Supporting Information For

Synthesis and Self-Seeding Behavior of Oligo(*p*-phenylene vinylene)-*b*-poly(*N*-(2-hydroxypropyl) methacrylamide)

Xian Yang,[a,#] *Junyi Ruan*,[b,#] *Chen Ma*,[a] *Bingjie Hao*,[a] *Xiaoyu Huang*,[a,]* *Guolin Lu*,[a,c] *Chun Feng*[a,]*

[a] Key Laboratory of Synthetic and Self-Assembly Chemistry for Organic Functional Molecules, Center for Excellence in Molecular Synthesis, Shanghai Institute of Organic Chemistry, University of Chinese Academy of Sciences, Chinese Academy of Sciences, 345 Lingling Road, Shanghai 200032, People's Republic of China

[b] School of Materials Science and Engineering, East China University of Science and Technology, 130 Meilong Road, Shanghai 200237, People's Republic of China

[c] State Key Laboratory of Molecular Engineering of Polymers, Department of Macromolecular Science, Fudan University, 220 Handan Road, Shanghai 200433, People's Republic of China

# Both authors contributed equally to this work.

* To whom correspondence should be addressed, E-mail: cfeng@sioc.ac.cn (Tel: +86-21-54925606, Fax: +86-21-64166128), xyhuang@mail.sioc.ac.cn (Tel: +86-21-54925310, Fax: +86-21-64166128).

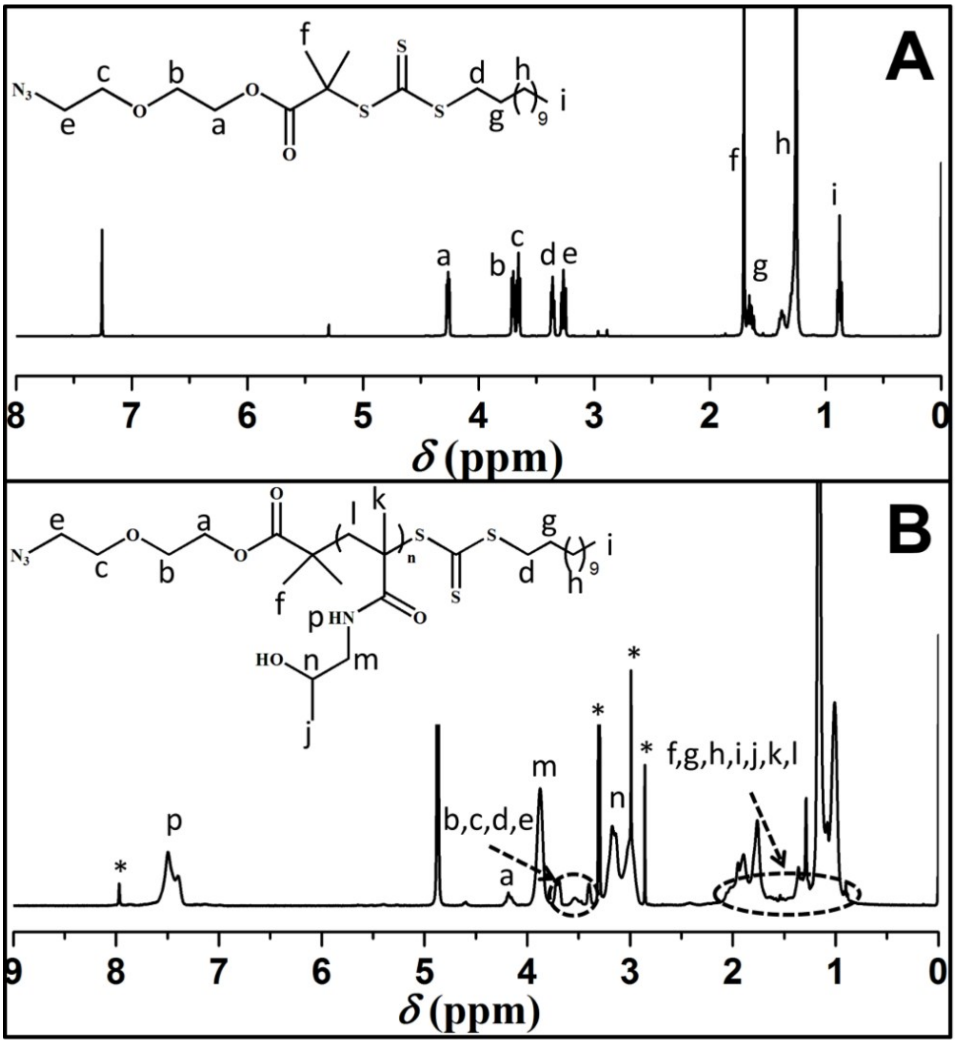

Figure S1. ^{1}H NMR spectra of (A) azide-containing CTA in $CDCl_3$ and (B) azide-terminated PHPMA in CD_3OD. The * indicates the impurities of DMF and un-deuterium CH_3OH. The proton resonance signals assured us of the structure of CTA, showing that the integration area ratio of peaks "a", "e", "f" and "i" is 2:2:6:3 (Figure S1A). One can notice that the characteristic signals appeared at 3.87 (peak "m") and 7.49 (peak "p") ppm in ^{1}H NMR spectrum of PHPMA homopolymer (Figure 1B), which are attributed to -C*H*NHCO and -N*H*CO of PHPMA segment, and typical signals located at 4.18 ppm (peak "a") was originated from -CH_2OCO of CTA. On the basis of integration area of peaks "a" and "m", the molecular weight of obtained PHPMA can be estimated.

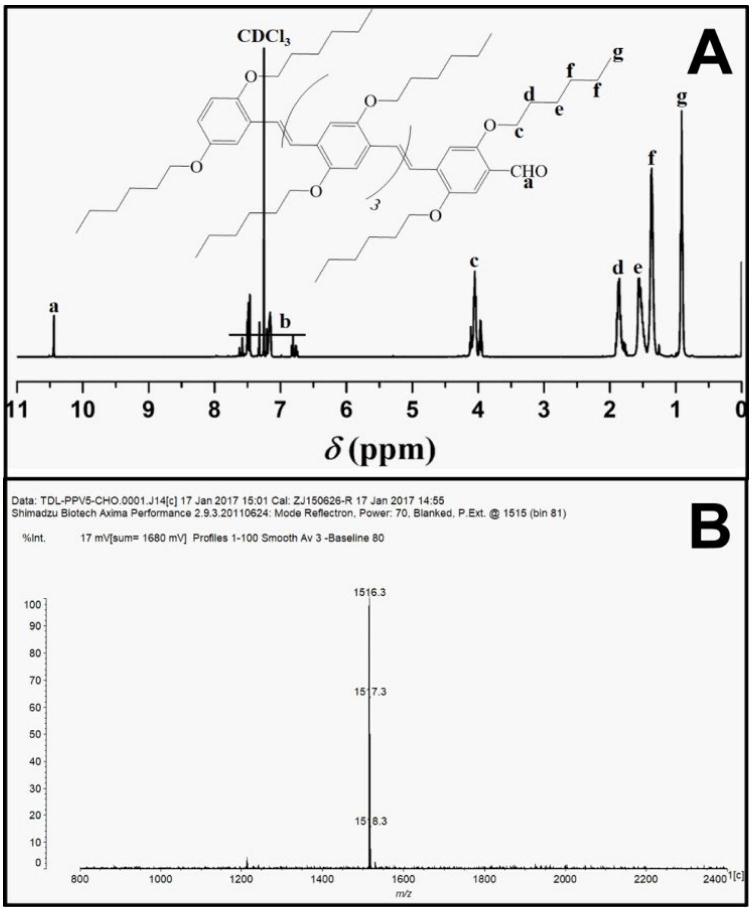

Figure S2. (A) ^{1}H NMR spectrum of aldehyde-terminated OPV_5 in $CDCl_3$. (B) MALDI-TOF spectrum of aldehyde-terminated OPV_5.

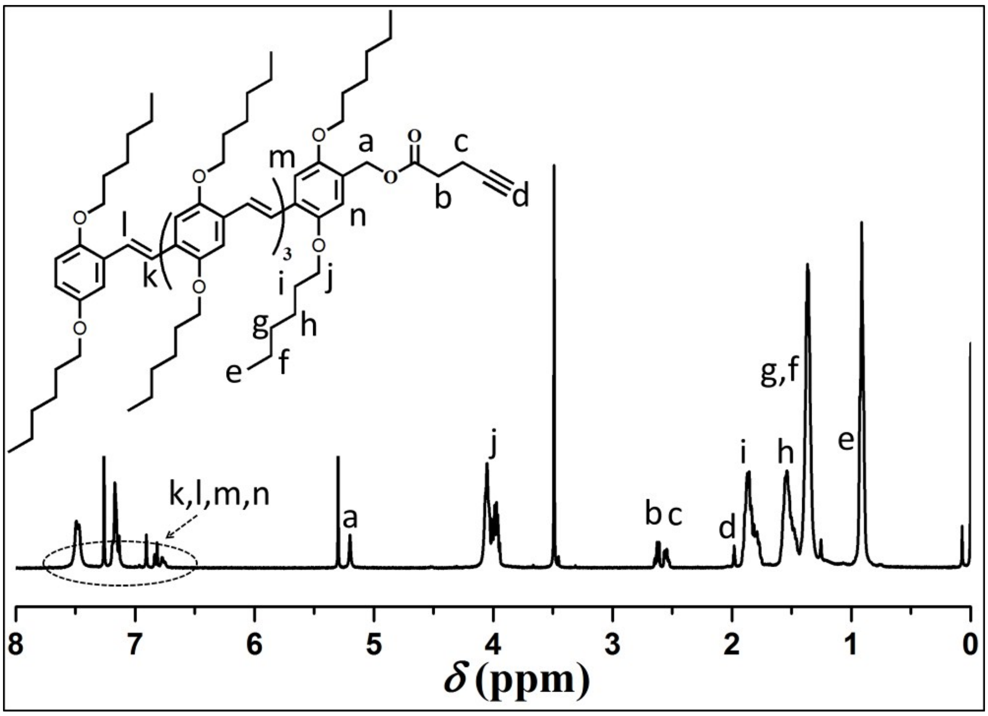

Figure S3. ^{1}H NMR spectrum of alkyne-terminated OPV_5 in $CDCl_3$.

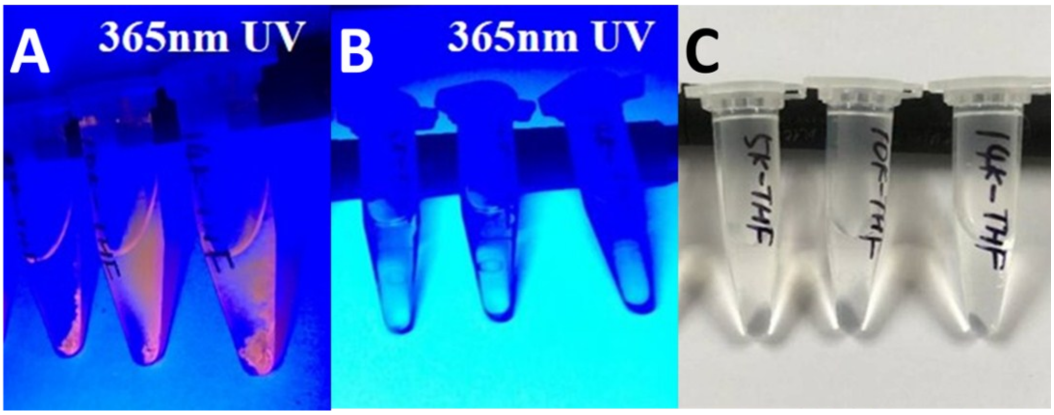

Figure S4. (A) THF solutions of OPV_5-*b*-PHPMA irradiated by 365 nm UV light. (B) THF solutions of OPV_5-*b*-PHPMA irradiated by 365 nm UV light after filtration through a 0.45 μm filter. (C) THF solutions of OPV_5-*b*-PHPMA observed in natural light after filtration through a 0.45 μm filter.

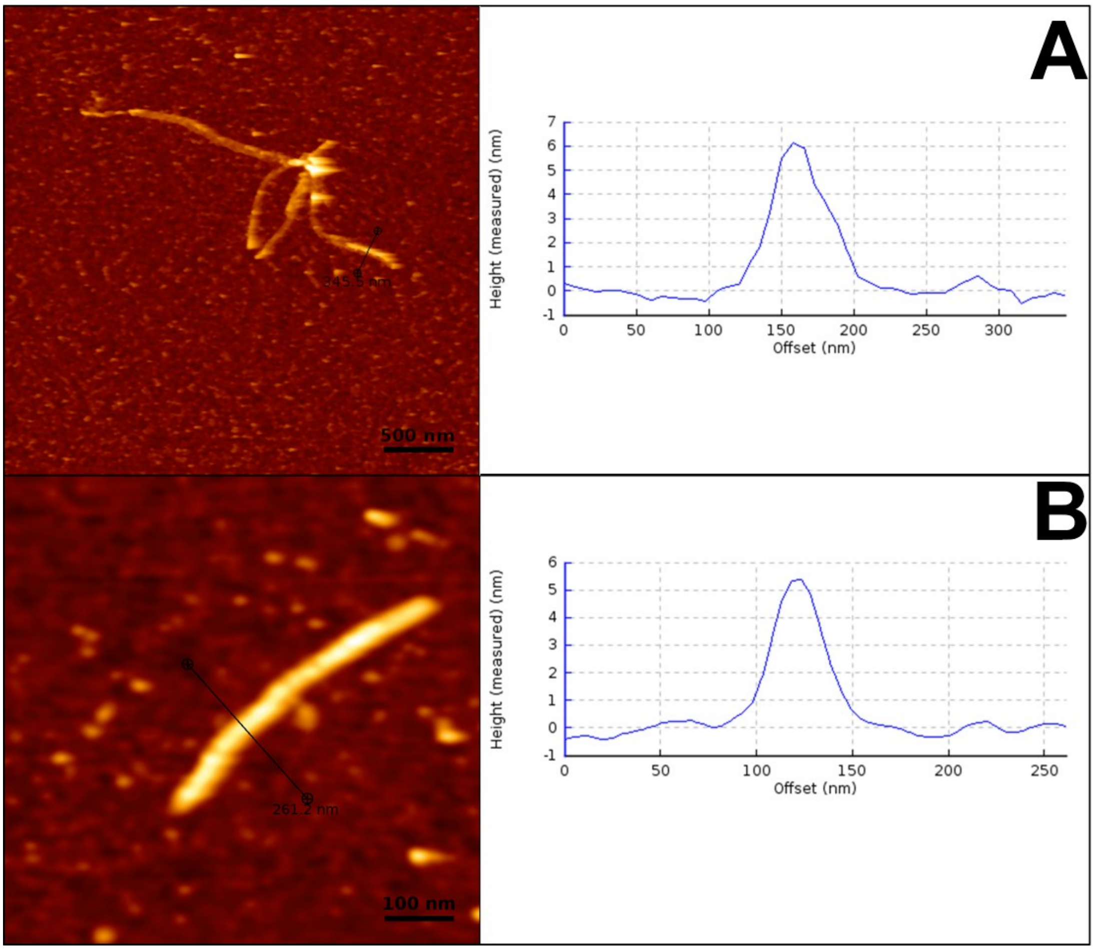

Figure S5. AFM images and high profiles of fiber-like micelles of (A) OPV_5-*b*-$PHPMA_{71}$ and (B) OPV_5-*b*-$PHPMA_{100}$.

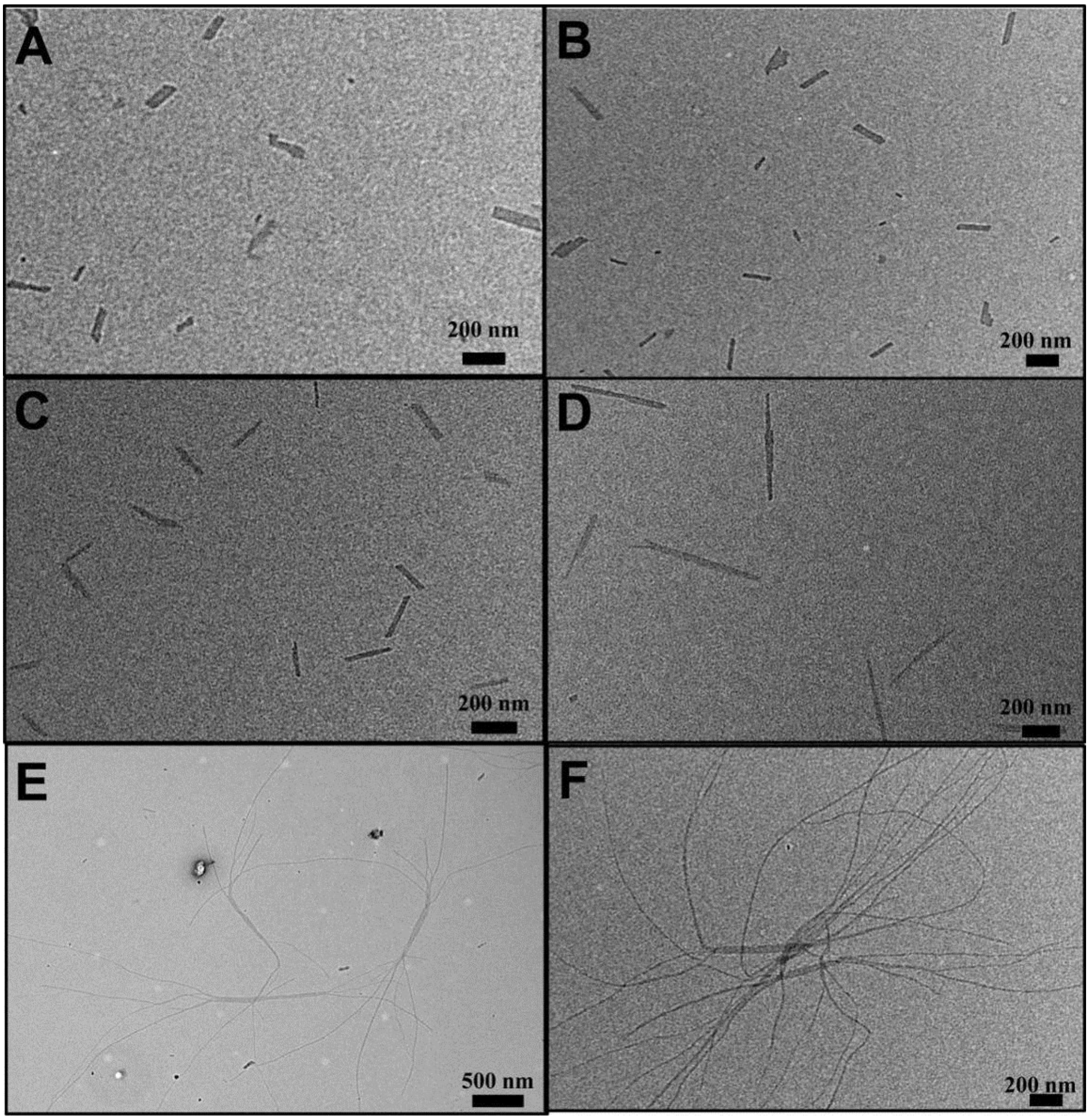

Figure S6. TEM images of fiber-like micelles of OPV_5-*b*-$PHPMA_{36}$ obtained by annealing the seeds in ethanol (0.05 mg/mL) at 36°C (A), 40°C (B), 44°C (C), 48°C (D), 60°C (E) and (F).

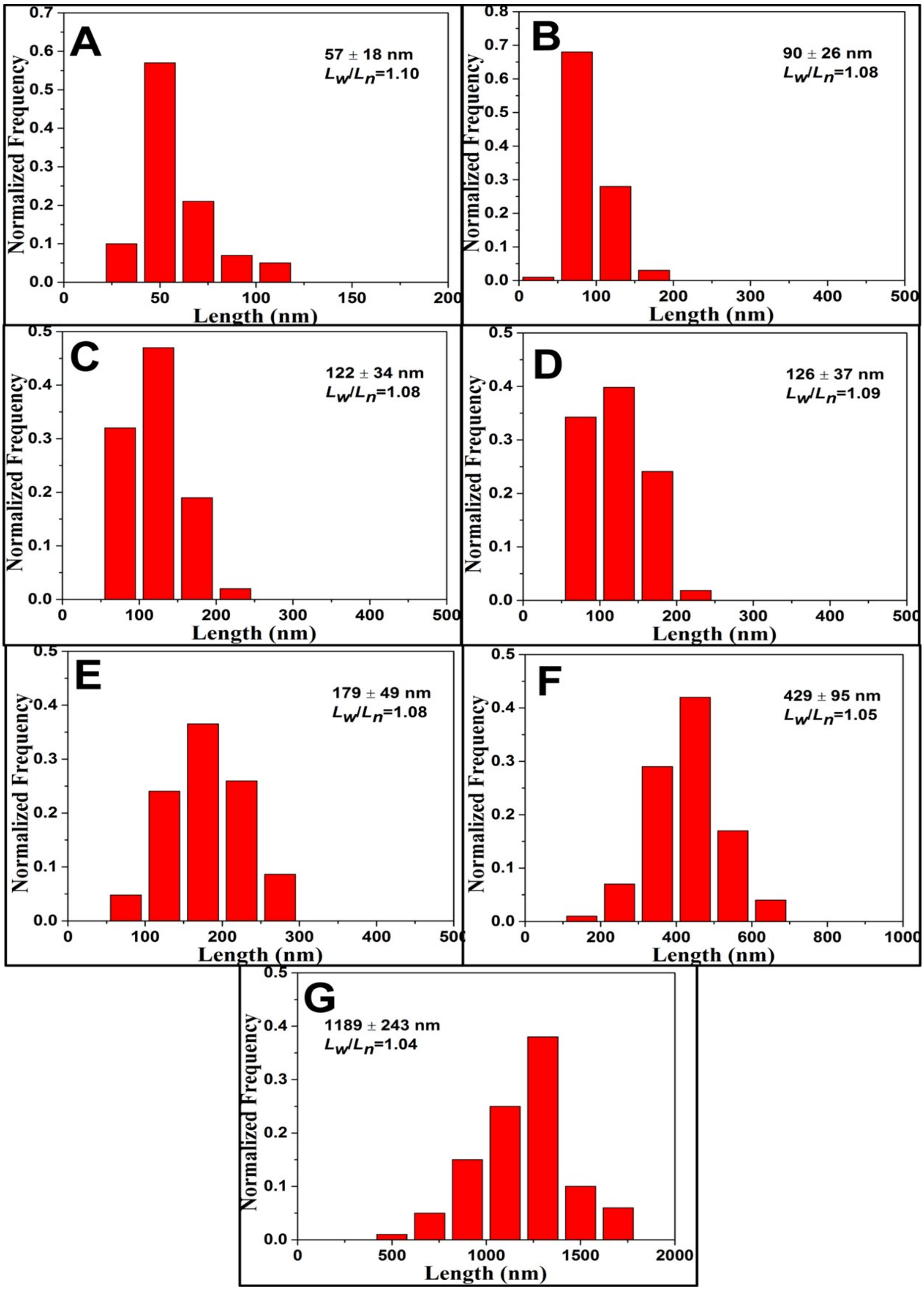

Figure S7. Contour length distribution histograms of the seeds of OPV_5-*b*-$PHPMA_{36}$ (A) in ethanol (0.05 mg/mL) and micelles obtained after annealing the seed solution at 32^{o}C (B), 36^{o}C (C), 40^{o}C (D), 44^{o}C (E), 48^{o}C (F) and 52^{o}C (G) for 30 min, followed by aging at room temperature for 48 h.

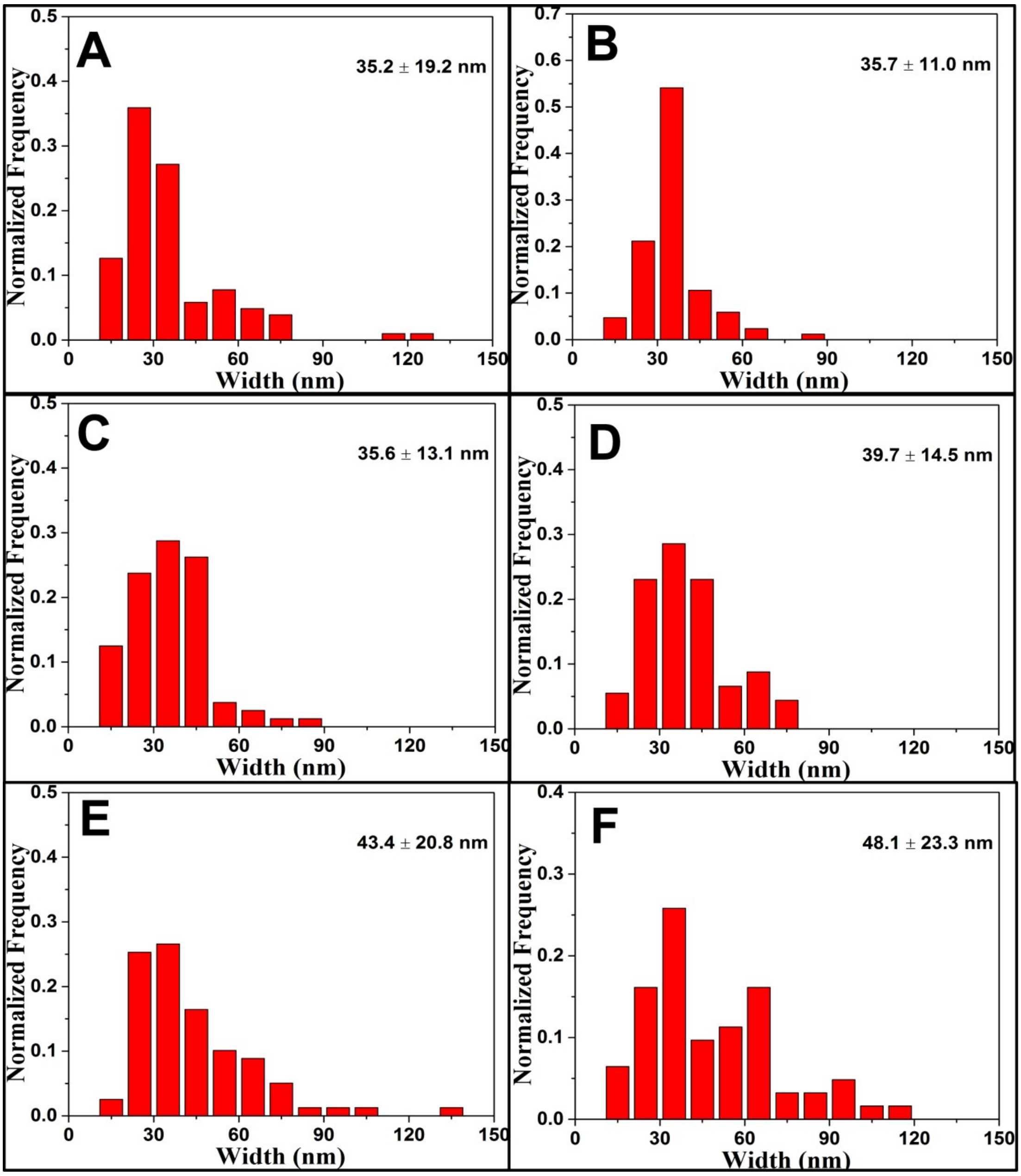

Figure S8. Contour width distribution histograms of micelles obtained after annealing the seed solution of OPV_5-*b*-$PHPMA_{36}$ in ethanol (0.05 mg/mL) at 32°C (A), 36°C (B), 40°C (C), 44°C (D), 48°C (E) and 52°C (F) for 30 min, followed by aging at room temperature for 48 h.

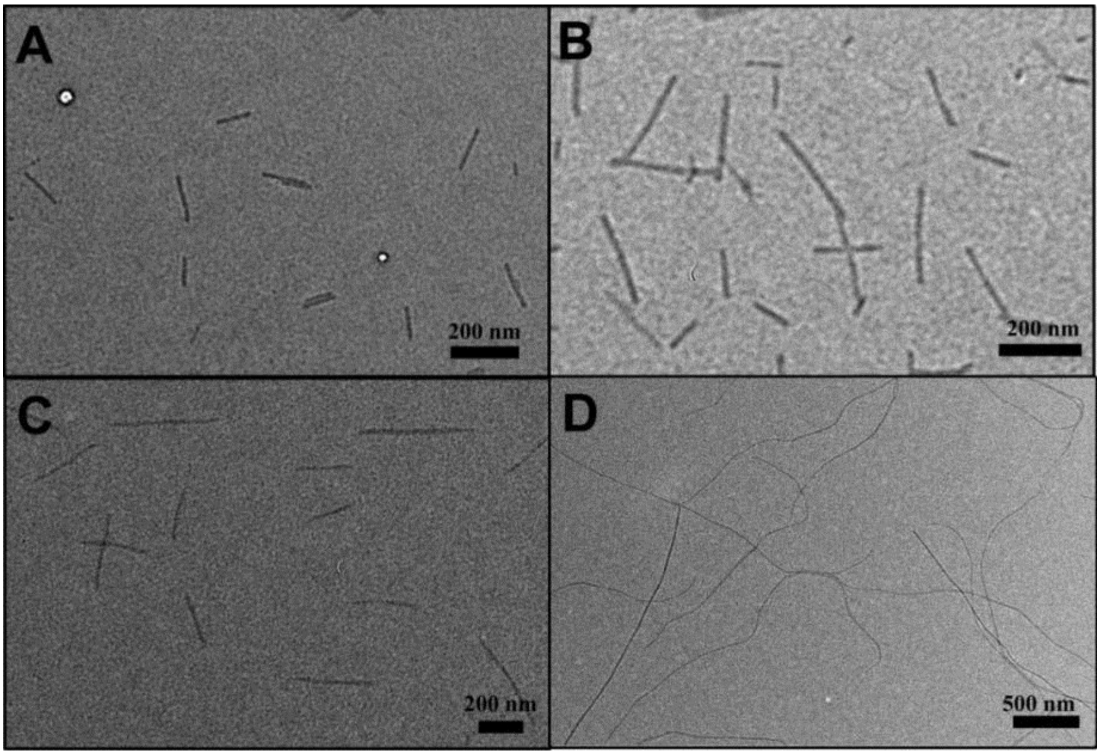

Figure S9. TEM images of fiber-like micelles of OPV_5-*b*-$PHPMA_{71}$ obtained by annealing the seeds in ethanol (0.05 mg/mL) at 32°C (A), 36°C (B), 44°C (C) and 55°C (D).

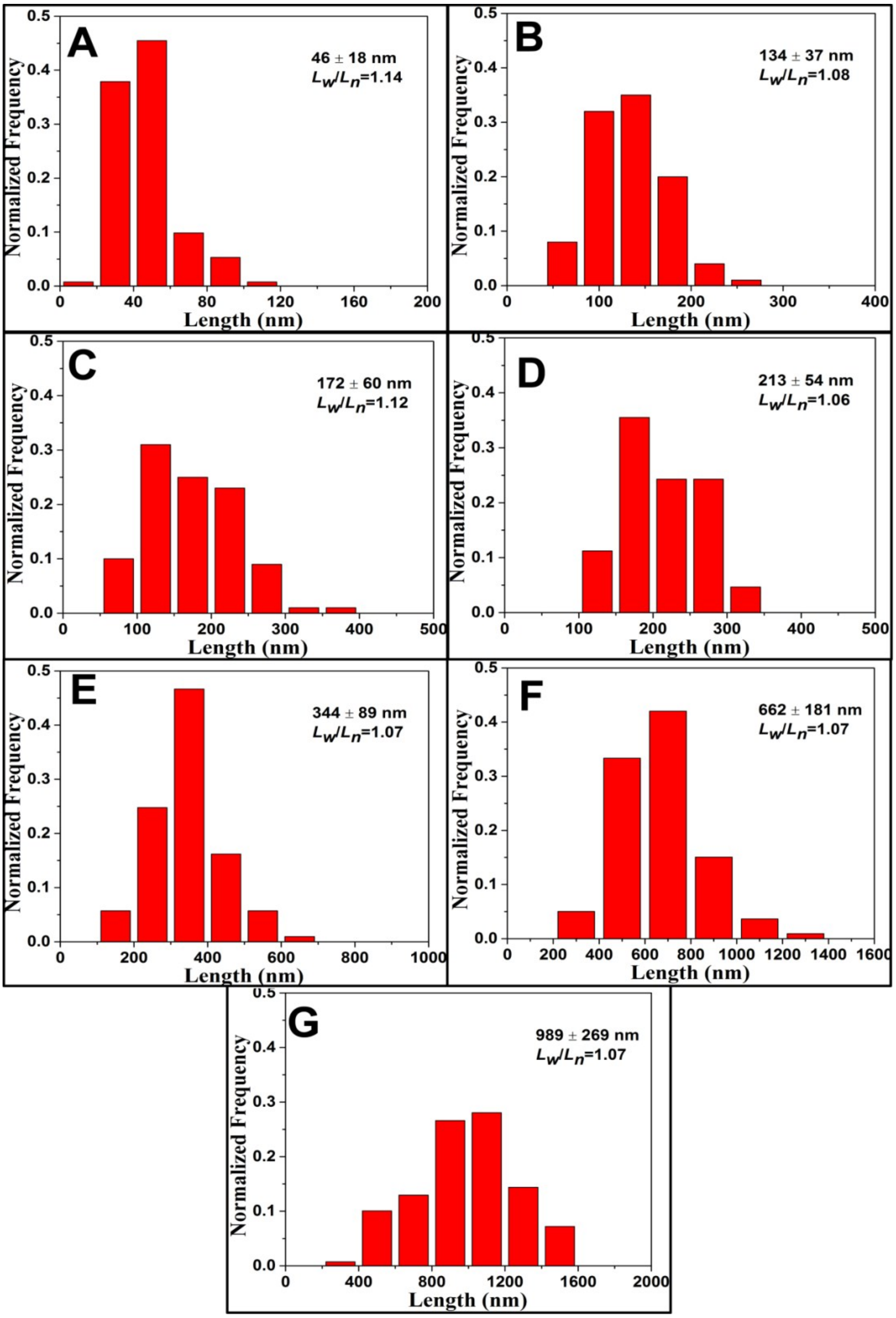

Figure S10. Contour length distribution histograms of the seeds of OPV_5-*b*-$PHPMA_{71}$ (A) in ethanol (0.05 mg/mL) and micelles obtained after annealing the seed solution at 32^{o}C (B), 36^{o}C (C), 40^{o}C (D), 44^{o}C (E), 48^{o}C (F) and 50^{o}C (G) for 30 min, followed by aging at room temperature for 48 h.

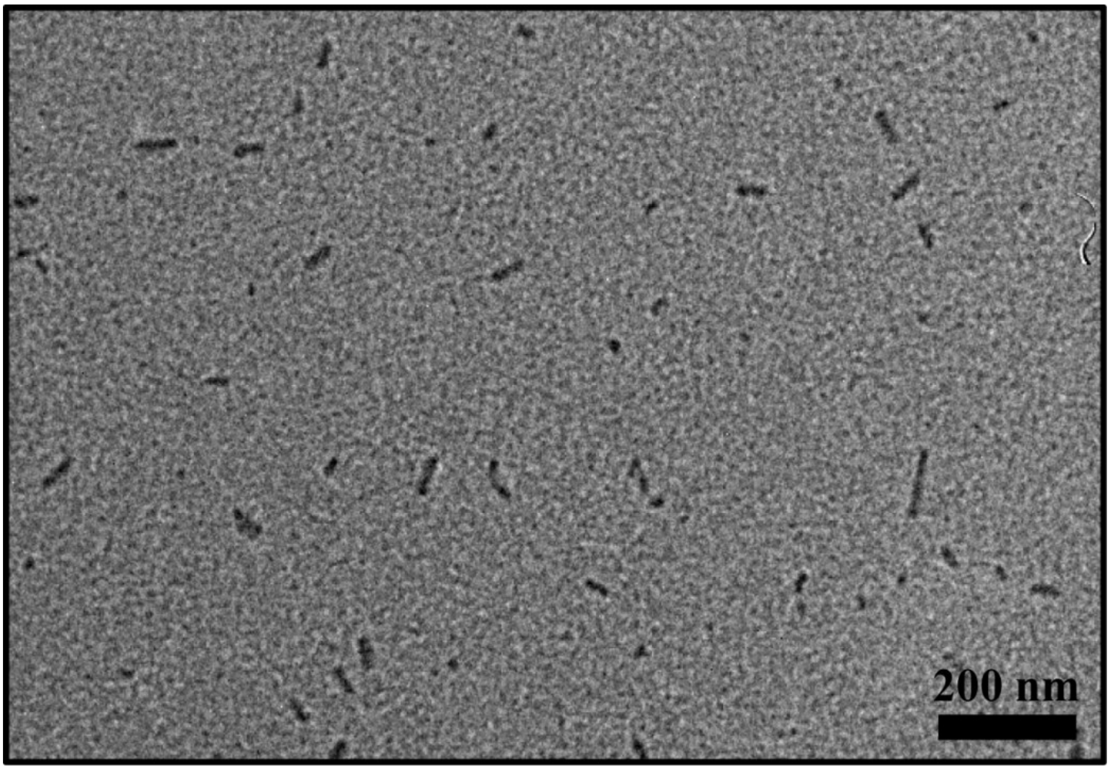

Figure S11. TEM image of fiber-like micelles of OPV_5-*b*-$PHPMA_{100}$ obtained by annealing the seeds in ethanol (0.05 mg/mL) at 30°C.

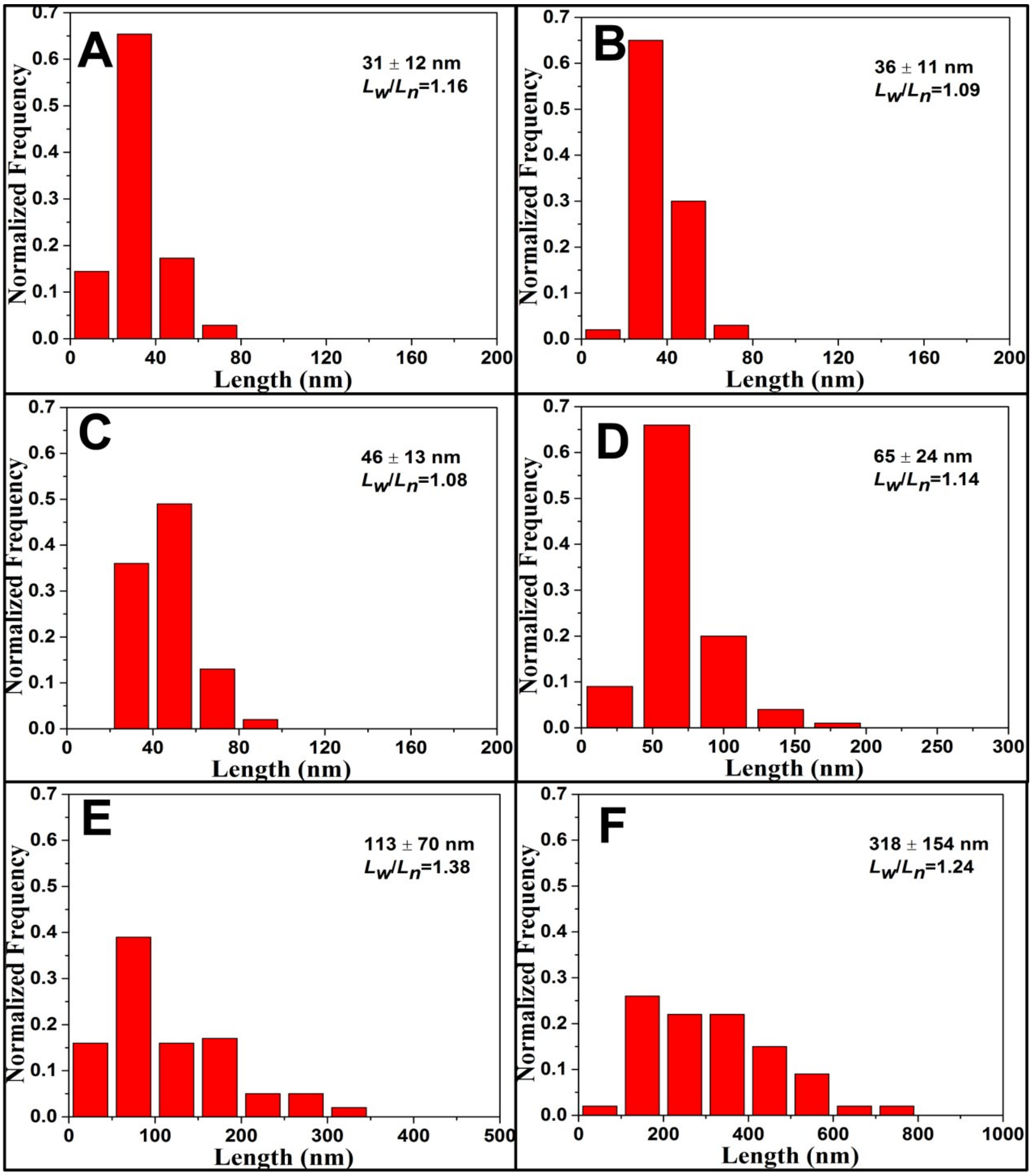

Figure S12. Contour length distribution histograms of the seeds of OPV_5-*b*-$PHPMA_{100}$ (A) in ethanol (0.05 mg/mL) and micelles obtained after annealing the seed solution at 30°C (B), 35°C (C), 40°C (D), 45°C (E) and 55°C (F) for 30 min, followed by aging at room temperature for 48 h.

Table S1. Characteristics of seed and fiber-like micelles of OPV_5-*b*-$PHPMA_{36}$ obtained by the self-seeding strategy in ethanol (0.05 mg/mL)[a]

T (^{o}C)	L_n (nm)	σ (nm)[b]	L_w (nm)	L_w/L_n[b]	$σ/L_n$[b]
32	90	26	97	1.08	0.29
36	122	34	132	1.08	0.28
40	210	57	229	1.09	0.27
44	300	79	324	1.08	0.26
48	429	95	450	1.05	0.22
52	1189	243	1237	1.04	0.20

[a] The lengths of fiber-like micelles were measured from their TEM images and the average values were obtained from over 100 readings. [b] L_n, L_w and σ are the number-average micelle length, weight-average micelle length and standard deviations of micelle length distributions, respectively, as calculated from the histograms of length distributions.

Table S2. Characteristics of the seed and fiber-like micelles of OPV_5-*b*-$PHPMA_{71}$ obtained by the self-seeding strategy in ethanol (0.05 mg/mL)[a]

T (^oC)	L_n (nm)	σ (nm)[b]	L_w (nm)	L_w/L_n[b]	$σ/L_n$[b]
32	134	37	145	1.08	0.28
36	172	60	193	1.12	0.35
40	213	54	226	1.06	0.25
44	344	89	368	1.07	0.26
48	662	181	708	1.07	0.27
50	989	269	1058	1.07	0.27

[a] The lengths of fiber-like micelles were measured from their TEM images and the average values were obtained from over 100 readings. [b] L_n, L_w and σ are the number-average micelle length, weight-average micelle length and standard deviations of micelle length distributions, respectively, as calculated from the histograms of length distributions.

Table S3. Characteristics of the seed and fiber-like micelles of OPV_5-*b*-$PHPMA_{100}$ obtained by the self-seeding strategy in ethanol (0.05 mg/mL)[a]

T (°C)	L_n (nm)	σ (nm)[b]	L_w (nm)	L_w/L_n[b]	σ/L_n[b]
30	36	11	39	1.09	0.31
35	46	13	57	1.24	0.28
40	65	24	74	1.14	0.37
45	114	70	157	1.38	0.61
55	318	154	394	1.24	0.48

[a] The lengths of fiber-like micelles were measured from their TEM images and the average values were obtained from over 100 readings. [b] L_n, L_w and σ are the number-average micelle length, weight-average micelle length, and standard deviations of micelle length distributions, respectively, as calculated from the histograms of length distributions.