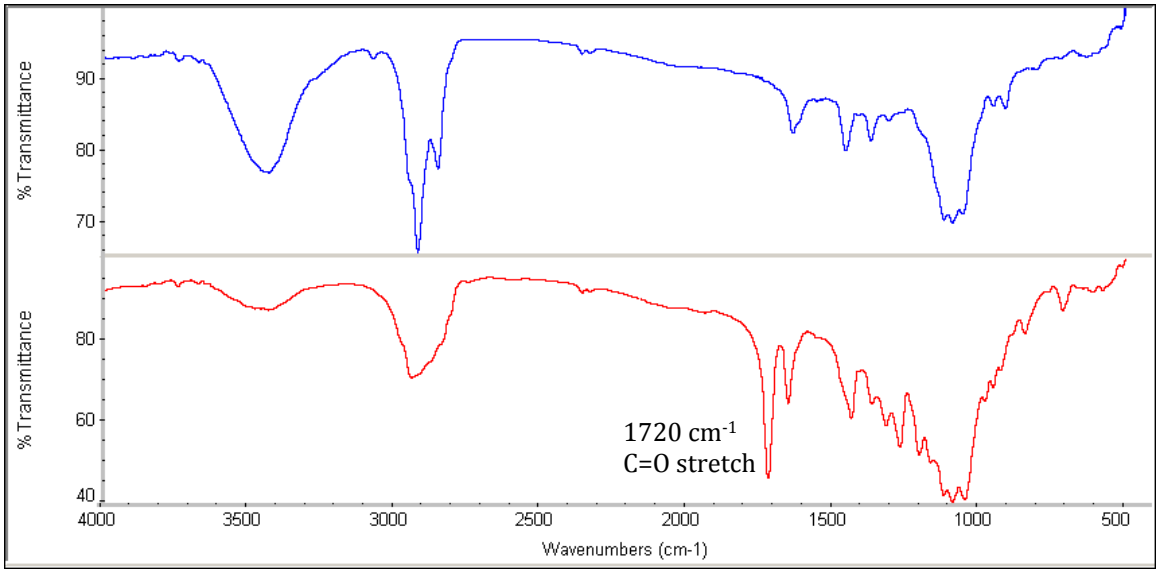
Electronic Supplementary Information

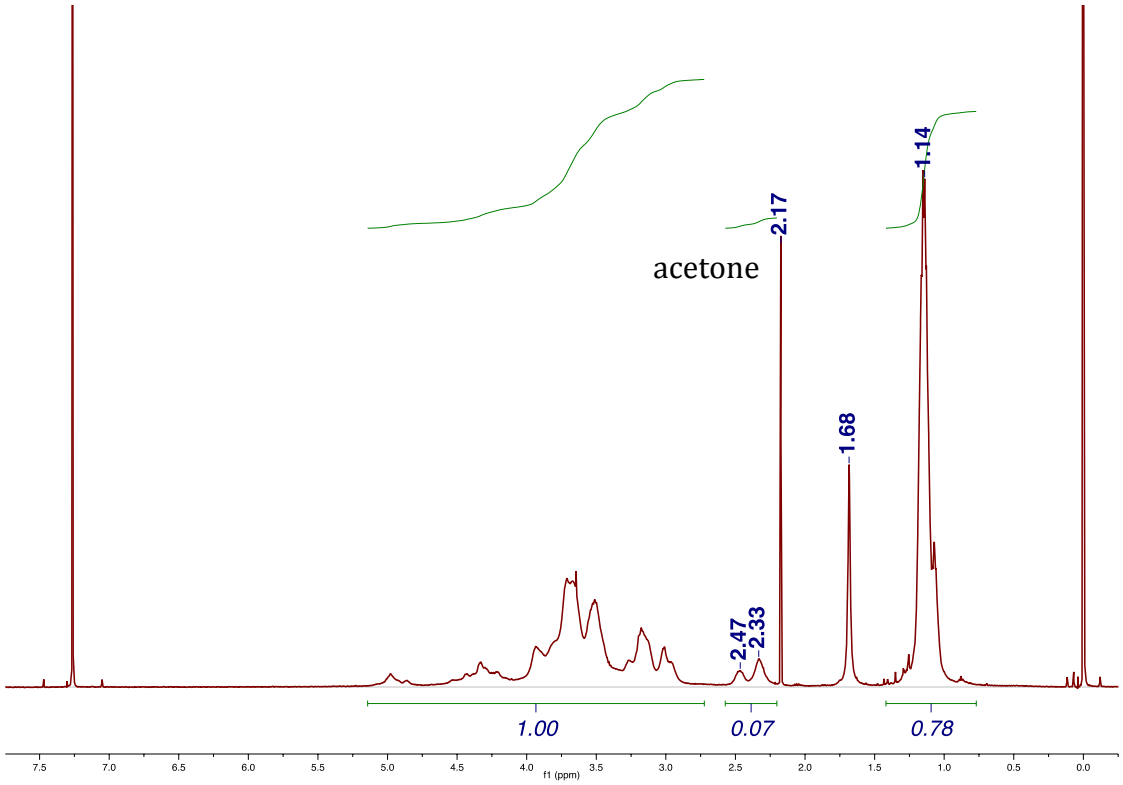
Here we included the FT-IR, ^{1}H NMR, and DSC spectra of new compounds we did not include in the body of the manuscript. All of these spectra were acquired using instruments and methods as described in the Experimental Section of this paper.

FT-IR spectra



S1. FT-IR spectra of EC2.58C5 (upper) and EC2.58C5-AA-5 (lower).

^{1}H NMR



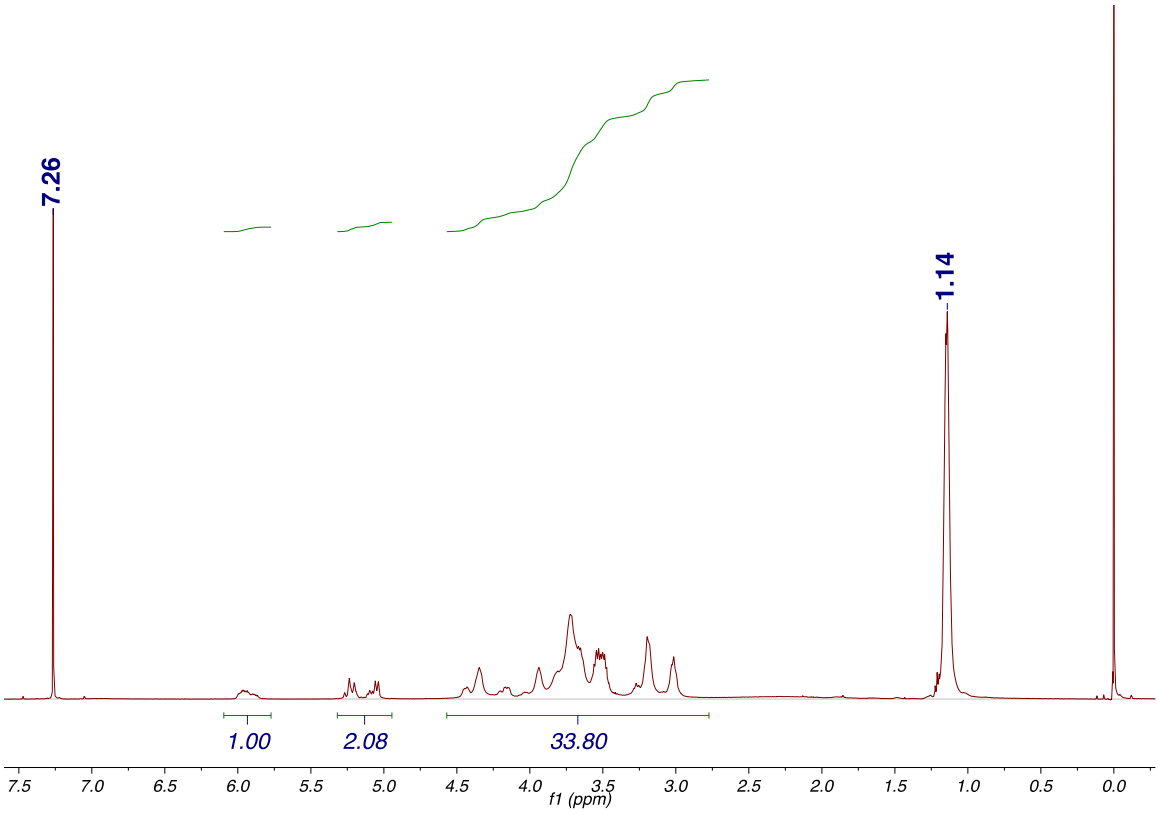
S2. ^{1}H NMR spectrum of ECN50-propionate.

The DS of free hydroxyl group is calculated as follows:

$$\frac{0.07}{1.00} = \frac{2x}{7 + 2(3 - x)}$$

$$x = 0.42$$

$$DS(Et) = 3.0 - 0.42 = 2.58$$

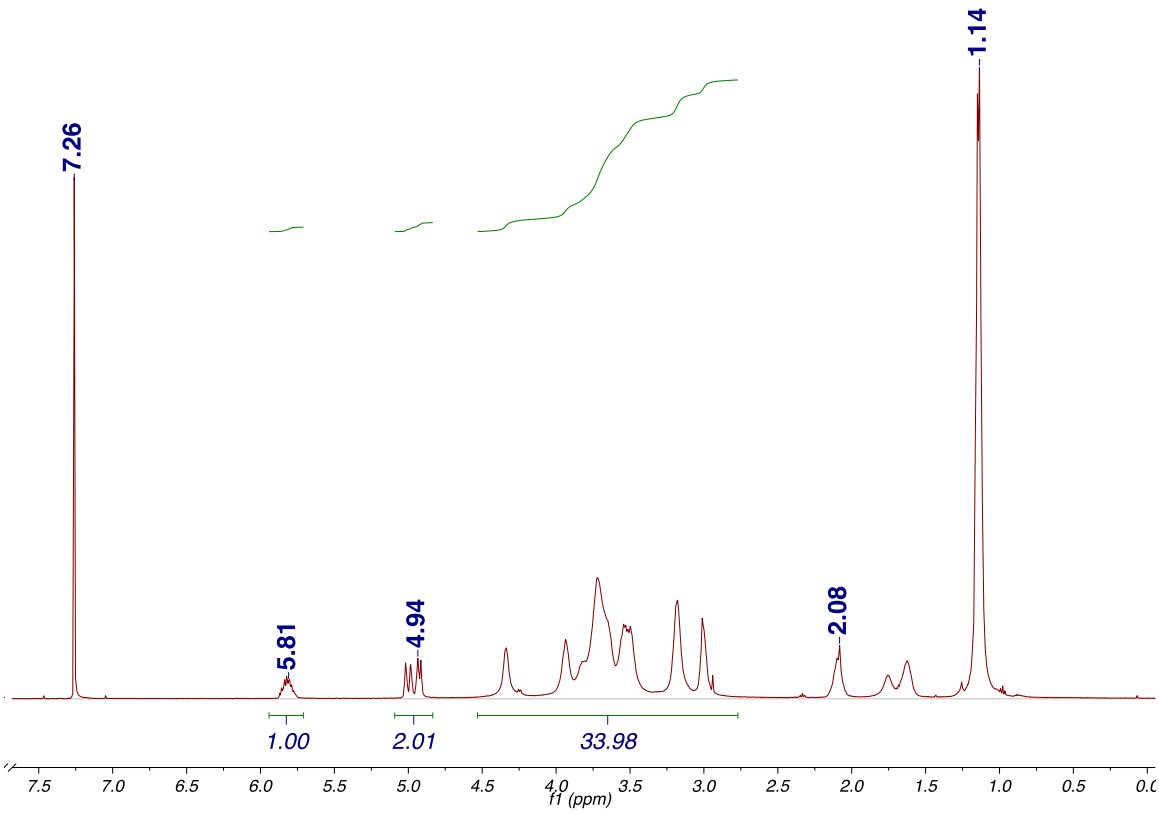


S3. ^{1}H NMR spectrum of EC2.58C3.

The DS of terminal olefin is calculated as follows:

$$\frac{x}{7 + 2x + 2 \times 2.58} = \frac{1}{33.80}$$

$x = 0.38$

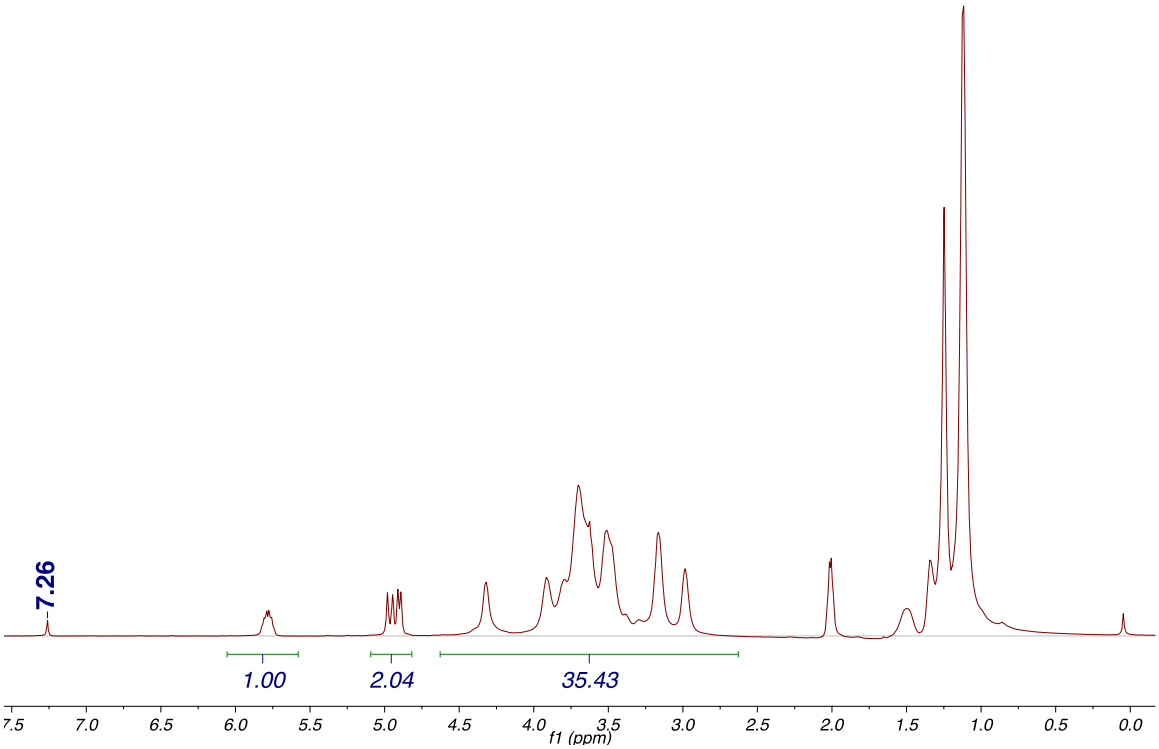


S4. ^{1}H NMR spectrum of EC2.58C5.

The DS of terminal olefin is calculated as follows:

$$\frac{x}{7 + 2x + 2 \times 2.58} = \frac{1}{33.98}$$

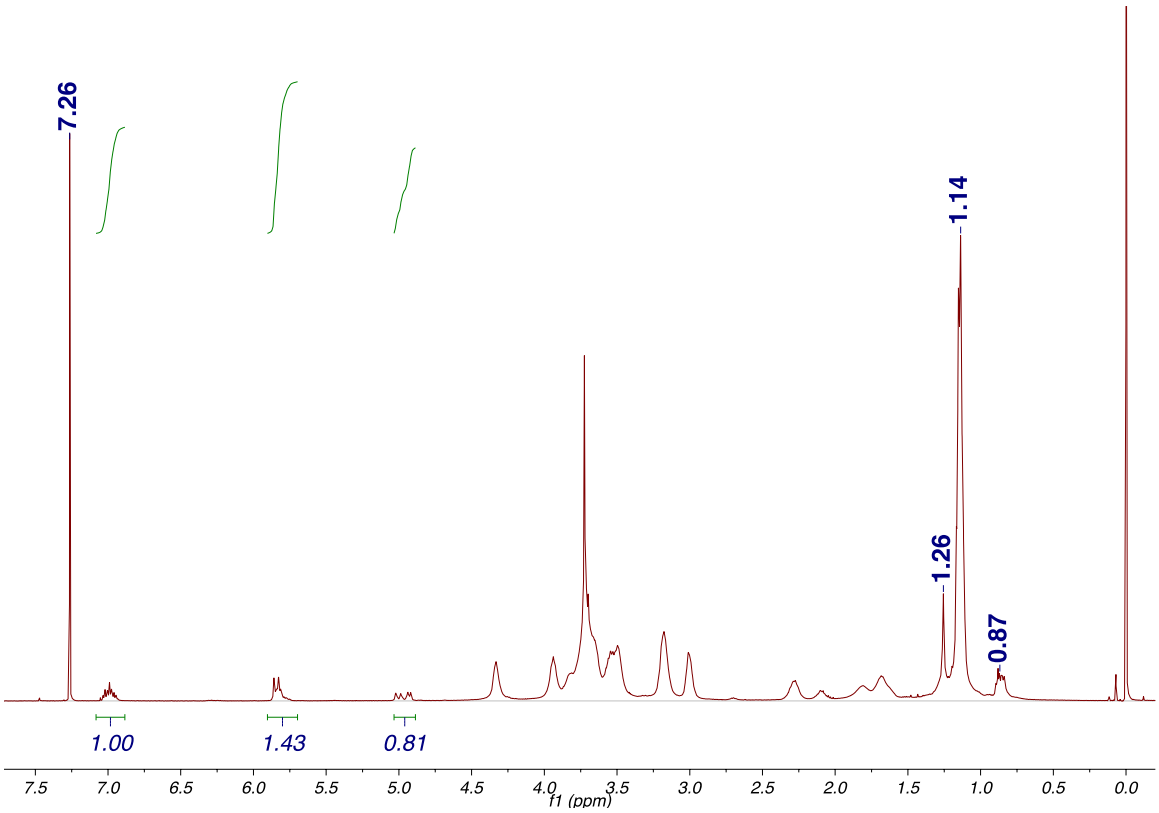
$x = 0.38$



S5. ^{1}H NMR spectrum of ECN50-C11. ($DS_{C=C}$ = 0.42)

$$\frac{x}{7 + 2x + 2 \times 2.58} = \frac{1}{35.43}$$

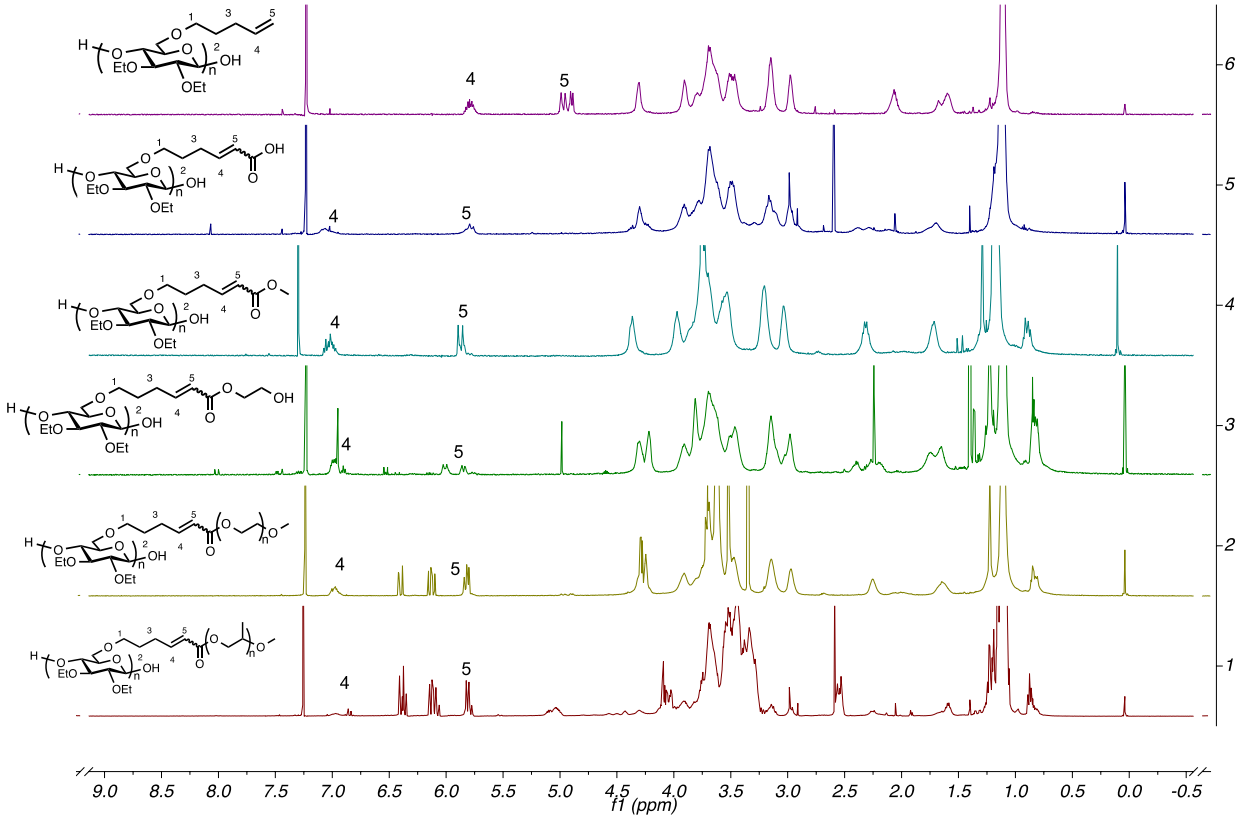
$$x = 0.36$$



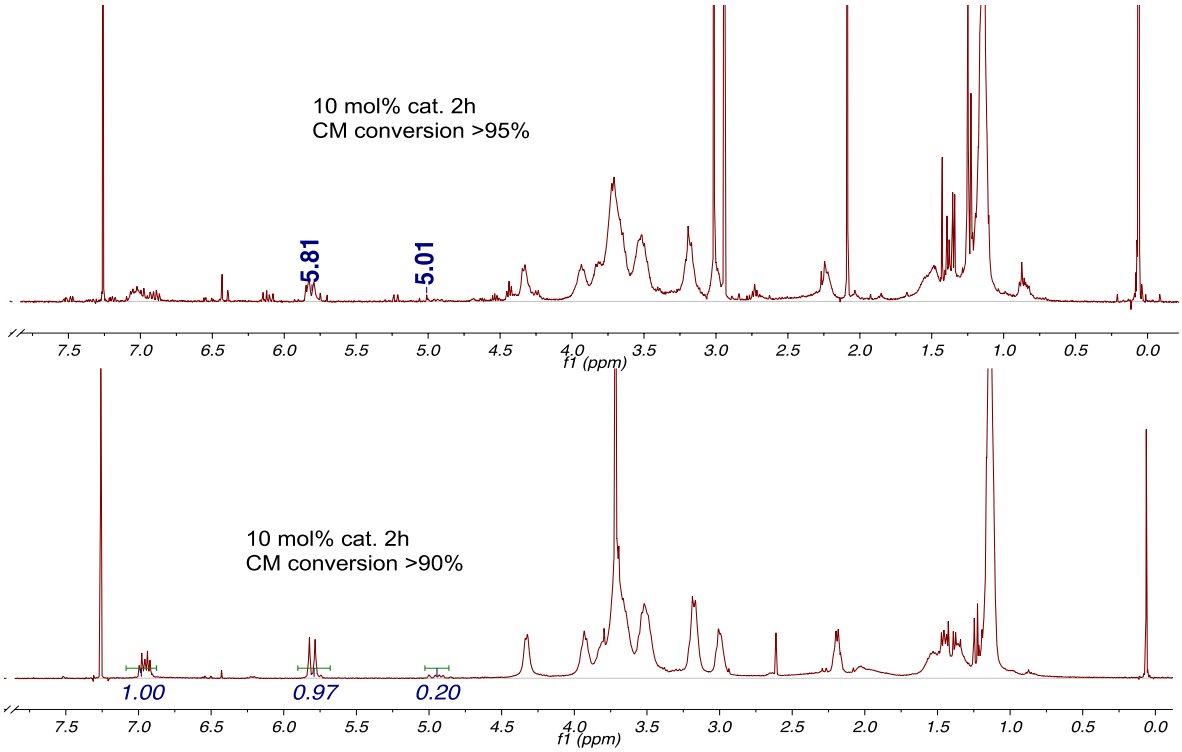
S6. [1]H NMR spectrum of EC2.58C5-MA-3. (5 mol% catalyst, 2 h)

The CM conversion is calculated as follows:

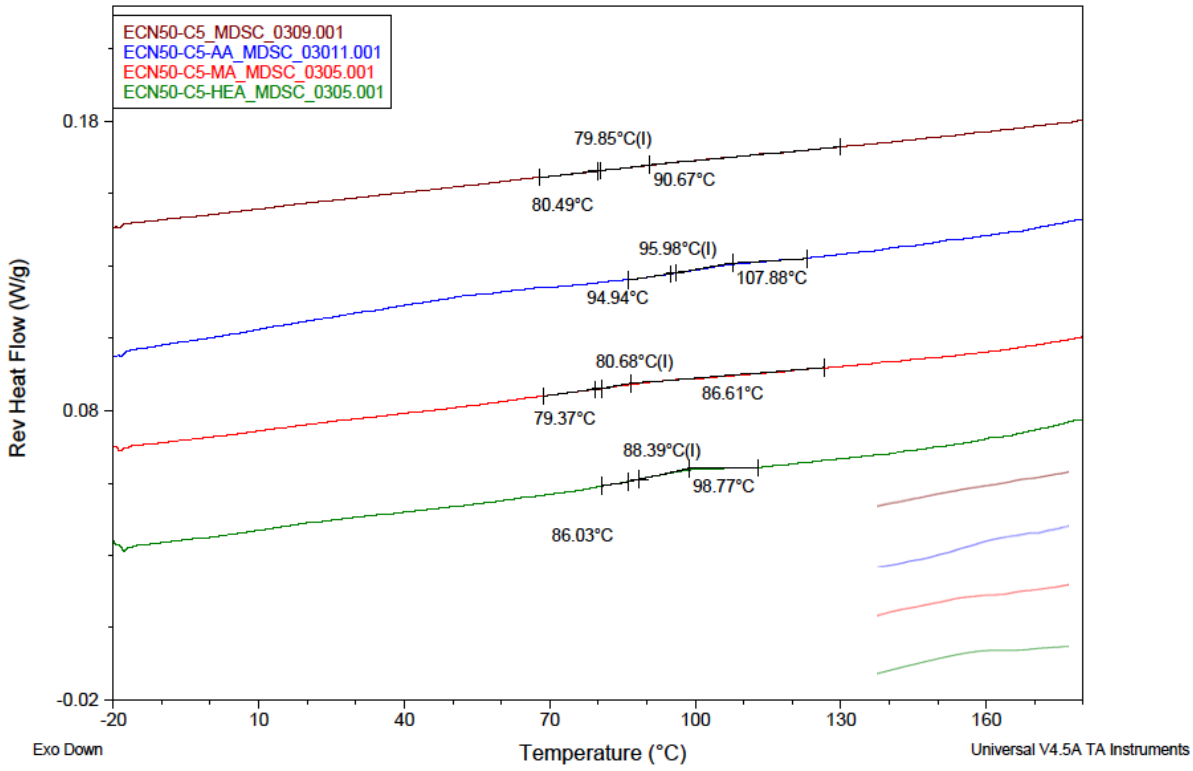
$$Conversion = \frac{1}{1 + 0.81/2} = 71\%$$



S7. ^{1}H NMR spectra of EC2.58C5 and CM products with AA, MA, HEA, PEGMEA and PPGA. All showing 100 % CM conversion except for with PPGA.



S9. ^{1}H NMR spectra of EC2.58C7-AA and EC2.58C7-MA.



S9. DSC curves of EC2.58C5 and its 100% CM products with AA, MA and HEA. (Embedded: zoomed region from 80-130 ^{o}C.)