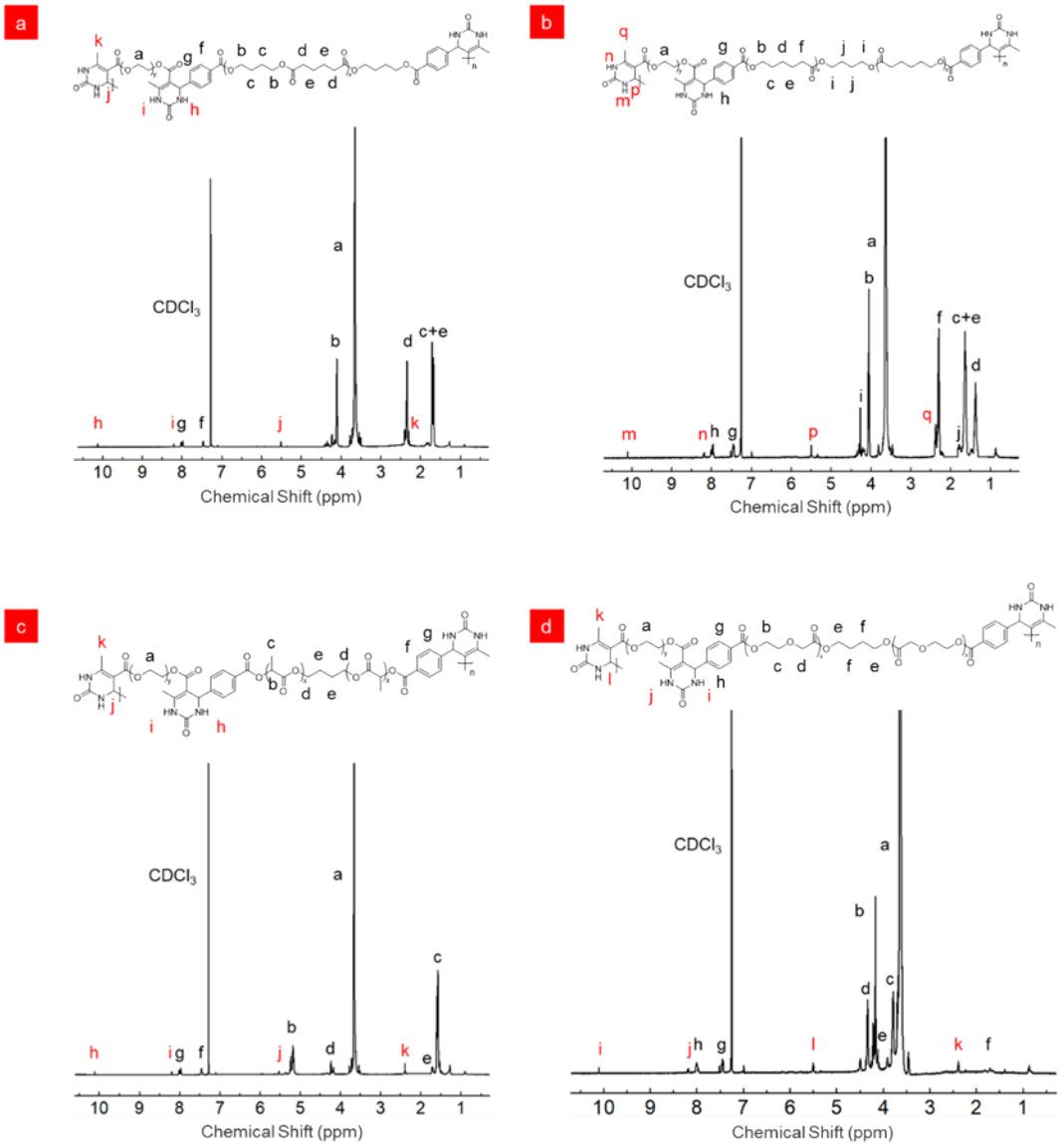


Figure S2. ^{1}H NMR of DHPM-PBA (a), DHPM-PCL (b), DHPM-PLA (c), and DHPM-PPDO (d).

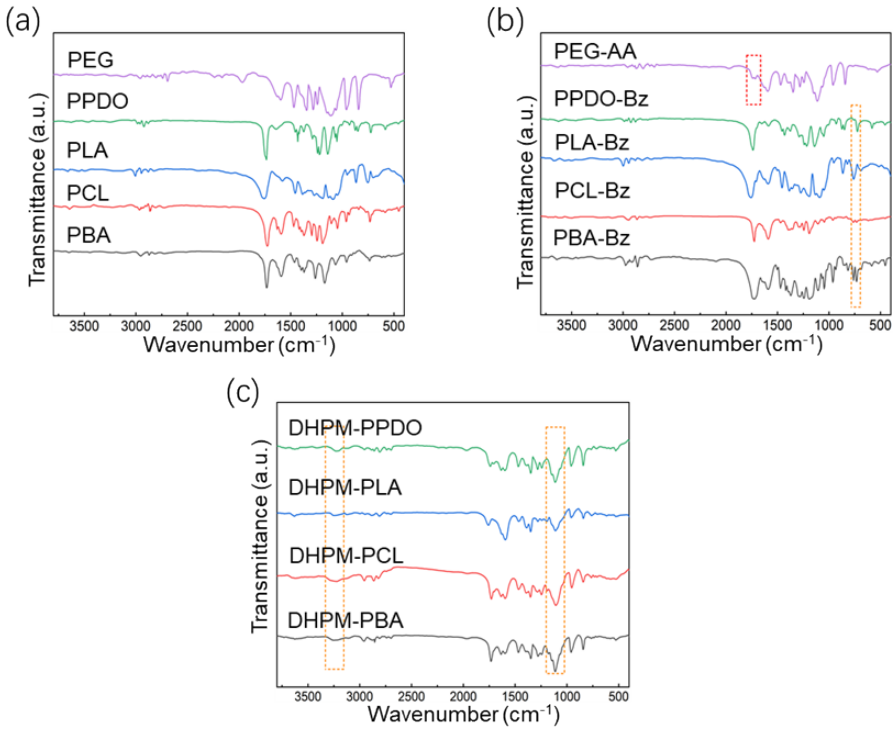


Figure S3. FT-IR spectra of PEG, PBA, PCL, PLA, and PPDO (a); PEG-AA, PBA-Bz, PCL-Bz, PLA-Bz, and PPDO-Bz (b); and DHPM-PBA, DHPM-PCL, DHPM-PLA, and DHPM-PPDO (c).

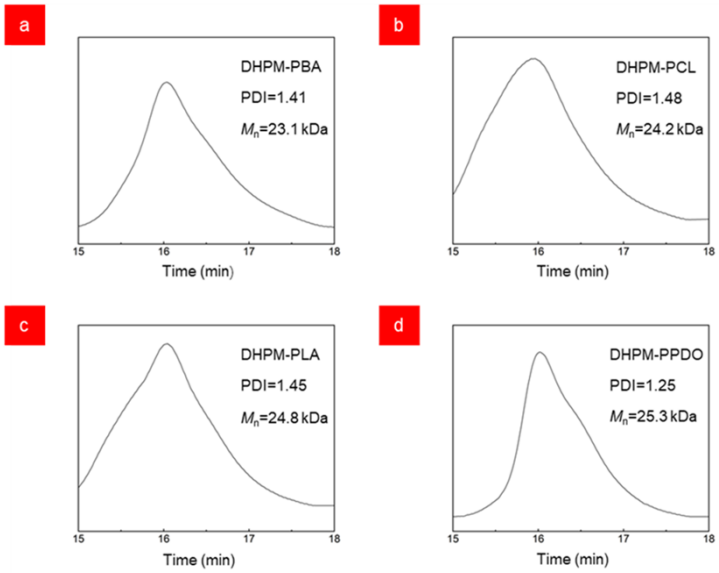


Figure S4. GPC trace of DHPM-PBA (a), DHPM-PCL (b), DHPM-PLA (c), and DHPM-PPDO (d).

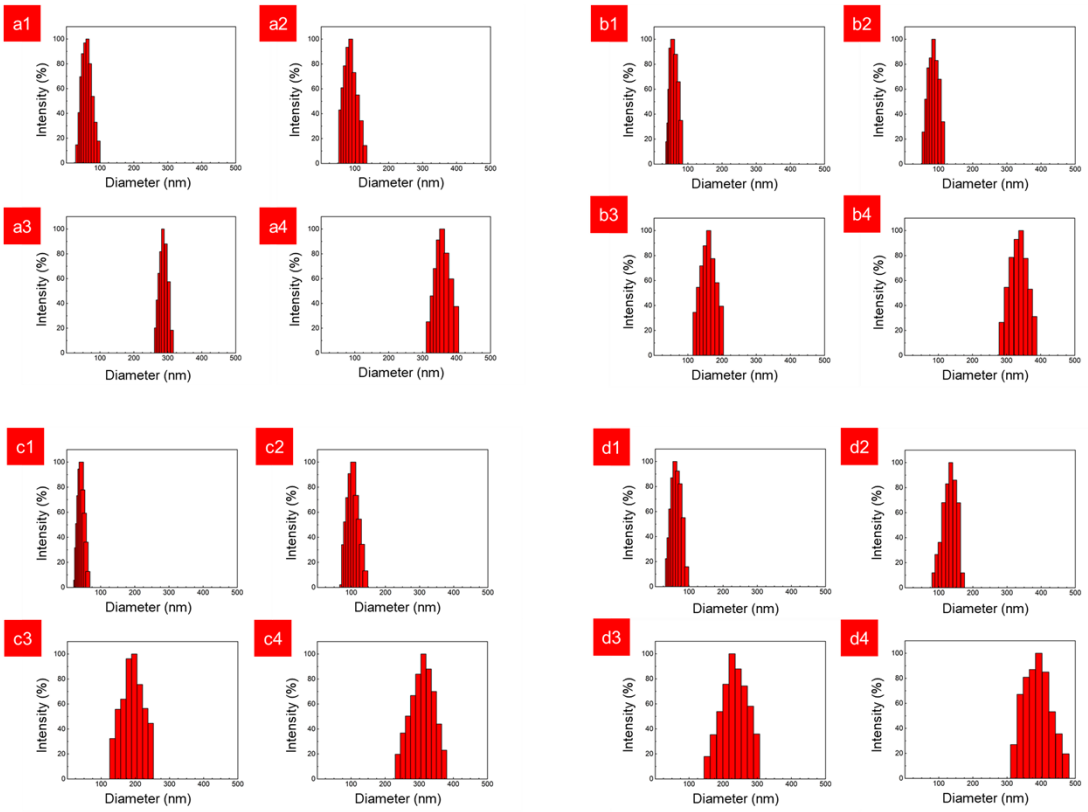


Figure S5. Size regulation of micelles. (a) DHPM-PBA (b) DHPM-PCL (c) DHPM-PLA (d) DHPM-PPDO.

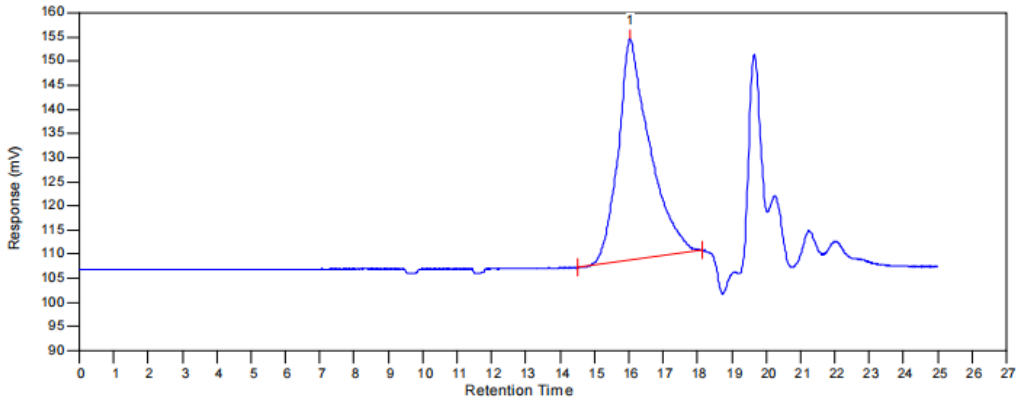


Figure S6. GPC trace of DHPM-PBA.

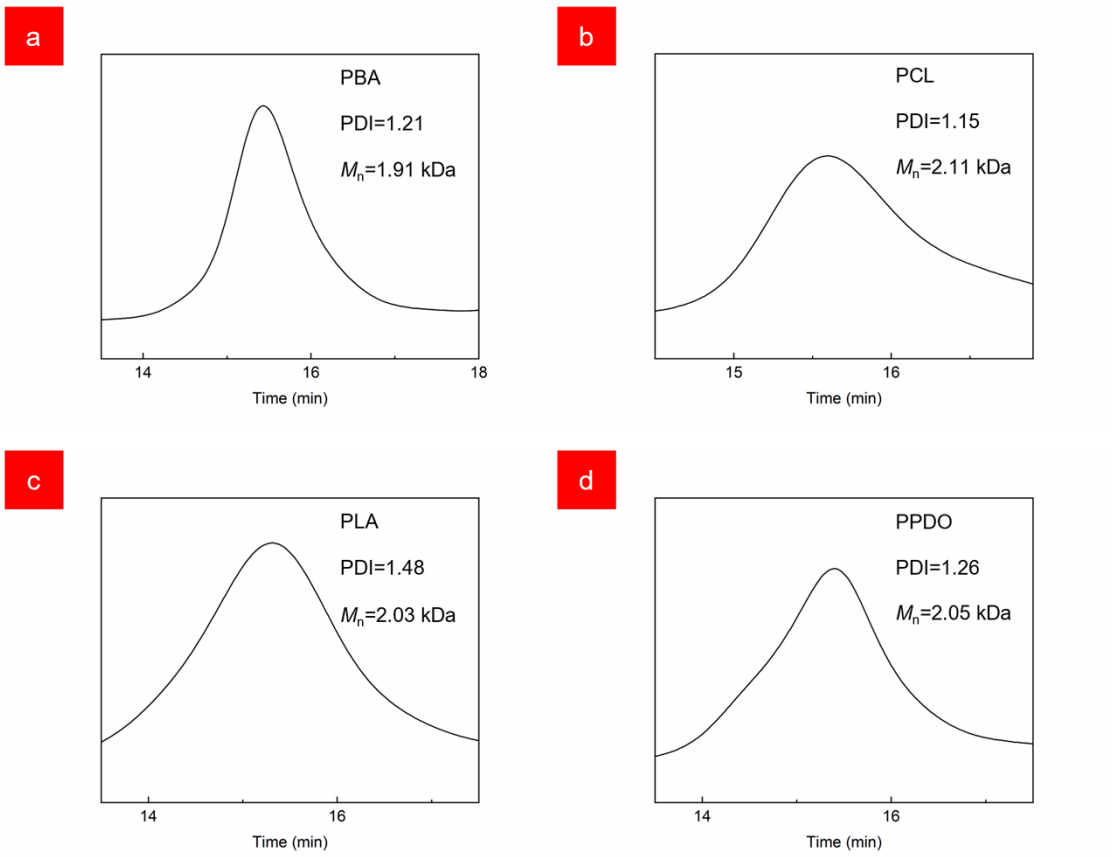


Figure S7. GPC trace of PBA (a), PCL (b), PLA (c), and PPDO (d). The data was from a different Agilent PL-GPC220 gel chromatograph than that of Figure S4, and other conditions were the same.

Table S1. Elemental analysis of DHPM-PBA, DHPM-PCL, DHPM-PLA, and DHPM-PPDO

Sample	C (%)	H (%)	O (%)	N (%)
DHPM-PBA	55.13	8.468	36.002	0.40
DHPM -PCL	55.35	8.426	35.644	0.58
DHPM -PLA	52.39	7.916	39.184	0.51
DHPM-PPDO	52.82	8.530	38.130	0.52

Table S2. Non-isothermal crystallization parameters of PEG, PBA, PCL, PLA, PPDO, DHPM-PBA, DHPM-PCL, DHPM-PLA, and DHPM-PPDO.

Sample	Cooling curves		Heating curves		
	T_c (°C)	ΔH_{mc} (J/g)	T_m (°C)	ΔH_m (J/g)	X_c (%)
PEG	30.94	-167.63	56.15	174.03	84.77
PPDO	23.93	-56.97	85.88	134.97	65.95
PLA	-	-	-	-	-
PCL	13.59	-88.39	39.68	93.54	63.56
PBA	28.03	-65.21	49.84	68.99	48.29
DHPM-PPDO	19.45	-139.08	51.40	138.34	61.79
DHPM-PLA	-2.75	-44.94	49.33	108.44	26.75
DHPM-PCL	0.73	-95.18	44.24	98.409	52.48
DHPM-PBA	14.60	-110.83	48.11	125.18	71.45

Table S3. Thermal propertial data of PEG, PBA, PCL, PLA, PPDO, DHPM-PBA, DHPM-PCL, DHPM-PLA, and DHPM-PPDO.

Sample	$T_{d5\%}$ (℃)	T_{dmax} (℃)	$T_{d95\%}$ (℃)
PEG	360.7	419.7	436.7
PBA	225.7	427.7	451.7
PCL	381.0	426.0	454.0
PLA	208.7	355.7	394.7
PPDO	201.7	276.7	302.7
DHPM-PBA	366.7	423.7	444.7
DHPM-PCL	371.7	424.7	453.7
DHPM-PLA	337.7	419.6	445.6
DHPM-PPDO	322.7	416.7	439.7