SUPPORTING INFORMATION

Light-Responsive Terpolymers Based on Polymerizable Photoacids

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Synthesis and characterization of photoacid-containing terpolymers

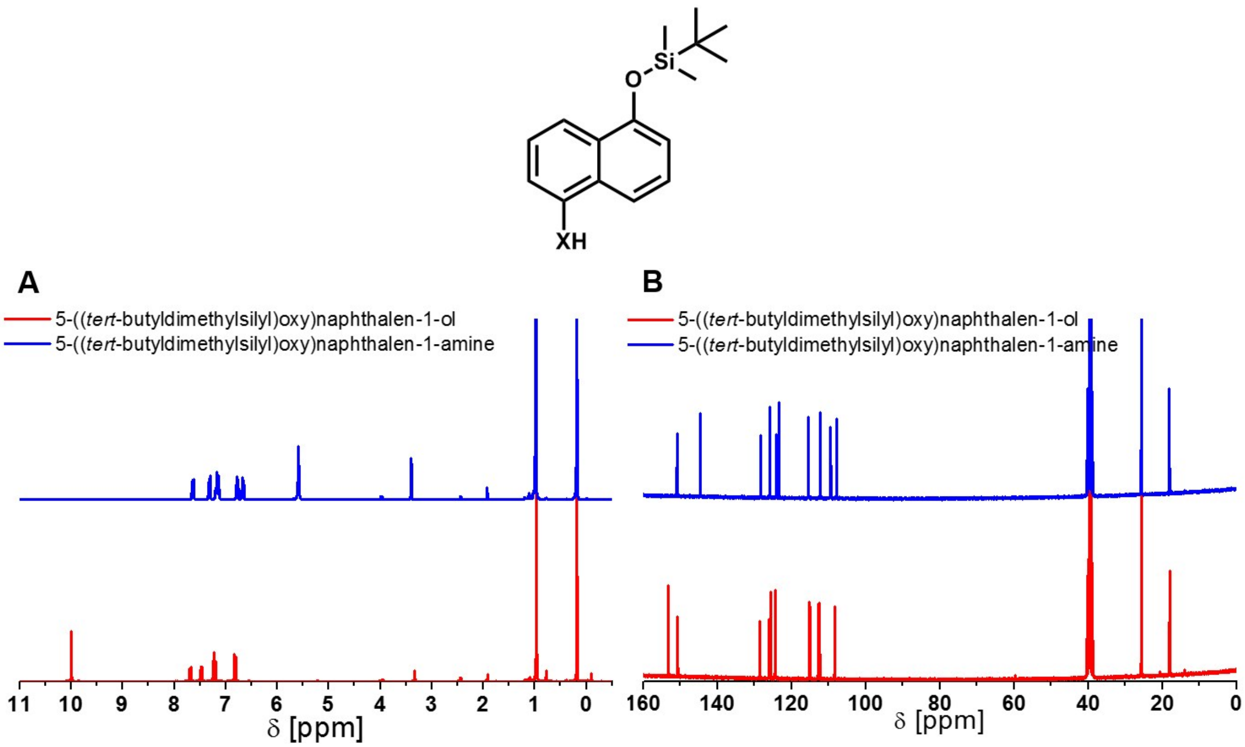

Figure S1: ^{1}H-NMR (A) and ^{13}C-NMR spectra overlay (B) of 5-((*tert*-butyldimethylsilyl)oxy)naphthalen-1-ol and 5-((*tert*-butyldimethylsilyl)oxy)naphthalen-1-amine in DMSO-d_6.

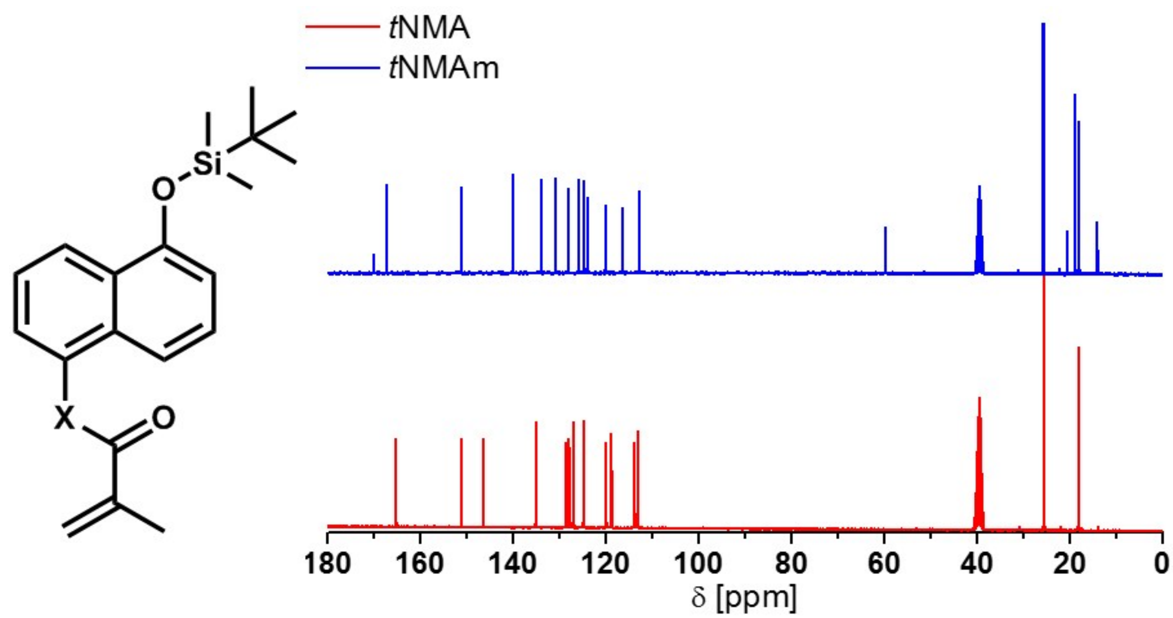

Figure S2: ^{13}C-NMR spectra overlay of *t*NMA and *t*NMAm in DMSO-d_6.

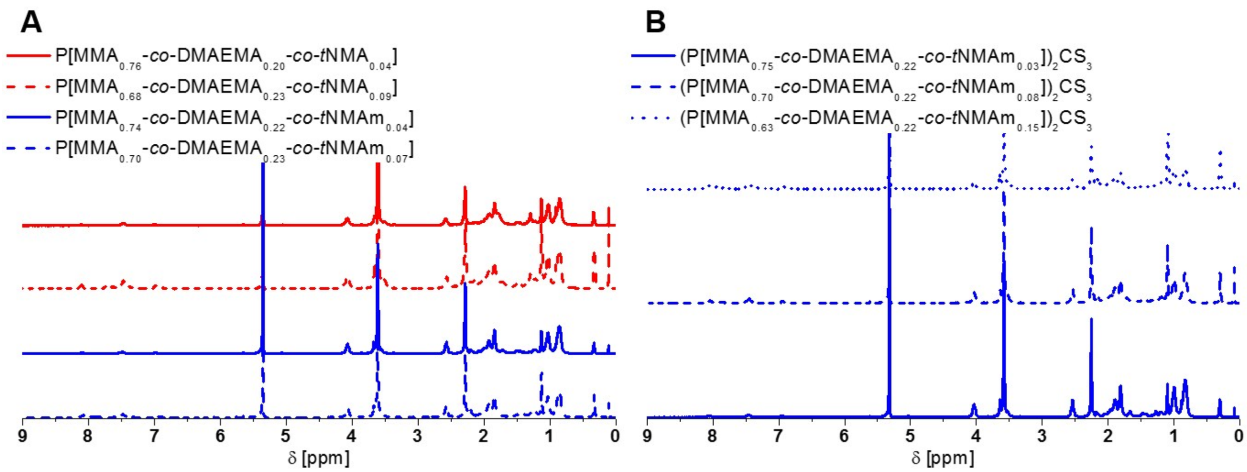

Figure S3: ^{1}H-NMR spectra overlay of P[MMA$_x$-*co*-DMAEMA$_y$-*co*-*t*NMA$_z$/*t*NMAm$_z$] (A) and (P[MMA$_x$-*co*-DMAEMA$_y$-*co*-*t*NMAm$_z$])$_2$CS$_3$ (B) in CD_2Cl_2.

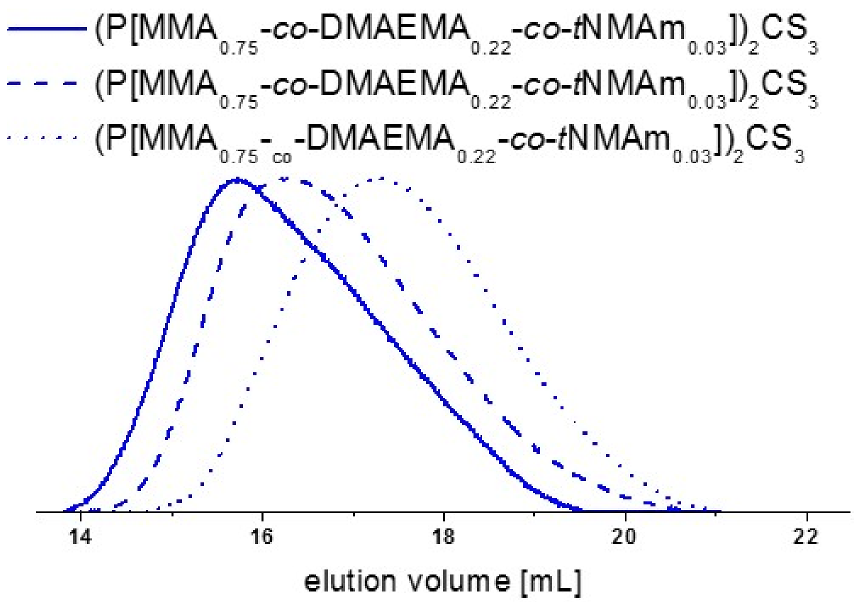

Figure S4: SEC elution traces for (P[MMA$_x$-*co*-DMAEMA$_y$-*co*-*t*NMAm$_z$])$_2$CS$_3$. For SEC DMAc with 2.1 g L^{-1} LiCl was the eluent (PMMA-calibration).

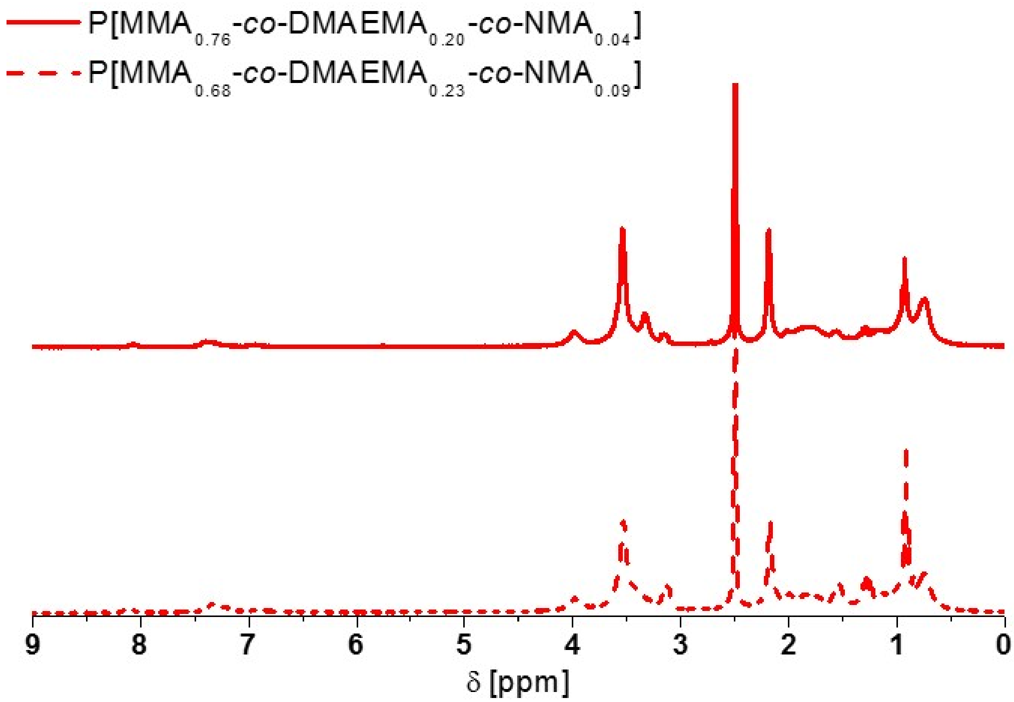

Figure S5: [1]H-NMR spectra overlay of P[MMA$_x$-*co*-DMAEMA$_y$-*co*-*t*NMA$_z$] in DMSO-d_6.

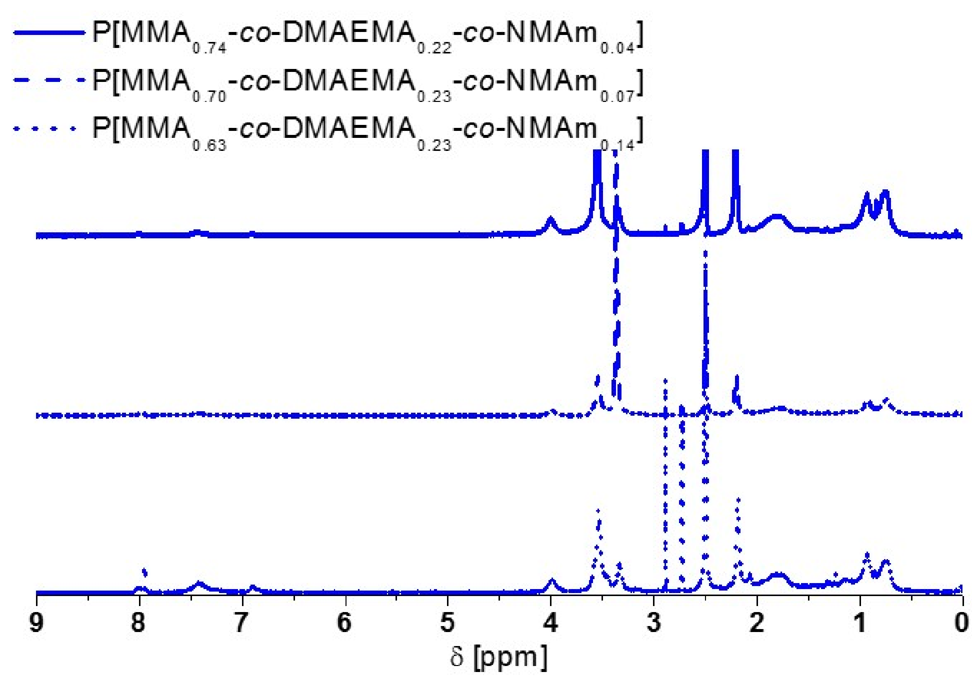

Figure S6: [1]H-NMR spectra overlay of P[MMA$_x$-*co*-DMAEMA$_y$-*co*- *t*NMAm$_z$] in DMSO-d_6.

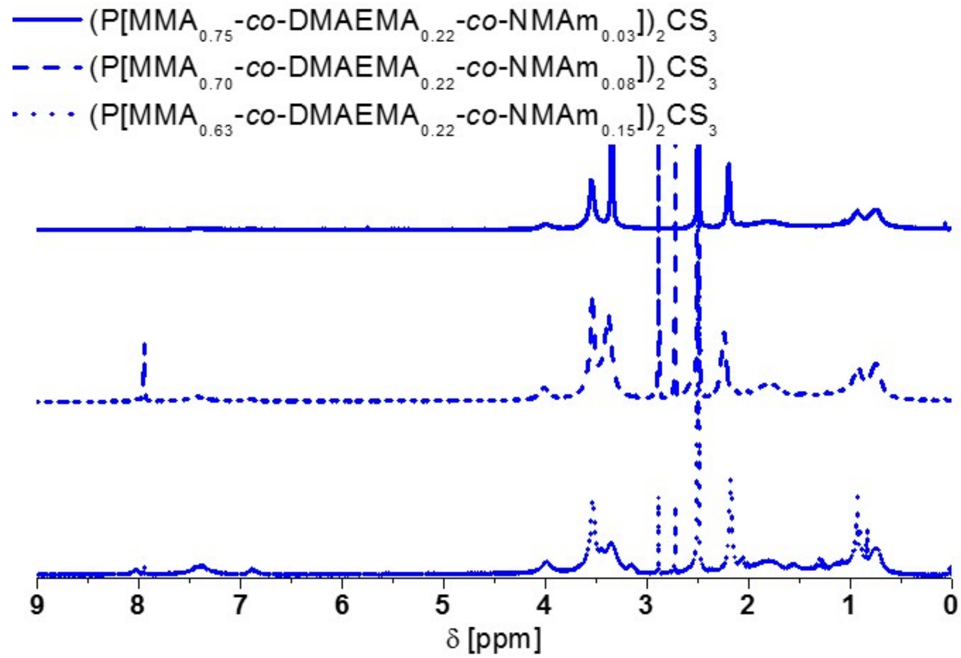

Figure S7: ^{1}H-NMR spectra overlay of (P[MMA$_x$-*co*-DMAEMA$_y$-*co*-*t*NMAm$_z$])$_2$CS$_3$ in DMSO-*d$_6$*.

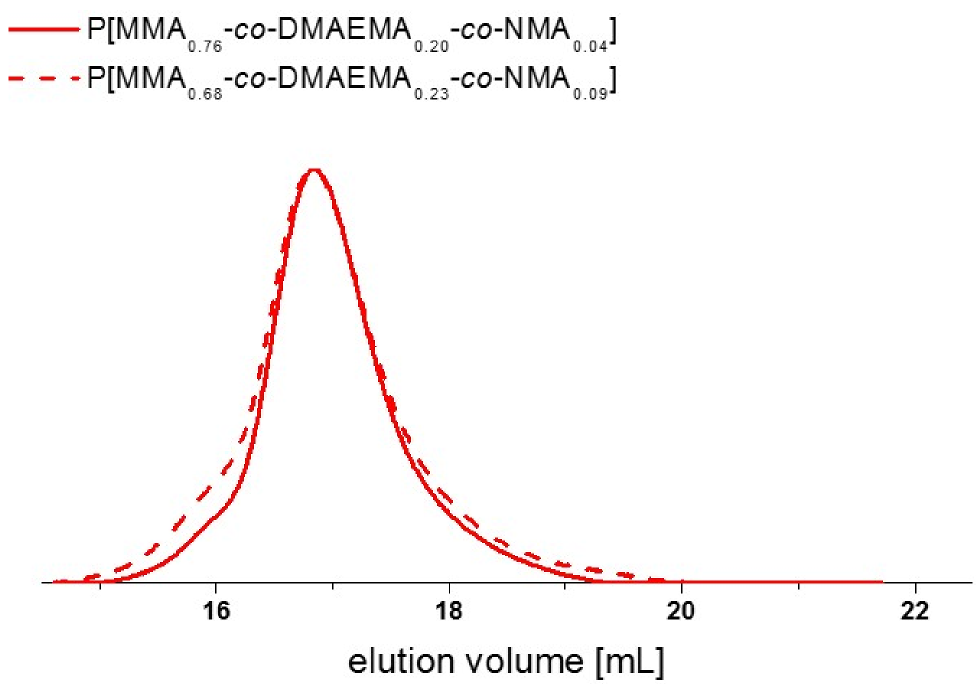

Figure S8: SEC elution traces for P[MMA$_x$-*co*-DMAEMA$_y$-*co*-NMA$_z$]. For SEC DMAc with 2.1 g L^{-1} LiCl was the eluent (PMMA-calibration).

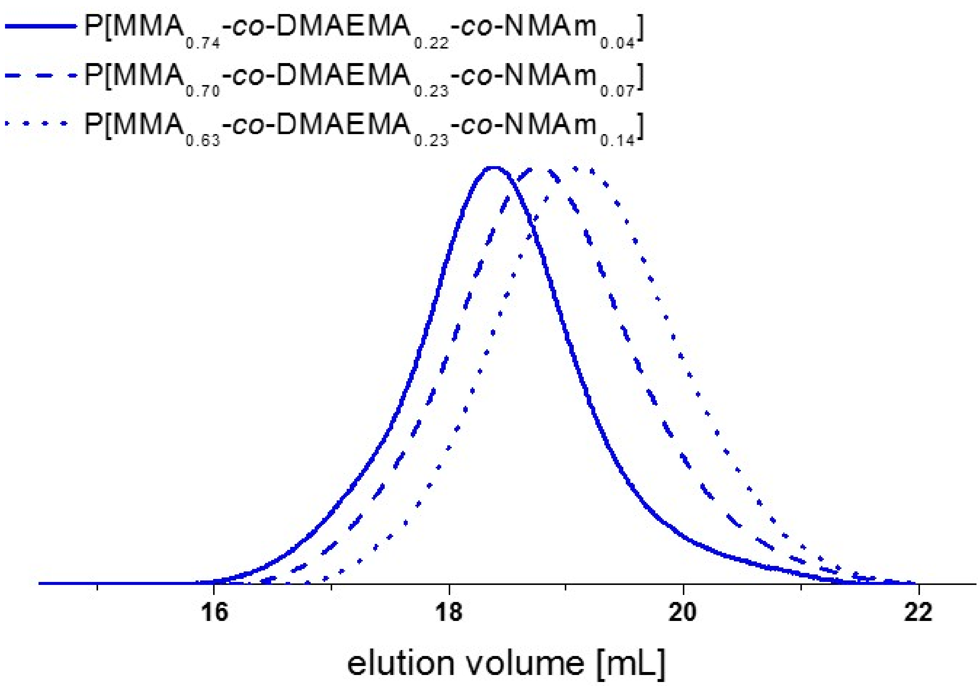

Figure S9: SEC elution traces for P[MMA$_x$-*co*-DMAEMA$_y$-*co*-NMAm$_z$]. For SEC DMAc with 2.1 g L^{-1} LiCl was the eluent (PMMA-calibration).

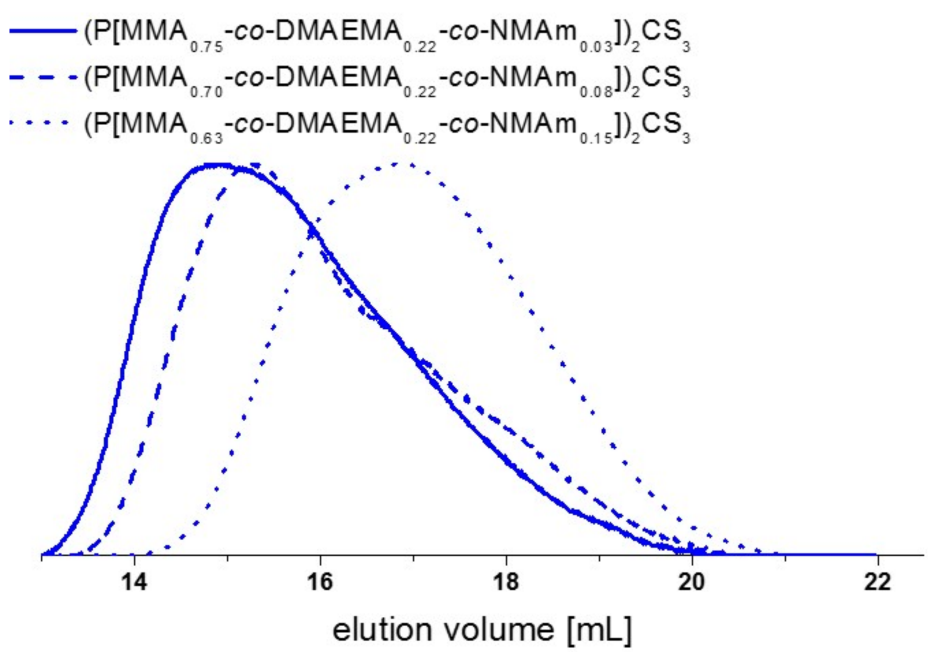

Figure S10: SEC elution traces for (P[MMA$_x$-*co*-DMAEMA$_y$-*co*-*t*NMAm$_z$])$_2$CS$_3$. For SEC DMAc with 2.1 g L^{-1} LiCl was the eluent (PMMA-calibration).

UV/Vis spectroscopy of monomers and polymers

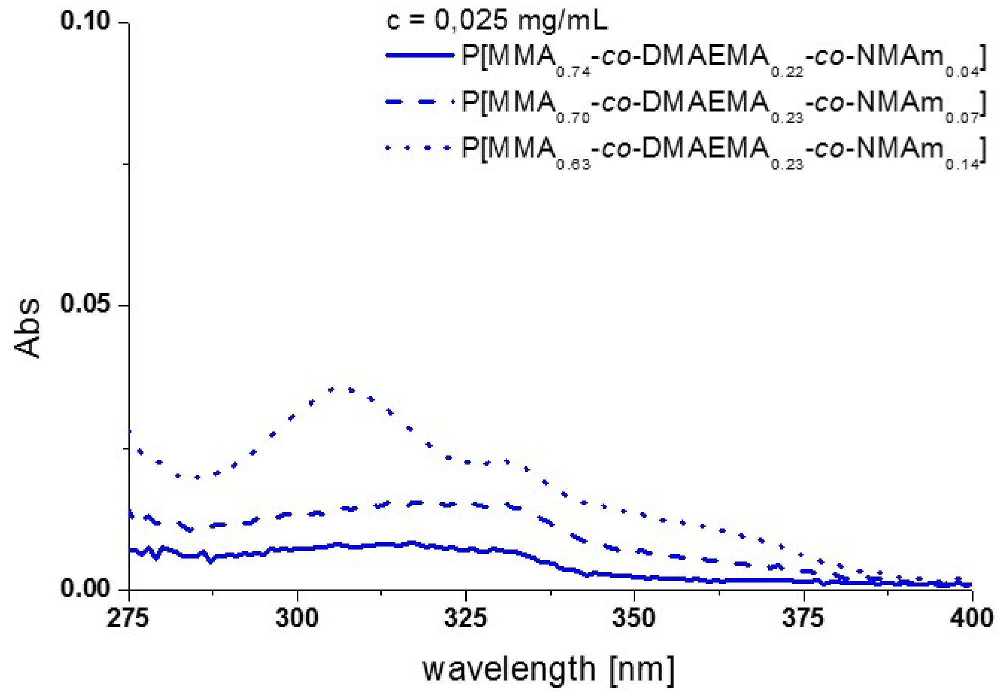

Figure S11: Absorption spectra of P[MMA$_x$-*co*-DMAEMA$_y$-*co*-NMA$_z$] in DMSO at 0,025 mg mL^{-1}.

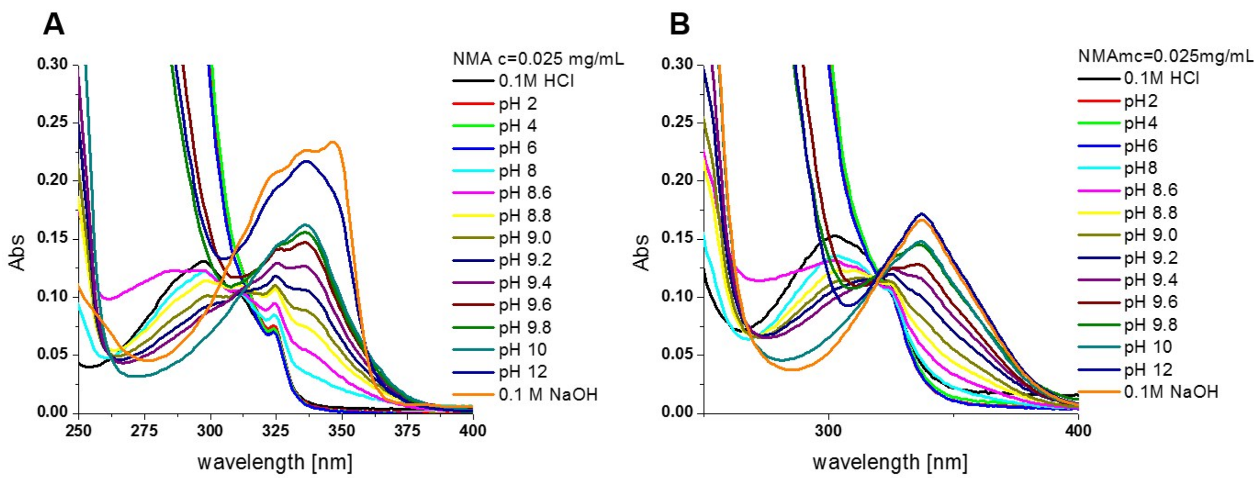

Figure S12: Absorption spectra of NMA (A) and NMAm (B) at different pH in diverse buffer solutions.

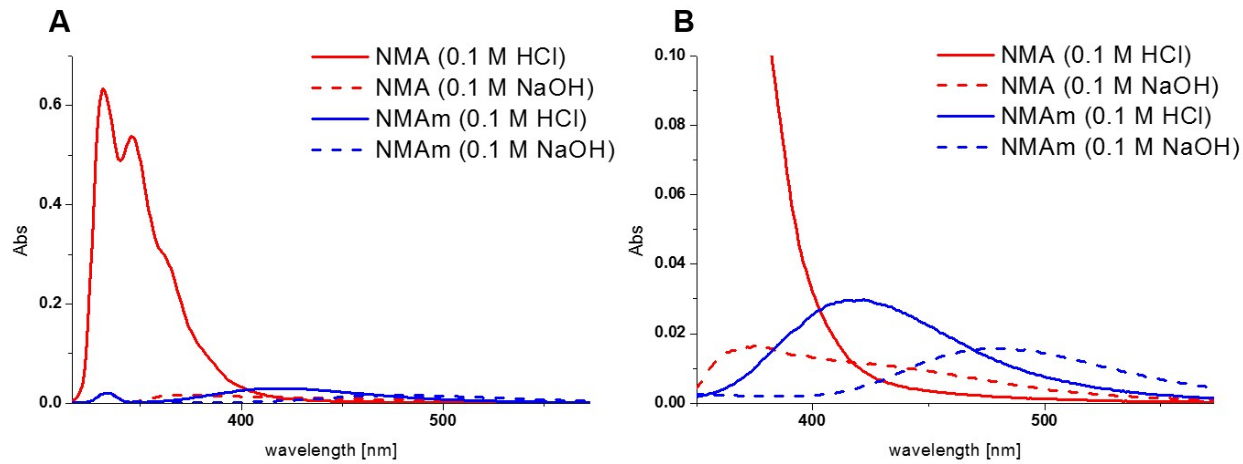

Figure S13: Emssion spectra of the photoacid NMA (solid red line, 0.1M HCl) and its base form (dashed red line, 0.1M NaOH) and NMAm (solid blue line, 0.1M HCl) and its base form (dashed blue line, 0.1M NaOH).

Formation of photo-responsive nanoparticles using nanoprecipitation

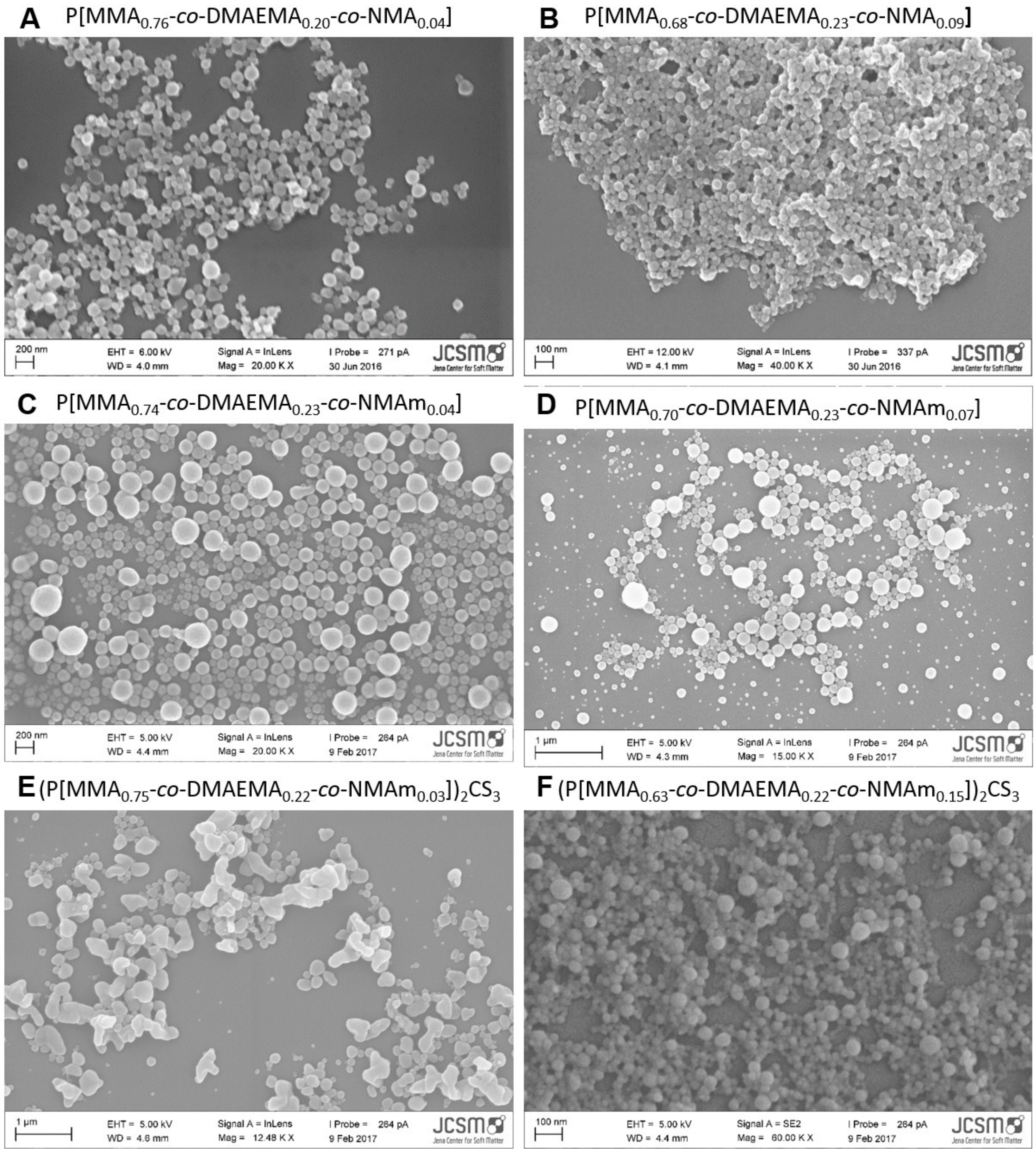

Figure S14: Representative SEM images for nanoparticles suspensions of $P[MMA_{0.76}\text{-}co\text{-}DMAEMA_{0.20}\text{-}co\text{-}NMA_{0.04}]$ (A), $P[MMA_{0.68}\text{-}co\text{-}DMAEMA_{0.23}\text{-}co\text{-}NMA_{0.09}]$ (B), $P[MMA_{0.74}\text{-}co\text{-}DMAEMA_{0.22}\text{-}co\text{-}NMAm_{0.04}]$ (C), $P[MMA_{0.70}\text{-}co\text{-}DMAEMA_{0.23}\text{-}co\text{-}NMAm_{0.07}]$ (D), $(P[MMA_{0.75}\text{-}co\text{-}DMAEMA_{0.22}\text{-}co\text{-}NMAm_{0.03}])_2CS_3$ (E) and $(P[MMA_{0.63}\text{-}co\text{-}DMAEMA_{0.22}\text{-}co\text{-}NMAm_{0.15}])_2CS_3$ (F).

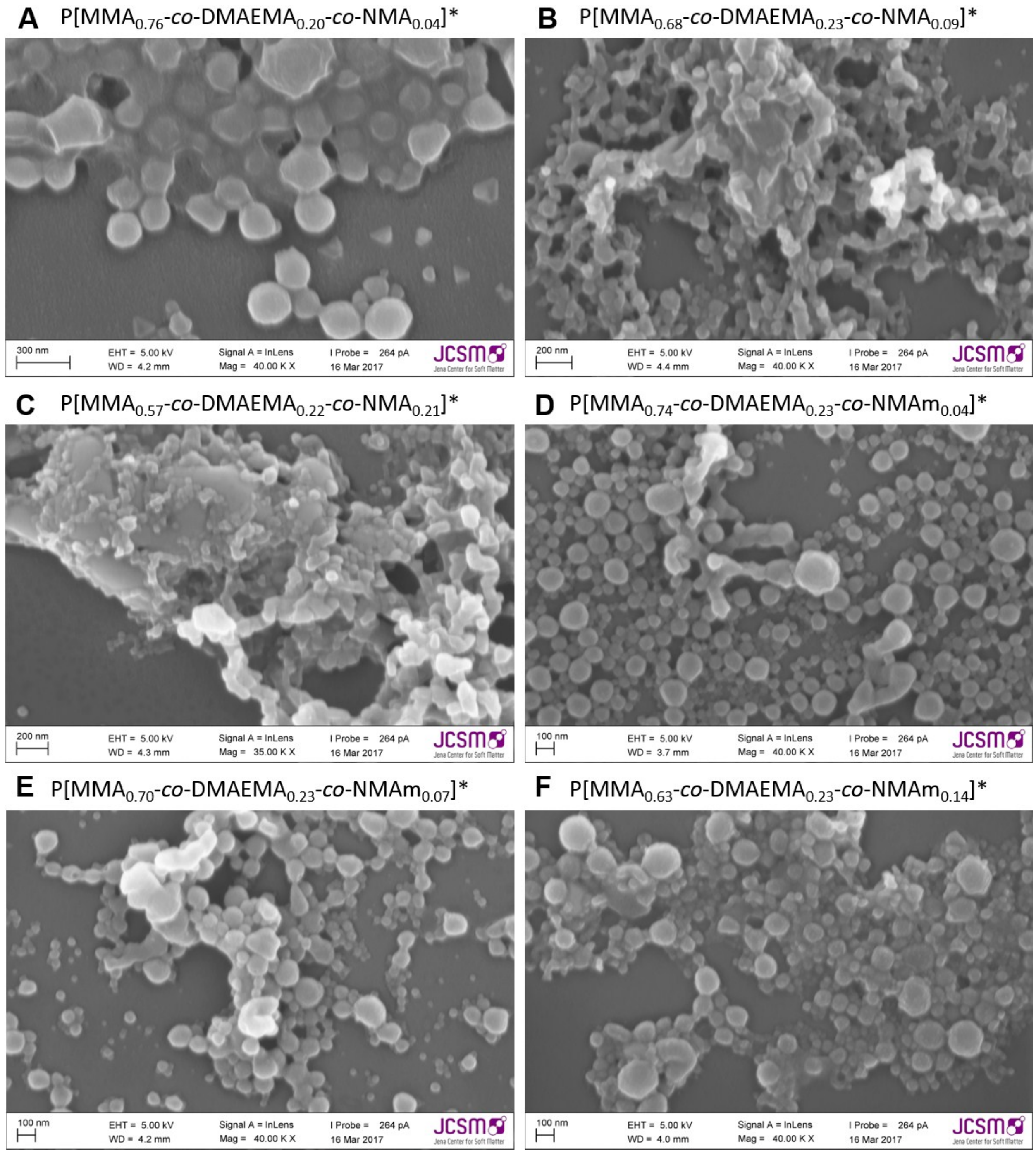

Figure S15: Representative SEM images for nanoparticle suspensions after irradiation with UV light of P[$MMA_{0.76}$-*co*-$DMAEMA_{0.20}$-*co*-$NMA_{0.04}$] (A), P[$MMA_{0.68}$-*co*-$DMAEMA_{0.23}$-*co*-$NMA_{0.09}$] (B), P[$MMA_{0.57}$-*co*-$DMAEMA_{0.22}$-*co*- $NMA_{0.21}$] (C), P[$MMA_{0.74}$-*co*-$DMAEMA_{0.23}$-*co*-$NMAm_{0.04}$] (D), P[$MMA_{0.70}$-*co*-$DMAEMA_{0.23}$-*co*-$NMAm_{0.07}$] (E) and P[$MMA_{0.63}$-*co*-$DMAEMA_{0.23}$-*co*-$NMAm_{0.14}$] (F).

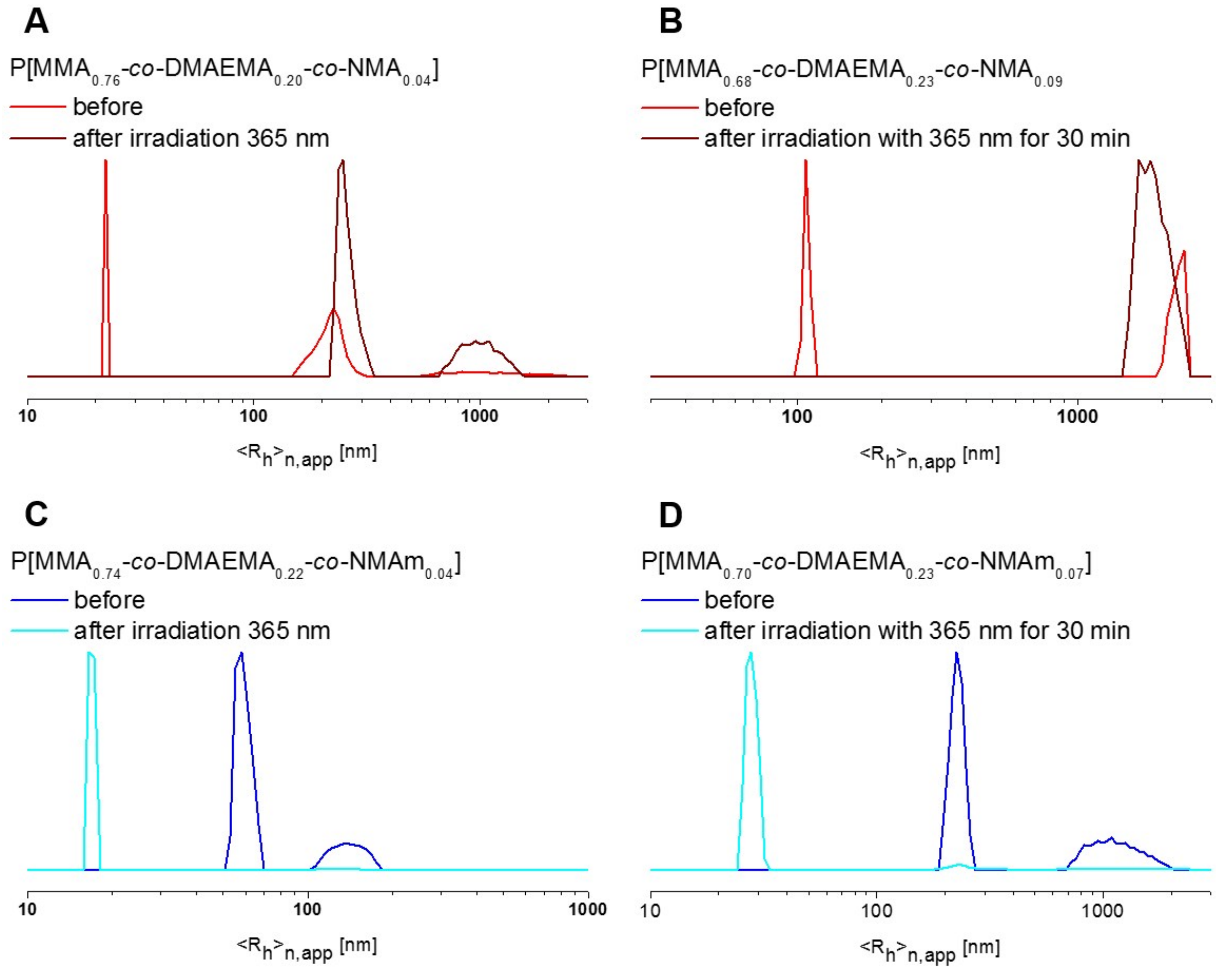

Figure S16: Number-weighted DLS CONTIN plots for nanoparticle suspensions of P[MMA$_{0.76}$-*co*-DMAEMA$_{0.20}$-*co*-NMA$_{0.04}$] (A), P[MMA$_{0.68}$-*co*-DMAEMA$_{0.23}$-*co*-NMA$_{0.09}$] (B), P[MMA$_{0.74}$-*co*-DMAEMA$_{0.22}$-*co*-NMAm$_{0.04}$] (C) and P[MMA$_{0.70}$-*co*-DMAEMA$_{0.23}$-*co*-NMAm$_{0.07}$] (D).

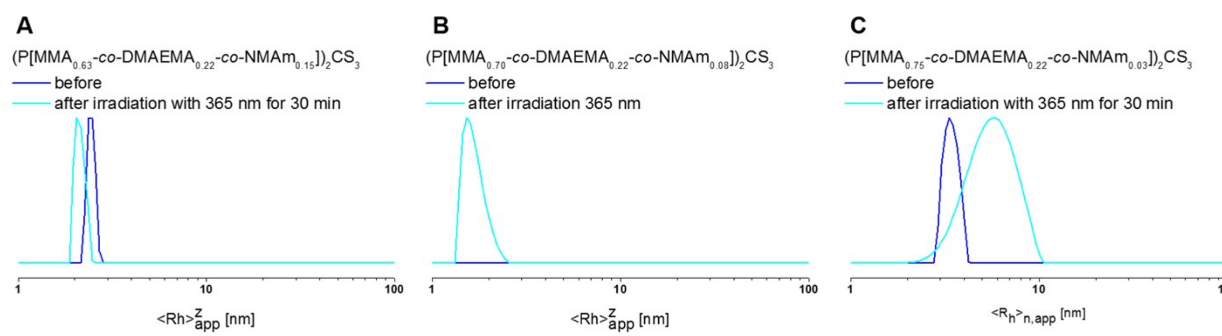

Figure S17: Number-weighted DLS CONTIN plots for nanoparticle suspensions of (P[MMA$_{0.75}$-*co*-DMAEMA$_{0.22}$-*co*-NMAm$_{0.03}$])$_2$CS$_3$ (A), (P[MMA$_{0.70}$-*co*-DMAEMA$_{0.22}$-*co*-NMAm$_{0.08}$])$_2$CS$_3$ (B), (P[MMA$_{0.63}$-*co*-DMAEMA$_{0.22}$-*co*-NMAm$_{0.15}$])$_2$CS$_3$ (C).

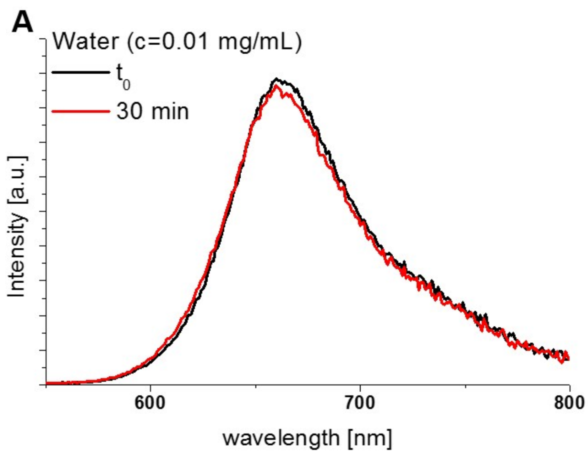

Figure S18: Fluorescence emission spectra of Nile Red in water (A) and acetone/water (2:1) (B) upon UV light irradiation for up to 30 minutes.