

Supporting Information for: High Amorphous Vinyl Alcohol-Silica Bionanocomposites: Tuning Interface Interactions with Ionic Liquids

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This Supporting Information for Publication contains 4 figures and 1 table.

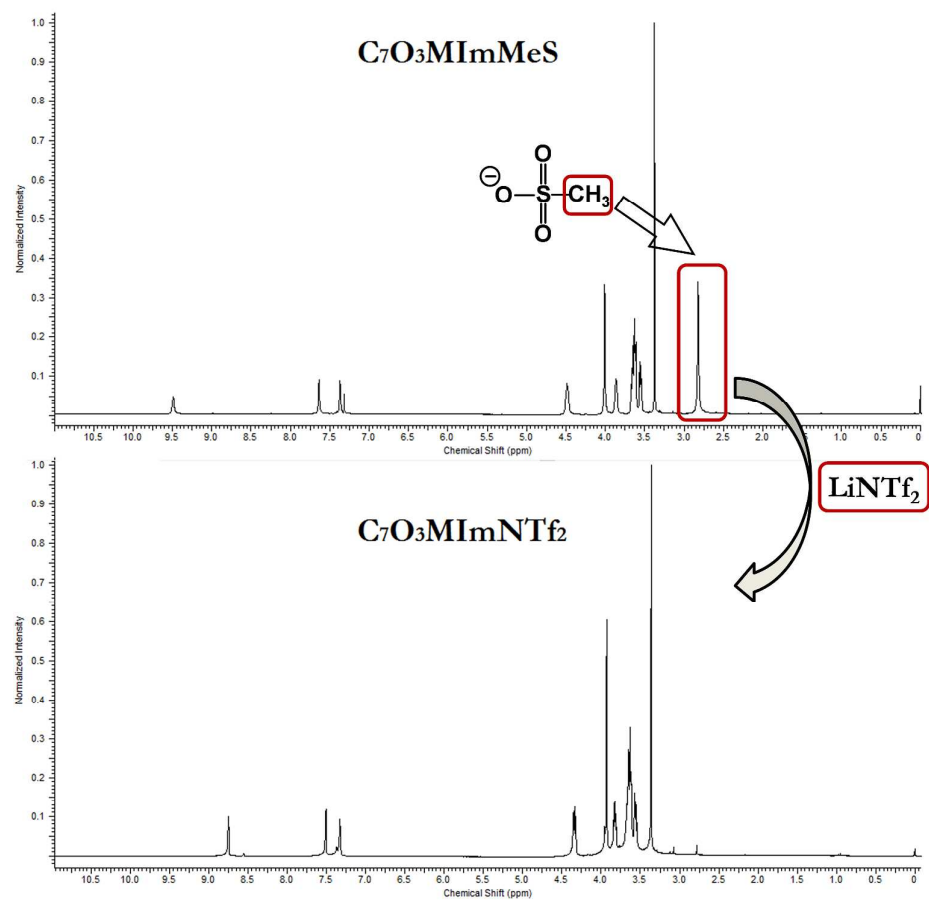


Figure S1. ^1H -NMR spectra of the anion exchange process from $[\text{C}_7\text{O}_3\text{MIm}][\text{MeS}]$ to $[\text{C}_7\text{O}_3\text{MIm}][\text{NTf}_2]$.

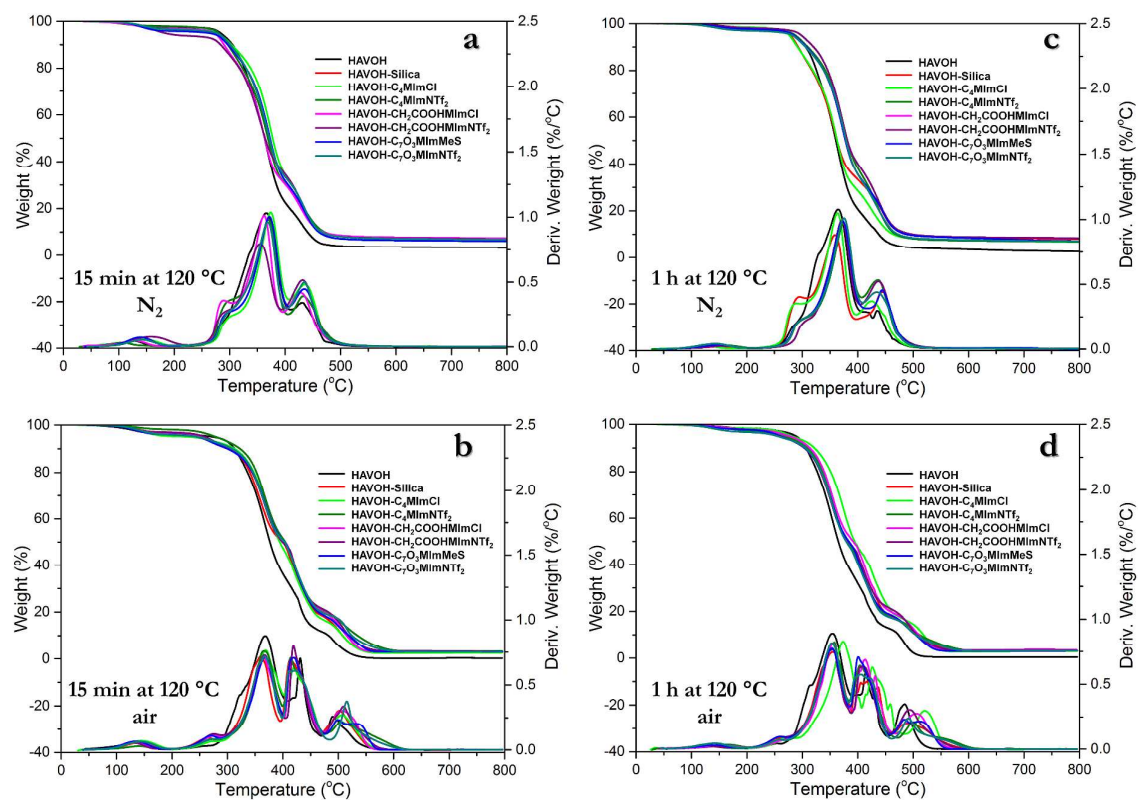


Figure S2. Representative TGA and DTG curves of HAVOH/silica/IL samples thermally treated for 15 min (a,c) or 1 h (b,d) at 120 °C under either a nitrogen (a,c) or air atmosphere (b,d).

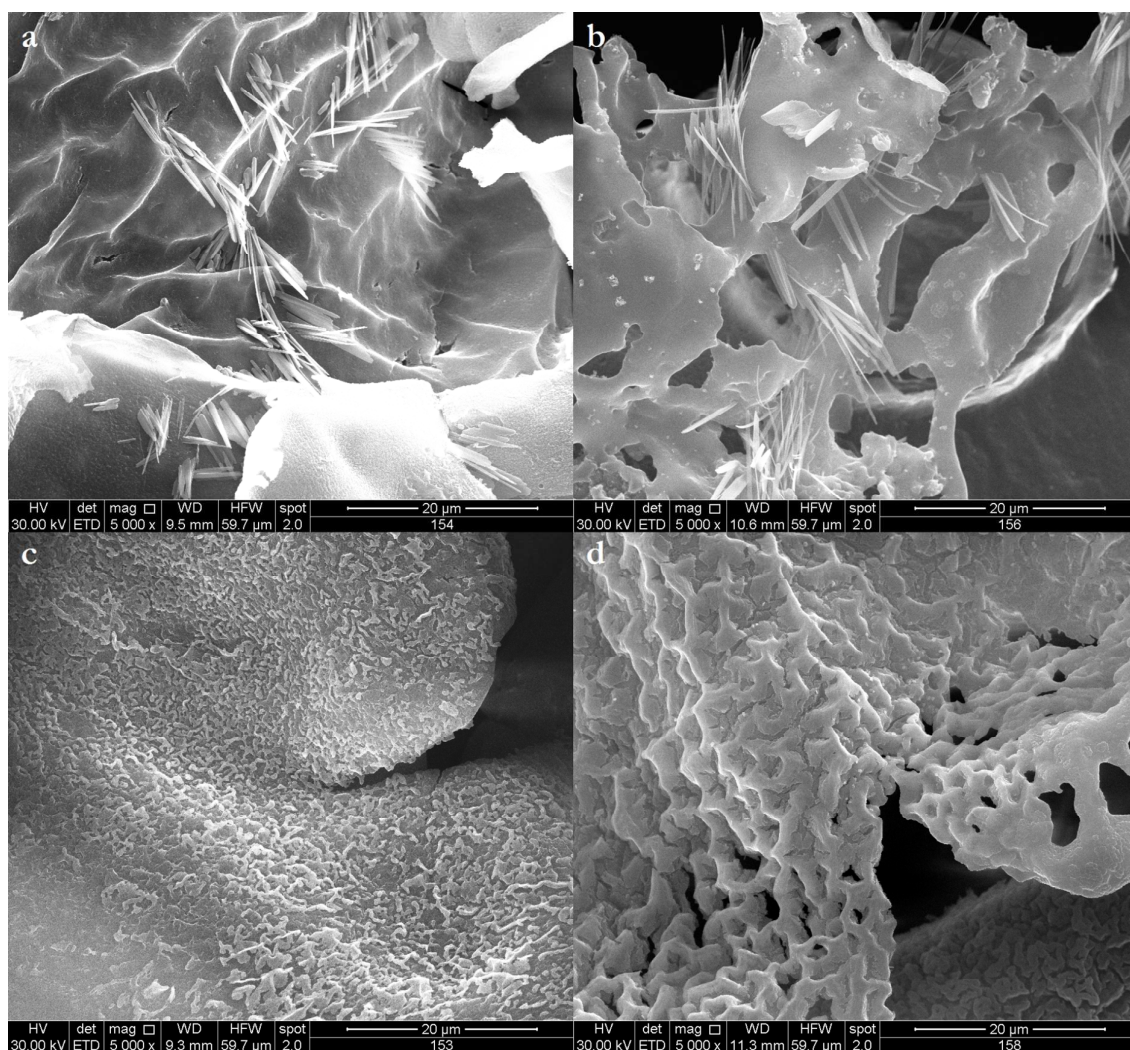


Figure S3. SEM images of microstructures obtained after calcination under oxidative atmosphere at 800 °C: (a) **HAVOH-C₇O₃MImMeS**; (b) **HAVOH-C₇O₃MImNTf₂**; (c) **HAVOH-CH₂CO₂MImNTf₂** and **HAVOH-C₄MImNTf₂**.

Table S1 SAXS scattering properties after two post-drying procedures; 15 min at 120 °C and 1 h at 120 °C (shadowed).

<i>Sample</i>	$(-G)^a$	q_G^b [nm ⁻¹]	q_P^c [nm ⁻¹]	$q_{\max}^d$ [nm ⁻¹]	δ [nm]	INV^g
HAVOH	-	-	0.47	0.74	8.52 ^e	0.15
	-	-	-	0.80	7.85 ^e	0.06
HAVOH-Silica	1.0	0.23	0.77	1.34	4.67 ^f	1.49
	1.1	0.22	0.86	1.32	4.74 ^f	1.06
HAVOH-C₄MIImCl	1.0	0.22	0.55	0.80	7.89 ^f	0.50
	1.1	0.22	0.79	1.18	5.32 ^f	0.77
HAVOH-C₄MIImNTf₂	1.2	0.24	0.70	1.10	5.69 ^f	0.87
	1.2	0.23	0.80	1.31	4.80 ^f	1.09
HAVOH-C₇O₃MIImMeS	1.2	0.31	0.91	1.26	4.99 ^f	1.27
	1.2	0.26	0.77	1.11	5.66 ^f	0.74
HAVOH-C₇O₃MIImNTf₂	1.1	0.22	0.89	1.03	6.11 ^f	0.95
	1.2	0.30	0.80	1.08	5.82 ^f	1.19
HAVOH-CH₂CO₂HMIImCl	1.1	0.22	0.73	2.00	3.14 ^f	1.96
	1.2	-	0.97	1.86	3.38 ^f	0.47
HAVOH-CH₂CO₂HMIImNTf₂	1.1	-	0.60	1.88	3.34 ^f	1.61
	1.2	0.32	0.84	1.84	3.41 ^f	0.66

^a slope in the fractal region;

^b scatter vector at the transition from the Guinier region to the fractal region;

^c scatter vector value at the transition from Porod to fractal region;

^d maximum SAXS intensity function from q vs $q^2I(q)$ plot;

^e the average distance between crystalline domains;

^f the average primary particle size;

^g integrated areas ($\int_{0.2}^{3.0} q^2I(q) dq$).

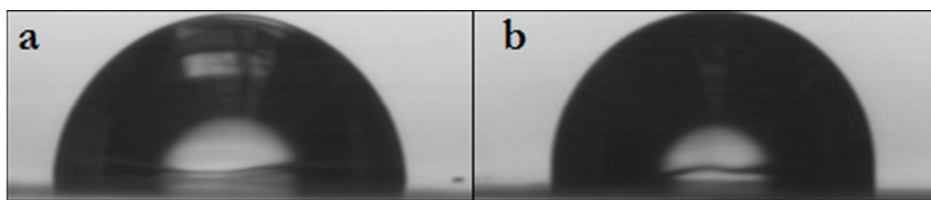


Figure S4. Contact angle measurements for (a) neat HAVOH and (b) **HAVOH-Silica**.