Supporting Information

Cross-Linked Networks that Selectively and Controllably Disassemble On-Demand via Cascading Bond Cleavage

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Experimental Section

Materials and Methods

Pentane-1,5-diol, N,N'-disuccinimidyl carbonate (DSC). triethanolamine, Nmethylethanolamine, N,N'-diisopropylethylamine (DIPEA), triethylamine (TEA), 0.5 M 9borabicyclo[3.3.1]nonane (9-BBN) solution in tetrahydrofuran (THF), sodium hydroxide, and 1.0 M vinyl magnesium bromide solution in THF were purchased from Sigma-Aldrich. Dimethyldivinylsilane and diphenyldichlorosilane were purchased from Gelest. Hydrogen peroxide solution (30 wt.% in water) was purchased from Fisher. The aliphatic polyisocyanate trimer based on 1,6-hexamethylenediisocyanate was purchased from Covestro as Desmodur N-3300A. Deuterated solvents, such as DMSO- d_6 and Chloroform-d, were purchased from Sigma-Aldrich. All chemicals were utilized as received. Solvents were used as received in most cases. In cases where anhydrous THF was required it was dried under molecular sieves for 24 hours. Thin layer chromatography (TLC) was performed on EMD silica gel 60 F254 plates from Sigma-Aldrich, while column chromatography was performed using flash grade silica gel (SiO₂, 32-63µm) from Sigma-Aldrich. Thin layer chromatography (TLC) was used in conjunction with column chromatography to purify all synthesized molecules.

Instruments and Characterization

NMR spectra were performed on a Bruker 300 MHz NMR spectrometer and subsequently worked-up on Spinworks Version 4.2.3.0. ¹³C NMR spectra were correspondingly recorded at 75 MHz. Chemical shifts for ¹H and ¹³C are presented in ppm against tetramethylsilane as an internal standard reference. *J* values are reported in Hz. NMR data is reported as follows: chemical shift (δ), multiplicity (bs = broad singlet, bt = broad triplet, s = singlet, d = doublet, t = triplet, q = quartet), coupling constant(s) in Hz, and integration. High resolution mass spectroscopy (HRMS) was performed on an Agilent 6220 LC/MS Time-of-Flight (TOF) spectrometer with 1200 Series HPLC system using extracted ion chromatography (EIC). Gel fraction analysis was performed on each sample by weighing, soaking in THF for 24 hours, drying *in vacuo* for 24 hours, and weighing again. Gel fraction was determined as the fraction of the final mass over the initial mass. Each sample was performed in triplicate. Sample swelling experiments were conducted by weighing each sample before and after soaking in 20 mL of THF and water for 24 hours. The percentage of swelling for each thermoset was then determined by subtracting the weight of the original sample from the weight of the swollen sample, then dividing by the weight of the original sample.

X-ray photoelectron spectroscopy (XPS) analysis was performed on a Thermo Scientific K-Alpha. The XPS was equipped with monochromatic Al K α radiation. Survey spectra were acquired from -10 to 1350 eV with 200.00 eV pass energy, 25 ms dwell time, and 1.000 eV step size. High resolution elemental scans were performed for C 1s, N 1s, O 1s, and Si 2p. For each element, 10 high resolution scans were averaged and each scan employed a 30 eV pass energy, 50 ms dwell time, and 0.150 eV step size. Peak fitting and integration were performed via Smart Fitting on Avantage XPS software.

Attenuated total reflection fourier transform infrared (ATR-FTIR) spectroscopy was performed on a Nicolet iS50-FT-IR with iS50 ATR attachment equipped and a diamond ATR crystal from Thermo Scientific with 64 scans compiled for each spectrum. Spectra were recorded from 4000 - 500 cm⁻¹ with a resolution of 2 cm⁻¹, and were analyzed using the Nicolet OMNIC software suite.

Static contact angle measurements were performed using a Ramé-Hart Model 590-F4 Advanced Goniometer with digital camera. The left and right angles of three 10 µl droplets of ultra-high purity (UHP) water and THF were measured for each sample, and all 6 angles were averaged.

Thermal analysis was performed on TA Instruments Discovery Differential Scanning Calorimeter (DSC) to determine glass transition temperature (T_g). Two successive ramps were performed from -50 °C to 170 °C at a rate of 10 °C/min., from which measurements were made

on the second run. Samples were run in triplicate and standard deviation was obtained for each set. Thermogravimetric analysis (TGA) was performed on a TA Instruments Discovery TGA at a heating rate of 10° C/min. under N₂ from room temperature to 700 °C. Degradation onset temperature was assigned at the temperature at which 90% mass remained. TA Instruments Trios software was used to analyze DSC and TGA data.

Thermogravimetric analysis / mass spectroscopy spectrometry (TGA-MS) was performed on a TA Instruments Discovery TGA connected to a TA Instruments Discover Mass Spectrometer. Approximately 5 mg of each thermoset was placed in a Tzero aluminum pan and covered with 1 M of TBAF (THF), which was held in the TGA oven at room temperature under nitrogen for 120 min., then heated to 70 °C at a rate of 1 °C per minute. This temperature was slightly above THF's boiling point to allow for any dissolved gases to be released while being monitored by MS in select ion monitoring mode. Carbon dioxide and ethylene were monitored at 44 amu and 26 amu (secondary fragment), respectively, as the carrier gas, nitrogen, did not allow for monitoring of ethylene at 28 amu. TA Instruments Trios software was used to analyze TGA-MS data.

Gas chromatrography / mass spectrometry (GC-MS) analysis of sample extracts were performed on an Agilent 7890A Gas Chromatograph and 5975C Mass Spectrometer at inlet temperature of 250 °C, 280 °C auxiliary temperature, 55 °C for 3 min. at the rate of 5 °C up to 150 °C, then by 10 °C to 300 °C. The GC was equipped with a Restek Rxi-5ms column with helium carrier gas and the Agilent 5975C mass selective detector operated in scan mode with electron ionization. Chromatographic analysis and peak identification was performed with Agilent ChemStation software.

Laser confocal microscopy images were performed on an Olympus LEXT OLS4000 3D Measuring Laser Microscope with magnification from 108X to 2150X. Images for surface analysis were taken at 1076X magnification with an area of 715 x 720 μ m² and a height step of 60 nm. OriginPro 2016 was used to make contour maps of surface height images.

Synthetic Scheme and Procedures for Synthesis of Silyl-Diols



Scheme S1. Reactions performed to synthesize silyl-diols (**D2-D3**) and extended chain silyl-diols (**D4-D5**).



Diphenyldivinylsilane (2b): Diphenyldichlorosilane (1) (1.9 mL, 9.1 mmol) was added to 1.0 M vinylmagnesium bromide solution in THF (20 mL, 20 mmol) at 0° C. After 10 min. the cooling bath was removed and the mixture was stirred at room temperature for 15 hours. Aqueous ammonium chloride (30 mL) was added, followed by water, and the organic layer was separated. The aqueous layer was extracted with dichloromethane (100 mL). The combined organics were dried with MgSO₄ and concentrated to give a yellow oil. The resulting mixture was purified using column chromatography (100% hexane) to furnish the product (1.97 g) as an oil in 92% yield. ¹H NMR (300 MHz, CDCl₃, Me₄Si, 25 °C): δ = 7.55 ppm (m, 4H), 7.39

(m, 6H), 6.55, 6.48, 6.31, 6.26, 5.85, 5.79. ¹³C NMR (75 MHz, CDCl₃, Me₄Si): $\delta = 136.61$, 135.71, 134.46, 134.07, 129.62, 128.05. HRMS (EI) *m/z*: [M]⁺ calcd for C₁₆H₁₆Si, 236.1216; found 236.1008. This compound has been previously reported.^[S1]



2,2'-(dimethylsilanediyl)bis(ethan-1-ol) (3a, D2): A solution of commercially available dimethyldivinylsilane (2a) (1 g, 8.9 mmol) in 30 mL of dry THF was added dropwise to a 0.5 M solution of 9-BBN in THF (35.6 mL, 17.8 mmol) and the resulting mixture was stirred at room temperature for 4 hours, followed by the addition of water (30 mL) and 3 M aqueous sodium hydroxide solution (30 mL). Subsequently, aqueous hydrogen peroxide solution (30 wt.%, 30 mL) was added dropwise at 0 °C within 15 minutes and the reaction mixture was heated to reflux for 3 hours. Upon cooling to room temperature, the aqueous layer was saturated with potassium carbonate, the organic layer was removed and the aqueous layer was extracted with ethyl acetate (100 mL). The organic layer was concentrated after dried over magnesium sulfate. The resulting mixture was purified using column chromatography (100% ethyl acetate) to furnish the product (1.1 g) as an oil in 83% yield. ¹H NMR (300 MHz, CDCl₃, Me₄Si, 25 °C): $\delta = 3.71$ ppm (t, J = 7.8 Hz, 4H), 2.69, (bs, 2H), 0.94 (t, J = 7.8 Hz, 4H), 0.01 (s, 6H). ¹³C NMR (75 MHz, CDCl₃, Me₄Si): $\delta = 58.75$, 20.15, -3.48. HRMS (EIC) m/z: [M + ACN]⁺ calcd for C₈H₁₉NO₂Si, 295.1125; found 295.1125. This compound has been previously reported.^[S2]



2,2'-(diphenylsilanediyl)bis(ethan-1-ol) (3b, D3): A solution of diphenyldivinylsilane (**2b**) (2.2 g, 9.4 mmol) in 15 mL of THF was added dropwise to a 0.5 M solution of 9-BBN in THF (47.2 mL, 23.6 mmol) and the resulting mixture was stirred at room temperature for 4 hours,

followed by the addition of water (30 mL) and 3 M aqueous sodium hydroxide solution (30 mL). Subsequently, aqueous hydrogen peroxide solution (30 wt.%, 30 mL) was added dropwise at 0 °C within 15 minutes and the reaction mixture was heated to reflux for 3 hours. Upon cooling to room temperature, the aqueous layer was saturated with potassium carbonate, the organic layer was removed and the aqueous layer was extracted with ethyl acetate (100 mL). The organic layer was concentrated after dried over magnesium sulfate. The resulting mixture was purified using column chromatography (100% ethyl acetate) to furnish the product (1.4 g) as a clear crystal in 83% yield. ¹H NMR (300 MHz, CDCl₃, Me₄Si, 25 °C): δ = 8.15 ppm (m, 4H), 7.24 (m, 6H), 4.29 (t, *J* = 7.6 Hz, 4H), 1.12 (t, *J* = 7.6 Hz, 4H). ¹³C NMR (75 MHz, CDCl₃, Me₄Si): δ =155.54, 152.44, 145.39, 125.30, 121.82, 67.35, 16.15. HRMS (EIC) *m/z:* [M + Na]⁺ calcd for C₁₆H₂₀O₂SiNa, 295.1125; found 295.1125. This compound has been previously reported.^[S3]



(Dimethylsilanediyl)bis(ethane-2,1-diyl) bis(2,5-dioxopyrrolidin-1-yl) bis(carbonate) (4a): Triethylamine (2.8 mL, 20.2 mmol) was added to 2,2'-(dimethylsilanediyl)bis(ethan-1-ol) (3a, D2) (0.5 g, 3.37 mmol) in 40 mL acetonitrile, followed by *N*,*N*'-disuccinimidyl carbonate (2.6 g, 10.1 mmol). The reaction was stirred at room temperature for overnight. The reaction was concentrated and extracted using ethyl acetate (100 mL) and saturated sodium bicarbonate (50 mL). The organic layer was concentrated after dried over magnesium sulfate. The resulting mixture produced a precipitate and was filtered with ethyl acetate. The precipitate could not be further purified due to solubility issues and was used in the next step.



Bis(2,5-dioxopyrrolidin-1-yl) ((diphenylsilanediyl)bis(ethane-2,1-diyl)) bis(carbonate) (4b): Triethylamine (1.02 mL, 7.34 mmol) was added to 2,2'-(diphenylsilanediyl)bis(ethan-1ol) (3b, D3) (0.52 mg, 1.83 mmol) in mL acetonitrile, followed by *N*,*N*'-disuccinimidyl carbonate (0.9 g, 3.67 mmol). The reaction was stirred at room temperature for overnight. The reaction was concentrated and extracted using ethyl acetate (100 mL) and saturated sodium bicarbonate (50 mL). The organic layer was concentrated after dried over magnesium sulfate. The resulting mixture produced a precipitate and was filtered with ethyl acetate to furnish the product (0.4 g) as a white powder in 40% yield. ¹H NMR (300 MHz, DMSO-*d*₆, Me₄Si): $\delta =$ 7.43 ppm (m, 4H), 7.31 (m, 6H), 4.28 (t, *J* = 8.6 Hz), 2.66 (s, 8H), 1.69 (t, *J* = 8.6 Hz). ¹³C NMR (75 MHz, DMSO-*d*₆, Me₄Si): $\delta =$ 170.39, 151.60, 134.57, 133.22, 130.52, 128.77, 69.82, 25.81, 13.54. The parent ion could not be obtained via HRMS analysis.







(Dimethylsilanediyl)bis(ethane-2,1-diyl) bis((2-hydroxyethyl)(methyl)carbamate) (5a, D4): A solution of *N*-methylethanolamine (2.6 mL, 32.4 mmol) and triethylamine (5.4 mL, 38.7 mmol) was prepared in acetonitrile (60 mL). The crude (dimethylsilanediyl)bis(ethane-2,1-diyl) bis(2,5-dioxopyrrolidin-1-yl) bis(carbonate) (4a) (15.4 mmol) was then added to the solution and was stirred overnight at room temperature. The reaction mixture was concentrated, dissolved in dichloromethane, and washed with sodium bicarbonate, 3 M sodium hydroxide, and brine. The organic layer was concentrated after dried over magnesium sulfate. The resulting mixture was purified using column chromatography (dichloromethane/methanol: 95/5) to furnish the product (2.8 g) as a clear liquid in 51% yield. ¹H NMR (300 MHz, CDCl₃, Me₄Si, 25 °C): $\delta = 4.19$ ppm (t, J = 8.2 Hz, 4H), 3.75 (bt, 4H), 3.43 (bt, 4H), 2.95 (s, 6H), 1.07 (t, J = 8.2 Hz, 4H), 0.09 (s, 6H). ¹³C NMR (75 MHz, CDCl₃, Me₄Si, 25 °C): $\delta = 157.02$, 156.65, 62.97, 59.82, 51.03, 50.56, 35.31, 34.88, 16.21, -3.21. ¹³C NMR (75 MHz, DMSO-*d*₆, Me₄Si, 70 °C): $\delta = 156.26$, 62.63, 59.53, 36.82, 35.32, 16.79, -2.58. HRMS (EIC) *m/z:* [M + Na]⁺ calcd for C₁₄H₃₀N₂O₆Si, 373.1771; found 373.1760.







(Diphenylsilanediyl)bis(ethane-2,1-diyl) bis((2-hydroxyethyl)(methyl)carbamate) (5b, D5): A solution of N-methylethanolamine (2.0 mL, 31.4 mmol) and triethylamine (4.1 mL, 29.4 mmol) was prepared in acetonitrile (60 mL). Bis(2,5-dioxopyrrolidin-1-yl) ((diphenylsilanediyl)bis(ethane-2,1-diyl)) bis(carbonate) (4b) (6.5 g, 11.7 mmol) was then added to the solution and was stirred for overnight at room temperature. The reaction mixture was concentrated, dissolved in dichloromethane, and washed with sodium bicarbonate, 3 M sodium hydroxide, and brine. The organic layer was concentrated after dried over magnesium sulfate. The resulting mixture was purified using column chromatography (dichloromethane/methanol: 95/5) to furnish the product (2.8 g) as a clear liquid in 51% yield. ¹H NMR (300 MHz, CDCl₃, Me₄Si, 25 °C): $\delta = 7.37$ ppm (m, 4H), 7.21 (m, 6H), 4.07 (t, J = 8.3 Hz, 4H), 3.51 (bt, 2H), 3.44 (bt, 2H), 3.40 (bs, 2H), 3.18 (bt, 2H), 3.07 (bt, 2H), 2.74 (s, 3H), 2.62 (s, 3H), 1.48 (t, J = 8.3 Hz, 4H). ¹H NMR (300 MHz, DMSO- d_6 , Me₄Si, 70 °C): $\delta =$ 7.41 (m, 4H), 7.28 (m, 6H), 4.23 (s, 2H), 3.98 (t, *J* = 8.3 Hz), 3.34 (bt, 4H), 3.05 (bt, 4H), 2.65 (s, 6H), 1.48 (t, J = 8.3Hz). ¹³C NMR (75 MHz, CDCl₃, Me₄Si, 25 °C): $\delta = 157.43$, 156.77, 134.64, 134.03, 62.89, 60.34, 51.45, 50.71, 35.43, 34.94, 25.37, 14.33. ¹³C NMR (75 MHz, DMSO- d_6 , Me₄Si, 70 °C): $\delta = 155.32$, 134.01, 133.94, 129.09, 127.57, 61.48, 58.63, 50.40, 34.31, 13.57. HRMS (EIC) m/z: $[M + Na]^+$ calcd for C₂₄H₃₄N₂O₆Si, 497.2084; found 497.2086.





Procedures for Synthesis of Polyurethane Thermosets

Thermosets **T1-T5** were formed by mixing each diol with the aliphatic polyisocyanate trimer (~3.3 NCOs per molecule, 193 grams/equivalents) in a round bottom flask with 2.5 ml of THF for 1 hour at 50 °C, then pouring into a circular aluminum pan and heating at 60 °C in an oven for overnight. A slight excess of the polyisocyanate was used to ensure that all hydroxyl groups were reacted. Thermoset **T1** was formed from diol **D1** (1.071 g, 0.0205 equiv.) and the aliphatic polyisocyanate (4.662 g, 0.0241 equiv.). Thermoset **T2** was formed from silyl-diol **D2** (0.758 g, 0.0102 equiv.) and the aliphatic polyisocyanate (2.270 g, 0.0117 equiv.), while thermoset **T3** was formed from silyl-diol **D3** (1.37 g, 0.01 eq.) and the aliphatic polyisocyanate (2.309 g, 0.0119 equiv.). Thermoset **T4** was formed from extend chain silyl-diol **D4** (1.787 g, 0.0102 equiv.) and the aliphatic polyisocyanate (2.281 g, 0.0118 equiv.), while thermoset **T5** was formed from extended chain silyl-diol **D5** (2.392 g, 0.0101 equiv.) and the aliphatic polyisocyanate (2.292 g, 0.0119 equiv.).

Figures



Fig. S1. Photograph of a 2 mm thick piece of thermoset **T5**, which was formed from extended chain silyl-diol **D5** and the aliphatic polyisocyanate trimer.



Fig S2. TGA of thermosets **T1-T5** showing that the control (**T1**) and all silyl-containing thermosets (**T2-T5**) possessed similar onset degradation temperatures and thermal degradation profiles.



Fig. S3. X-ray photoelectron spectra (XPS) of thermosets. Spectra show detection of silicon in thermosets (A) T2, (B) T3, (C) T4, and (D) T5. Thermoset T1 did not show silicon in the spectrum.

For ATR-IR analysis, small pieces (~1.5 cm width x ~2 cm length x ~2 mm thickness) of all thermosets were immersed in room temperature solutions of 1 M aqueous (aq) potassium fluoride (KF), 1 M aqueous tetrabutylammonium fluoride (TBAF), 1 M TBAF in tetrahydrofuran (THF) and neat THF for 24 hours. Following the exposure, the thermosets were removed and dried *in vacuo* at room temperature for 24 hours before testing.



Fig. S4. ATR-FTIR of unexposed thermosets compared to 24 hour exposures in THF and fluoride salt solutions: Spectra for (**A**) **T1**, (**B**) **T2**, (**C**) **T3**, and (**D**) **T4**, where the grey area encompasses amide I and amide II peaks, and whereas the blue areas show the Si-F stretching region.



Fig. S5. Average static contact angles and standard deviation (error bars) of water and THF droplets on the surface of thermosets **T1-T5**. The lower contact angles with THF are due to greater surface wetting compared to water, which indicates that the thermoset surfaces are more oleophilic than hydrophilic.



Fig. S6. Percentage of swelling for thermosets T1-T5 after 24 hours immersion in water and THF. The greater swelling with THF is the result of increased weight gain due to the thermoset networks having a greater affinity for the hydrocarbon based solvent, whereas weight gain due to water was minimal (i.e., <4% max.). Thermoset T2 demonstrated reduced swelling in THF compared to the other thermosets, which is likely due to the material having a slightly higher cross-link density as demonstrated by its initial T_g . Although the control (T1) demonstrated greater than 30% swelling in THF it did not show signs of disassembly upon treatment with TBAF (THF) because it lacks both the silyl-triggers and ability to disassemble via cascading bond cleavage.



Fig. S7. TGA-MS of thermoset **T1** showing no detection of ethylene (black, 26 amu (secondary fragment)) and carbon dioxide (green, 44 amu) and after 120 min. exposure to 1 M TBAF (THF), followed by heating from RT to 70 °C. Weight loss was solely due to evaporation of THF.



Fig. S8. TGA-MS of thermoset **T2** showing detection of ethylene (black, 26 amu (secondary fragment)) and carbon dioxide (green, 44 amu) and after 120 min. exposure to 1 M TBAF (THF), followed by heating from RT to 70 °C. The derivative matches the curves, indicating that weight loss is due to off-gassing.



Fig. S9. TGA-MS of thermoset **T3** showing detection of ethylene (black, 26 amu (secondary fragment)) and carbon dioxide (green, 44 amu) and after 120 min. exposure to 1 M TBAF (THF), followed by heating from RT to 70 °C. The derivative matches the curves, indicating that weight loss is due to off-gassing



Fig. S10. TGA-MS of thermoset **T5** showing detection of ethylene (black, 26 amu (secondary fragment)) and carbon dioxide (green, 44 amu) and after 120 min. exposure to 1 M TBAF (THF), followed by heating from RT to 70 °C. The green and black lines begin to overlap after 40 °C, but the derivative matches the curves, indicating that weight loss is due to off-gassing.



Fig. S11. Topographic images of thermoset **T5** using confocal microscopy. Comparison of surface topography for **T5** when exposed in (**A**) THF for 24 hours compared to when exposed in (**B**) 1 M TBAF (aq) for 24 hours.



Fig. S12. Change in glass transition temperature of thermosets T1-T5 after exposed to THF. (A) Change (Δ) in T_{gs} of thermosets after 24 hours of exposure compared to unexposed. (B) Change (Δ) in T_{gs} of thermosets after 1 week of exposure compared to unexposed. Samples were run in triplicate and the error bars were determined from the standard deviation of each set.



Fig. S13. Change in glass transition temperature of thermosets T1-T5 after exposed to 1 M aqueous KF solution. (A) Change (Δ) in T_{g} s of thermosets after 24 hours of exposure compared to unexposed. (B) Change (Δ) in T_{g} s of thermosets after 1 week of exposure compared to unexposed. Samples were run in triplicate and the error bars were determined from the standard deviation of each set.



Fig. S14. Change in glass transition temperature of thermosets T1-T5 after exposed to 1 M aqueous TBAF solution. (A) Change (Δ) in T_{gs} of thermosets after 24 hours of exposure compared to unexposed. (B) Change (Δ) in T_{gs} of thermosets after 1 week of exposure compared to unexposed. Samples were run in triplicate and the error bars were determined from the standard deviation of each set.



Fig. S15. ATR-FTIR of unexposed thermosets compared to 1 week exposures in THF and fluoride ion solutions. ATR-FTIR spectra for (**A**) **T1**, (**B**) **T2**, (**C**) **T3**, (**D**) **T4**, and (**E**) **T5**. The grey area encompasses amide I and amide II peaks, whereas the yellow areas show the Si-F stretching region.



Fig. S16. ATR-FTIR of unexposed thermosets compared to 24 hour and 1 week exposures in 1 M aqueous HCl and 1 M aqueous NaOH solutions. ATR-FTIR spectra for (A) T1, (B) T2, (C) T3, (D) T4, and (E) T5. The spectra show that no observable bond changes have occurred within the thermosets upon exposure to the highly-acid and highly-basic solutions.



Fig. S17. Change in glass transition temperature of thermosets exposed to 1 M aqueous HCl solution. (A) Change (Δ) in T_{gs} of thermosets after 24 hours of exposure compared to unexposed. (B) Change (Δ) in T_{gs} of thermosets after 1 week of exposure compared to unexposed. Samples were run in triplicate and the error bars were determined from the standard deviation of each set. The larger change in T_g for T2 relative to the other thermosets is likely the result of its slightly greater swelling in water, as ATR-IR analysis did not show bond cleave. However, it should be noted that the error bars for T2 are large.



Fig. S18. Change in glass transition temperature of thermosets exposed to 1 M aqueous NaOH solution. (A) Change (Δ) in T_{gs} of thermosets after 24 hours of exposure compared to unexposed. (B) Change (Δ) in T_{gs} of thermosets after 1 week of exposure compared to unexposed. Samples were run in triplicate and the error bars were determined from the standard deviation of each set. The larger change in T_g for T2 relative to the other thermosets is likely the result of its slightly greater swelling in water, as ATR-IR analysis did not show bond cleave.

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