Electronic Supplementary Material (ESI) for RSC Applied Polymers.

Supplementary Information

PISA printing from CTA functionalized polymer scaffolds

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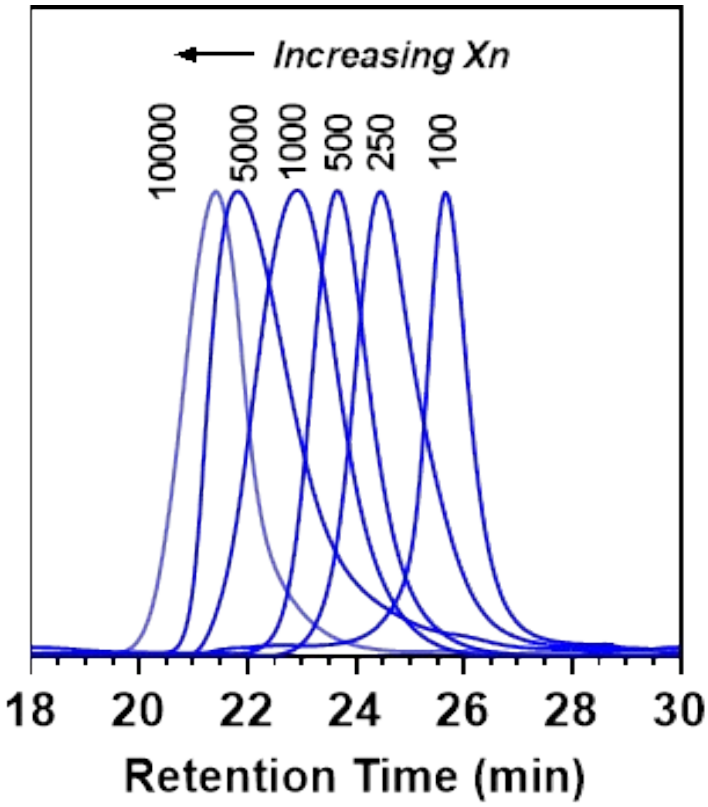
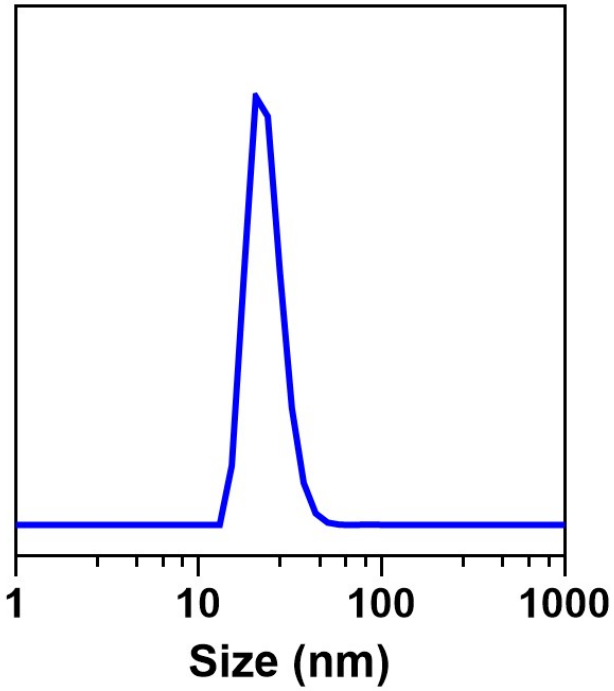


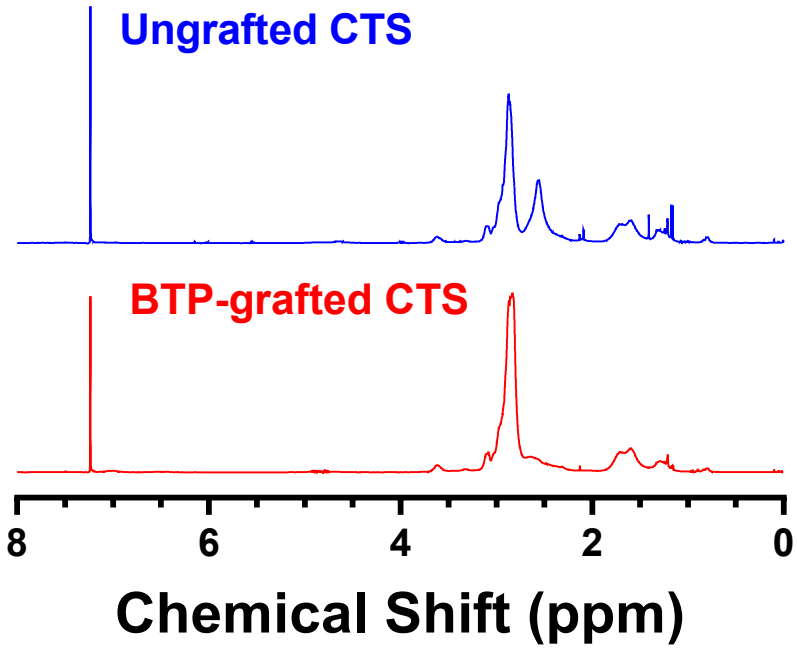
SI Figure 1. GPC traces for PET RAFT poly(DMA-co-HEAm) polymers targeting various DPs

SI Table I. Summarized molecular weights and PDI (molar mass dispersity) values for additional varying poly(DMA-co-HEAm) target DPs

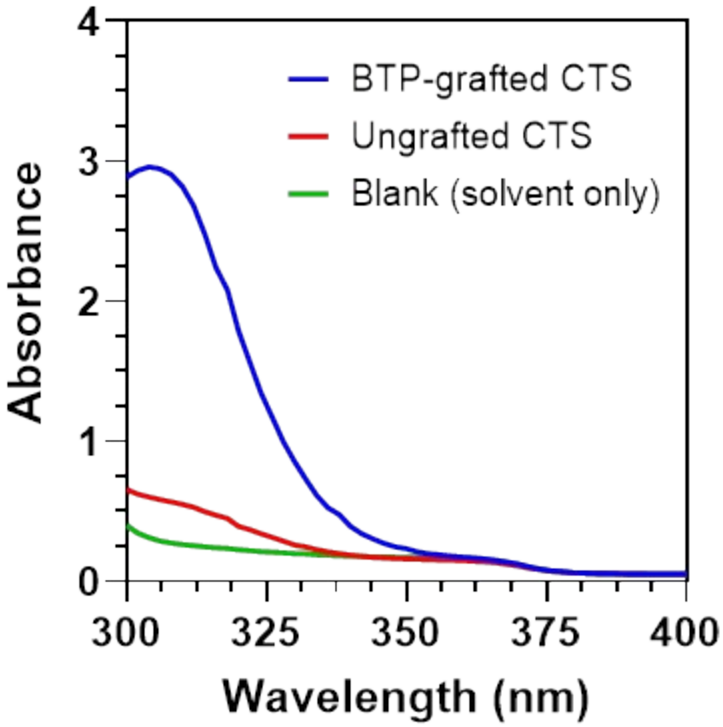
Degree of Polymerization (X_n)	Conversion (%)	$M_{n,theo}$ (Da)	$M_{n,GPC}$ (Da)	Molar Mass Dispersity (Đ)
100	99+	9913	8352	1.22
250	99+	24783	19663	1.40
1000	99+	99130	93092	1.45
5000	95+	495650	349782	1.54



SI Figure 2. DLS for LFP or 10% BTP-grafted poly(DMA-co-HEAm) macro-CTA



SI Figure 3. ^{1}H NMR traces for purified ungrafted and grafted DP10000 CTS scaffolds

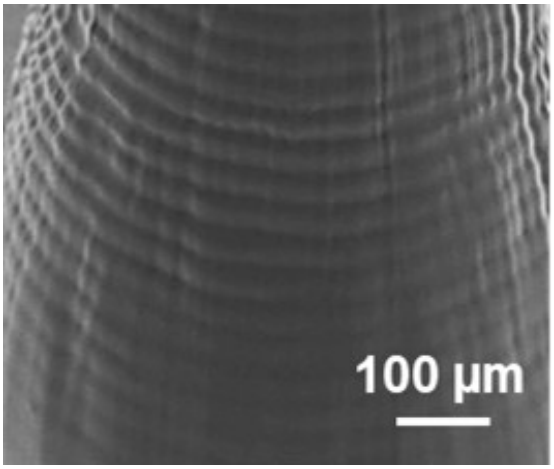


SI Figure 4. UV-Vis spectra for BTP-grafted and ungrafted CTS scaffolds compared to a solvent-only blank (91% isopropanol). The absorbance value at 325 nm was used to determine the CTA concentration per gram of polymer via a BTP standard curve in 91% isopropanol. Since there a slight difference in absorbance between the ungrafted CTS sample and blank at this wavelength, this absorbance was taken into account when determining BTP concentration

SI Figure 5. Overcured S&T logo printed with DP 10000 CFS

SI Table II. Mechanical property values for 10% DCT-grafted LFP HPMA PISA resin system (DP 250 HPMA, 25 wt. % solids)

Elastic Modulus, E (kPa)	Strain-to-break, ε_{br} (%)	Toughness, K (kJ/m^3)
6.37 ± 0.871	953 ± 69.5	224 ± 64.3



SI Figure 6. SEM images of layers on a part 3D-printed using 10% BTP CFS with DP 500 DAAm at 30 wt. %. This SEM sample is representative for the CFS PISA system specifically.

Table III. Mechanical property summary for crosslinked version DP 10000 10% grafted CFS with target DP 500 DAAm at 25 wt. % solids. This system contained 2.5 wt. % MBAc (N'N-methylene bisacrylamide) crosslinker.

Elastic Modulus (kPa)	Strain-to-break, ε (%)	Toughness, K (kJ/m^3)
176 ± 35	96 ± 22	60 ± 14