SI

Peak No.	Identity	AG$_{1.3}$	AG$_{1.8}$	AG$_{2.2}$
		Relative Abudnance (%)		
1	Glycerol	38.8	30.1	20.1
2	MonoAcrylate 2	1.8	1.8	1.6
3	MonoAcrylate 1	14.6	17.6	16.4
4	Hydroquinone	4.0	4.0	8.6
5	DiAcrylate 2	0.4	0.4	0.9
6	DiAcrylate 1	1.0	1.3	2.3
7	Inactive	20.8	22.3	21.0
8	Active	0.3	0.5	1.2
9	Inactive	2.3	2.0	1.8
10	Inactive	9.4	10.6	8.9
11	Active	0.5	0.7	0.7
12	Active	7.9	10.6	11.6
13	Active	0.5	0.6	0.1
14	Active	0.7	1.5	3.3
15	Active	0.1	0.1	0.4
16	Inactive	0.4	0.4	0.2
17	Active	0.6	0.8	1.7
18	Active	2.7	3.4	3.0
19	Active	0.0	0.4	0.6
20	Inactive	6.6	6.7	6.9
21	Active	1.4	1.3	1.7
22	Active	0.5	0.3	0.3
23	Inactive	0.4	0.3	0.4
24	Inactive	1.0	0.9	1.2
25	Active	0.1	0.2	0.5
26	Active	0.5	0.5	0.6
27	Active	2.0	1.3	2.6
28	Active	0.7	0.3	0.9
Total Monoacrylate	Active	16.4	19.4	17.9
Total Diacrylate	Active	1.4	1.7	3.2
Total Other Active	Active	18.6	22.6	22.3
Total Inactive	Inactive	20.8	22.3	21.0

Table S1: Percentages of the various peaks and the activity of the molecule as determined by the presence of a substantial 55 mass fragment

Sample Code	$[M_{tot}]_o$	$[PC]_e$	$[C]_o$
PAG$_{1.3}$-A	0.56	0.045	0.044
PAG$_{1.3}$-B	0.23	0.0019	0.018
PAG$_{1.3}$-C	0.23	0.00019	0.018
PAG$_{1.3}$-CW	0.23	0.00019	0.018
PAG$_{1.8}$-A	0.38	0.032	0.029
PAG$_{1.8}$-B	0.22	0.0018	0.017
PAG$_{2.2}$-A	0.29	0.023	0.036

Table S2: Values used to calculate crosslinking tendency. Note that x was assumed to be 2 as there has been no evidence of glycerol triacrylates

$$CT = [M_{tot}]_0(x-1)\frac{[C]_0}{[PC]_e} \qquad (1)$$

Where $[M_{tot}]_0$ is the initial concentration of monovinyl monomer plus crosslinker, $[PC]_e$ is the concentration of effective primary chains, and CT is the crosslinking tendency.
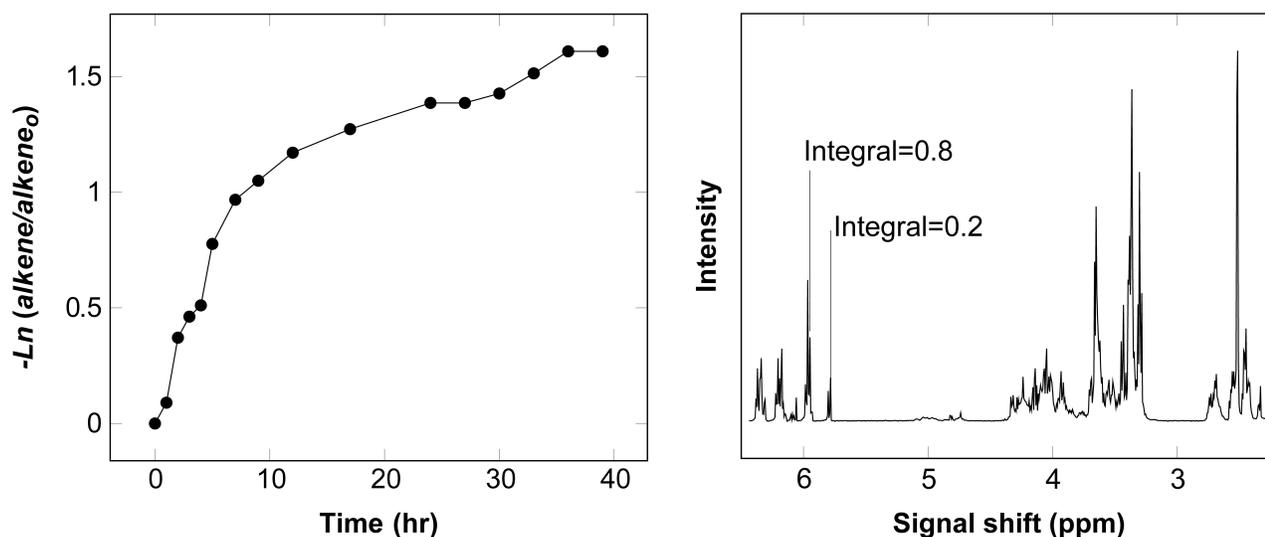
Fig. S1: (Left) Semilog plot of alkene conversion $X \equiv -\ln\left(\frac{[=]}{[=]_0}\right)$ for $AG_{1.3}$, where $[=]$ is the alkene molarity, versus time. Determined by integration of the acrylic acid alkenes and the acrylic ester alkenes via ^{1}H-NMR. (Right) NMR showing the result of the esterification of glycerol with acrylic acid.
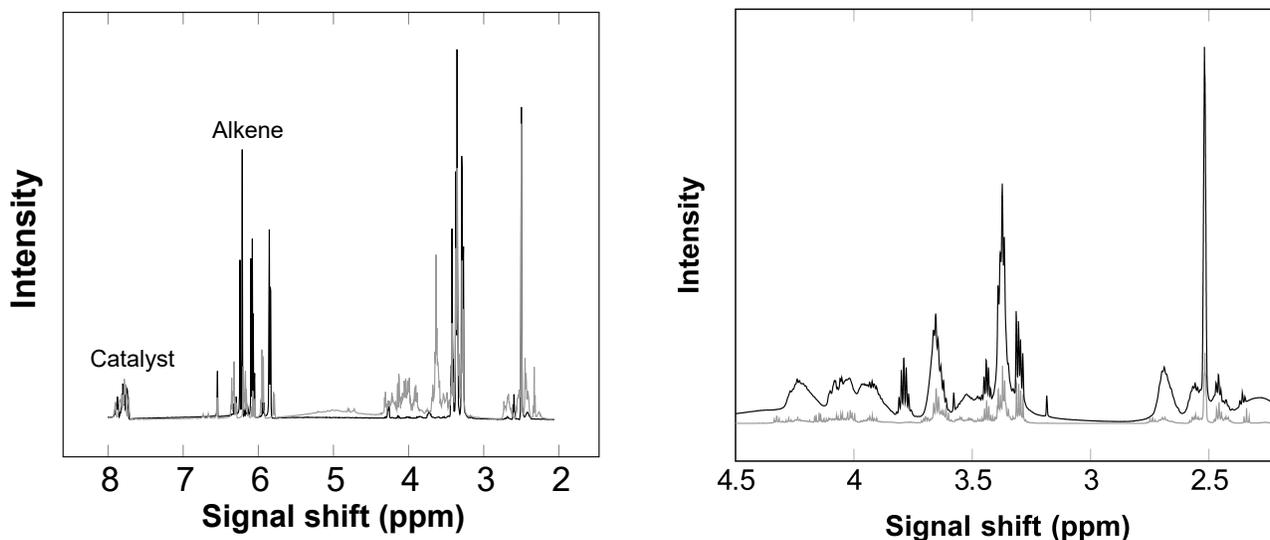
Fig. S2: (Left) Overlay of time 0 hr (black) and time 36 hr (gray) NMR. Shows the difference in catalyst to alkene ratio that happens over time. (Right) Overlay of original monomer NMR $AG_{1.3}$ (gray) and polymer NMR $PAG_{1.3}$-C (black). This shows the characteristic line broadening of polymer protons. This in addition to the loss of alkene double bonds is the initial indication that polymerization is occurring.
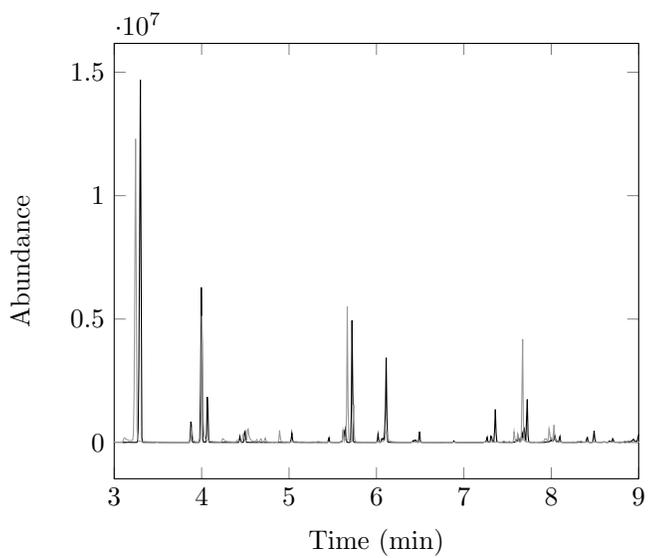
Fig. S3: GCMS overlap showing similarities between acrylation of analytical grade and crude glycerol