

Supporting Information

Characterization of poly(Sodium Styrene Sulfonate) Thin Films Grafted from Functionalized Titanium Surfaces

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Table S1: High-resolution O1s and C1s XPS peak fitting results for evaporated Ti, MPS modified Ti and pNaSS grafted Ti. The peaks are shown in figure 3.

	BE	Possible Species	fractional peak area		
			Evaporated Ti	MPS modified Ti	pNaSS grafted Ti
O1s	530.2	TiO ₂	0.84	0.67	0.59
	531.8	Ti- <u>Q</u> -H Ti- <u>Q</u> -Si C= <u>Q</u> S= <u>Q</u>	0.16	0.23	0.32
	533.1	C- <u>Q</u> -Si C- <u>Q</u> -C=O	---	0.09	0.09
C1s	285.0	<u>C</u> -C; <u>C</u> -H	Surface contamination	0.66	0.88
	286.5	<u>C</u> -O-C <u>C</u> -O-Si		0.22	0.12
	288.9	O- <u>C</u> =O		0.12	< limit of detection

Table S2: Negative secondary ion fragments detected in ToF-SIMS analysis of the evaporated titanium, MPS modified titanium and pNaSS grafted titanium surfaces.

Ion	Mass		Evaporated titanium	MPS modified titanium	pNaSS grafted titanium
TiO ₃ H	96.942	Ti	1.53	1.11	0.61
TiO ₃ H ₂	97.956		0.54	0.29	0.16
Ti ₂ OH ₂	113.918		0.09	0.04	0.03
TiO ₄ H ₂	113.955		0.11	0.09	0.06
Ti ₂ OH ₃	114.914		0.50	0.21	0.04
TiO ₄ H ₃	114.960		0.15	0.08	0.07
Ti ₂ OH ₄	115.927		0.23	0.09	0.02
TiSiO ₃ CH	136.941	MPS	---	0.4	0.09
TiSiO ₃ CH ₂	137.940			0.1	0.04
SiOCH ₂	57.988			0.05	0.03
SiOCH ₃	58.999			0.10	0.05
SiO ₂	59.970			1.30	0.20
SiO ₂ CH ₃	74.998			0.39	0.18
SiO ₃	75.970			0.67	0.05
C ₃ H ₅ O	57.038			0.33	0.02
C ₂ H ₃ O ₂	59.017			0.36	0.05
C ₄ H ₅ O ₂	85.038			0.20	0.02
SO ₂	63.967	NaSS	---	---	2.71
SO ₃	79.966				16.25
SO ₃ H	80.974				7.52
C ₂ HSO ₃	104.968				0.40
C ₅ H ₉ SO	117.039				0.26
C ₅ H ₁₁ SO	119.055				0.61
C ₆ H ₄ SO ₃	156.004				1.16
C ₆ H ₆ O ₃	158.011				0.10
C ₇ H ₆ SO ₃	170.028				0.57
C ₆ H ₆ SO ₃ Na	181.013				1.36
C ₈ H ₆ SO ₃	182.019				0.29
C ₈ H ₇ SO ₃	183.035				7.59
C ₈ H ₈ SO ₃	184.037				0.84
C ₈ H ₉ SO ₃	185.029				0.55
C ₈ H ₁₀ SO ₃	186.024				0.07
C ₇ H ₇ SO ₃ Na	194.024				0.08
C ₁₂ H ₃ O ₃	195.008				0.51
C ₁₃ H ₉ O ₂	197.042				0.29
C ₁₃ H ₁₁ O ₂	199.024				0.24
C ₈ H ₉ SO ₃ Na	208.036				0.04
C ₁₄ H ₉ O ₂	209.038				0.32
C ₈ H ₁₀ SO ₃ -C ₄ H ₅ O ₂	271.037				0.12
C ₈ H ₁₀ SO ₃ -C ₂ H ₃ O ₂ -C ₃ H ₄	285.069				0.10
C ₈ H ₁₀ SO ₃ -C ₂ H ₃ O ₂ -C ₃ H ₆	287.049				0.07
C ₁₅ H ₁₁ O ₆ S ₂	350.996				0.08
C ₁₅ H ₁₂ O ₆ S ₂	352.027				0.04
C ₁₅ H ₁₃ O ₆ S ₂	353.035				0.03
C ₈ H ₁₀ SO ₃ -C ₈ H ₄ -C ₂ H ₃ O ₂ -CH ₄	361.004				0.09
C ₈ H ₁₀ SO ₃ -C ₈ H ₄ -C ₂ H ₃ O ₂ -C ₂ H ₄	372.988				0.40
C ₈ H ₁₀ SO ₃ -C ₈ H ₄ -C ₂ H ₃ O ₂ -C ₃ H ₆	387.025				0.25
C ₄ H ₆ N-C ₈ H ₁₀ SO ₃ -C ₄ H ₅ O ₂	339.026	AIBN	---	---	0.02
C ₄ H ₆ N ₂ -C ₈ H ₁₀ SO ₃ -C ₄ H ₅ O ₂	353.035				0.03
C ₈ H ₁₂ N ₄ -C ₈ H ₁₀ SO ₃ -C ₄ H ₅ O ₂	434.999				0.01

Table S3: Positive secondary ion fragments detected in ToF-SIMS analysis of the evaporated titanium, MPS modified titanium and pNaSS grafted titanium surfaces.

Ion	Mass		Evaporated titanium	MPS modified titanium	pNaSS grafted titanium
Ti	47.945	Ti	2.98	1.94	0.36
TiH	48.953		1.73	0.92	0.14
TiO	63.943		3.63	2.64	0.36
TiOH	64.951		1.27	0.86	0.12
TiO ₂ H	80.946		1.26	0.94	0.23
TiO ₂	81.956		0.73	0.46	0.10
Ti ₂ O ₂	127.881		0.27	0.15	0.02
Ti ₂ O ₃	143.871		0.79	0.49	0.09
TiO ₂ Si	107.911		MPS	---	0.19
Si	27.976	0.20			0.10
Na	22.990	NaSS	---	---	23.80
C ₃ H ₆ N	56.049	AIBN	---	---	0.25
C ₈ H ₁₂ N	122.100				0.04
C ₈ H ₁₂ N ₂	136.119				0.04
C ₆ H ₁₂ N ₄	140.102				0.013
C ₈ H ₁₂ N ₄	164.104				0.02