Figure 1: $^1$H NMR spectrum for COM

Figure 2: $^{13}$C NMR spectrum for COM
Figure 3: HRMS(HESI) for COM

Figure 4: $^1$H NMR spectrum for MUM
Figure 5: $^{13}$C NMR spectrum for MUM

Figure 6: HRMS(ESI) for MUM
Figure 7: $^1$H NMR spectrum for MUC

Figure 8: $^{13}$C NMR spectrum for MUC
Figure 9: HRMS(HESI) for MUC
Figure 10: $^1$H NMR spectrum of DBU-catalyzed polymerization of MUM after 35 min. A. CH$_2$ in initiator. B. 2 x CH$_2$ in MUM ring (left and middle doublet peaks) and 2 x CH$_2$ in PMUM backbone (right singlet peak). C. Pendant CH$_2$ in MUM (left peak) and PMUM (right peak). D. CH$_2$ adjacent to terminal OH. E. Pendant CH$_3$ adjacent to carbonate ring in MUM (left peak) and adjacent to polymer backbone in PMUM (right peak).
Figure 11: $^1$H NMR spectrum of DBU-catalyzed polymerization of COM after 35 min. A. CH$_2$ on initiator. B. 2 x CH$_2$ in COM ring (left and right doublet peaks) and 2 x CH$_2$ in PCOM backbone (right overlapped singlet peak). C. Pendant CH$_2$ on COM (left peak) and PCOM (right peak). D. CH$_2$ adjacent to terminal OH. E. Pendant CH$_3$ on COM (left peak) and PCOM (right peak).
Figure 12: $^1$H NMR showing transesterification of MUC during an attempted melt copolymerization. The full conversion of benzyl alcohol to an ester (5.22 ppm) and the appearance of the chemical shifts for MU (10.59 ppm, 7.60 ppm, 6.81 ppm, 6.71, and 6.13 ppm) can be seen.
Figure 13: Upper \(^1\)H NMR spectra is for an unpurified TBD catalysed polymerization conducted in DCM at room temperature and shows minimal polymerization after 4 h. Lower \(^1\)H NMR spectra is for an unpurified tin(II) 2-ethylhexanoate catalysed polymerization conducted in toluene at 110 °C and shows partial polymerization after 18 h.

Figure 14: Stack of GPC curves of (A) poly(TMC\(_{40}\)-MUC\(_{10}\)) and (B) poly(CL\(_{40}\)-MUC\(_{10}\)) catalyzed by triflic acid.