Electronic Supplementary Material (ESI) for Polymer Chemistry
This journal is © The Royal Society of Chemistry 2013

Oligomeric dual functional antibacterial polycaprolactone

Hui Wang, [a] Christopher V. Synatschke,[a] Alexander Raup,[b] Valérie Jérôme,[b] Ruth Freitag,[b] and Seema Agarwal*[a]

Solubility in methanol

Turbidity measurements were performed on a custom-modified Tepper turbidity photometer TP1-D at a wavelength of 670 nm, a cell path length of 10 mm and magnetic stirring. The heating program started at 60 °C and proceeded via cooling to 4 °C at a constant rate of 1.0 °C/min followed by reheating to the starting temperature with the same rate. The inflection point of the transmittance curve was considered as cloud point. It was graphically determined by the maximum of the first derivative of the heating or cooling curve, respectively.

Figure S1 displays the turbidity measurement of the Sample 2 (1.0 wt%) in MeOH. The cloud point upon cooling was about 9 °C. The phase transition upon heating was broad, between 4°C and 30 °C, which made it difficult to define cloud point. The phase transitions were complete and reversible.

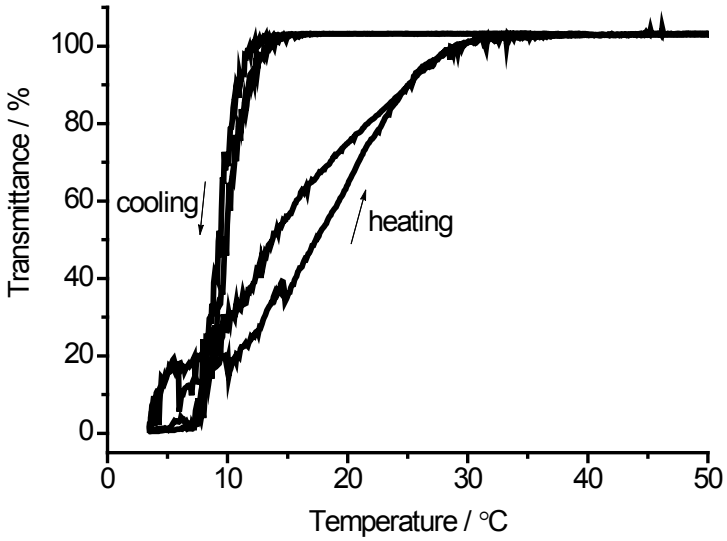
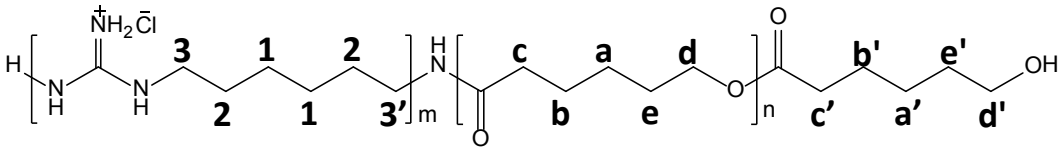


Figure S1: Solubility measurements of 1.0 wt.% MeOH solution of the Sample 2 with M_w = 3400 g/mol and PDI of 1.2. The heating rate was 1.0 °C/min.

This journal is © The Royal Society of Chemistry 2013



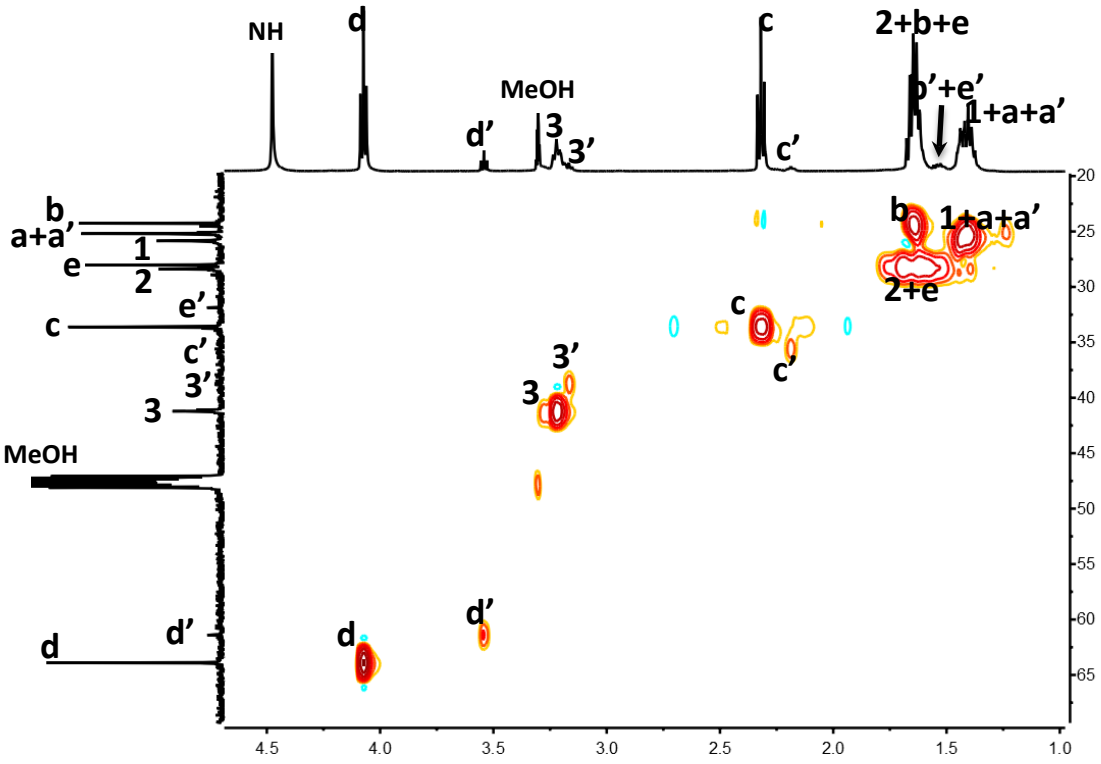


Figure S2: 2D ^{1}H-^{13}C correlation NMR experiment (heteronuclear single-quantum coherence HMQC, 600 or 150 MHz, MeOD, at 60 ℃ of sample 2).

This journal is © The Royal Society of Chemistry 2013

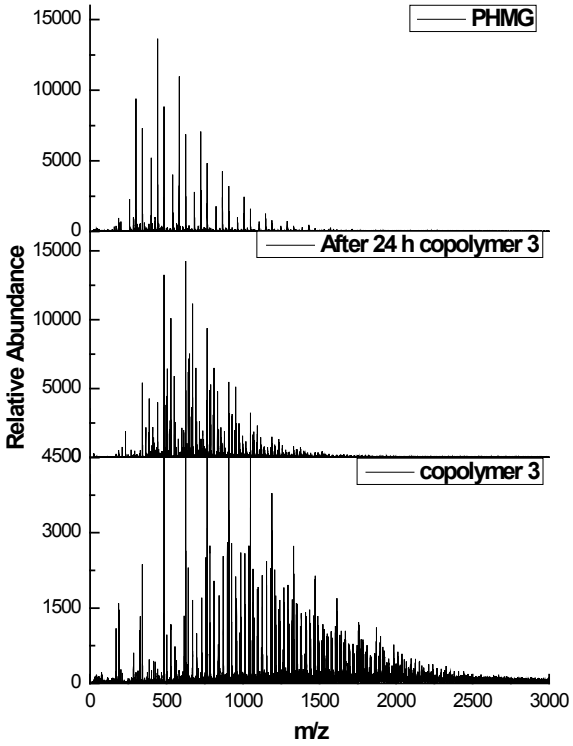


Figure S3. MALDI-TOF MS of copolymer 2 and PHMG after and before enzymatic degradation

Monitoring of antibacterial activity during enzymatic degradation process

In general, 100 mg copolymer was taken in a suspension of 2 mL phosphate buffered saline (PBS) buffer (pH = 7) with bacteria of cell density of 10^6 cfu • mL^{-1} (*Escherichia coli* or *Bacillus subtilis*). This mixture was then placed at 37 ºC with shaking for different time intervals. After defined time intervals, 100 µL specimens were drawn and spread on nutrient agar plates. Incubation for 24 h at 37 ºC showed no bacterial colonies.

This journal is © The Royal Society of Chemistry 2013

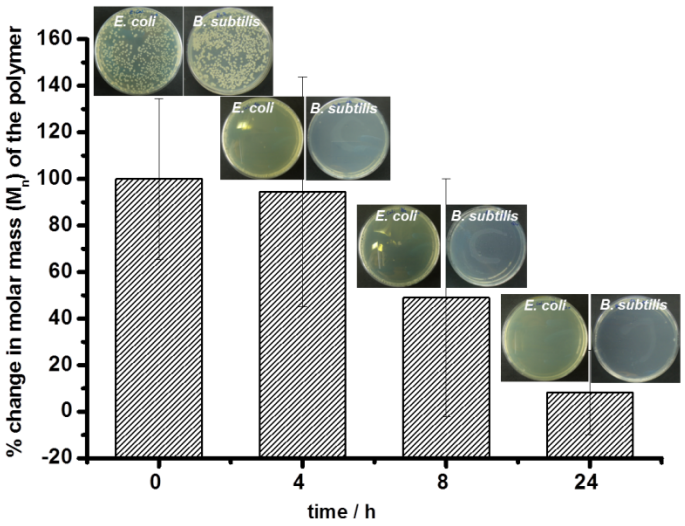


Figure S4: Antibacterial testing during polymer degradation process.