

Supporting Information

Synthesis, characterization and micellization of amphiphilic polyethylene-*b*-polyphosphoester block copolymers

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1 Synthesis and characterization of EEP

2-Ethoxy-2-oxo-1,3,2-dioxaphospholane (EEP) was synthesized according to the reported method.¹

Scheme S1. Synthetic route of EEP.

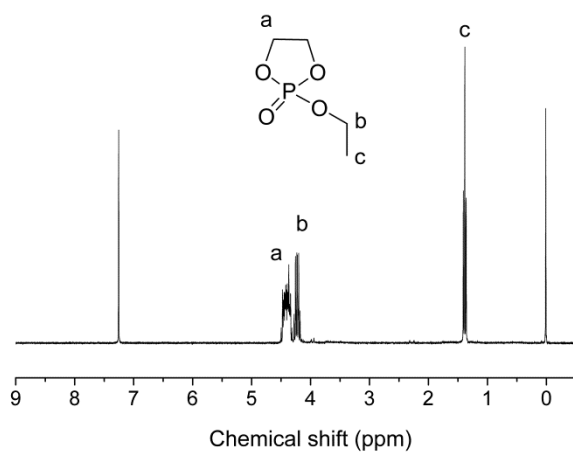
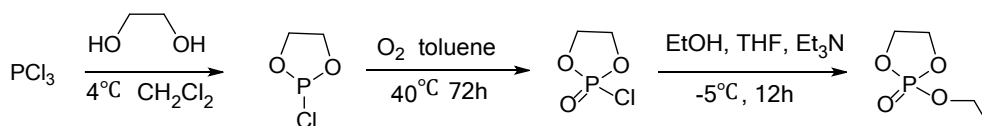


Figure S1. ^1H NMR spectrum of EEP

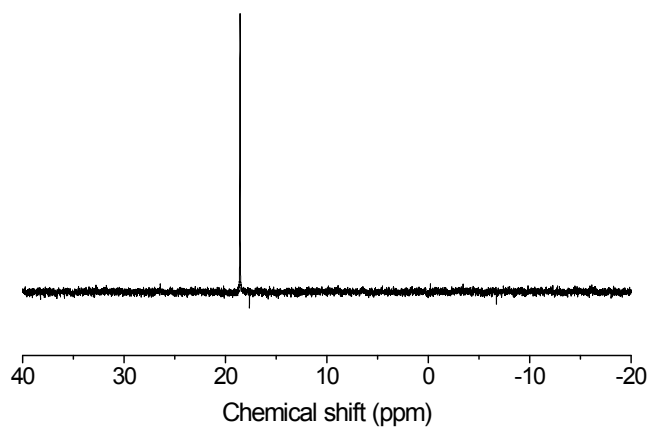


Figure S2. ^{31}P NMR spectrum of EEP

2 Synthesis and characterization of MeEP

2-Methyl-2-oxo-1,3,2-dioxaphospholane (MeEP) was synthesized according to the reported method.²

Scheme S2. Synthetic route of MeEP.

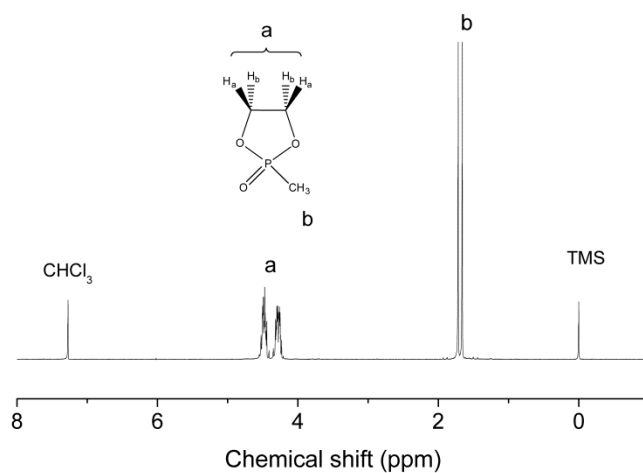
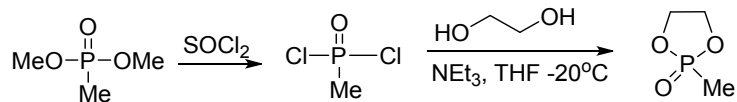


Figure S3. ¹H NMR spectrum of MeEP.

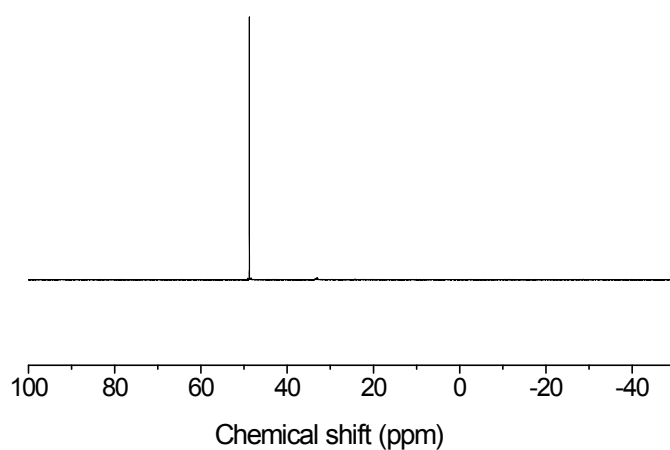


Figure S4. ³¹P NMR spectrum of MeEP.

3 Synthesis and characterization of TU

Thiourea (TU) was synthesized according to a reported method.³

Scheme S3. Synthetic route of TU.

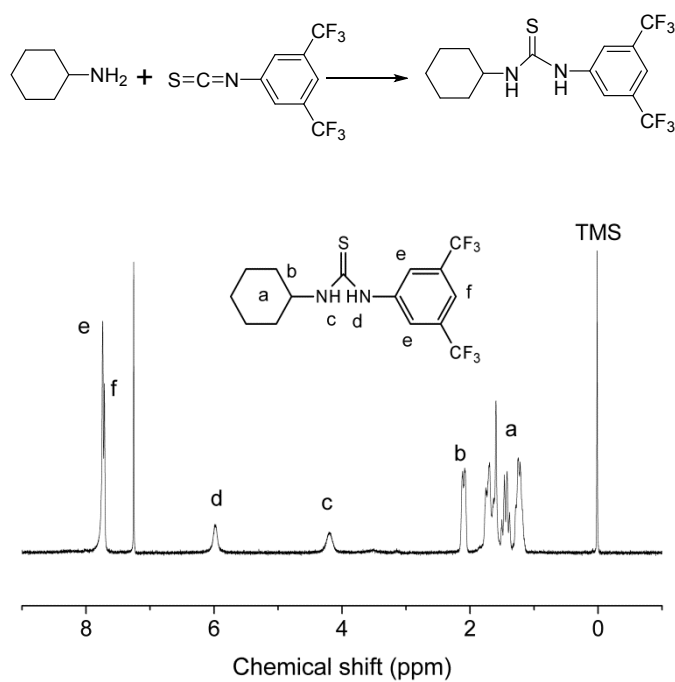


Figure S5. ¹H NMR spectrum of TU

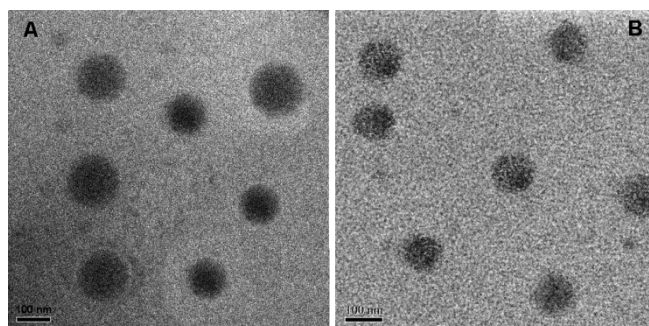


Figure S6. TEM images of p PTX-loaded micelles (A: PE₆₈₀-*b*-PEEP₁₃₁; B: PE₆₈₀-*b*-PMeEP₁₁₂).

References:

- (1) J. Libiszowski, K. Kałużynski, S. Penczek, *J. Polym. Sci., Part A: Polym. Chem.*, 1978, **16**, 1275-1283.

- (2) T. Steinbach, S. Ritz, F. R. Wurm, *ACS Macro Lett.*, 2014, **3**, 244-248.
- (3) R. C. Pratt, B. G. G. Lohmeijer, D. A. Long, P. N. P. Lundberg, A. P. Dove, H. Li, C. G. Wade, R. M. Waymouth, J. L. Hedrick, *Macromolecules*, 2006, **39**, 7863-7871.