Impedance Spectroscopic Detection of Binding and Reactions in Acid-Labile Dielectric Polymers for Biosensor Applications

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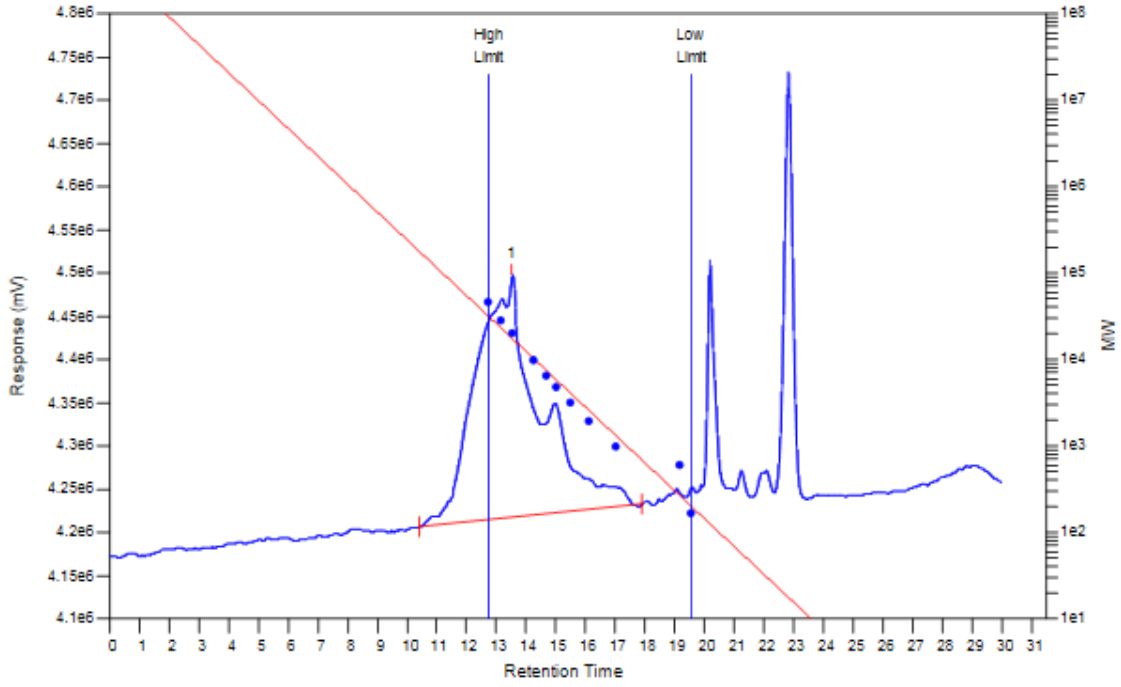
Supplementary Information

SI 1: (a)-(d) GPC of all polymers and analysis 1mg/ml in THF.

(a) PolyBMMA



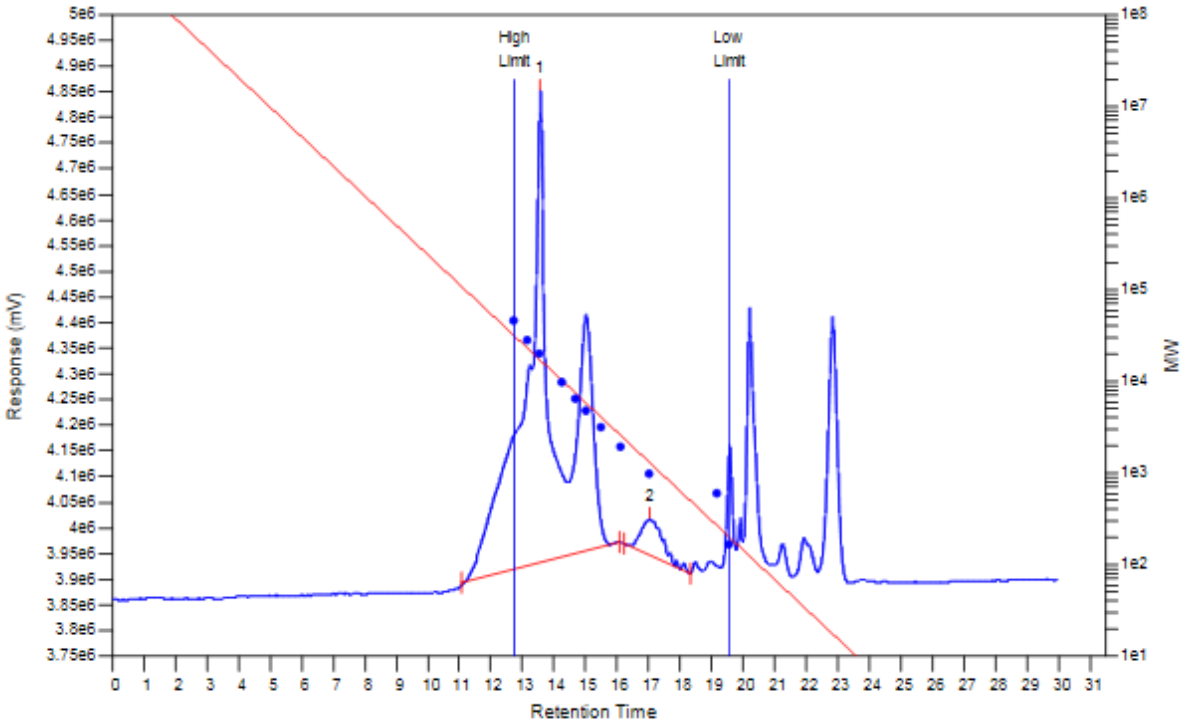
MW Averages

Peak No	Mp	Mn	Mw	Mz	Mz+1	Mv	PD
1	17728	10052	24194	40796	59341	22014	2.40688

Processed Peaks

Peak No	Name	Start RT (mins)	Max RT (mins)	End RT (mins)	Pk Height (mV)	% Height	Area (mV.secs)	% Area
1		10.43	13.51	17.89	280609	0	4.20277e+007	100

(b) PolyBMTrM



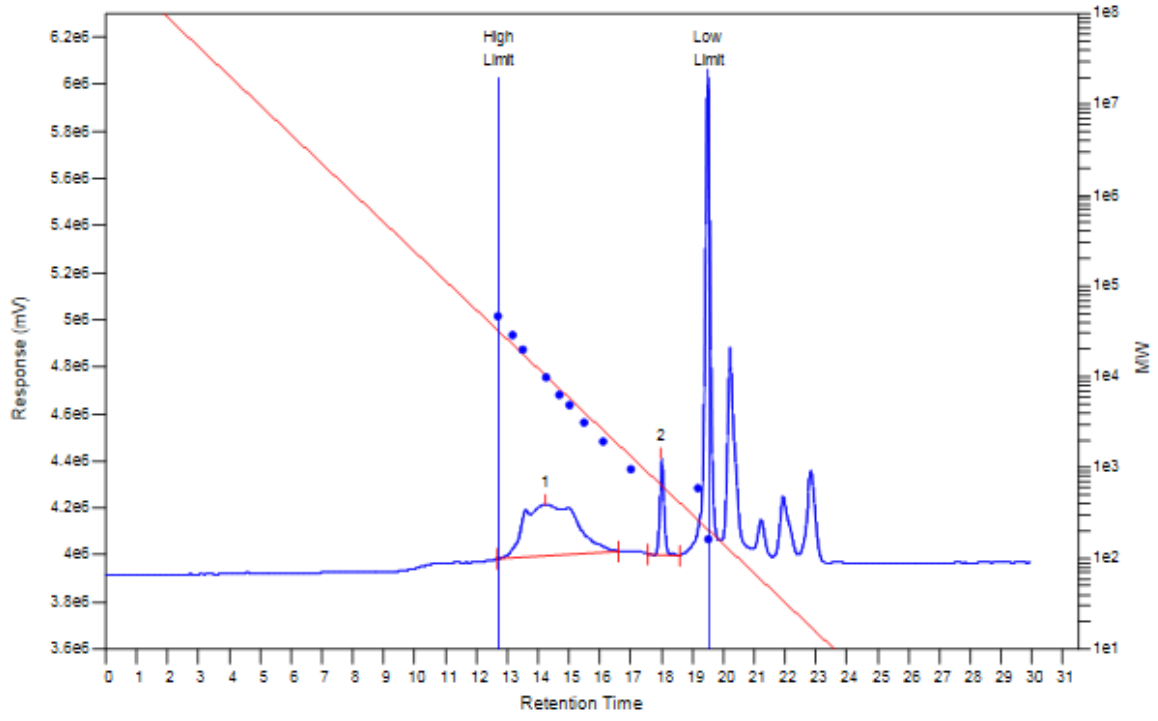
MW Averages

Peak No	Mp	Mn	Mw	Mz	Mz+1	Mv	PD
1	17467	12550	20666	31938	43905	19223	1.64669
2	1307	1152	1232	1303	1366	1221	1.06944

Processed Peaks

Peak No	Name	Start RT (mins)	Max RT (mins)	End RT (mins)	Pk Height (mV)	% Height	Area (mV.secs)	% Area
1		11.09	13.53	16.08	921581	92.883	6.51088e+007	95.0462
2		16.25	17.02	18.33	70614.9	7.11703	3.39346e+006	4.95379

(c) PolyBMMTrM



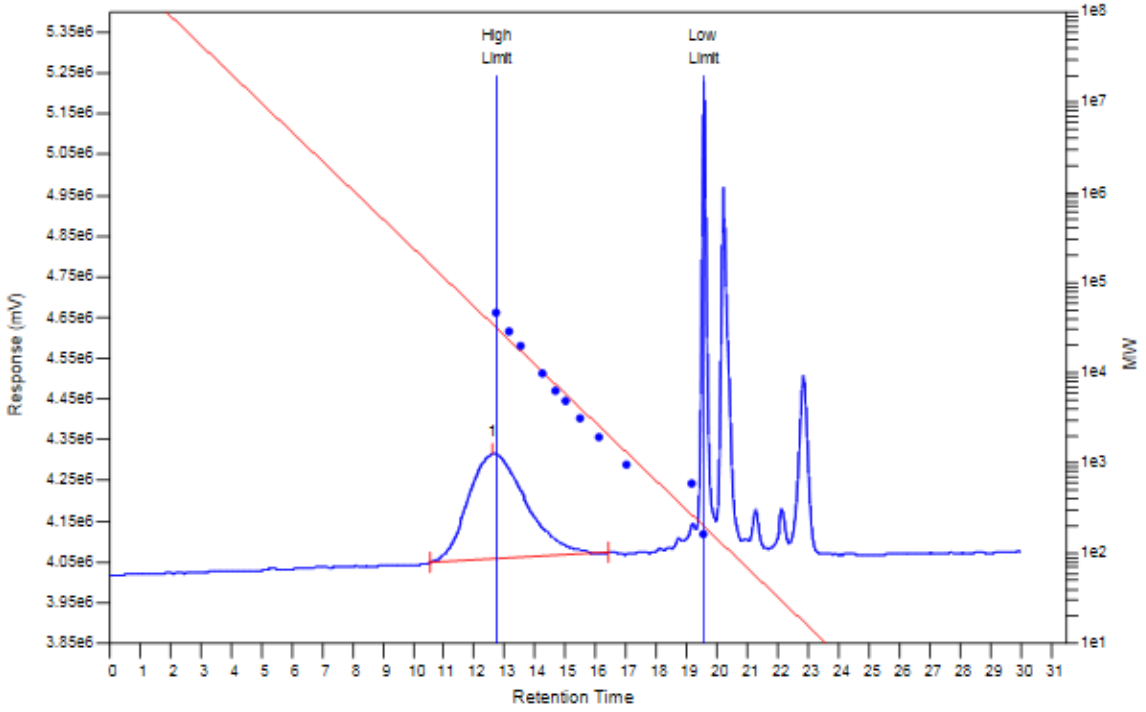
MW Averages

Peak No	Mp	Mn	Mw	Mz	Mz+1	Mv	PD
1	10493	7703	10104	12600	14845	9737	1.3117
2	641	635	637	639	641	637	1.00315

Processed Peaks

Peak No	Name	Start RT (mins)	Max RT (mins)	End RT (mins)	Pk Height (mV)	% Height	Area (mV.secs)	% Area
1		12.68	14.23	16.61	218795	34.6508	2.61754e+007	85.8781
2		17.55	17.99	18.57	412634	65.3492	4.30433e+006	14.1219

(d) PolyBMDTrM



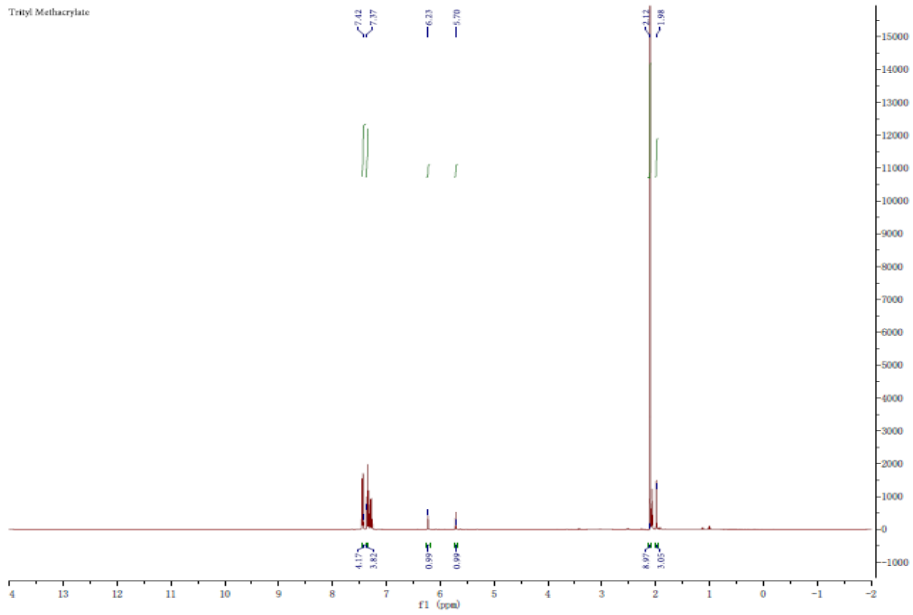
MW Averages

Peak No	Mp	Mn	Mw	Mz	Mz+1	Mv	PD
1	35089	23019	35722	49748	63798	33770	1.55185

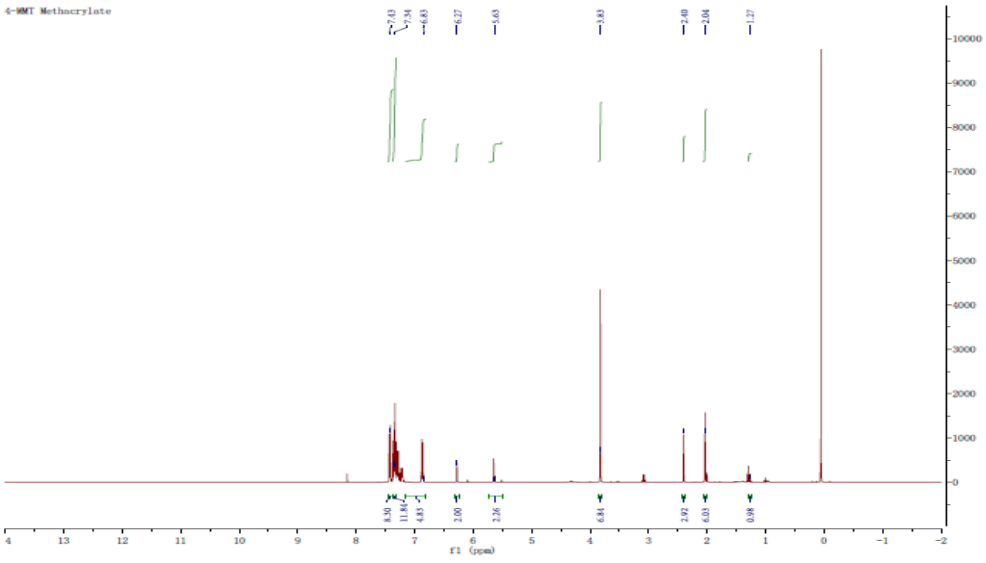
Processed Peaks

Peak No	Name	Start RT (mins)	Max RT (mins)	End RT (mins)	Pk Height (mV)	% Height	Area (mV.secs)	% Area
1		10.53	12.60	16.41	258997	0	3.41479e+007	100

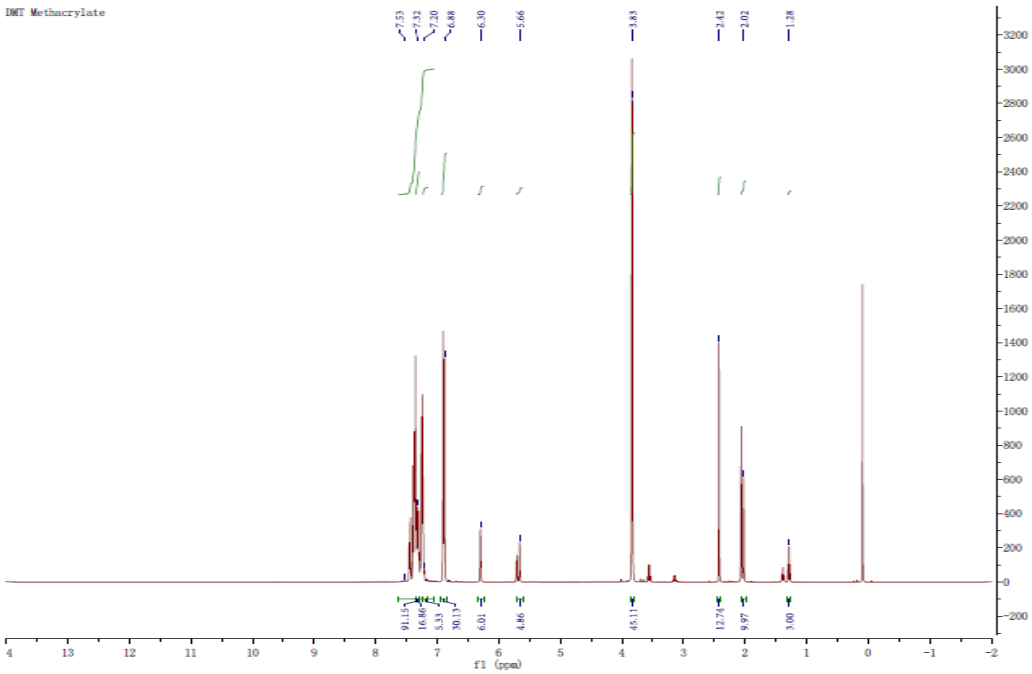
SI 2: (a)-(f) Proton NMR of each monomer and polymer. Trityl Methacrylate polymer



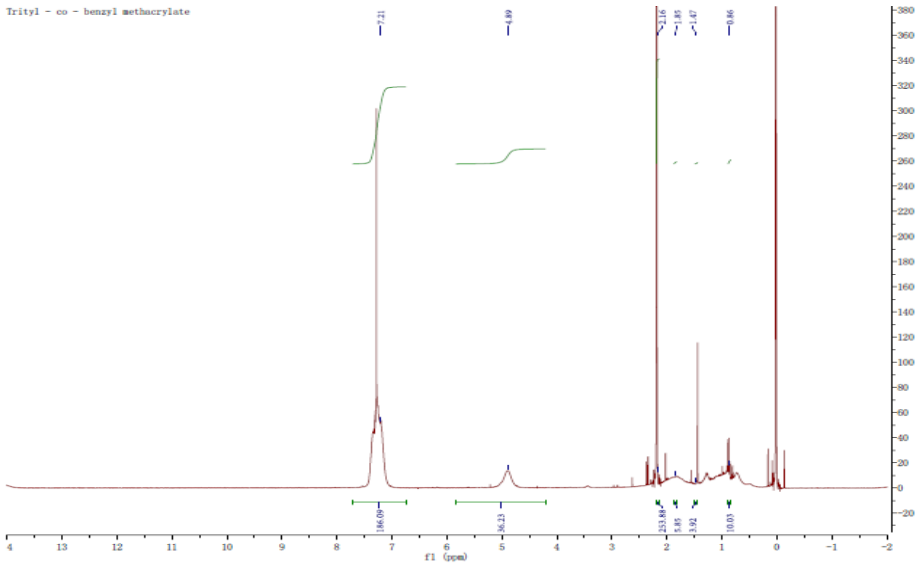
a.) Monomethoxytrityl Methacrylate- We see the methoxy group located near 3.8.



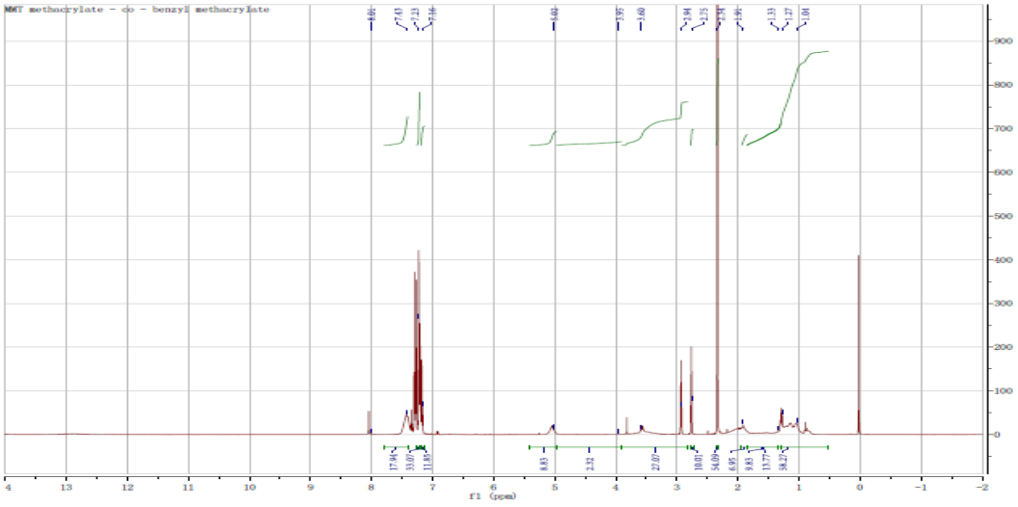
b.) Dimethoxytrityl Methacrylate- The methoxy group at 3.8 doubles due to there being twice as many groups



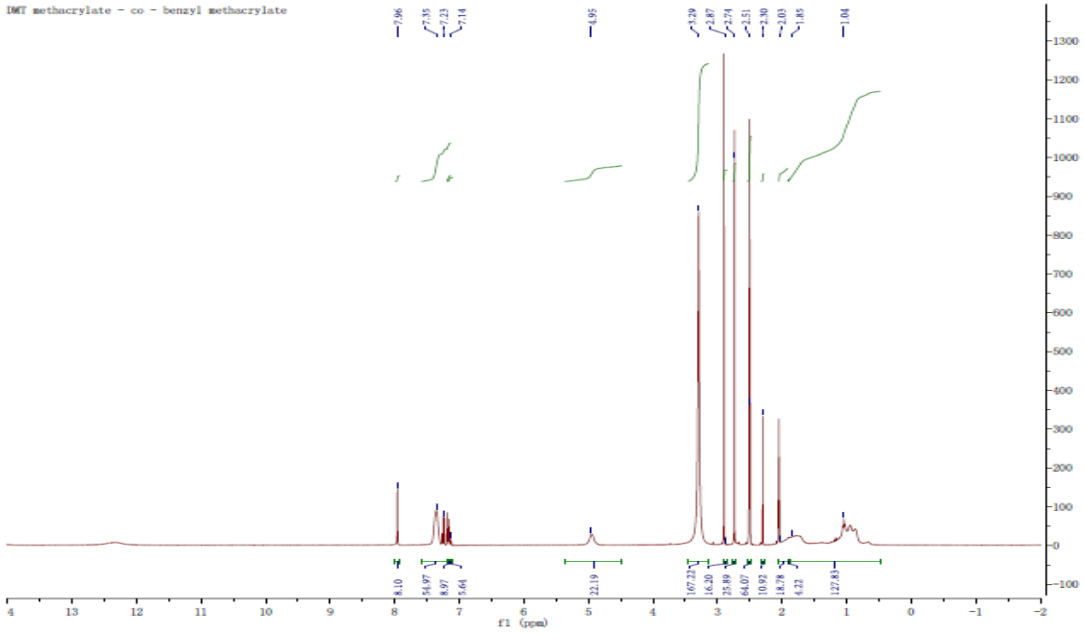
c.) PolyBMTrM- We compare the number of methyl groups to the quantity of trityl so that we can determine the percentage of each monomer.



d.) PolyBMMTrM- We can see the small 3.8 peak indicating the methoxy group, its size is correlated to the amount of monomer successfully included in the polymer.



e.) PolyBMDTrM- We can compare the methoxy group peak to the benzyl methacrylate to find the percentage of monomer incorporated.



SI 3 (Left) 3D image of DMT-based polymer exposed to pH 7.4 buffer. (Right) DIC image of same. Though not flat, this demonstrates that there is no pitting through the surface, but rather there are some small imperfections on top of the film.