

AOT + polyethylene glycol eutectics for enhanced oil recovery

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SUPPLEMENTARY INFORMATION

Figures S1-S4: ¹H NMR spectra for AOT, PEG-600, PEG1000 and PEG-2000	S1
Figures S5-S12: TGA and DSC thermograms for pure compounds	S3
Table S1. Melting temperatures for AOT + PEG mixtures	S7
Table S2. Density (ρ) and dynamic viscosity (η) for PEG-600 + AOT eutectic at different temperatures and atmospheric pressure.	S7

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^1H NMR spectra for AOT, PEG-600, PEG-1000, and PEG-2000

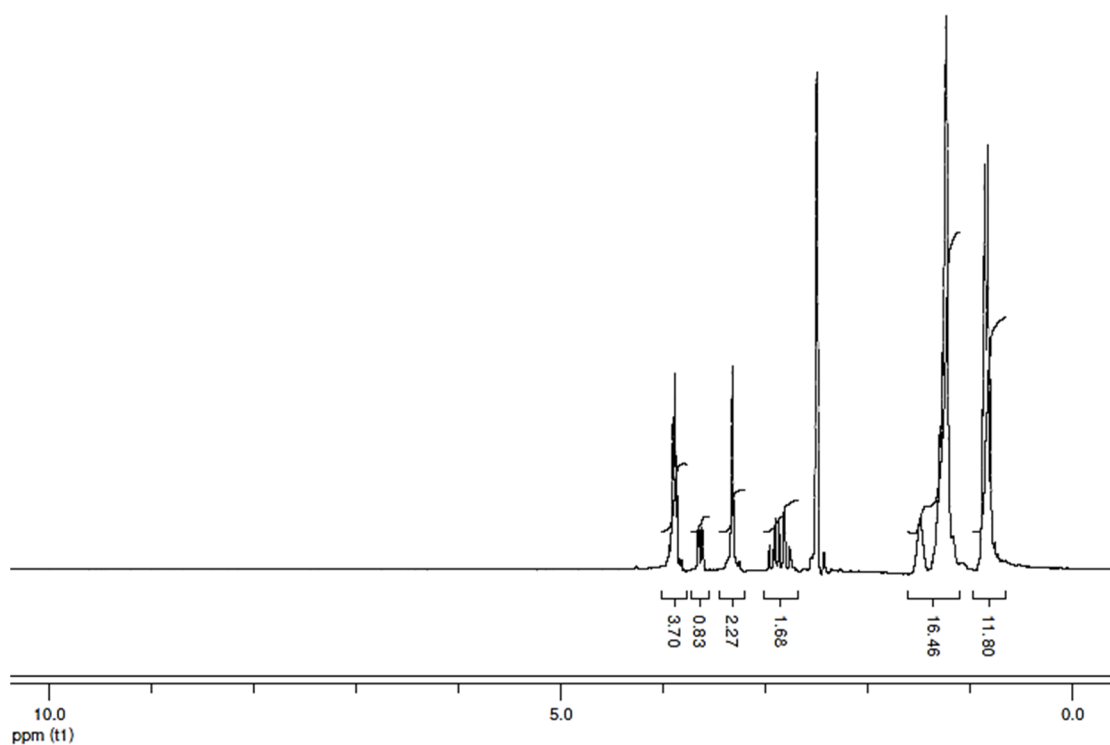


Figure S1. ^1H NMR spectrum of AOT. ^1H NMR, δ_{H} (DMSO- d_6 , 300 MHz): 0.66-0.97 (unresolved, 12H, $4 \times \text{CH}_3$), 1.10-1.61 (unresolved, 16H, $2 \times \text{CHCH}_2\text{CH}_3$ and $2 \times \text{CH}(\text{CH}_2)_3\text{CH}_3$), 2.69-3.01 (unresolved, 2H, $2 \times \text{OCH}_2\text{CH}$), 3.20-3.44 (unresolved, 2H, O_3SCHCH_2), 3.55-3.72 (unresolved, 1H, O_3SCH), 3.77-4.01 (unresolved, 4H, $2 \times \text{OCH}_2$). The peak at 2.50 ppm corresponds to the residual proton signal of the perdeuterated solvent.

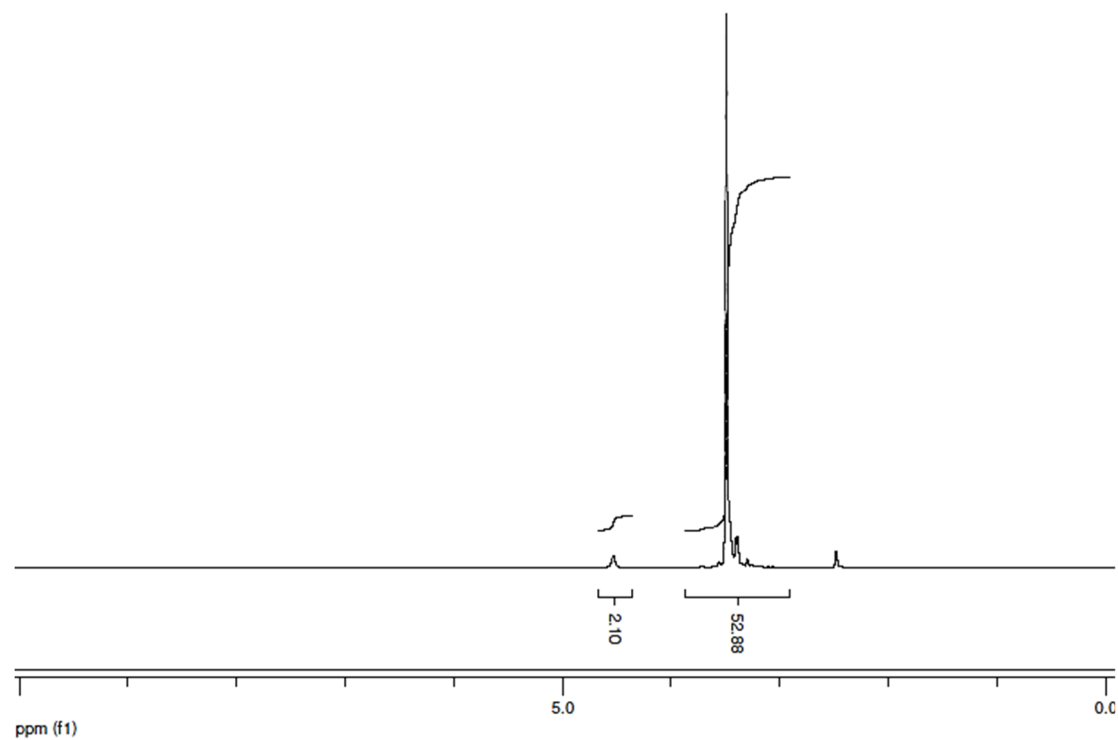


Figure S2. ^1H NMR spectrum of PEG-600. ^1H NMR, δ_{H} (DMSO- d_6 , 300 MHz): 3.20-3.75 (unresolved, 53H, $\text{HO}(\text{CH}_2\text{CH}_2\text{O})_n\text{H}$), 4.53 (s, 2H, $\text{HO}(\text{CH}_2\text{CH}_2\text{O})_n\text{H}$). The peak at 2.50 ppm corresponds to the residual proton signal of the perdeuterated solvent.

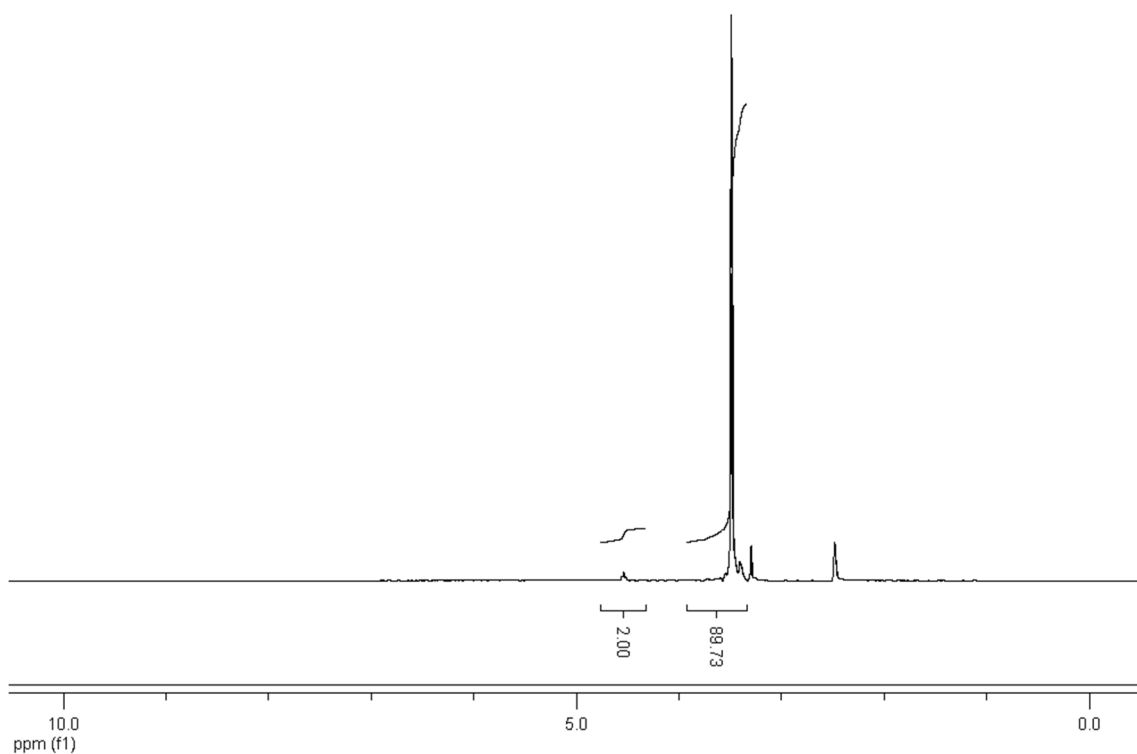


Figure S3. ^1H NMR spectrum of PEG-1000. ^1H NMR, δ_{H} (DMSO- d_6 , 300 MHz): 3.35-3.60 (unresolved, 89H, $\text{HO}(\text{CH}_2\text{CH}_2\text{O})_n\text{H}$), 4.53 (m, 2H, $\text{HO}(\text{CH}_2\text{CH}_2\text{O})_n\text{H}$). The peak at 2.50 ppm corresponds to the residual proton signal of the perdeuterated solvent, and the peak at 3.30 ppm corresponds to trace water present in the NMR mixture (solvent + PEG).

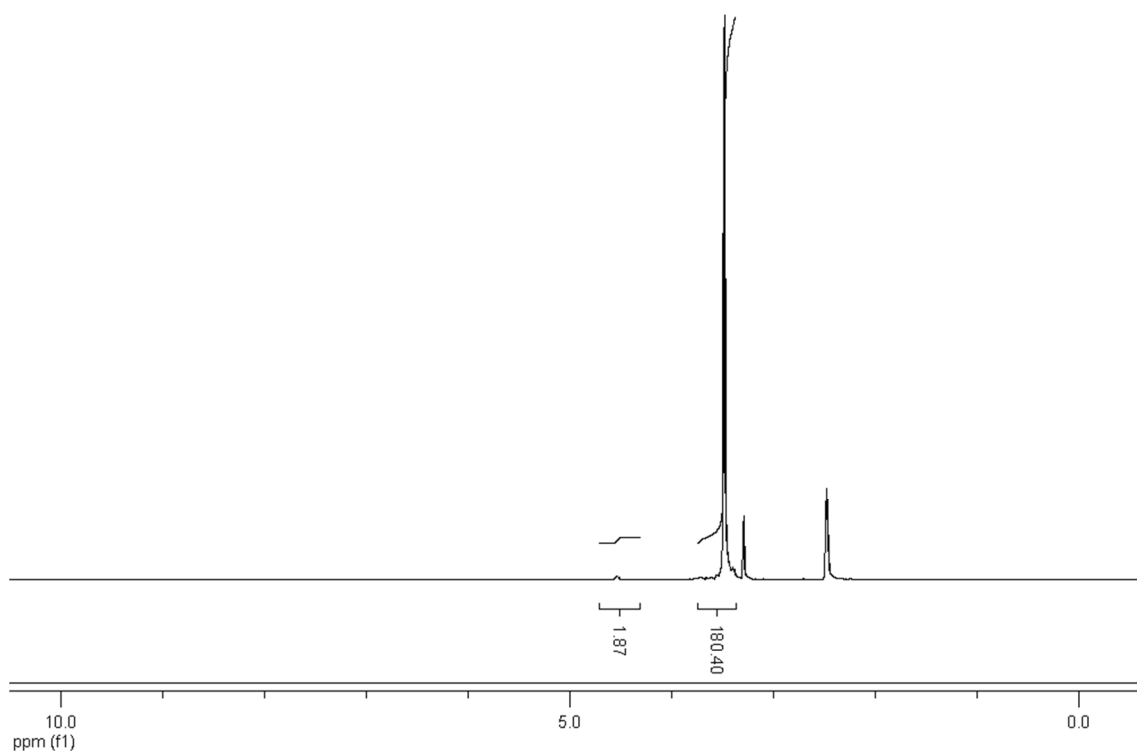


Figure S4. ^1H NMR spectrum of PEG-2000. ^1H NMR, δ_{H} (DMSO- d_6 , 300 MHz): 3.35-3.50 (unresolved, 180H, $\text{HO}(\text{CH}_2\text{CH}_2\text{O})_n\text{H}$), 4.53 (s, 2H, $\text{HO}(\text{CH}_2\text{CH}_2\text{O})_n\text{H}$). The peak at 2.50 ppm corresponds to the residual proton signal of the perdeuterated solvent, and the peak at 3.30 ppm corresponds to trace water present in the NMR mixture (solvent + PEG).

TGA and DSC thermograms for pure compounds

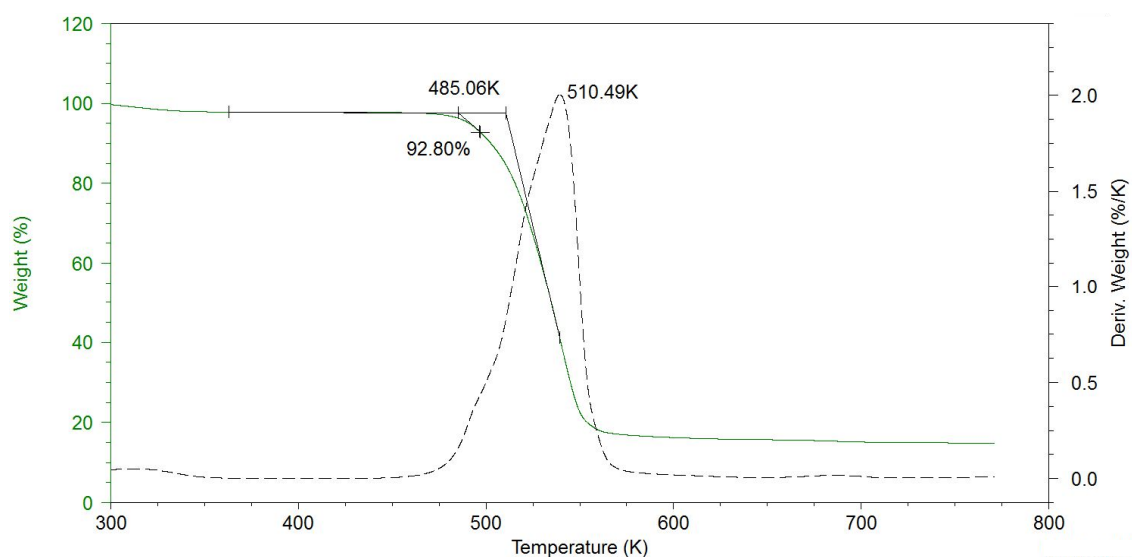


Figure S5. TGA thermogram of AOT, showing the determination of the regular onset decomposition temperature (T_d) and the 5 % onset decomposition temperature ($T_{d,5\%}$). The green solid line represents the weight percentage as a function of temperature, while the black dashed line represents its first derivative.

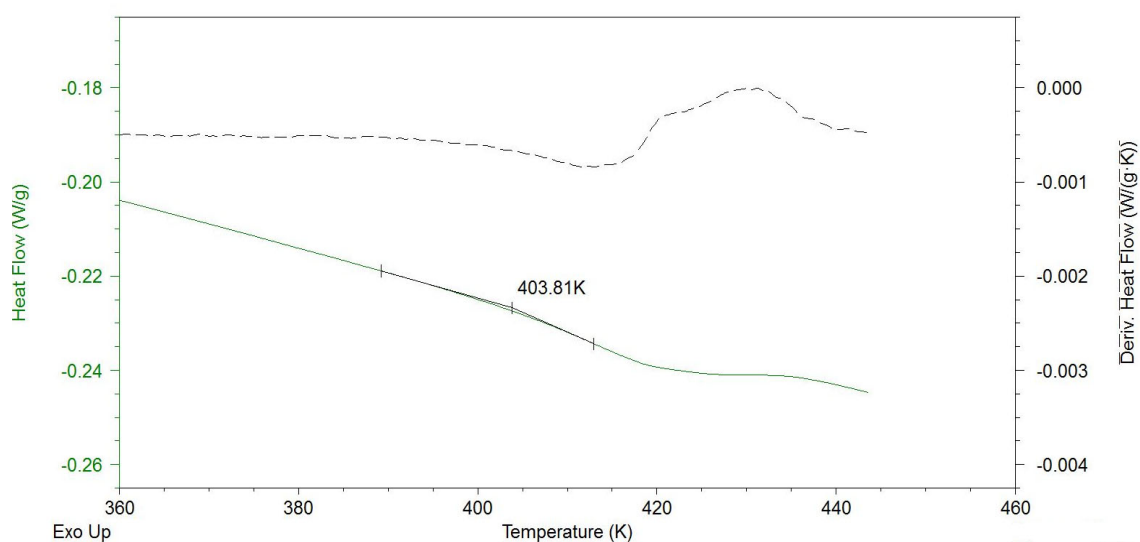


Figure S6. DSC thermogram of AOT, showing the determination of the onset melting temperature. The green solid line represents the heat flow as a function of temperature, while the black dashed line represents its first derivative.

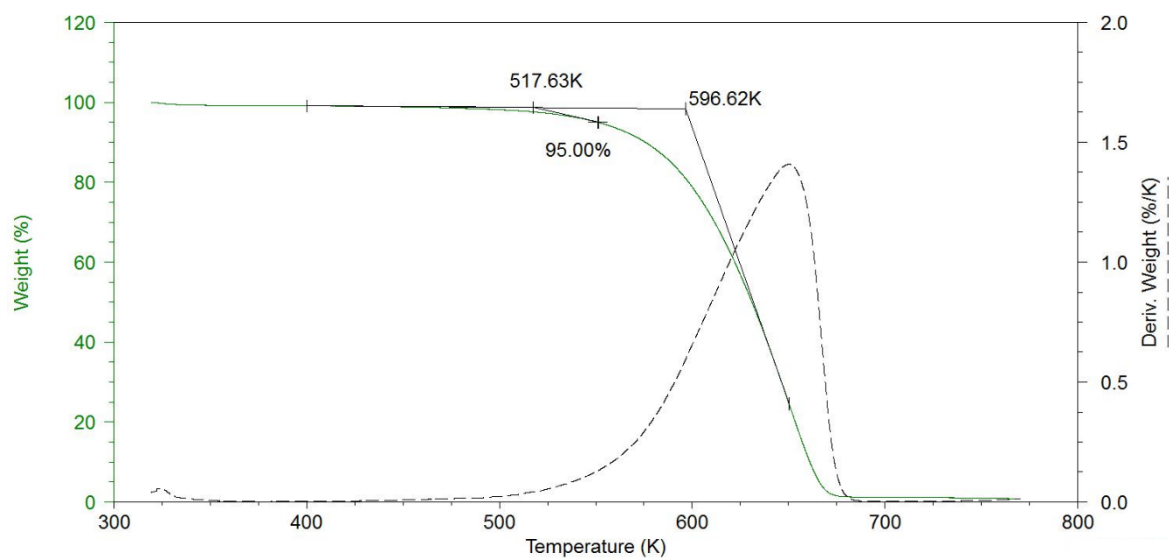


Figure S7. TGA thermogram of PEG-600, showing the determination of the regular onset decomposition temperature (T_d) and the 5 % onset decomposition temperature ($T_{d,5\%}$). The green solid line represents the weight percentage as a function of temperature, while the black dashed line represents its first derivative.

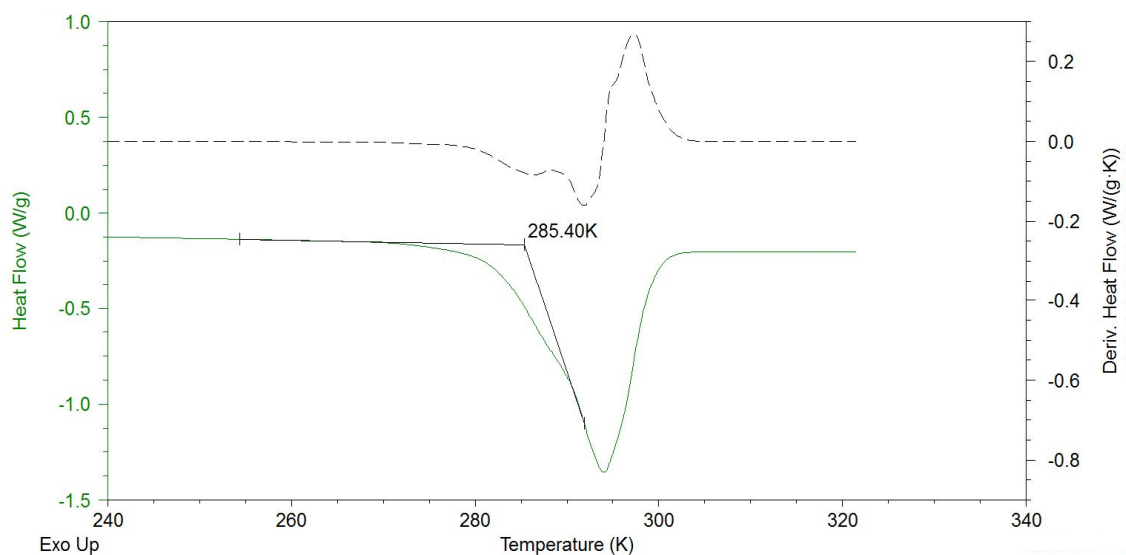


Figure S8. DSC thermogram of PEG-600, showing the determination of the onset melting temperature. The green solid line represents the heat flow as a function of temperature, while the black dashed line represents its first derivative.

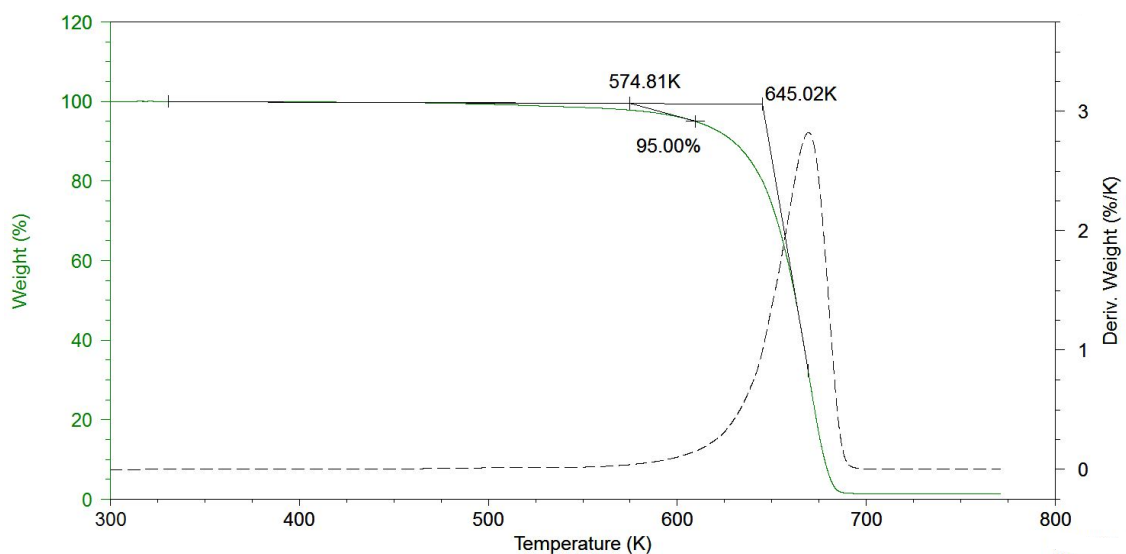


Figure S9. TGA thermogram of PEG-1000, showing the determination of the regular onset decomposition temperature (T_d) and the 5 % onset decomposition temperature ($T_{d,5\%}$). The green solid line represents the weight percentage as a function of temperature, while the black dashed line represents its first derivative.

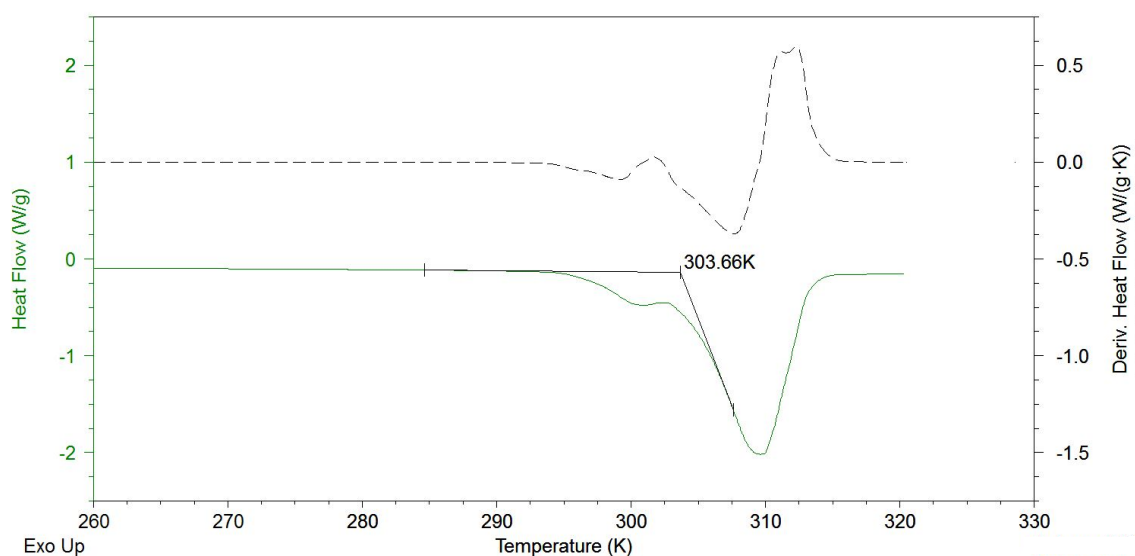


Figure S10. DSC thermogram of PEG-1000, showing the determination of the onset melting temperature. The green solid line represents the heat flow as a function of temperature, while the black dashed line represents its first derivative.

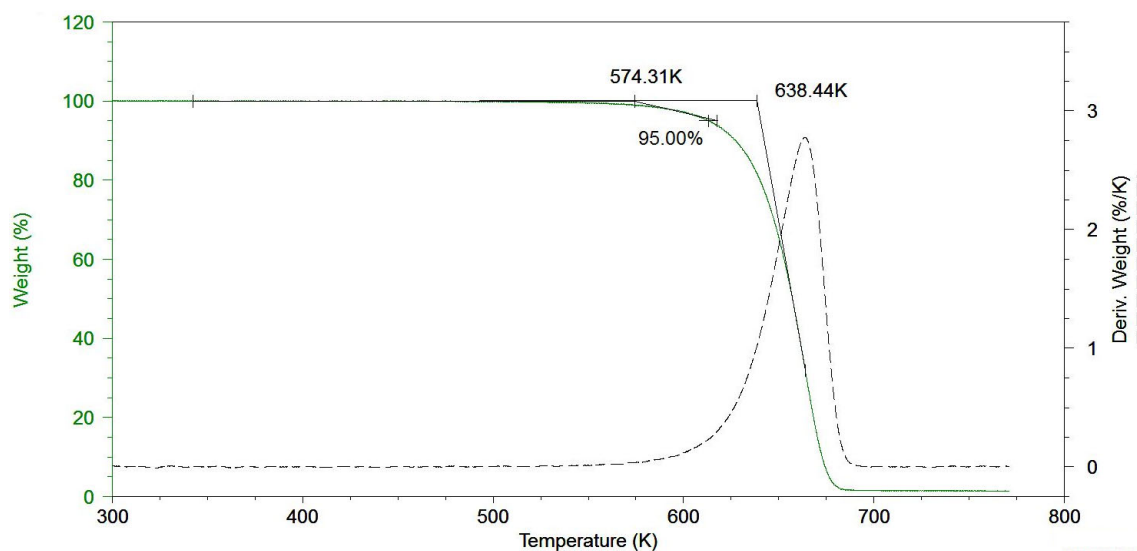


Figure S11. TGA thermogram of PEG-2000, showing the determination of the regular onset decomposition temperature (T_d) and the 5 % onset decomposition temperature ($T_{d,5\%}$). The green solid line represents the weight percentage as a function of temperature, while the black dashed line represents its first derivative.

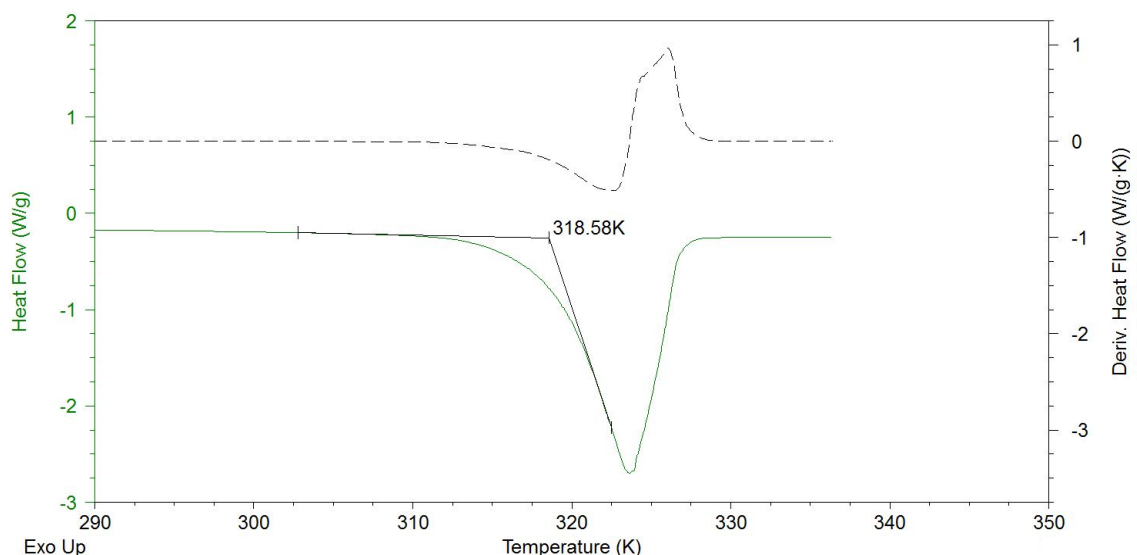


Figure S12. DSC thermogram of PEG-2000, showing the determination of the onset melting temperature. The green solid line represents the heat flow as a function of temperature, while the black dashed line represents its first derivative.

Table S1. Melting temperatures for AOT + PEG mixtures.

AOT mole fraction	T_m (K)		
	AOT + PEG-600	AOT + PEG-1000	AOT + PEG-2000
0.0	285	304	319
0.1	282	301	319
0.2	281	300	318
0.3	280	297	318
0.4	275	293	318
0.5	278	292	317
0.6	279	290	316
0.7	283	292	315
0.8	285	296	314
0.9	285	298	317
1.0	404	404	404

Table S2. Density (ρ) and dynamic viscosity (η) for AOT + PEG-600 eutectic composition at different temperatures and atmospheric pressure.

T (K)	ρ (g·cm ⁻³)	η (mPa·s)
288.15	1.135682	869.31
298.15	1.127670	392.44
308.15	1.119781	216.44
318.15	1.111923	129.82
328.15	1.104087	85.513
338.15	1.096291	59.669
348.15	1.088518	42.024