

Supporting Information

Simple strategy towards the substitution of styrene by sobrerol-based monomers in unsaturated polyester resins

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DETERMINATION OF THE PURITY OF SOBACR AND SOBMET BY ¹H NMR

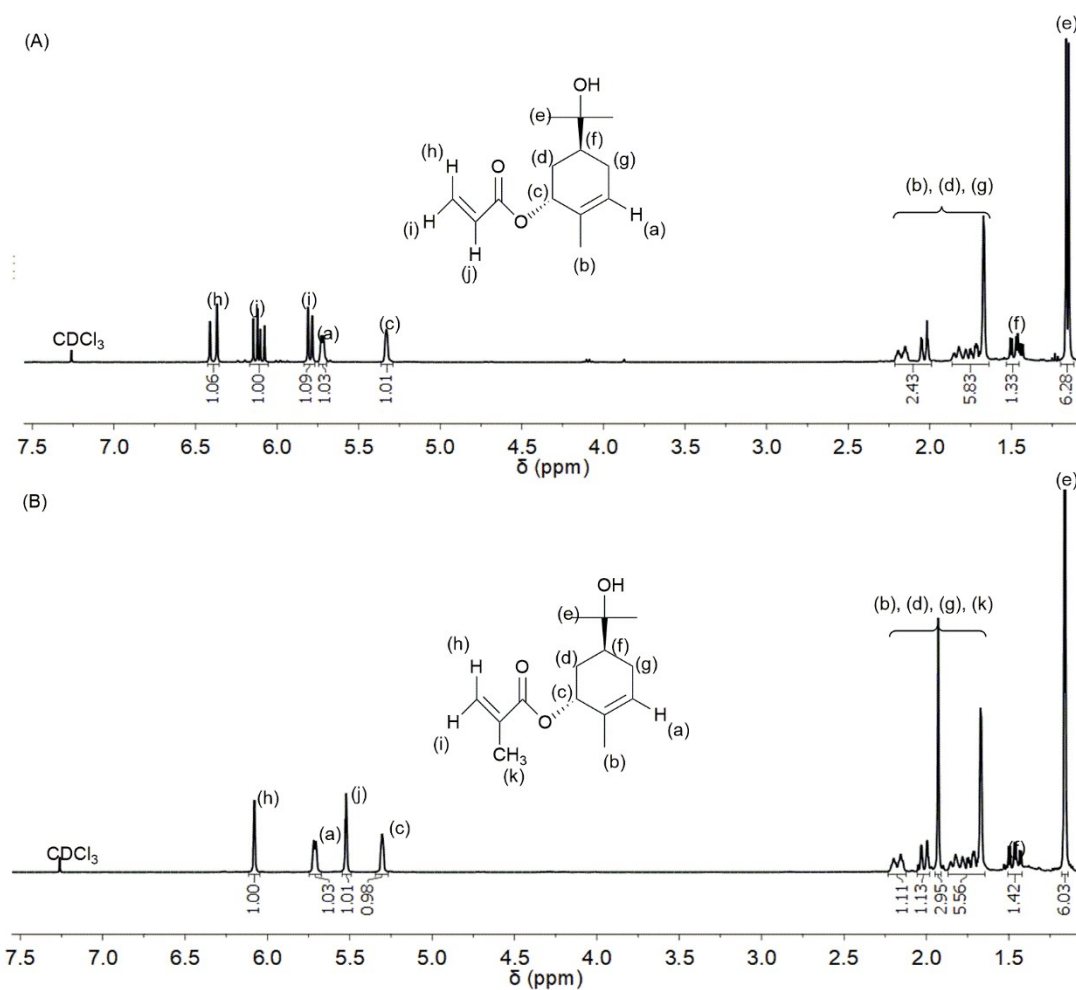


Figure S 2 ¹H NMR spectra of SobAcR (A) and SobMet (B).

The purity of the sobrerol based monomers was calculated by the equation S1:

$$\% \text{ purity} = 1 - \frac{\int \text{alkene protons of SobAcR or SobMet} - \int \text{alkene protons of AcrCl or MetAn}}{\int \text{alkene protons of AcrCl or MetAn}} \times 100$$

The estimated values of purity were found to be 94 % for SobAcR and 97 % for SobMet.

PROCEDURE FOR THE FREE RADICAL POLYMERIZATION (FRP) OF P(SOBACR) AND P(SOBMET)

To either SobAcR and SobMet (1 g), 3 %m of benzoyl peroxide (BPO; 0.03 g) was added. Upon dissolution at room temperature, the temperature was raised to 80 °C and the reaction allowed to proceed until a hard solid (either P(SobAcR) or P(SobMet)) was attained.

UPR CHARACTERIZATION

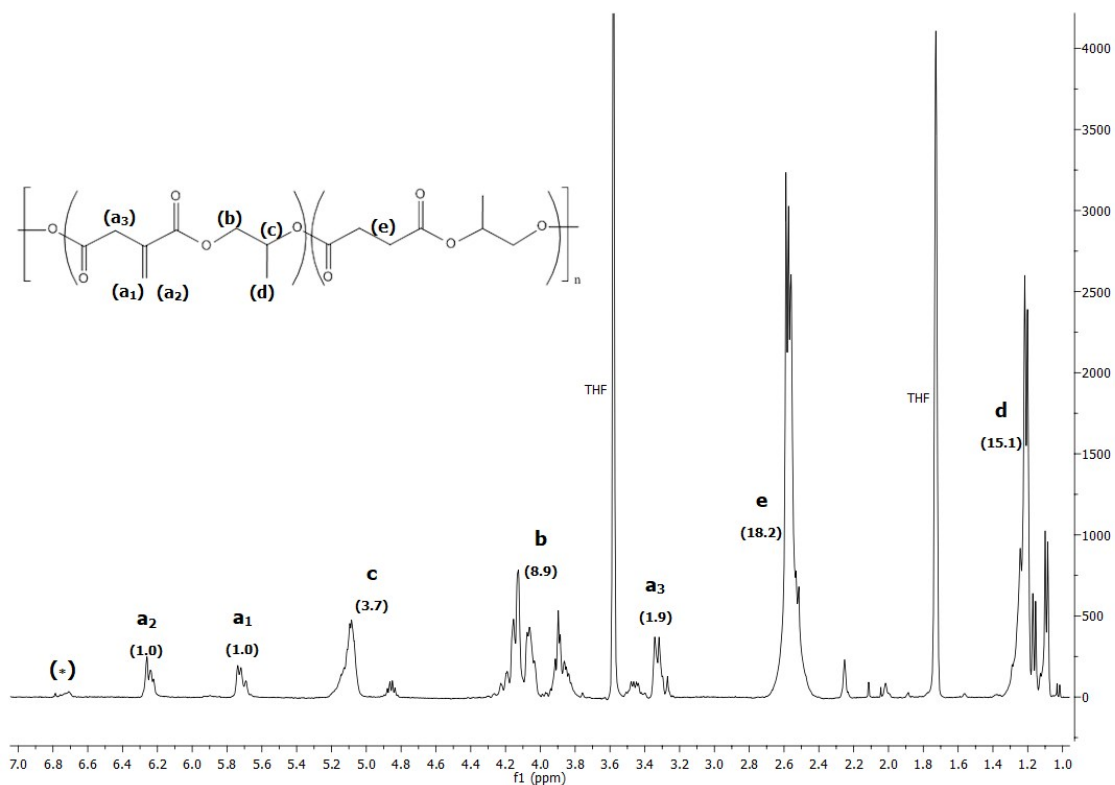


Figure S 2 - ^1H NMR spectrum of a Bio-UP1 sample in THF- d_8 .

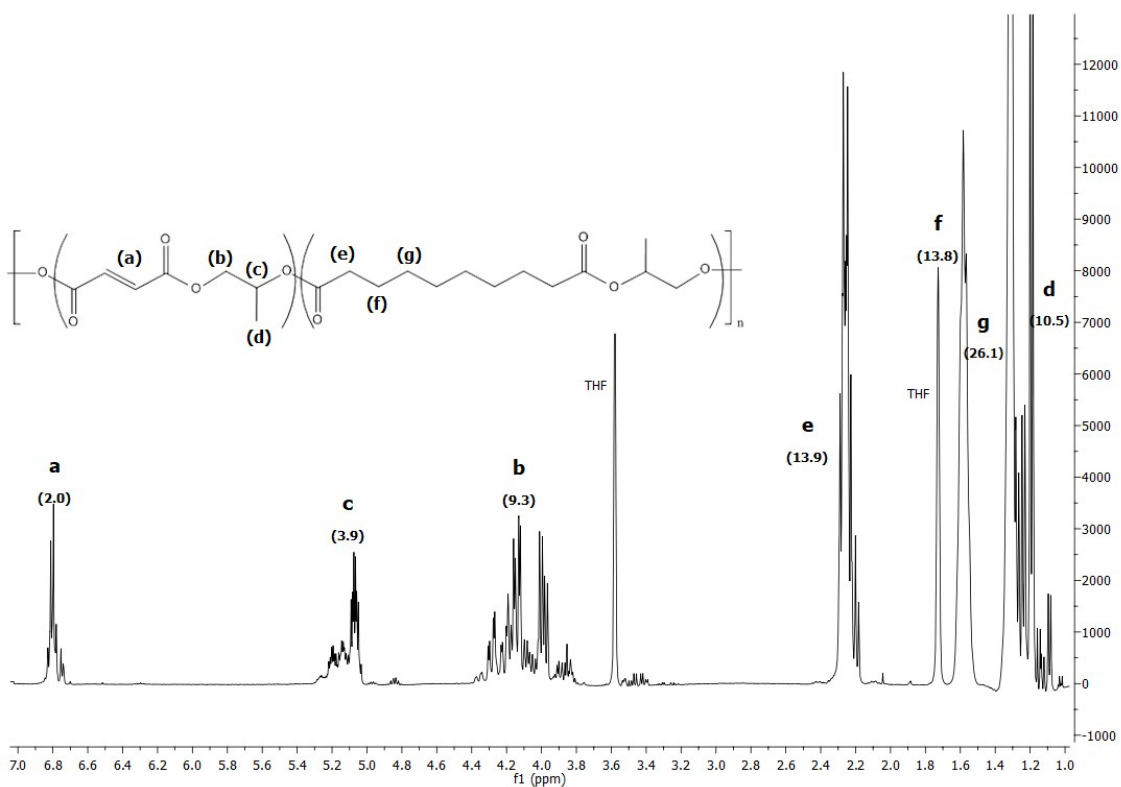


Figure S 3 - ^1H NMR spectrum of a Bio-UP2 sample in THF- d_8 .

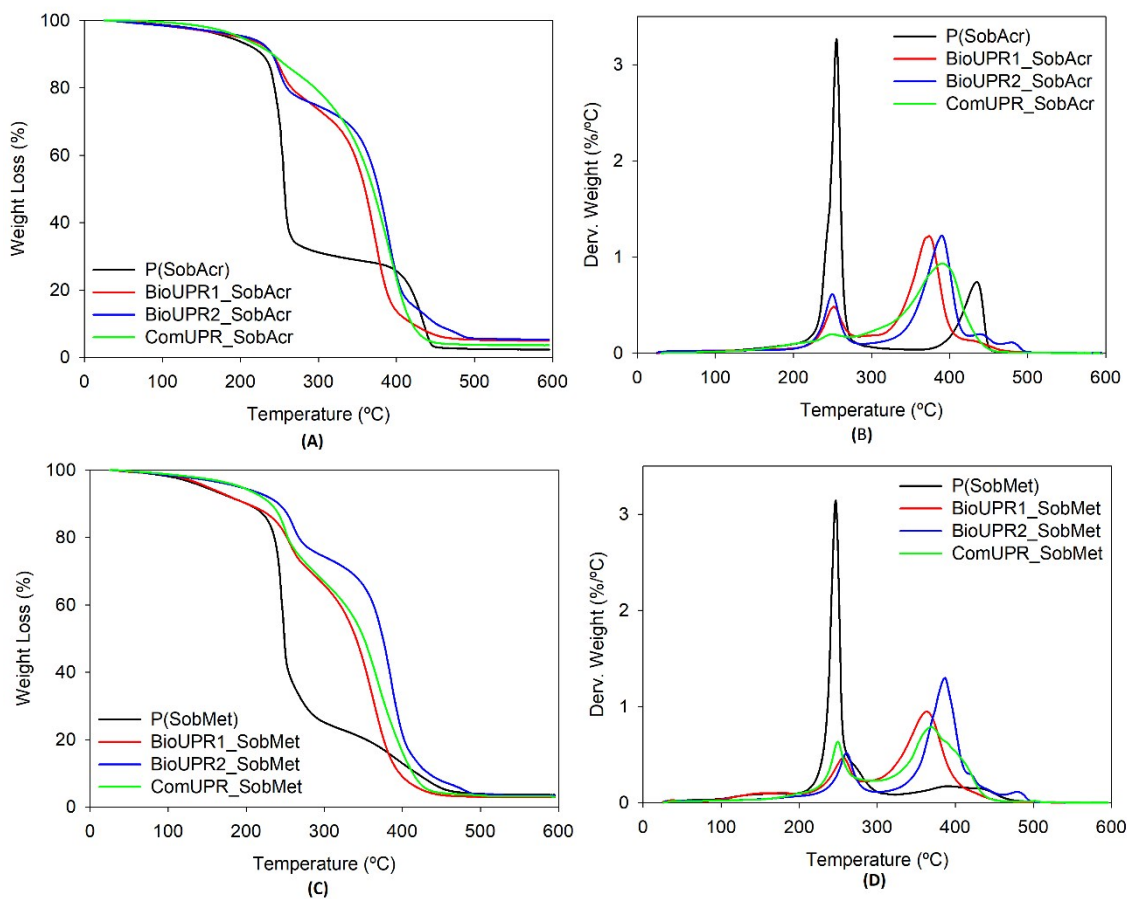


Figure S 4 - Thermogravimetric curves of the SobAcr- ((A) and (B)) and SobMet-containing ((C) and (D)) UPRs in comparison to each of their respective homopolymers P(SobAcr) and P(SobMet).

Table S 1– Characteristic temperatures of the UPRs taken from the TGA. $T_{5\%}$: temperature corresponding to 5 % of mass loss; $T_{10\%}$: temperature corresponding to 10 % of mass loss; T_{max} : temperature of maximal rate of decomposition.

UPR	$T_{5\%}$ (°C)	$T_{10\%}$ (°C)	T_{max} (°C)
BioUPR1_SobAcr	196.51	240.22	373.73 (250.94)
BioUPR1_SobMet	149.56	198.64	363.21 (256.08)
BioUPR1_Sty	209.25	292.16	374.43
BioUPR2_SobAcr	206.20	240.48	390.03 (249.27)
BioUPR2_SobMet	190.76	240.62	386.62 (260.58)
BioUPR2_Sty	249.93	328.36	384.91
ComUPR_SobAcr	201.06	241.06	390.26 (247.91)
ComUPR_SobMet	191.14	230.07	368.98 (249.27)
ComUPR_Sty	191.23	243.25	395.13 (207.06)

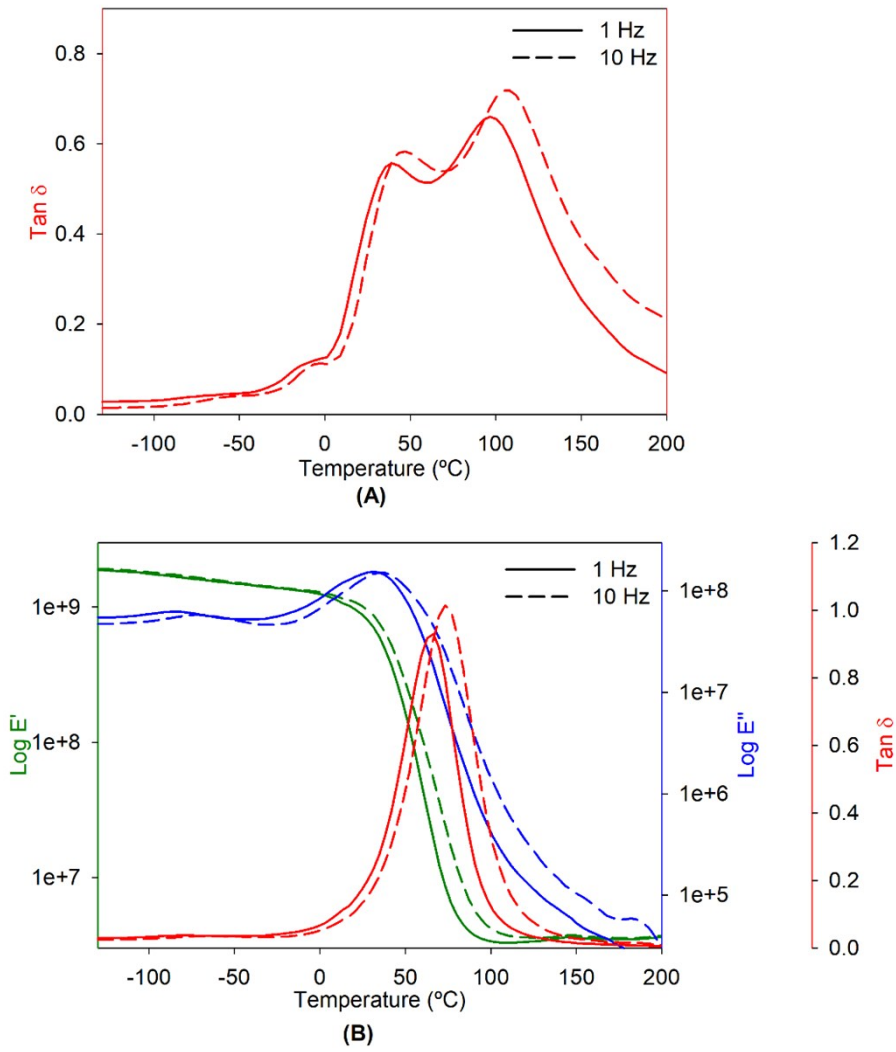
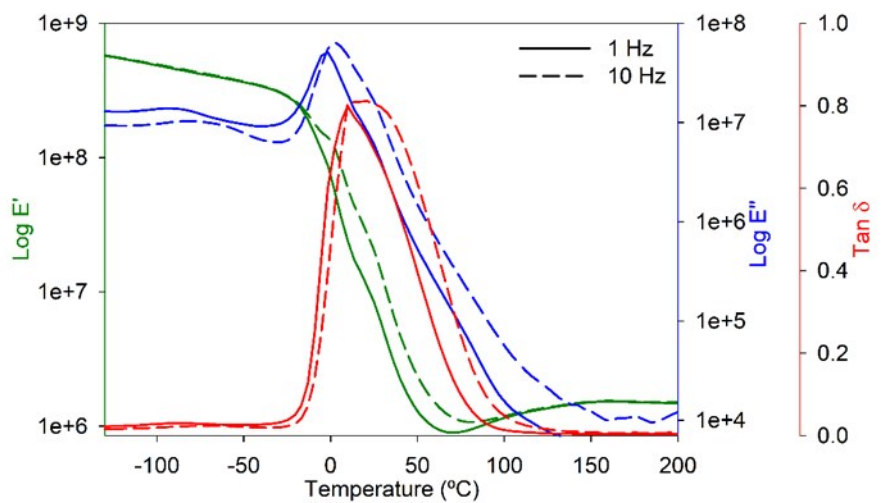
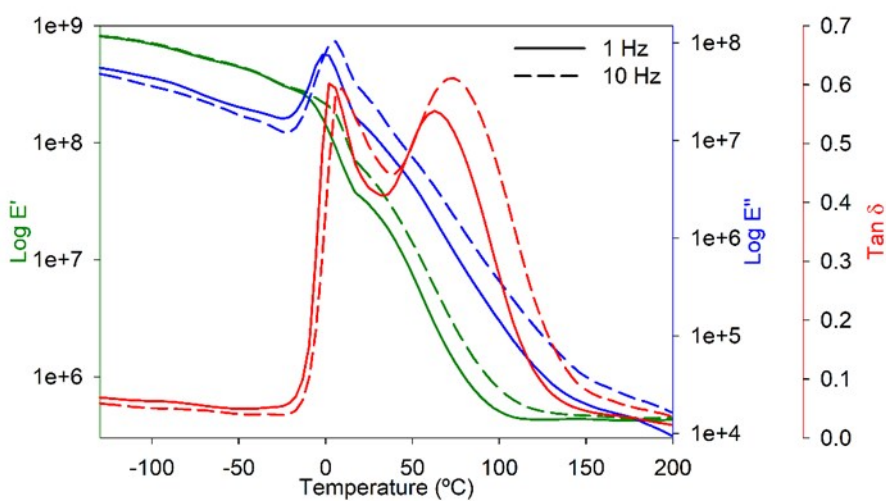


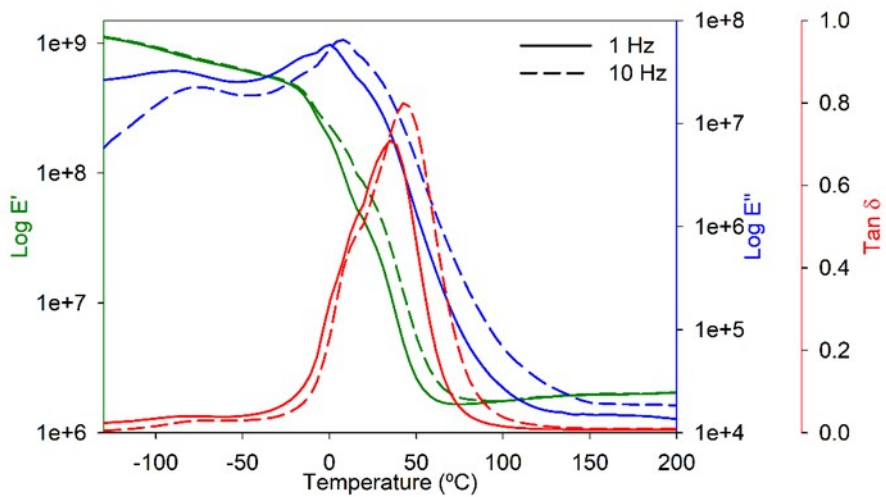
Figure S 5 - DMTA traces of the studied Commercial-UP-based UPRs at frequencies 1 Hz and 10 Hz, with either, SobMet (A) or Sty (B) as the UM.



(A)



(B)



(C)

Figure S 6 - DMTA traces of the studied Bio-UP1-based UPRs at frequencies 1 Hz and 10 Hz, with either SobAcr (A), SobMet (B) or Sty (C) as the UM.

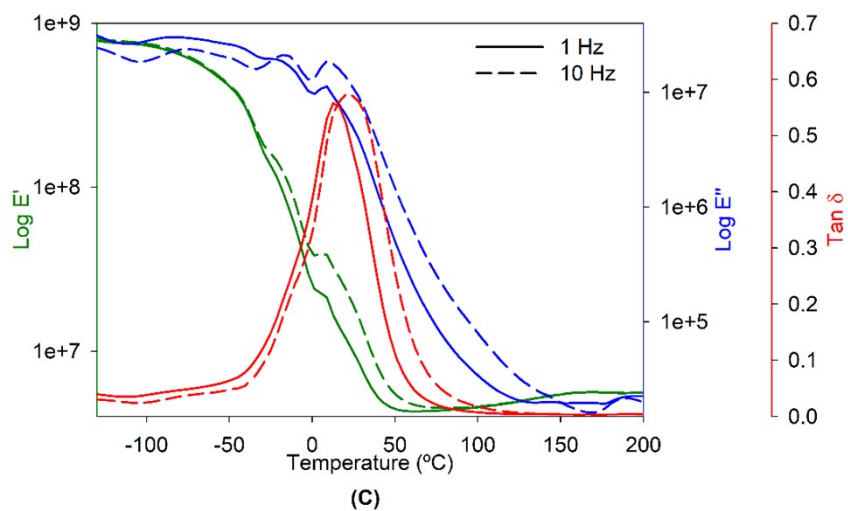
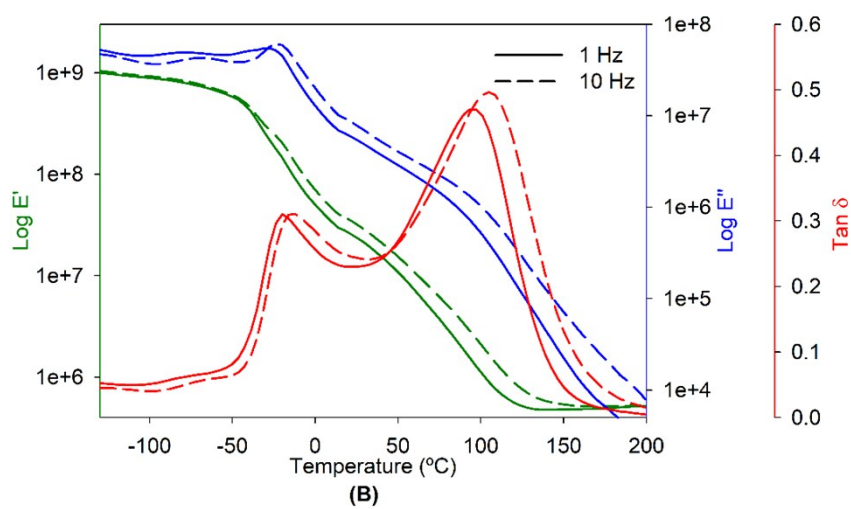
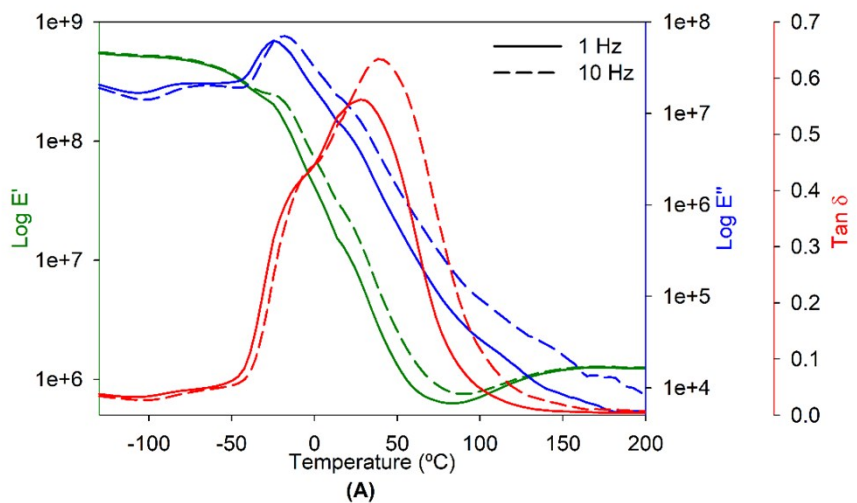


Figure S 7 - DMTA traces of the studied Bio-UP2-based UPRs at frequencies 1 Hz and 10 Hz, with either SobAcr (A), SobMet (B) or Sty (C) as the UM.

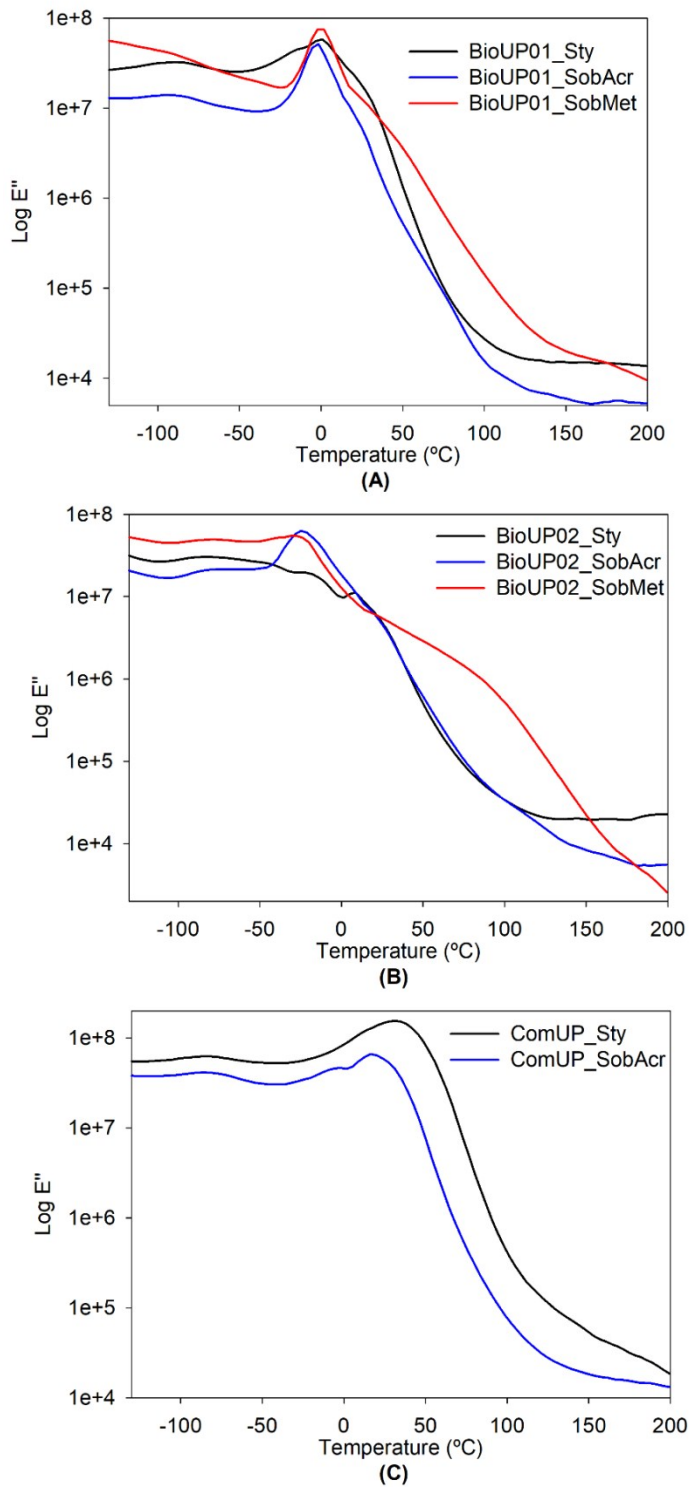


Figure S 8 - DMTA traces of the studied UPR formulations either Bio-UP1 (A), Bio-UP2 (B) or Commercial-UP (C) as the UP in terms of E'' .