Electronic Supplementary Material (ESI) for Biomaterials Science.

Supporting Information

Polymer characterization

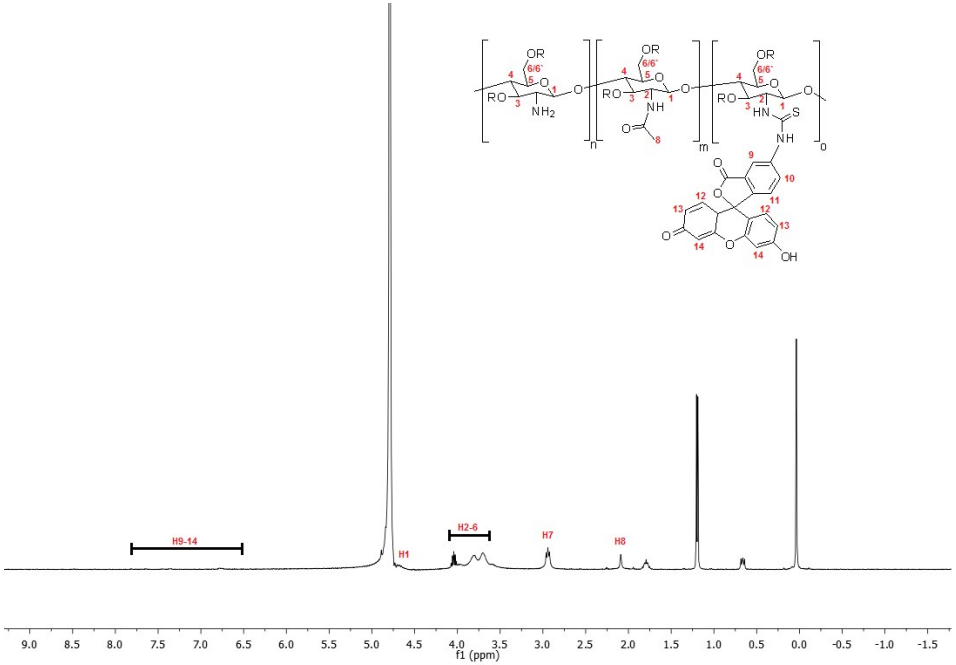

Figure S1. 1H-NMR spectra of Chitosan-FITC.

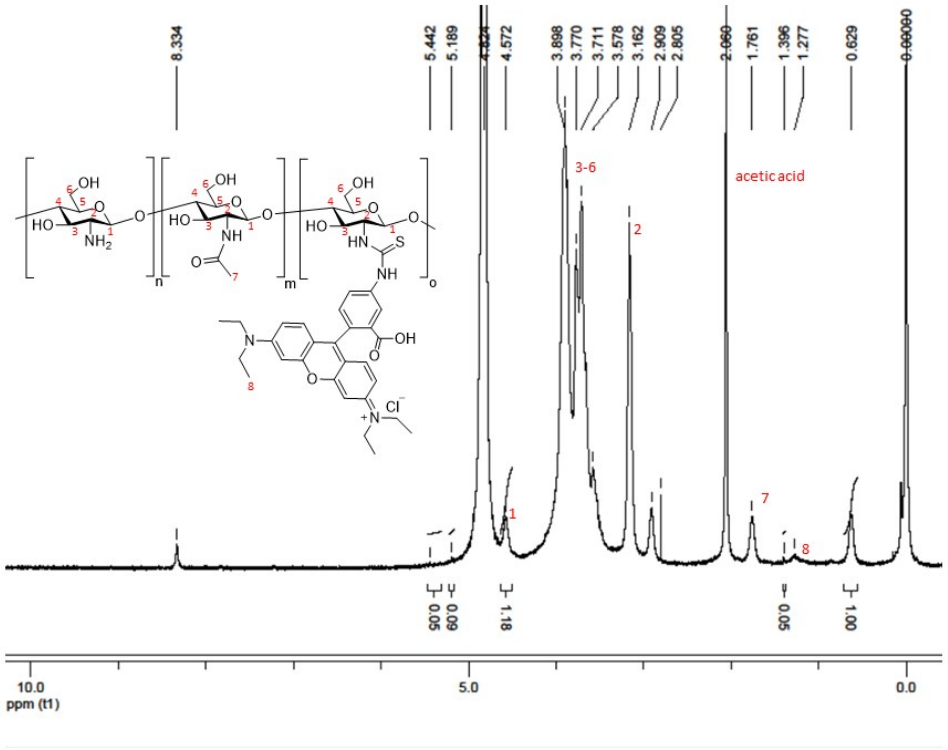

Figure S2. 1H-NMR spectra of Chitosan-Rhodamine.

Particle stability

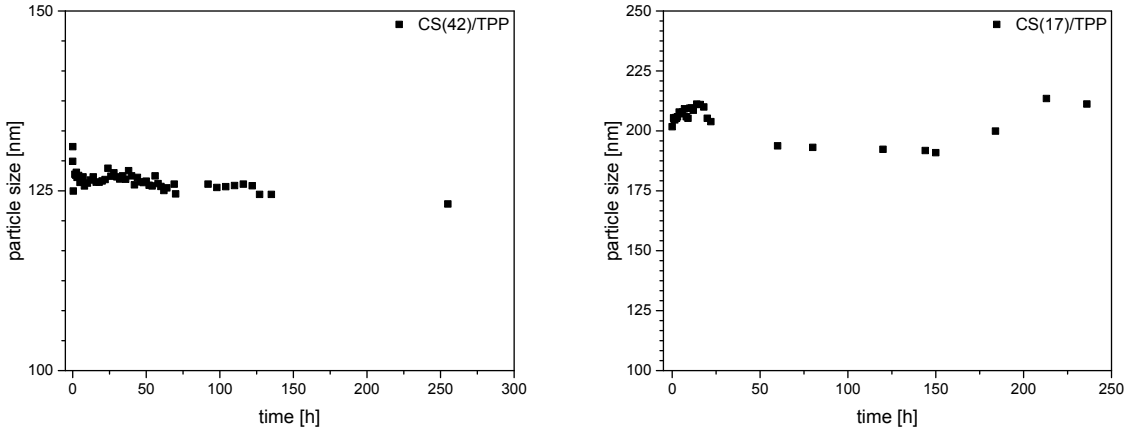

Figure S3. Particle size distribution of CS(42)/TPP (left) and CS(17)/TPP (right) nanoparticle for 10d at 25 °C

Stability measurements have been carried out by preparing the nanoparticles as mentioned. Average particle size was determined by DLS in defined intervals. No significant change in particle size average and PDI are observable after 10d. PDI measurements are not shown here. From this a stable particle suspension with no degradation can be concluded.

Influence of concentration

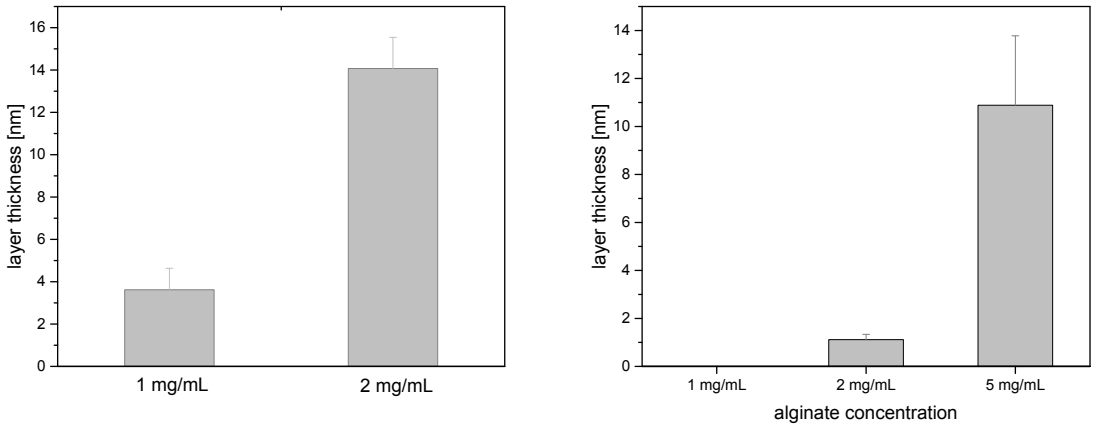

Figure S4. Influence of particle and polymer concentration to film layer thickness. (Left) CS(17)/TPP nanoparticles. (right) alginate concentration for second layer.

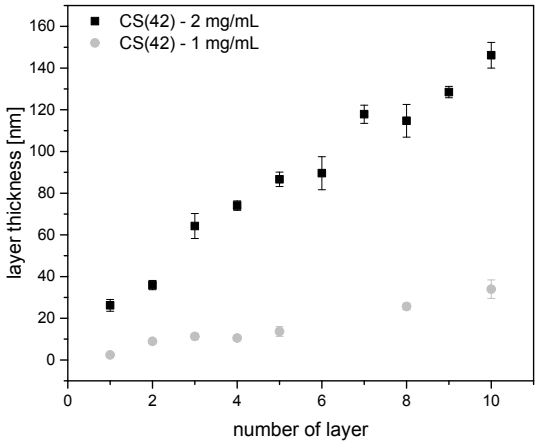

Figure S5. Influence of particle and polymer concentration to film layer thickness in a CS(42) and alginate multilayer system. (c(Alg) = 5 mg/mL).

Table S1: Elemental composition expressed as atomic ratio of the elements to carbon (C_{total}) of the coating as determined by XPS.

Sample	CS-Tpp		Si/CS-TPP/ Alg		Si/CS-TPP/Cho		Si/CS-TPP/Hya		Si/CS-TPP/ Alg/CS-TPP		Si/CS-TPP/ Cho/CS-TPP		Si/CS-TPP/ Hya/CS-TPP		Peak position		Tentative assignmen
	Mean	*Dev.*	**Mean**	*Dev.*	**Mean**	*Dev.*	**Mean**	*Dev.*	**Mean**	*Dev.*	**Mean**	*Dev.*	**Mean**	*Dev.*		*Dev.*	
O	**0,715**	*0,008*	**0,598**	*0,012*	**0,610**	*0,011*	**0,581**	*0,009*	**0,574**	*0,009*	**0,677**	*0,003*	**0,627**	*0,012*			
C1+C2	**0,221**	*0,003*	**0,239**	*0,000*	**0,253**	*0,002*	**0,231**	*0,013*	**0,321**	*0,006*	**0,247**	*0,007*	**0,241**	*0,021*	**285,00**	*0,00*	C-C, C-H
C3	**0,594**	*0,003*	**0,535**	*0,002*	**0,535**	*0,003*	**0,520**	*0,016*	**0,482**	*0,001*	**0,554**	*0,007*	**0,550**	*0,020*	**286,67**	*0,08*	C-O, C-N
C4	**0,164**	*0,007*	**0,194**	*0,001*	**0,187**	*0,005*	**0,231**	*0,007*	**0,172**	*0,013*	**0,183**	*0,003*	**0,185**	*0,001*	**288,24**	*0,07*	C=O. O-C-O, N-C=O
C5	**0,022**	*0,007*	**0,032**	*0,003*	**0,024**	*0,002*	**0,019**	*0,004*	**0,025**	*0,009*	**0,015**	*0,001*	**0,024**	*0,002*	**289,37**	*0,15*	O-C=O
C_{total}	**1,000**		**1,000**		**1,000**		**1,000**		**1,000**		**1,000**		**1,000**				
N1	**0,056**	*0,002*	**0,043**	*0,003*	**0,097**	*0,008*	**0,057**	*0,005*	**0,053**	*0,002*	**0,055**	*0,001*	**0,066**	*0,001*	**400,08**	*0,09*	Amine/Amide
N2	**0,060**	*0,004*	**0,024**	*0,002*	**0,030**	*0,000*	**0,003**	*0,001*	**0,037**	*0,001*	**0,052**	*0,002*	**0,038**	*0,002*	**401,99**	*0,09*	N+
N3							**0,003**	*0,000*			**0,002**	*0,000*			**407,21**	*0,13*	NOx
N_{total}	**0,116**		**0,067**		**0,126**		**0,062**		**0,090**		**0,108**		**0,104**				
P	**0,056**	*0,002*	**0,001**	*0,001*	**0,007**	*0,004*	**0,001**	*0,000*	**0,023**	*0,001*	**0,040**	*0,001*	**0,032**	*0,003*			
Si	**0,076**	*0,008*	**0,016**	*0,001*	**0,075**	*0,019*	**0,003**	*0,001*	**0,032**	*0,003*	**0,034**	*0,007*	**0,010**	*0,007*			
S			**0,002**	*0,001*	**0,017**	*0,000*	**0,001**	*0,000*	**0,004**	*0,000*	**0,005**	*0,000*	**0,001**	*0,001*			
Na			**0,017**	*0,005*	**0,003**	*0,000*	**0,044**	*0,005*									
Fe							**0,008**	*0,003*									
P/N	0,484		0,016		0,053		0,021		0,255		0,369		0,304				

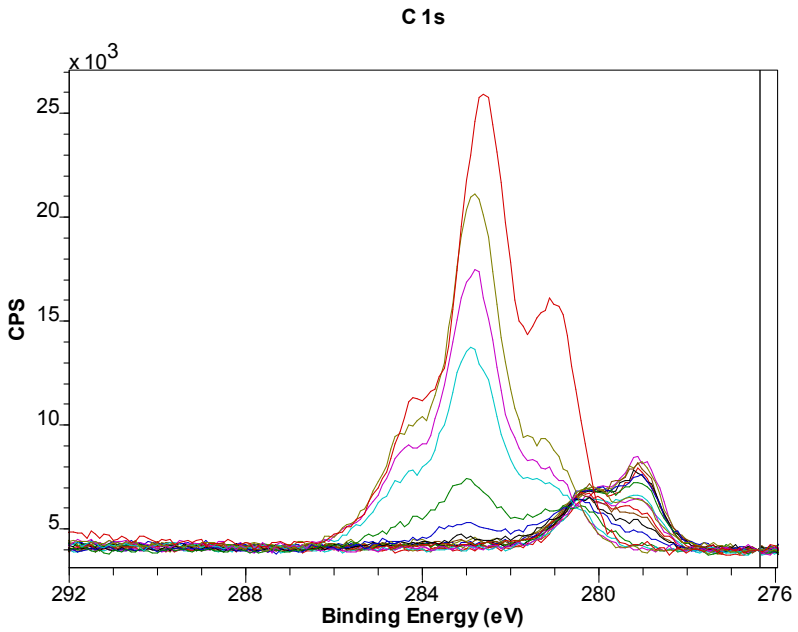

Figure S6. C1s high-resolution spectra for different etching times for a CS-TPP layer on Silicon (s. Figure 5a). The binding energy (BE) scale has not been corrected for the inevitable shift due to sample charging during analysis. Three observations are noteworthy. 1. While the very first (most intense) spectrum before etching displays a pronounced hydrocarbon peak (ca. 281 eV) this is reduced after just one short etch to a much weaker shoulder, evidence for the removal of some hydrocarbon-based surface contamination. Subsequent etches through the coating do not change the peak shape significantly (except for a reduction in intensity), indicating that etching does not degrade or alter the coating chemistry. Once the coating/Si-wafer interface has been reached, a new peak emerges at lower binding energies (below 280 eV); this new signal is attributed to SiC formed by the etching process.