

Supporting Information

**Inspired by mussel adhesive protein:
Hydrophilic cationic copoly(2-oxazoline)s carrying catecholic side chains**

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2-(3,4-Dimethoxybenzyl)-2-oxazoline.

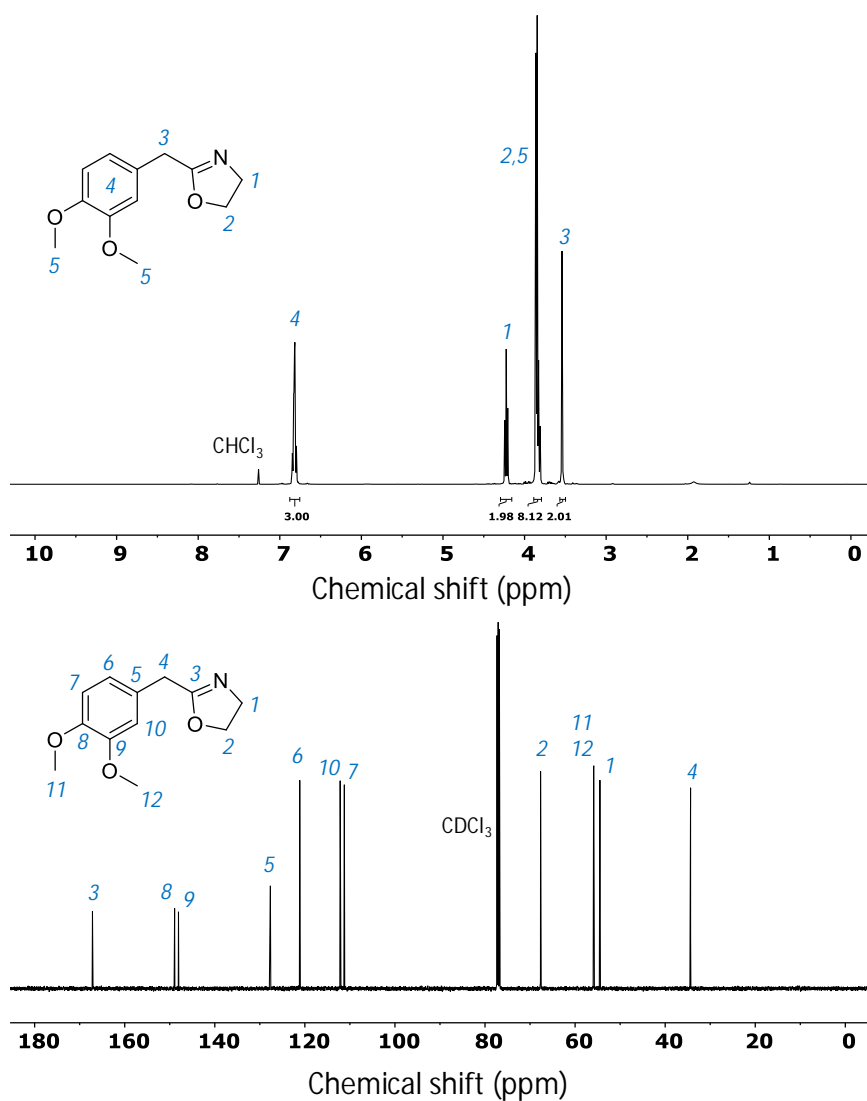


Figure S1. ¹H NMR (600 MHz) (top) and ¹³C NMR (150 MHz) (bottom) spectra of 2-(3,4-dimethoxybenzyl)-2-oxazoline (**1c**) in CDCl₃.

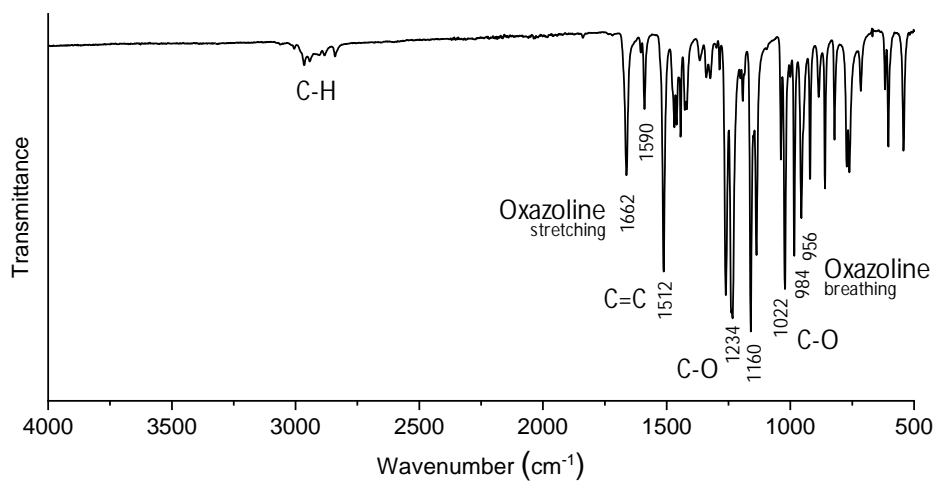


Figure S2. FT-IR (ATR) spectrum of 2-(3,4-dimethoxybenzyl)-2-oxazoline (**1c**).

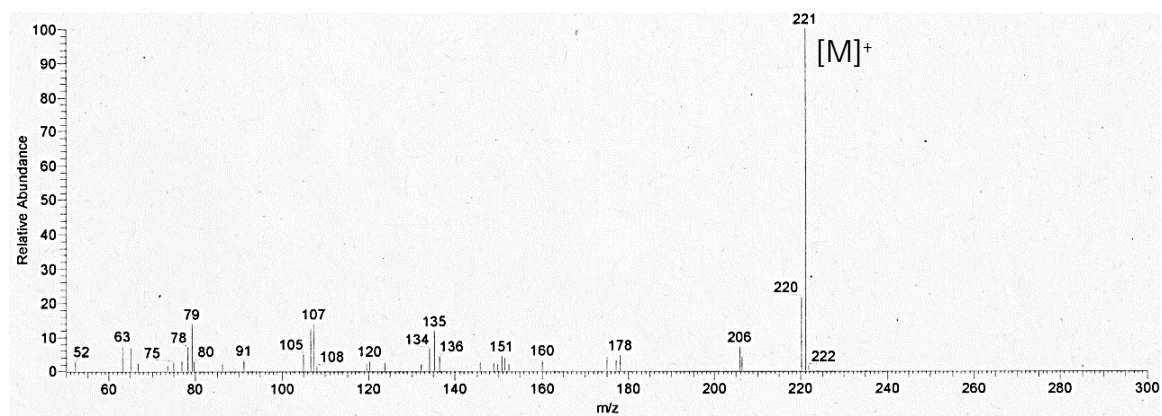


Figure S3. EI-MS spectrum of 2-(3,4-dimethoxybenzyl)-2-oxazoline (**1c**).

Microwave-assisted cationic ring-opening polymerizations of 2-ethyl-2-oxazoline (**1a**), protected catechol-substituted 2-oxazolines (**1b**, **1c**, and **1d**) and pyrogallol-substituted 2-oxazolines (**1b'** and **1d'**) in acetonitrile solution ($[\text{monomer}]_0 = 1 \text{ M}$, $[\text{monomer}]_0/[\text{MeOTos}]_0 = 25$) at $100 \text{ }^\circ\text{C}$.

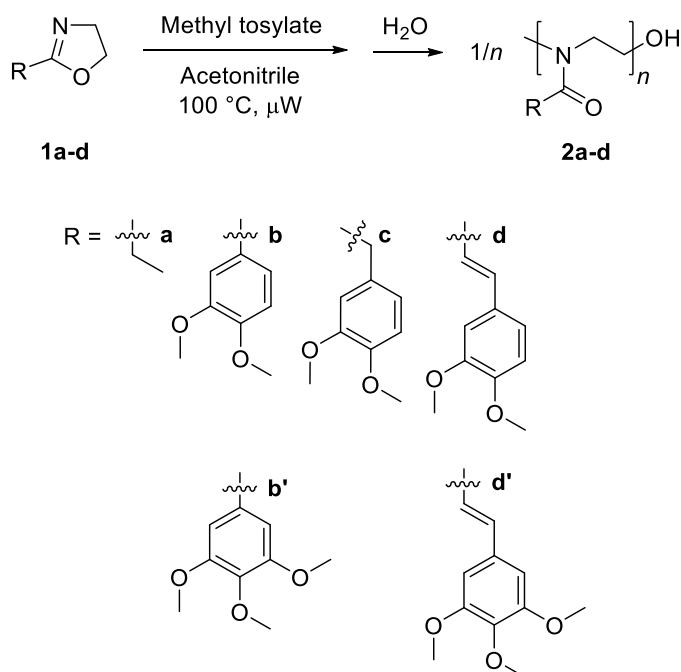


Table S1. Molecular characteristics of the polymers **2a-d** obtained by microwave-assisted cationic ring-opening polymerization of the 2-oxazoline monomers **1a-d** and **1b'-d'**.

	Time (min)	Conversion (%) ^a	M_n^{calc} (kg mol^{-1}) ^b	M_n^{app} (kg mol^{-1}) ^c	\bar{D} ^d	M_n^{MS} (kg mol^{-1}) ^e
2a	64	96	2.4	2.6	1.28	2.7
2b	480	93	4.8	3.2	1.26	4.2
2b'	480	99	5.9	3.5	1.23	4.3
2c	64	94	5.3	3.7	1.22	4.1
2d	128	99	5.8	3.5	1.22	4.7
2d'	128	97	6.5	4.1	1.20	5.4

^a Determined by FT-IR spectroscopy. ^b Expected molar mass, as calculated by $25 \times M_{\text{monomer}} \times \text{conversion} + 32$. ^c Apparent number-average molar mass determined by SEC with polystyrene calibration. ^d Dispersity index determined by SEC. ^e Number-average molar mass determined by MALDI-TOF mass spectrometry (see Fig. S5).

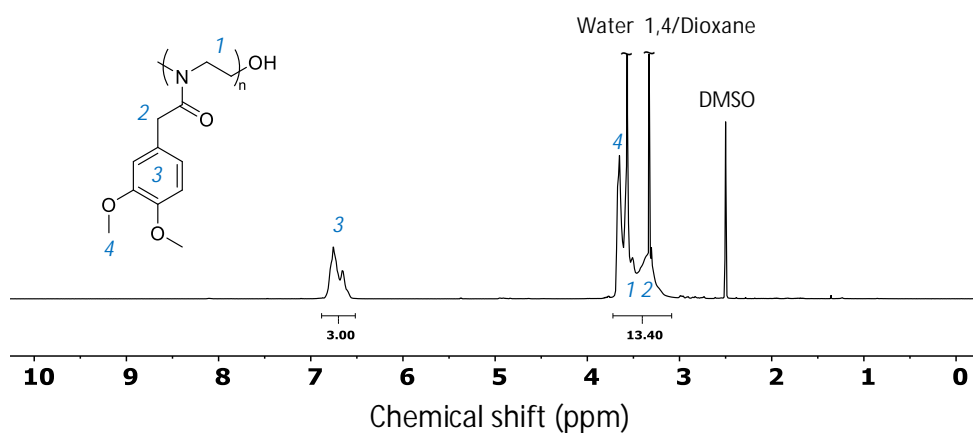


Figure S4. ^1H NMR (400 MHz) spectrum of poly[2-(3,4-dimethoxybenzyl)-2-oxazoline] (**2c**) in $\text{DMSO-}d_6$.

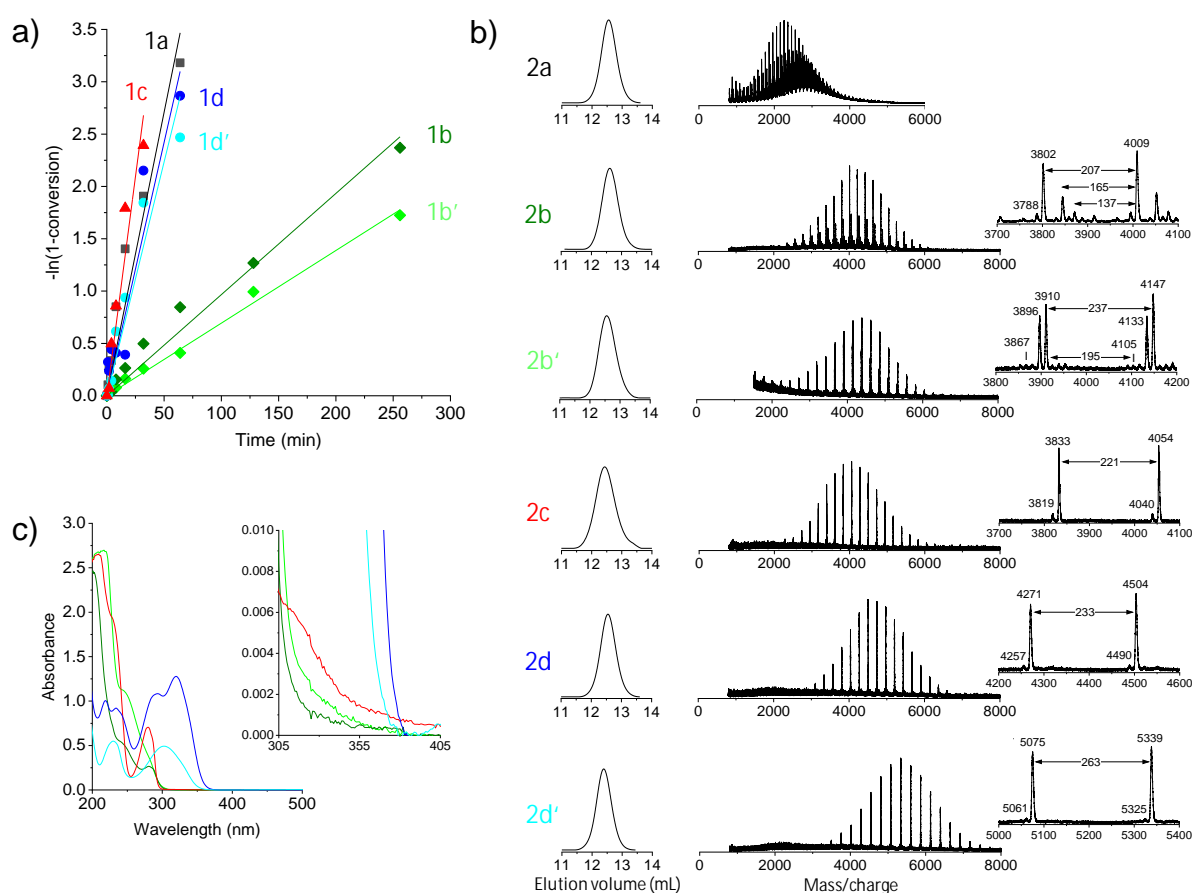


Figure S5. (a) First-order time conversion plots for the microwave-assisted polymerizations of **1a**, **1b**, **1b'**, **1c**, **1d**, and **1d'** ($[\text{monomer}]_0 = 1 \text{ M}$, $[\text{monomer}]_0/[\text{MeOTos}]_0 = 25$) in acetonitrile solution at 100°C . (b) SEC-RI traces (NMP) (left) and MALDI-TOF mass spectra (DCTB, K^+) (right) of the polymers **2a**, **2b**, **2b'**, **2c**, **2d**, and **2d'** obtained at the end of kinetic experiments. (c) UV-visible spectra of the polymers in acetonitrile solution (**2b**, **2b'**, and **2c** 0.05 mg mL^{-1} , **2d** and **2d'** 0.01 mg mL^{-1}).

Microwave-assisted cationic ring-opening copolymerizations of 2-ethyl-2-oxazoline (**1a**) with either 2-(3,4-dimethoxyphenyl)-2-oxazoline (**1b**) (90:10), 2-(3,4-dimethoxybenzyl)-2-oxazoline (**1c**) (90:10), or 2-(3,4-dimethoxycinnamyl)-2-oxazoline (**1d**) (90:10) in acetonitrile solution ($[\text{monomer}]_0 = 1 \text{ M}$, $[\text{monomer}]_0/[\text{MeOTos}]_0 = 100$) at $100 \text{ }^\circ\text{C}$.

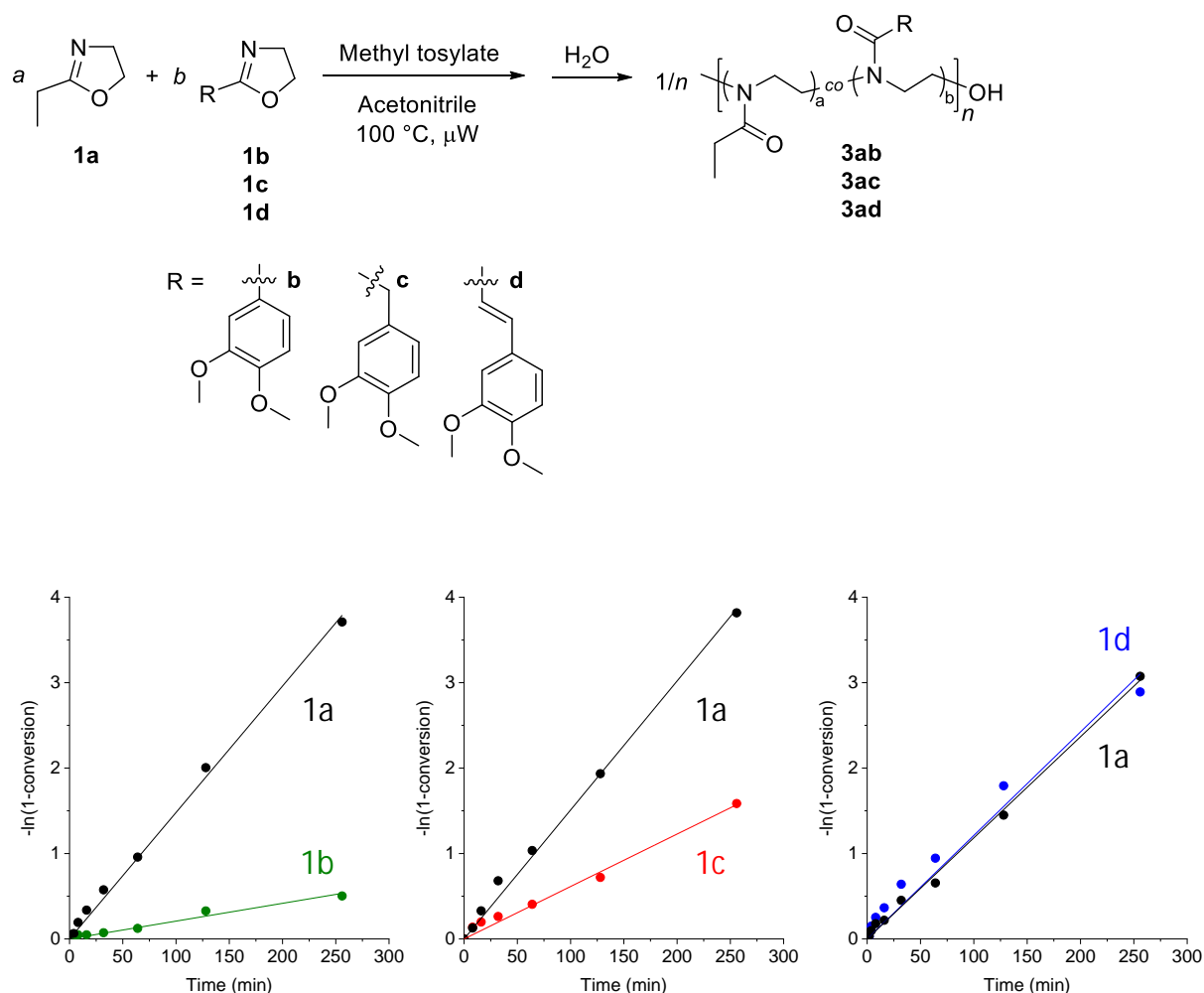


Figure S6. Pseudo first-order time-conversion plots for the microwave-assisted copolymerizations of 2-ethyl-2-oxazoline (**1a**) with either 2-(3,4-dimethoxyphenyl)-2-oxazoline (**1b**) (90:10), 2-(3,4-dimethoxybenzyl)-2-oxazoline (**1c**) (90:10), or 2-(3,4-dimethoxy-cinnamyl)-2-oxazoline (**1d**) (90:10) in acetonitrile solution at $100 \text{ }^\circ\text{C}$. Monomer conversions were determined by ^1H NMR spectroscopy (see Figs. S7-S9).

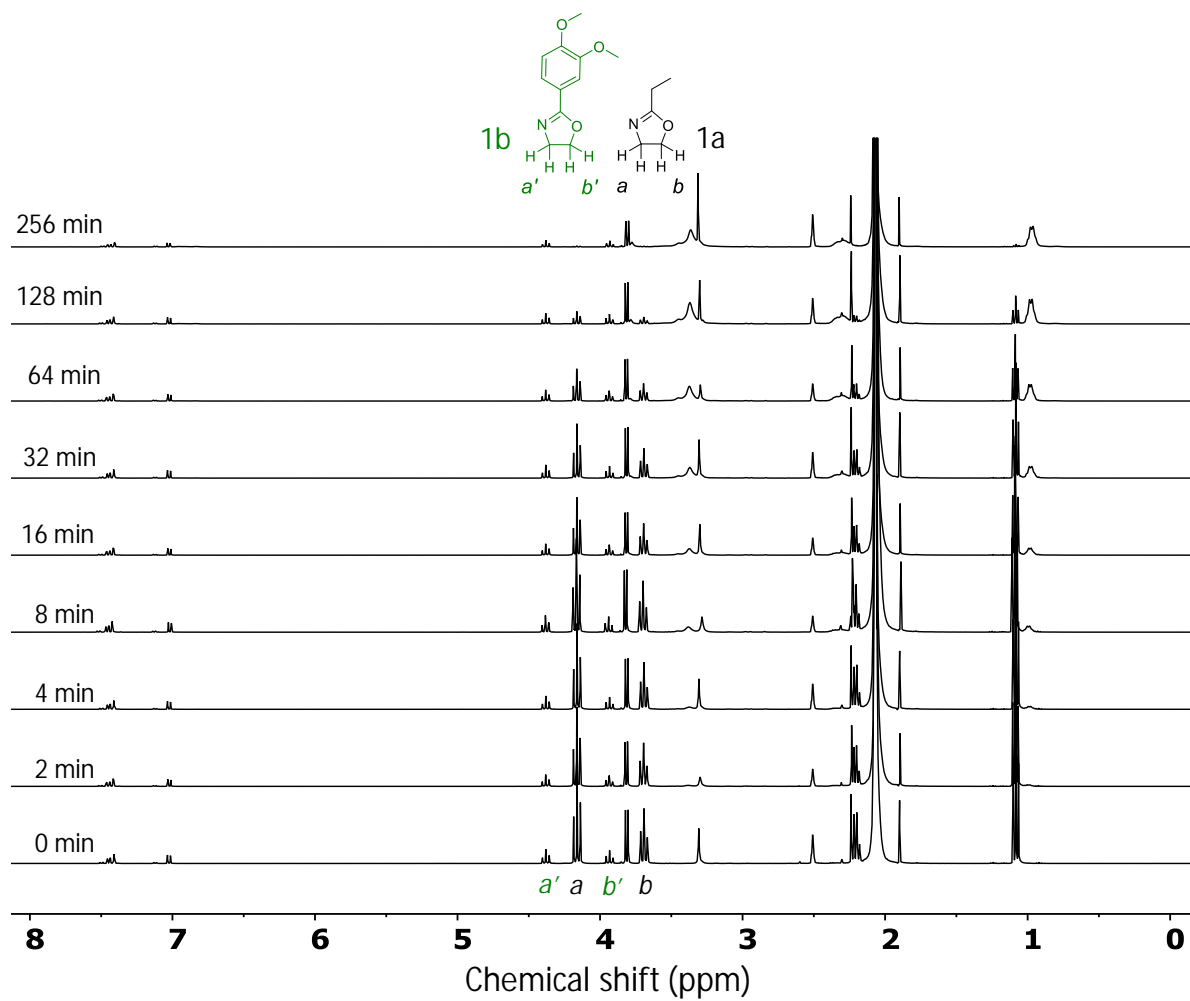


Figure S7. ^1H NMR (400 MHz, $\text{DMSO}-d_6$) spectra of crude reaction mixtures (terminated with water) obtained during the microwave-assisted copolymerization of 2-ethyl-2-oxazoline (**1a**) with 2-(3,4-dimethoxyphenyl)-2-oxazoline (**1b**) (90:10) in acetonitrile solution at 100 °C.

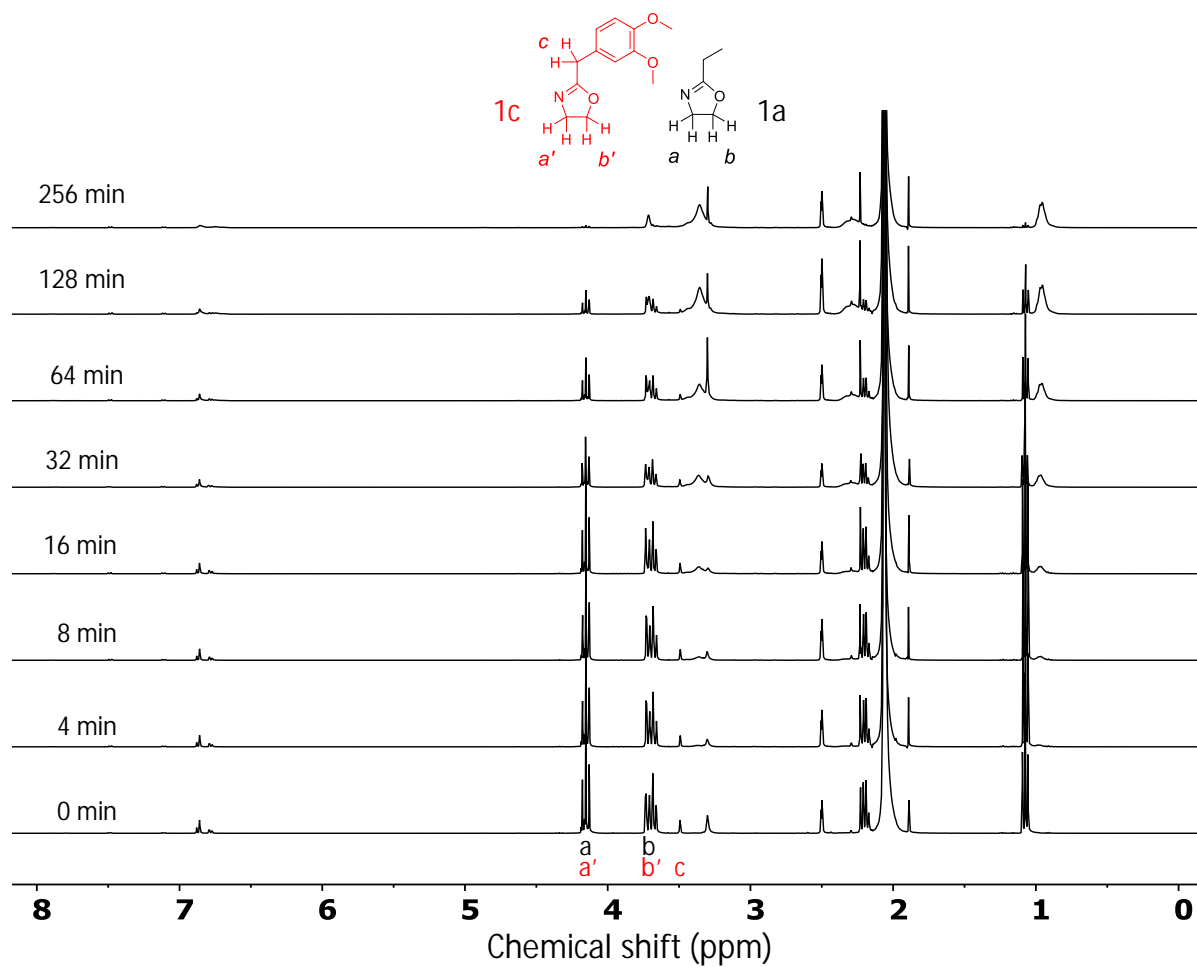


Figure S8. ¹H NMR (400 MHz, DMSO-*d*₆) spectra of crude reaction mixtures (terminated with water) obtained during the microwave-assisted copolymerization of 2-ethyl-2-oxazoline (**1a**) and 2-(3,4-dimethoxybenzyl)-2-oxazoline (**1c**) (90:10) in acetonitrile solution at 100 °C.

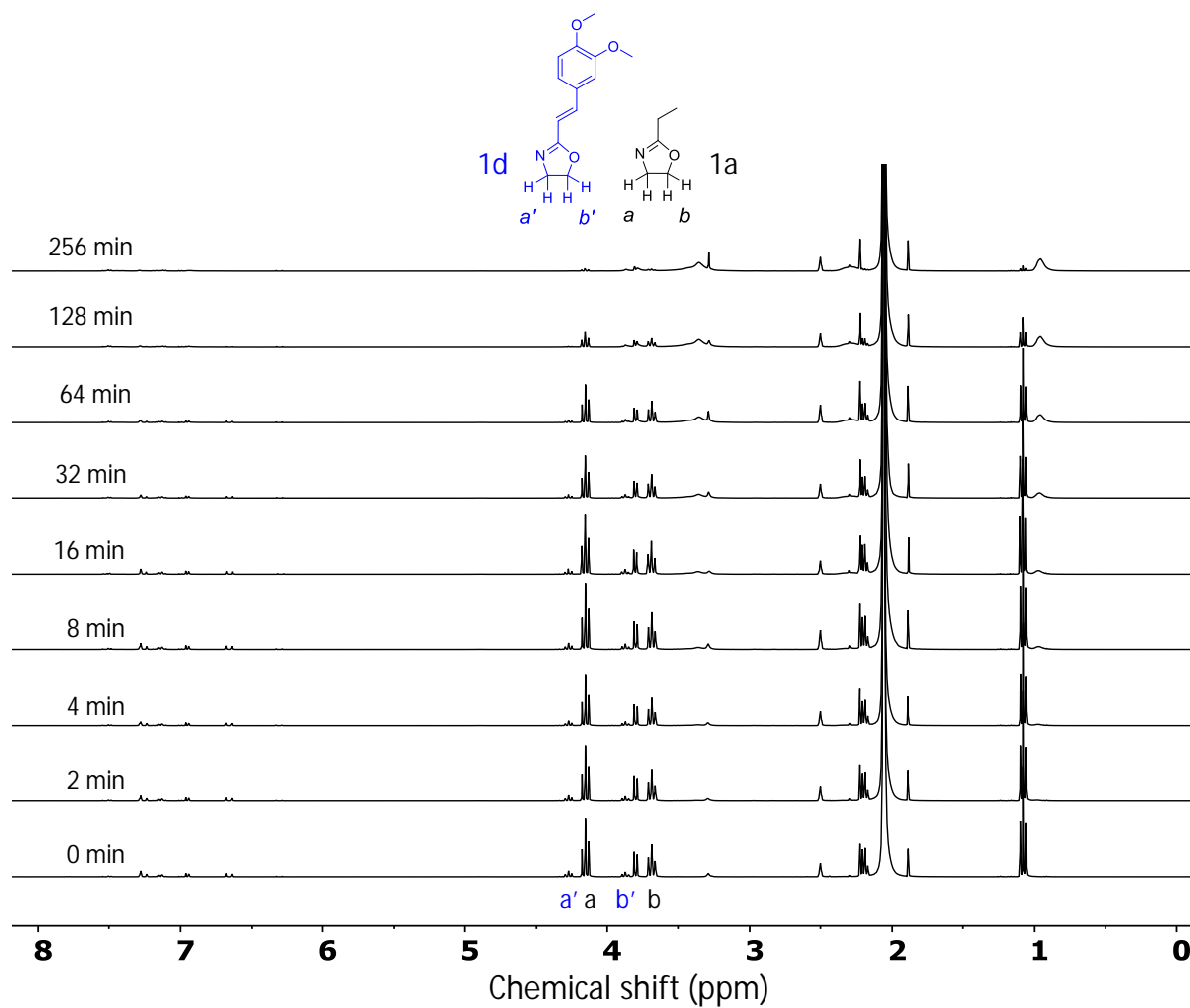


Figure S9. ¹H NMR (400 MHz, DMSO-*d*₆) spectra of crude reaction mixtures (terminated with water) obtained during the microwave-assisted copolymerization of 2-ethyl-2-oxazoline (**1a**) and 2-(3,4-dimethoxycinnamyl)-2-oxazoline (**1d**) (90:10) in acetonitrile solution at 100 °C.

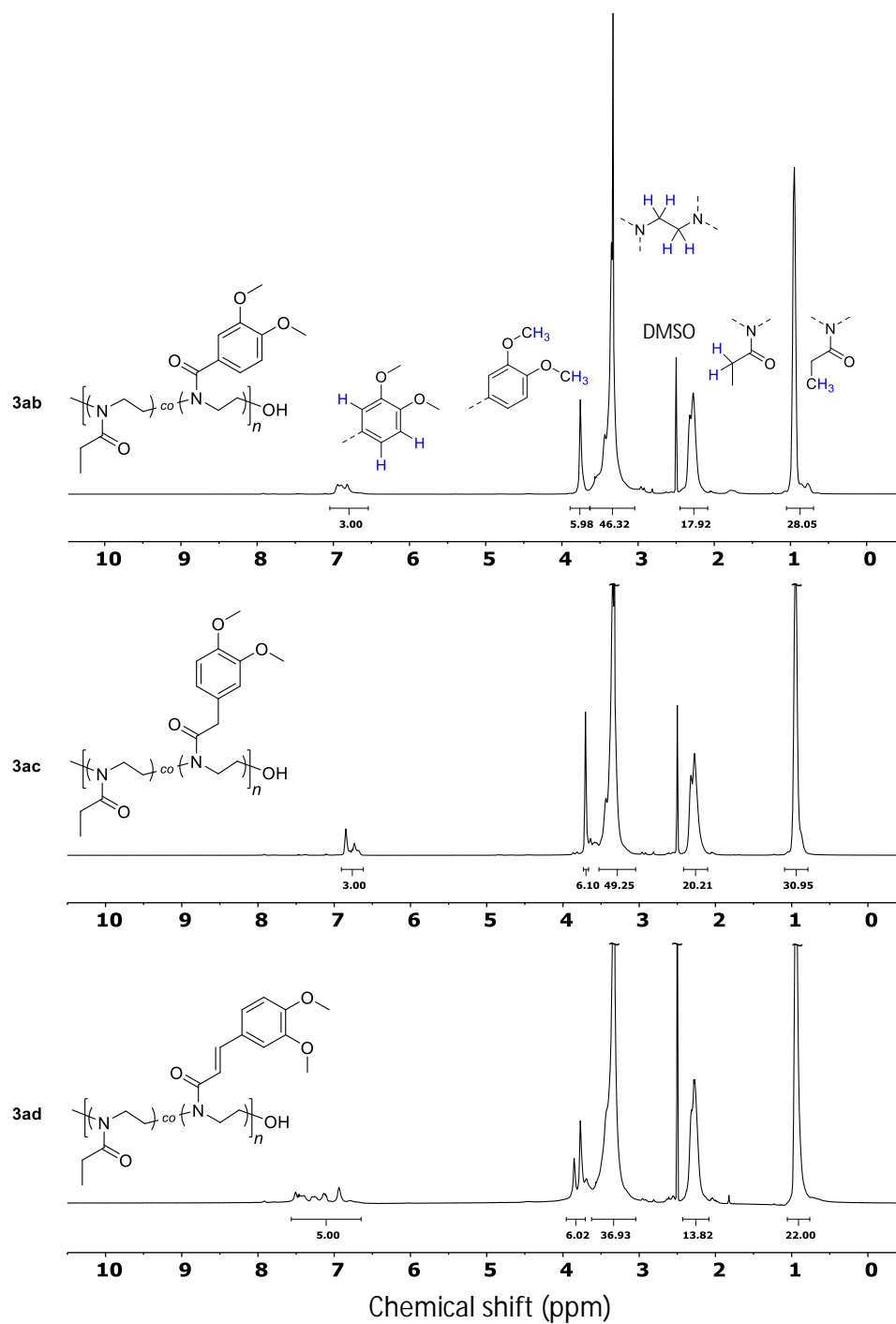


Figure S10. ^1H NMR (400 MHz, $\text{DMSO-}d_6$) spectra of the isolated copolymers **3ab**, **3ac**, and **3ad** obtained by microwave-assisted copolymerization of 2-ethyl-2-oxazoline (**1a**) with either 2-(3,4-dimethoxyphenyl)-2-oxazoline (**1b**) (90:10) (a-c), 2-(3,4-dimethoxybenzyl)-2-oxazoline (**1c**) (90:10) (d-f), or 2-(3,4-dimethoxycinnamyl)-2-oxazoline (**1d**) (90:10) in acetonitrile solution at 100 °C.

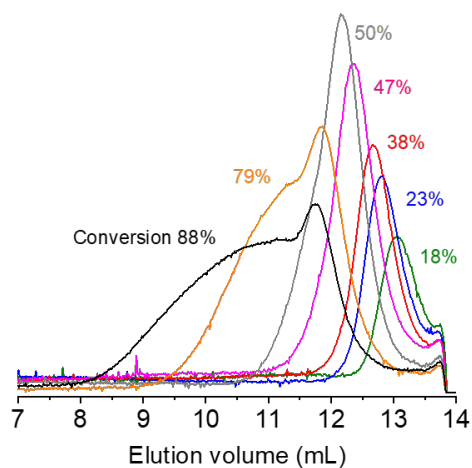


Figure S11. SEC-RI traces of the copolymers obtained during the microwave-assisted copolymerization of 2-ethyl-2-oxazoline (**1a**) and 2-(3,4-dimethoxycinnamyl)-2-oxazoline (**1d**) (75:25) in acetonitrile solution at 100 °C.

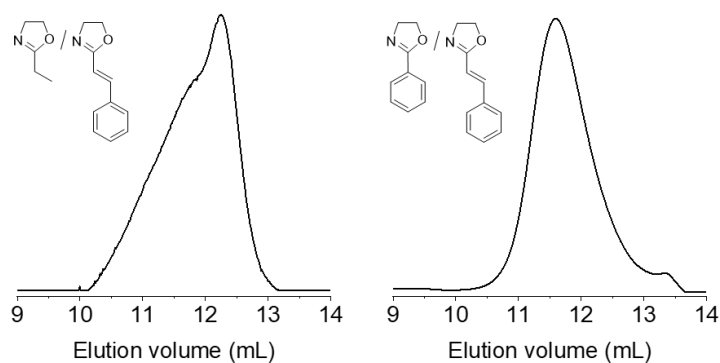


Figure S12. SEC-RI traces of the copolymers obtained by microwave-assisted copolymerization of 2-ethyl-2-oxazoline/2-cinnamyl-2-oxazoline (75:25) (left) and 2-phenyl-2-oxazoline/2-cinnamyl-2-oxazoline (75:25) (right).

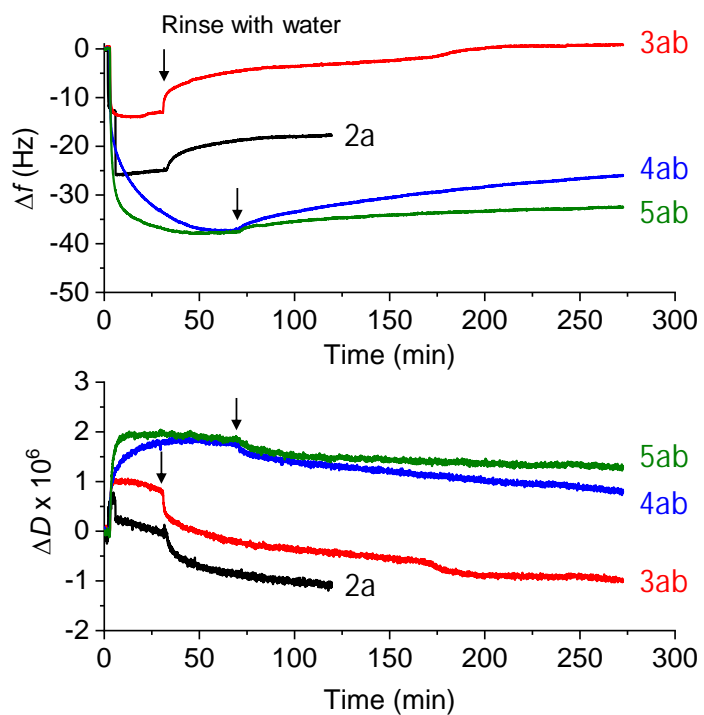


Figure S13. QCM-D measurement: Time-dependent change of frequency (Δf) (top) and of dissipation (ΔD) (bottom) during the coating of a gold surface with the polymers **2a**, **3ab**, **4ab**, and **5ab**.