

Transparent Low Molecular Weight Poly(Ethylene Glycol) Diacrylate-Based Hydrogels as Film Media for Photoswitchable Drugs

Electronic supplementary information (ESI)

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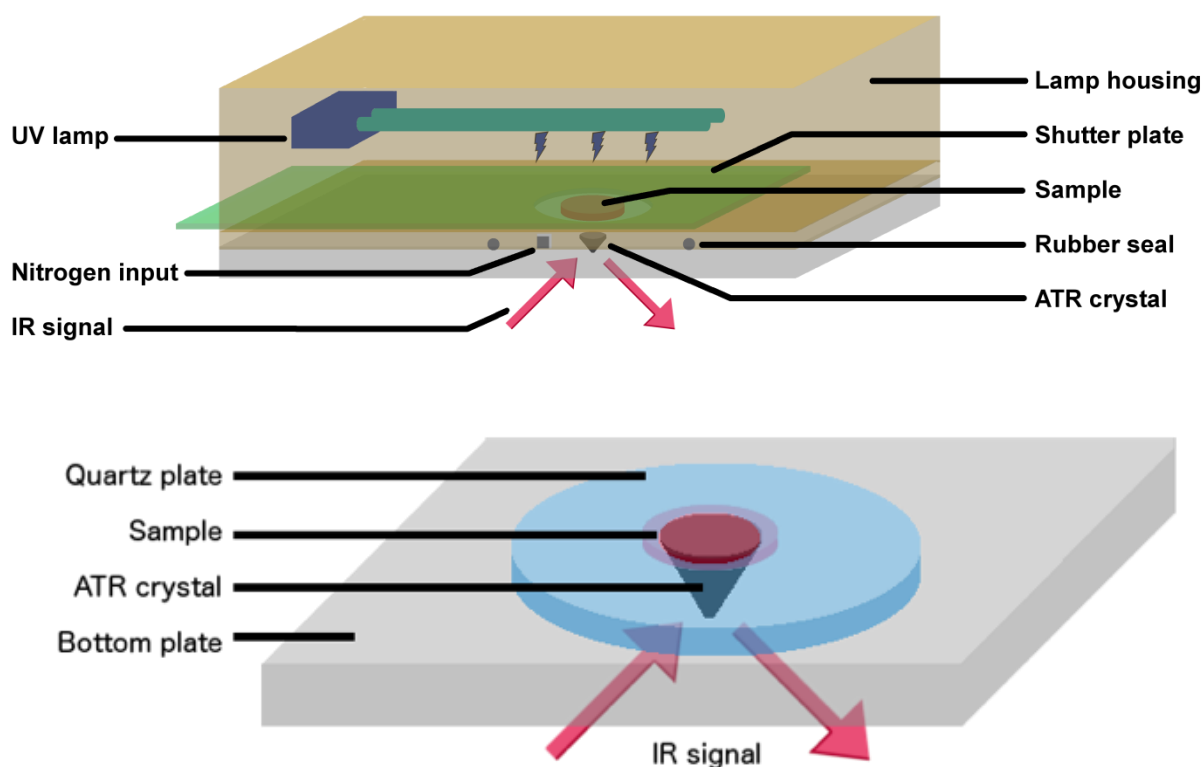


Figure S1: Scheme of the lamp and its irradiation box used for the photopolymerization of the mixtures (top). The scheme shows the irradiation box mounted on the ATR module of the RT-FTIR spectrometer. Detailed view of the sample deposited on the ATR crystal and calibrated using the quartz plate (bottom).

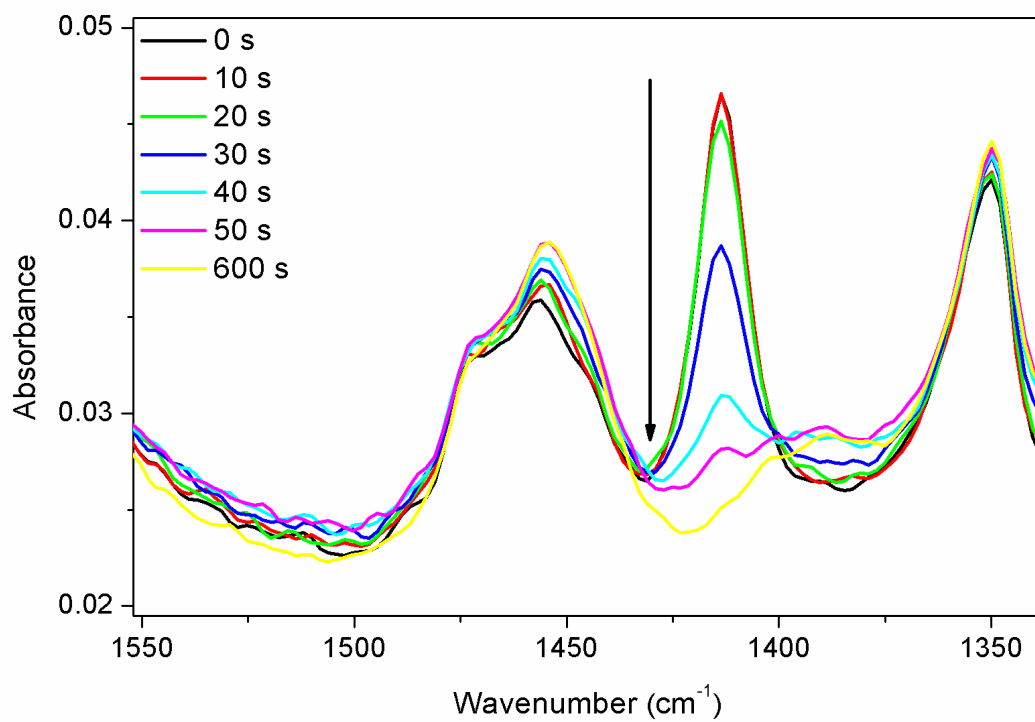


Figure S2: Decrease of the IR band assigned to the =CH₂ deformation vibration of the PEGDA at 1,410 cm⁻¹ in a hydrogel sample. The formulation containing 0.5 wt% α -HAP was photopolymerized in air with a light intensity of 12 mW cm⁻² using the UV-A lamp.

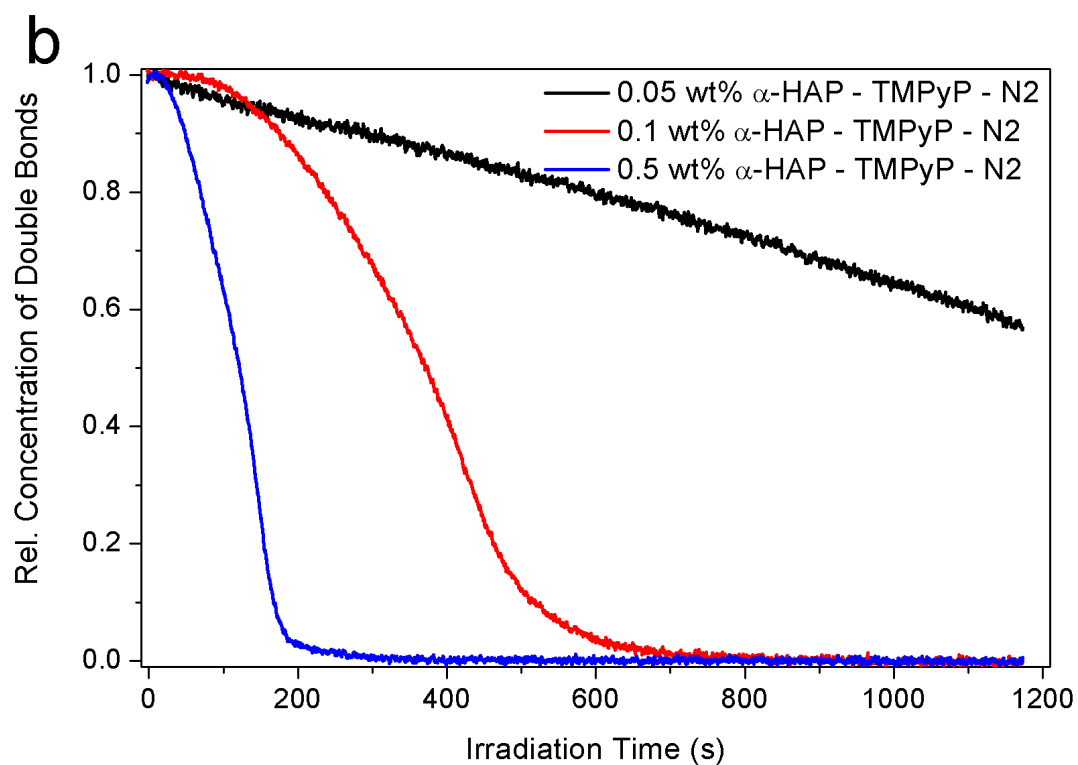
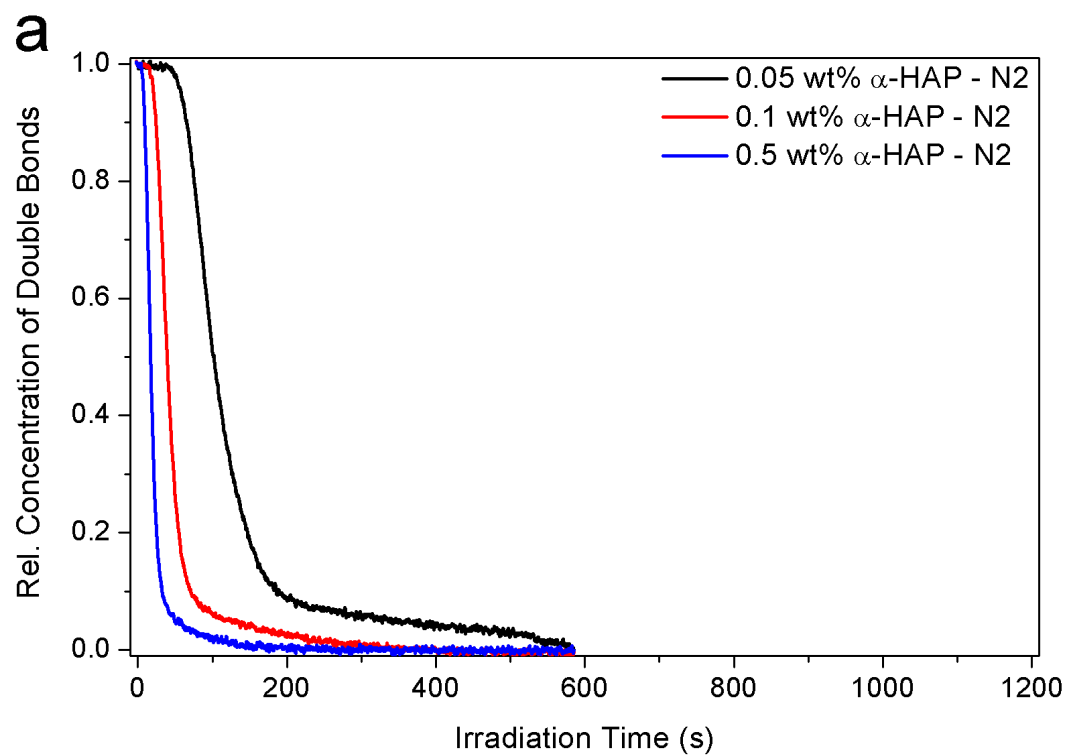


Figure S3: Photopolymerization kinetics of hydrogel formulations using three different α -HAP concentrations in dye-free formulations (up) and dye-added mixtures (i.e. with 0.01 wt% TMPyP) (down) with nitrogen inertization and at a light intensity of 12 mW cm⁻².

[α -HAP] (wt%)	0.05		0.05		0.1		0.1		0.5		0.5	
	[TMPyP] (wt%)		0.01		0		0.01		0		0.01	
Atmosphere	air	N ₂	air	N ₂	air	N ₂	air	N ₂	air	N ₂	air	N ₂
Conv. at 300 s (%)	97	94	10	11	98	99	23	33	100	100	99	99
Conv. at 600 s (%)	100	100	18	21	100	100	78	96	100	100	100	100
Final conv. (%)	100	100	37	43	100	100	100	100	100	100	100	100
Induc. time (s)	35	50	65	65	20	15	55	100	5	5	19	26
Max. rate (s ⁻¹)	0.008	0.012	0.0004	0.0004	0.014	0.020	0.002	0.003	0.033	0.053	0.012	0.010

Table S1: Photopolymerization data including final conversions, induction times and maximum reaction rates for all samples measured by RT-FTIR spectroscopy (with and without TMPyP, with three different α -HAP concentrations and under air or inert atmosphere).

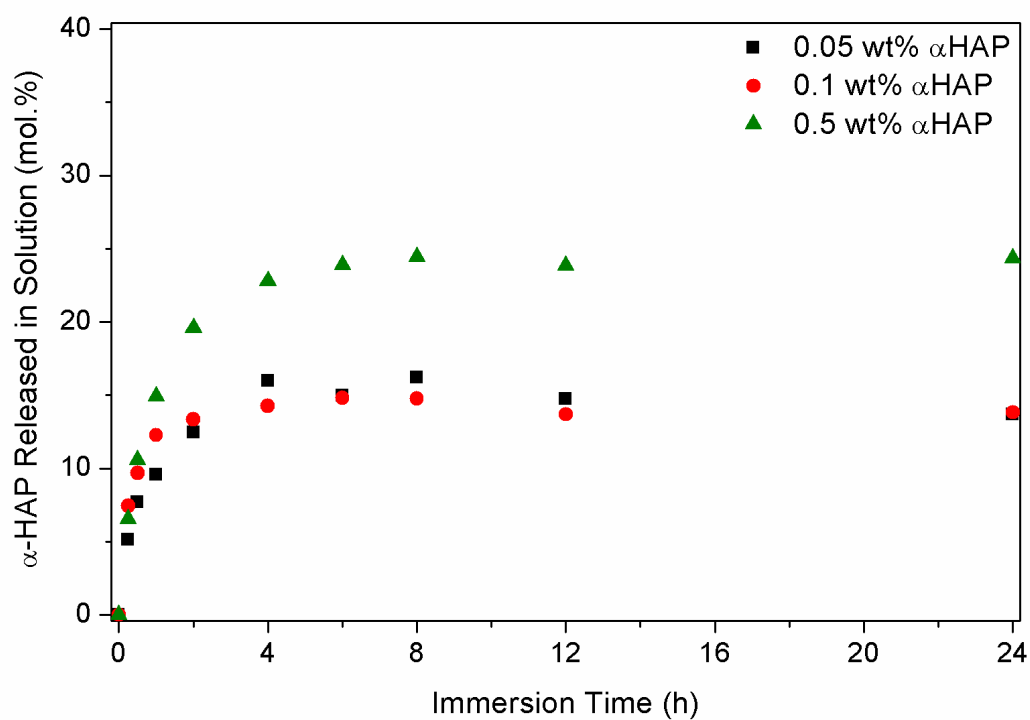


Figure S4: Molar percentages of α -HAP released into the PBS solution for the three photoinitiator formulations.

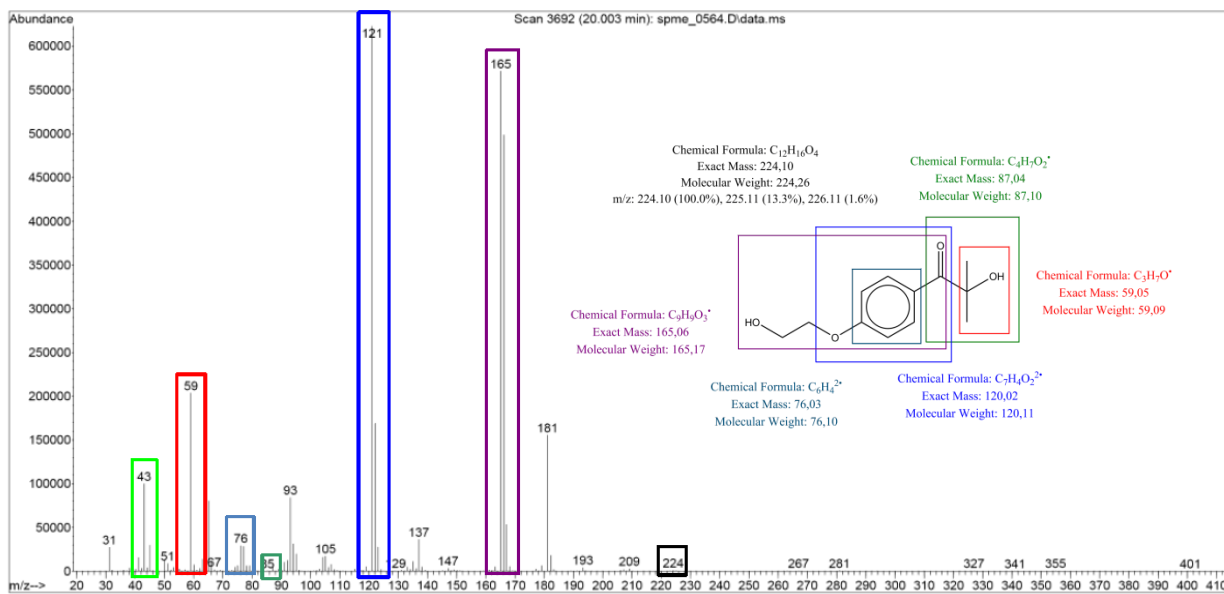


Figure S5: Mass spectrum of 2-Hydroxy-1-[4-(2-hydroxyethoxy) phenyl]-2-methyl-1-propanone and possible cleavage products.

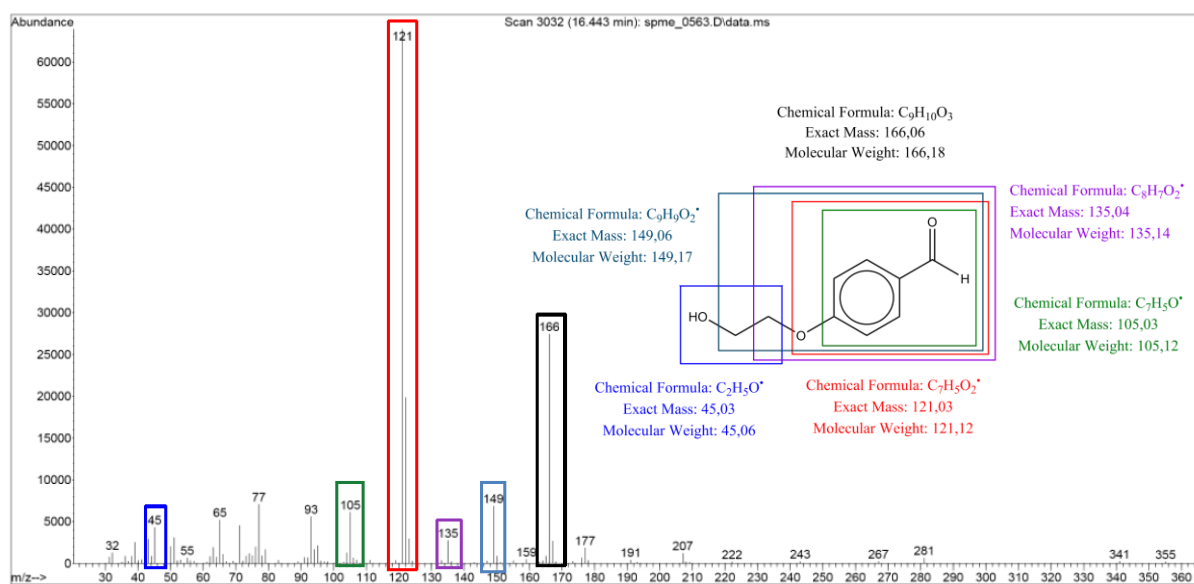


Figure S6: Mass spectrum of the main cleavage product of (4-(2-Hydroxy)ethoxy)benzaldehyde).

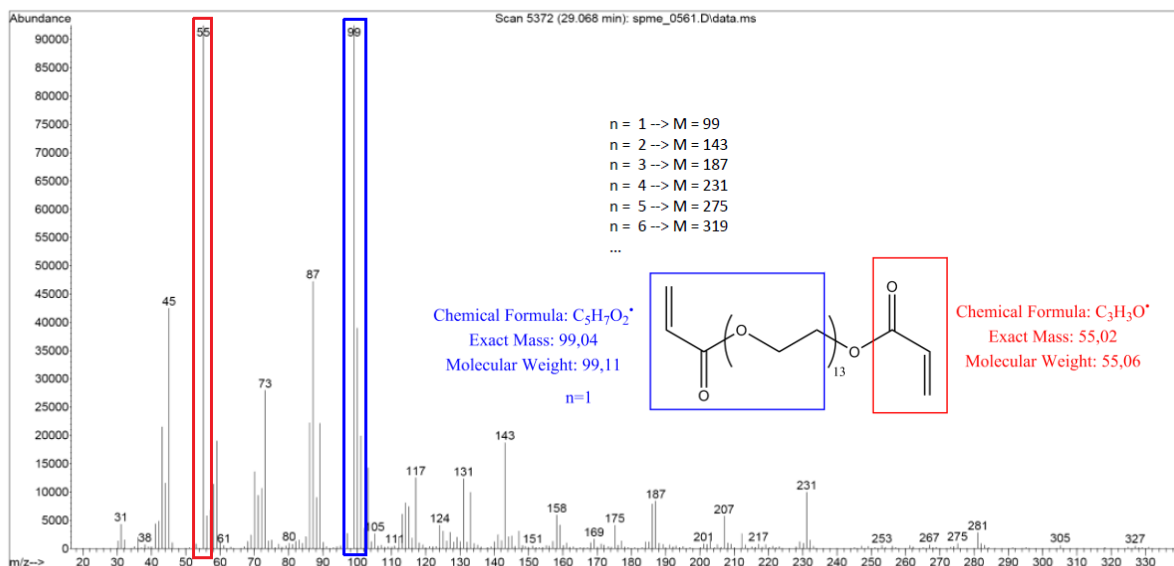


Figure S7: Mass spectrum of PEGDA 700 and its oligomers.

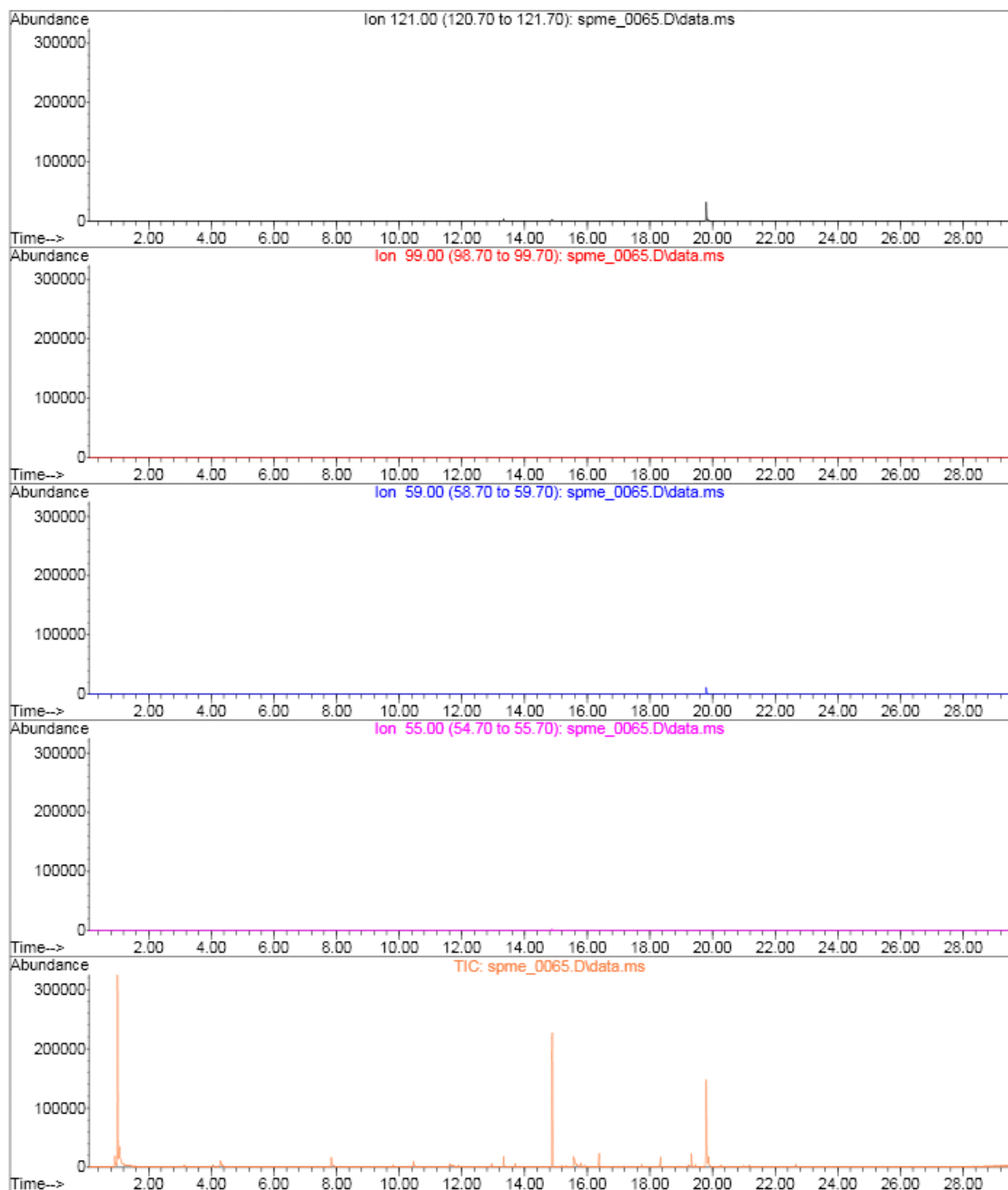


Figure S8: Total ion chromatogram (orange) and selected ion chromatograms at different mass to charge ratios (black $m/z = 121$, red $m/z = 99$; blue $m/z = 59$, pink $m/z = 55$) of the washing solution after 24 h.

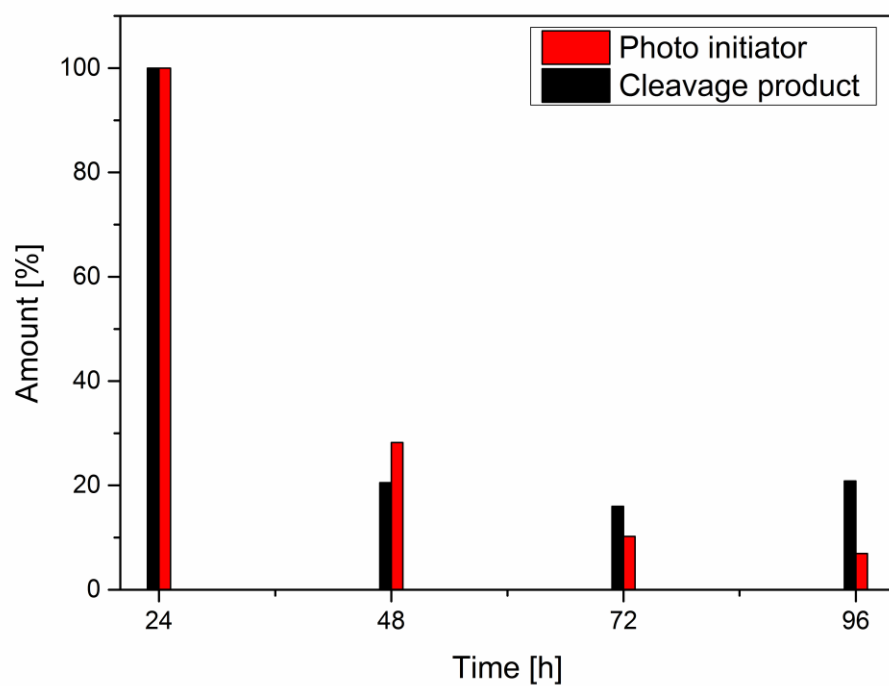


Figure S9: Relative concentration of photoinitiator (red) and photo cleavage product (black) in the washing solutions.