Supporting information

Functional plasma polymerized surfaces for biosensing

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Table S1. Assignment of the signals from FT-IR spectra.

Wavenumbers [cm^{-1}]	Type of oscillations, intensity	Structural fragments
3730	ν_{OH}	R-OH, R-COOH
3465	ν_{OH}	R-OH, R-COOH
3200	ν_{OH}	R-OH
3080	C-H, ν_{as}, medium	$RH=CH_2$, $R_2=CH_2$,
2980	C-H, ν_{as}, strong; C-H, ν_s, medium	$-CH_3$, $RH=CH_2$
2950	C-H, ν_{as}, strong	$-CH_2-$
2925	C-H, ν_s, strong	$-CH_2-$
2880	C-H, ν_s, strong	$-CH_3$, $-CH_2-$
2850	C-H, ν_s, strong	$-CH_2-$, $R-O-CH_2-$
App 1800	C=C, overtone	$RH=CH_2$
1730	$\nu_{C=O}$	ROOR
1720	$\nu_{C=O}$	R-CH=CH-COOR, R-COOH
1640	$\nu_{C=C}$	$RH=CH_2$, $R_2=CH_2$,
1460	C-H, δ_{as}, medium, δ_s, strong	$-CH_3$, $-CH_2-$, $R-O-CH_2-$
1380	C-H, δ_s, strong	$-CH_2-$, $-CH_3$,
1275	ν_{C-O-C}, wide, very strong	R-COOR, R-CH=CH-COOR
1240	ν_{C-O-C}, wide, very strong	R-COOR
1185	ν_{C-O-C}, wide, very strong	R-COOR, R-CH=CH-COOR
1155	ν_{C-O-C}, wide, very strong	R-COOR
1085	ν_{C-O-C}, strong	R-O-R
1000	δ_{CH}, ip	$-RH=CH_2$
920	ν_{C-O-C}, strong, δ_{CH}, oop,	R-O-R, $-RH=CH_2$
880	δ_{CH}, ip	$R_2=CH_2$

760	$(CH_2)_x$, δ, medium (CH_2 rocking)	Alkane polymeric chains

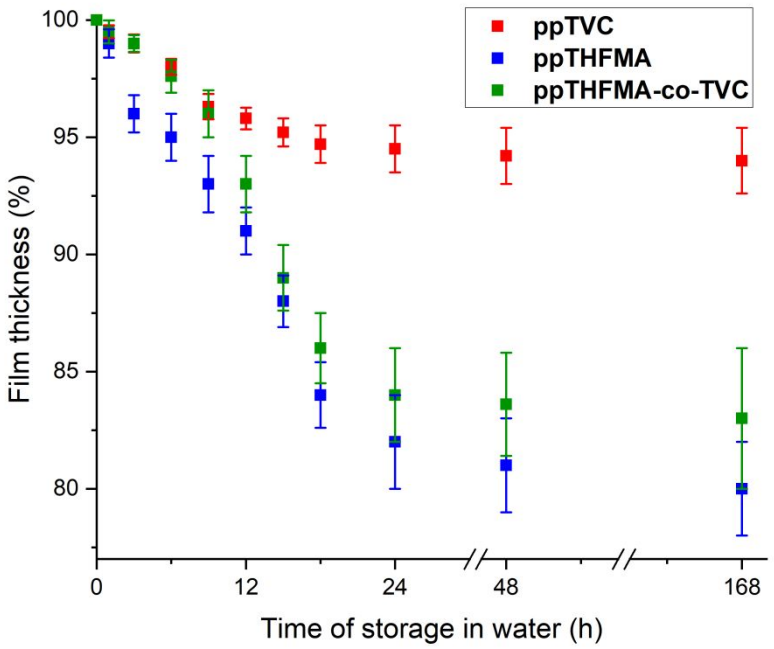

Figure S1. Thickness losses of the pp films after different times of immersion in water measured by ellipsometry.

Table S2. Elemental composition of the as-deposited films and after storage in water for 24 h determined by XPS.

	C (at.%)	O (at.%)	O/C
ppTVC as-deposited	75.9	24.1	0.32
ppTVC immersed	80.8	19.2	0.24
ppTHFMA as-deposited	68.9	31.1	0.45

ppTHFMA immersed	72.7	27.3	0.38
ppTHFMA-co-TVC as-deposited	71.1	28.9	0.41
ppTHFMA-co-TVC immersed	76.0	24.0	0.32

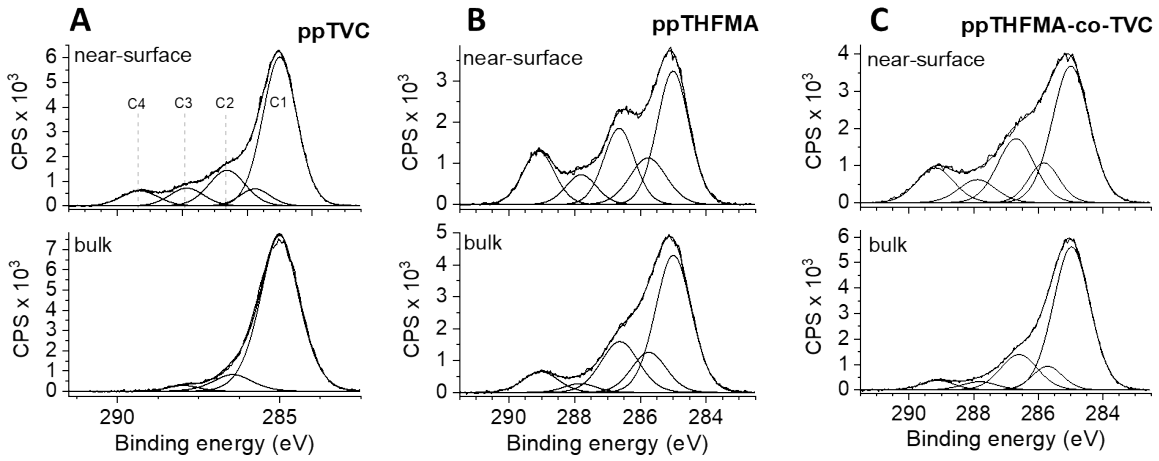

Figure S2. High-resolution C 1s XP spectra near surface (t = 0) and in the bulk of the ppTVC (A), ppTHFMA (B), and ppTHFMA-co-TVC (C) as-deposited pp films.

Table S3. Water contact angle results evaluated in SCA20 software.

Conditions	ppTVC	ppTHFMA	ppTHFMA-co-TVC
As-deposited	50° ± 5°	45° ± 2°	47° ± 2°
After 24 h of storage in water	76° ± 2°	68° ± 1°	69° ± 4°

Table S4. Root mean squared surface roughness results of pp films evaluated in Gwyddion software.

Conditions	ppTVC (nm)	ppTHFMA (nm)	ppTHFMA-co-TVC (nm)
As-deposited	0.33	0.35	0.74
After 24 h of storage in water	2	5	175

Table S5. Comparison of XPS analysis of the 120-140 nm (assigned as "thick") pp films and 20-40 nm (assigned as "thin") pp films.

Type of pp film	"thick" pp films (120–140 nm)				"thin" pp films (20–40 nm)			
	surface		bulk		surface		bulk	
	C at.%	O at.%	C at.%	O at.%	C at.%	O at.%	C at.%	O at.%
ppTVC	75.93	24.07	91.22	8.78	76.70	23.30	86.19	13.81
ppTVC 24h in water	80.83	19.17	91.61	8.38	82.37	17.58	86.35	13.65
ppTHFMA	68.87	31.13	78.65	21.35	71.88	28.12	77.04	22.96
ppTHFMA 24h in water	72.66	27.34	78.30	21.70	73.91	26.09	76.56	23.44
ppTHFMA-co-TVC	71.10	28.90	83.94	16.06	75.86	24.14	82.54	17.46
ppTHFMA-co-TVC 24 h water	75.97	24.03	82.46	17.54	79.10	20.90	81.90	18.10

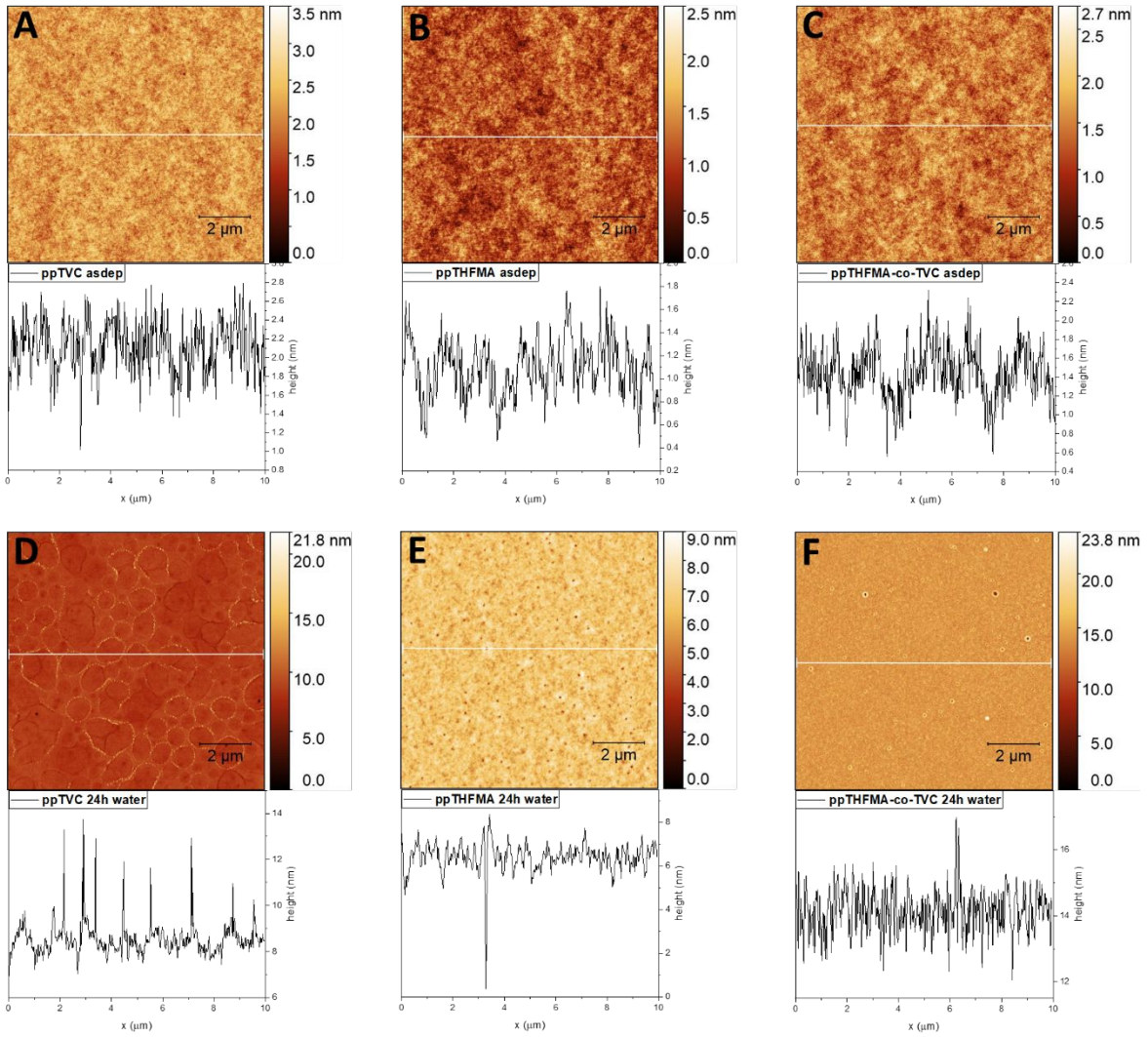

Figure S3. AFM images (10 µm × 10 µm) of thin ppTVC, ppTHFMA, and ppTHFMA-co-TVC films: A, B, C: as-deposited; D, E, F: after 24 h of storage in water. Corresponding height profiles are shown for each picture, which were extracted from the solid lines in the micrographs.

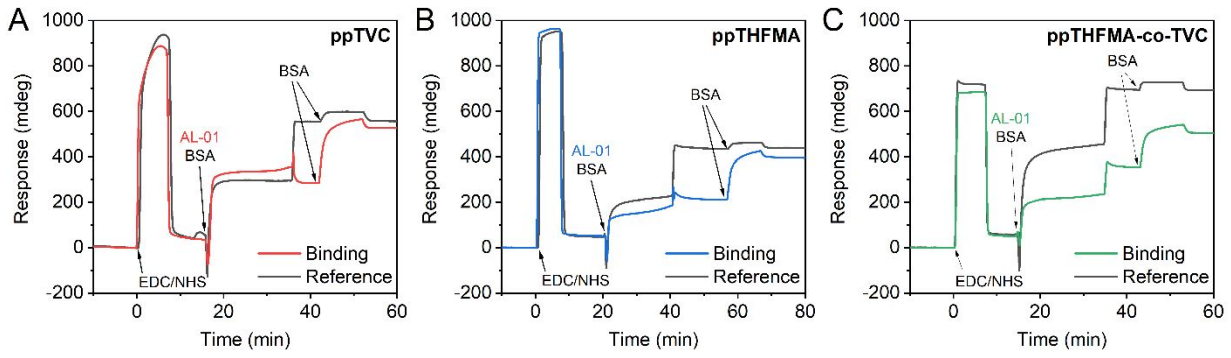

Figure S4. Ab immobilization procedure: a: ppTVC, b: ppTHFMA, c: ppTHFMA-co-TVC.

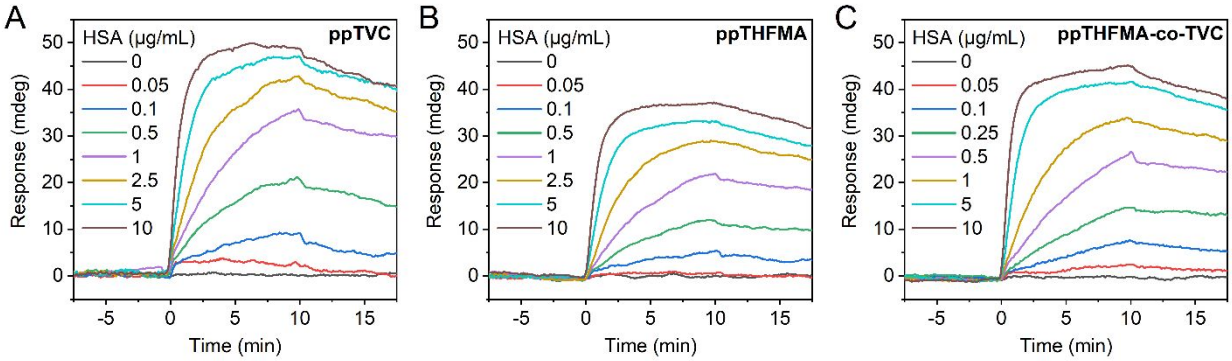

Figure S5. Sensorgrams obtained from the real data, reference channel was not subtracted.

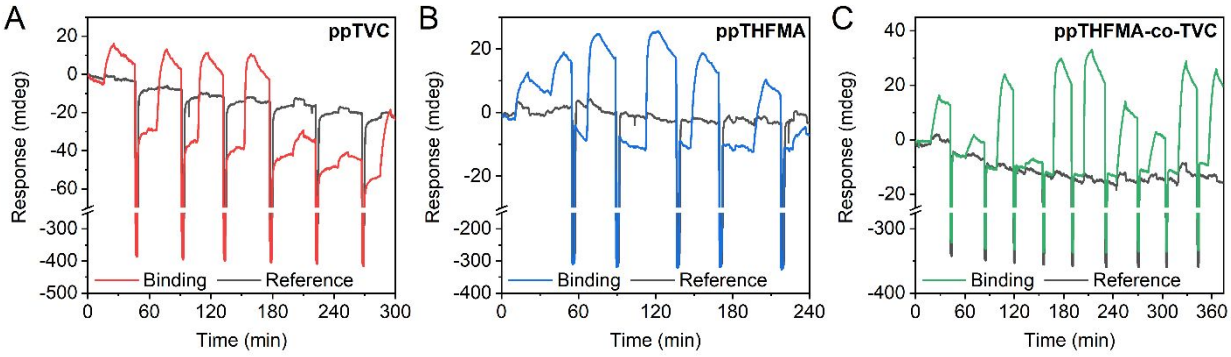

Figure S6. Regeneration of the sensors.