Electronic Supplementary Material (ESI) for Polymer Chemistry.

SUPPORTING INFORMATION

Synthesis of poly(allyl 2-ylidene-acetate) and subsequent post-polymerization modification via thiol-ene reaction

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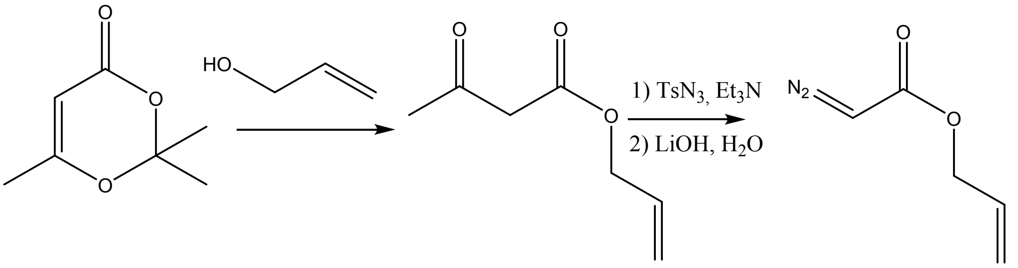
Spectral data of allyl 2-diazoacetate



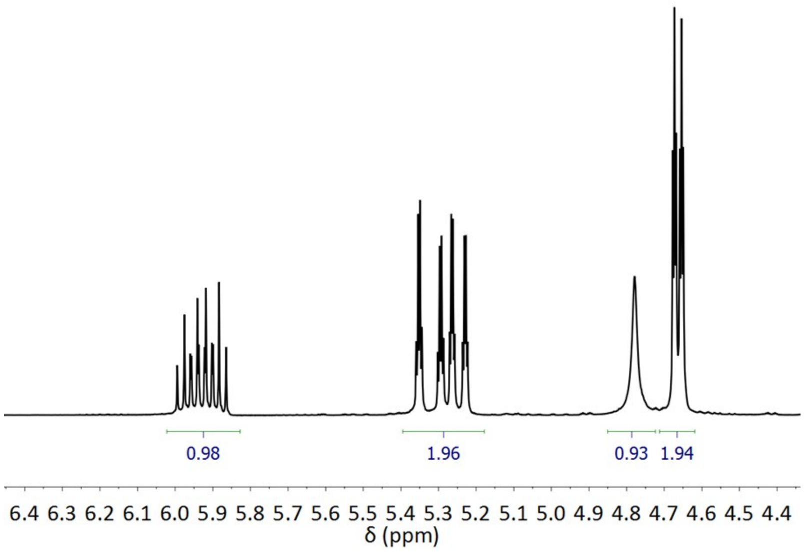


Figure S1. **^{1}H NMR spectrum of allyl 2-diazoacetate in CDCl3 (300MHz spectrum).**

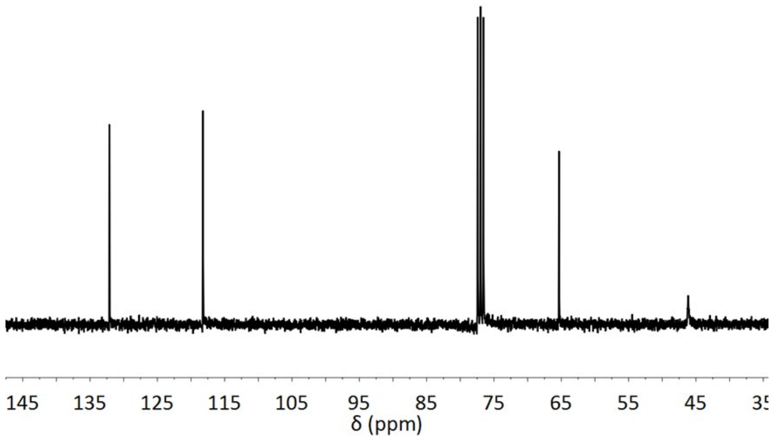


Figure S2. **^{13}C NMR spectrum of allyl 2-diazoacetate in CDCl3 (75MHz spectrum).**

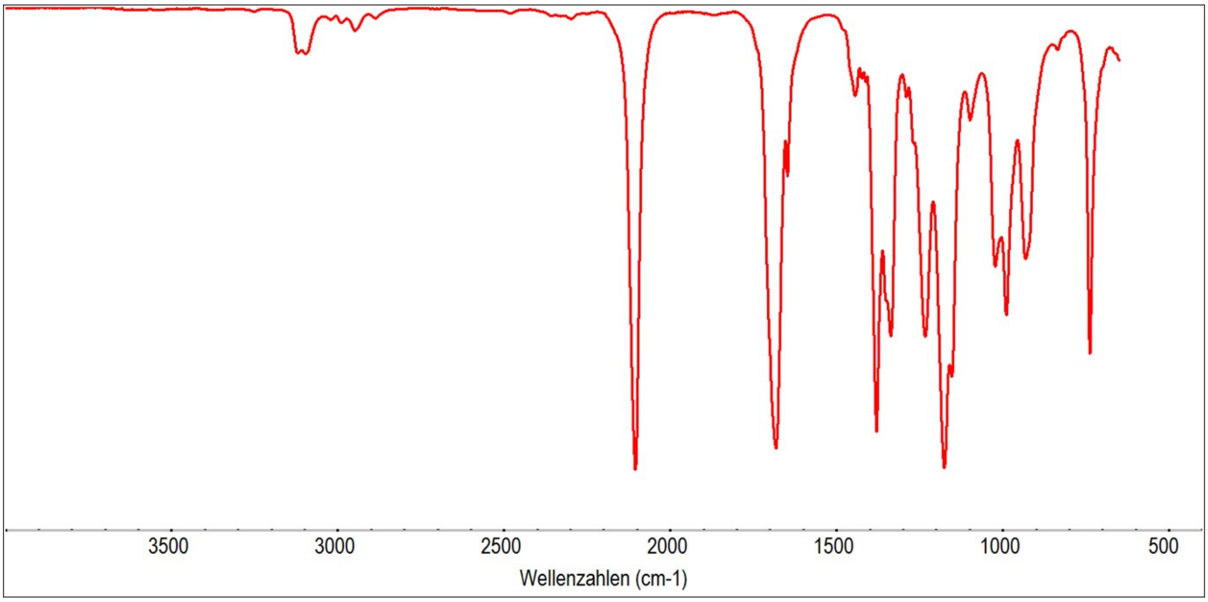


Figure S3. FT-IR spectrum of allyl 2-diazoacetate.

Real-time in-situ FT-IR (masked points included)

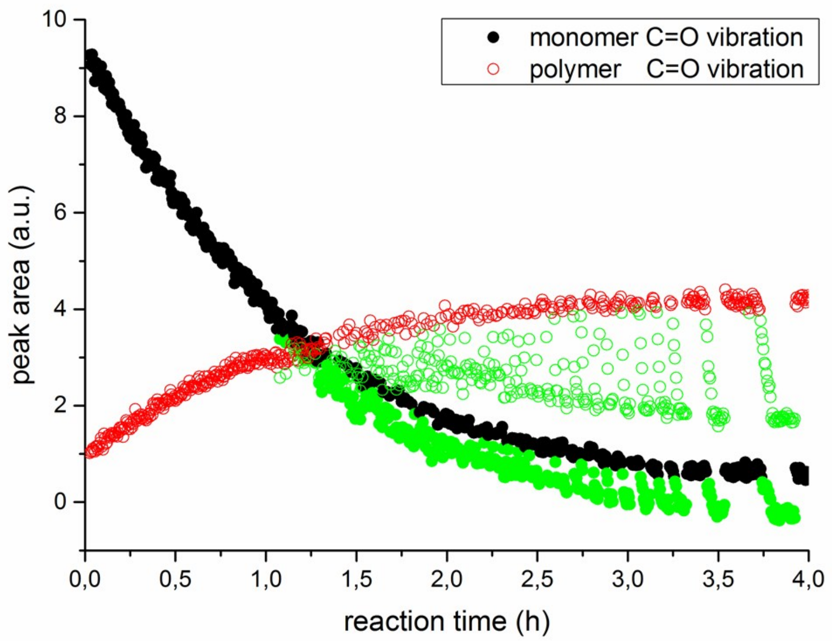


Figure S4. Peak areas of the C=O vibration modes tracked over time by real-time in-situ FT-IR spectrscopy. Black circles resemble the peak area trend of the monomer C=O vibration mode. Red open circles resemble the peak area trend of the

polymer C=O vibration mode. Green open and closed circles are masked points. Points were masked as the recorded IR signal tended to drop in intensity at later reaction times. This intensity drop was recorded for both C=O vibration modes, monomer and polymer.

Spectral data for PAA after bromination

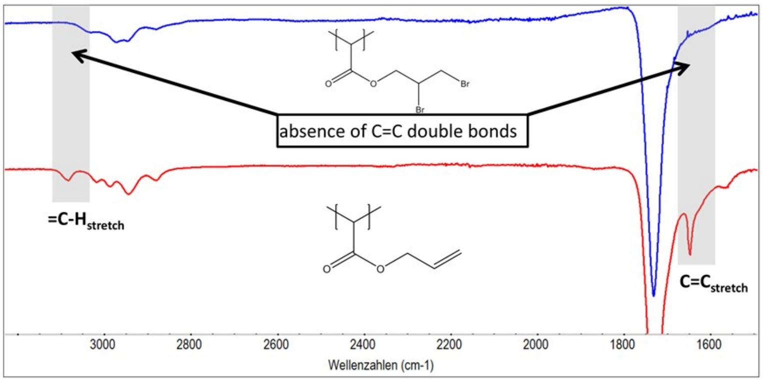


Figure S5: IR spectra of PAA before and after bromination showing quantitative conversion of double bonds. Bromination of 54.6 mg PAA in 20 mL chloroform was done by adding a large excess of bromine (1 mL) and subsequent storage in the fridge for three days. Afterwards the polymer was precipitated in methanol. The obtained polymer was insoluble in all tested solvents.