Supporting information

Thermo-Responsive Polymer-Based Catalytic Nanoreactors for

Controllable Catalysis of Selective Alcohols Oxidation in Water

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1. Preparation of PBMA₁₈-NHS



Figure S1. The ¹H NMR spectrum of PBMA₁₈-NHS in CDCl₃

2. General route for the synthesis of catalytic nanoreactor 11



CL-(PDMA₅₇-*b*-PAMA₁₁-*b*-PBMA₁₈)-NHS (10) CL-(PDMA₅₇-*b*-PAMA₁₁-*b*-PBMA₁₈)-TEMPO (11)

Figure S2. General route for the synthesis of catalytic nanoreactor 11

3. Preparation of (PAMA₁₁-b-PBMA₁₈)-NHS



Figure S3. The ¹H NMR spectrum of (PAMA₁₁-*b*-PBMA₁₈)-NHS in CDCl₃

4. Preparation of (PDMA₅₇-*b*-PAMA₁₁-*b*-PBMA₁₈)-NHS





5. Preparation of CL-(PDMA₅₇-b-PAMA₁₁-b-PBMA₁₈)-NHS



(PDMA₅₇-*b*-AMA₁₁-*b*-BMA₁₈)-NHS (9)

CL-(PDMA₅₇-*b*-PAMA₁₁-*b*-PBMA₁₈)-NHS (10)



6. ESR characterization of CL-(PDMA₅₇-*b*-PAMA₁₁-*b*-PBMA₁₈)-TE MPO (11)



Figure S6. The ESR spectrum of CL-(PDMA₅₇-*b*-PAMA₁₁-*b*-PBMA₁₈)-TEMPO (11)

7. GC-MS diagrams







Figure S8. GC-MS diagram catalyzed by 6 at 41 °C



Figure S9. GC-MS diagram catalyzed by 8 at 0 °C



Figure S10. GC-MS diagram catalyzed by 8 at 41 °C



Figure S11. GC-MS diagram catalyzed by 8 (placed at 0 °C and 41 °C for four cycles before catalysis) at 0 °C.



Figure S12. GC-MS diagram catalyzed by 8 (placed at 0 °C and 41 °C for four cycles

before catalysis) at 41 °C.



Figure S13. GC-MS diagram catalyzed by 8 at 0 °C



Figure S14. GC-MS diagram catalyzed by 8 at 41 °C



Figure S15. GC-MS diagram catalyzed by 8 at 0 °C



Figure S16. GC-MS diagram catalyzed by 8 at 41 °C



Figure S17. GC-MS diagram catalyzed by 8 at 0 °C



Figure S18. GC-MS diagram catalyzed by 8 at 41 °C







Figure S20. GC-MS diagram catalyzed by 11 at 41 °C