Supporting information



Figure ESI 1: ¹H NMR (to the left) and FTIR (to the right) analysis of EFA (1)

Model Experiment A:

Cationic polymerization of secondary epoxides in presence of thiols

Model experiment A was made to better understand what a UV initiated cationic polymerization by UVAcure 1600 will render in a reaction mixture of secondary epoxides and thiols. It has previously been shown by Torron et al that epoxides undergo cationic polymerization initiated by UVAcure 1600 and keeping alkene bonds intact.³³ EMO was chosen as a model compound due to its chemical structure similarities to EFA. The thiol, 11-mercaptoundecanol was chosen for miscibility reasons with EMO. Figure ESI 2 shows the UV-initiated reaction containing only EMO (Table 1, sample A). The experiment confirms that a ring-opening reaction occurs evidenced by the disappearance of epoxide protons at 2.90 ppm. At the same time new peaks emerges in the region between 3.30-3.60. This region is a characteristic region for ether bonds, hence, further confirming the epoxide to epoxide ring-opening reaction (Figure ESI 2). In the case of epoxides and thiols in the same mixture, EMO was mixed with 11-mercaptoundecanol (Table 1, sample B) and was put under UV-light exposure. According to the obtained results (Figure ESI 3), the protons next to the thiol group at 2.52 ppm were unharmed during the reaction while the epoxide protons at 2.90 ppm from EMO had a similar trend to previous result. The results from the experiments indicated that the reaction initiated by UVAcure 1600 is selective to the secondary epoxide ring-opening reaction in the presence of aliphatic thiols.

	EMO		11-mercaptoundecanol		HMVE	
Sample	[mg]	[mmol]	[mg]	[mmol]	[mg]	[mmol]
Α	25	0.08				
В	25	0.08	16.4	0.08		
С					25	0.17
D			35	0.17	25	0.17

Table T. Allound to induct conclutents A and t	Table 1: Amounts	for model e	experiments A	and B
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Figure ESI 2: ¹H NMR of model experiment A containing only EMO (Table 1, sample A)



Figure ESI 3: ¹H NMR of model experiment A containing EMO and 11-mercaptoundecanol (Table 1, sample B)

Model Experiment B:

Radical polymerization of aliphatic vinyl ethers in presence of thiols

During UV-initiated radical polymerization there are possibilities of homopolymerization. We were interested in understanding how aliphatic vinyl ethers reacts in the presence of thiols initiated by benzophenone. First, an experiment containing only vinyl ether and the initiator was made (Table 1, sample C). The results obtained by ¹H NMR confirmed that the vinyl ether do not homopolymerize (Figure ESI 4). The protons belonging to the double bond at 3.95, 4.15 and 6.45 ppm were unharmed after UV-light exposure. However, a mixture containing both the vinyl ether and thiol (Table 1, sample D) proved that a reaction occurs between the double bond and the thiol group. The characteristic protons from the double bond disappear while new peaks emerge indicating a reaction with the thiol group (Figure ESI 4).



6.4 6.2 6.0 5.8 5.6 5.4 5.2 5.0 4.8 4.6 4.4 4.2 4.0 3.8 3.6 3.4 3.2 3.0 2.8 2.6 2.4 2.2 2.0 1.8 1.6 1.4 1.2 f1 (ppm)

Figure ESI 4: ¹H NMR of model experiment B (Table 1, sample C and D)