Supporting Information (SI) for:

Inverse Vulcanization of Trimethoxyvinylsilane Particles

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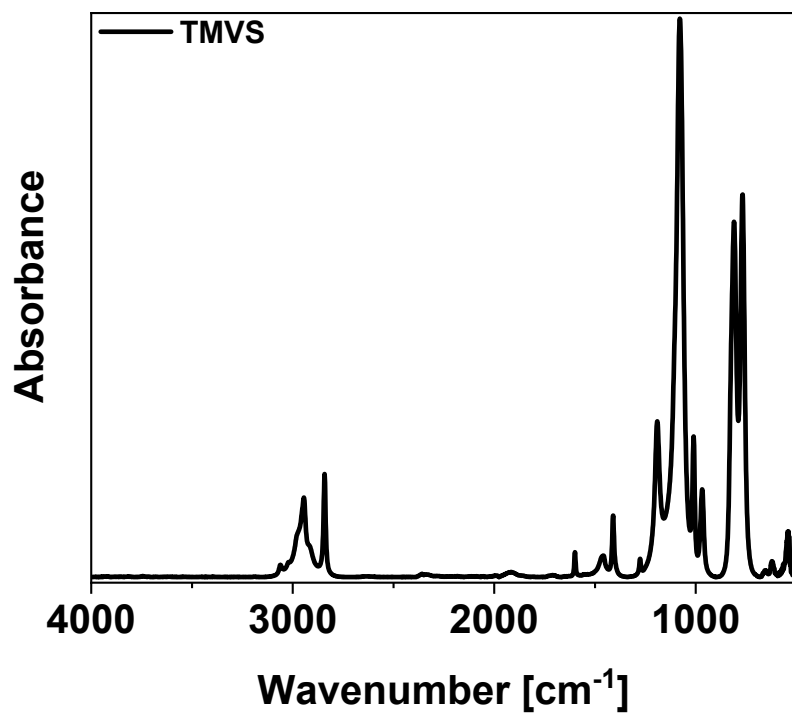
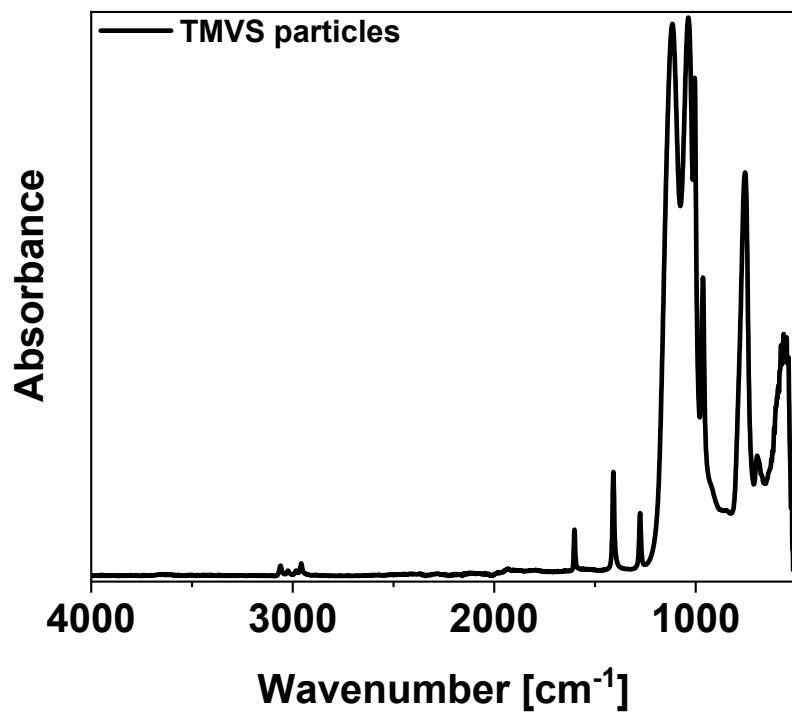Figure S1: ATR FT-IR spectrum of trimethoxyvinylsilane. Resolution: 2 cm^{-1}.

Figure S2: ATR FT-IR spectrum of vinylated trimethoxyvinylsilane particles. Resolution: 2 cm^{-1}.
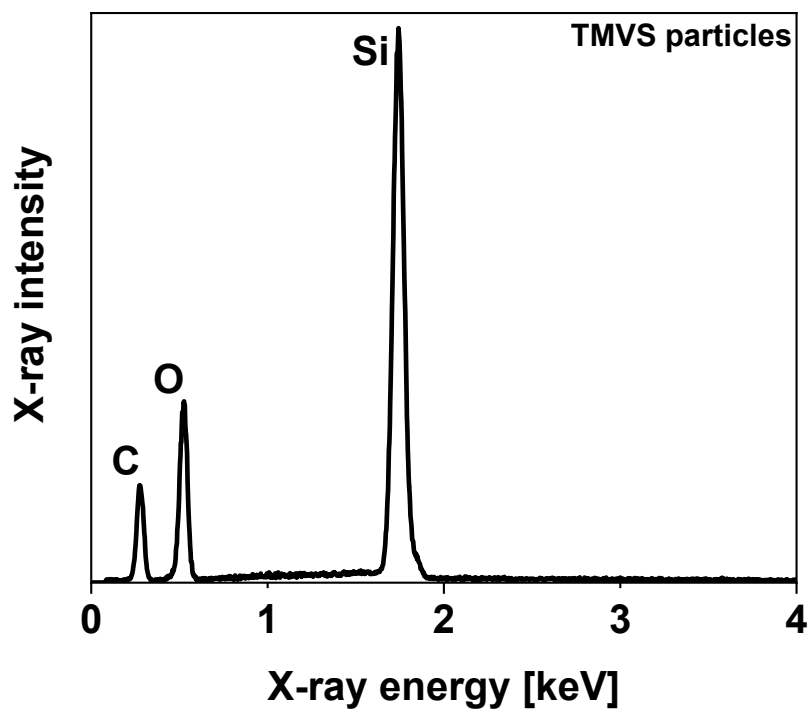
Figure S3: EDX spectrum of trimethoxyvinylsilane particles. Accelerating voltage: 10 kV.
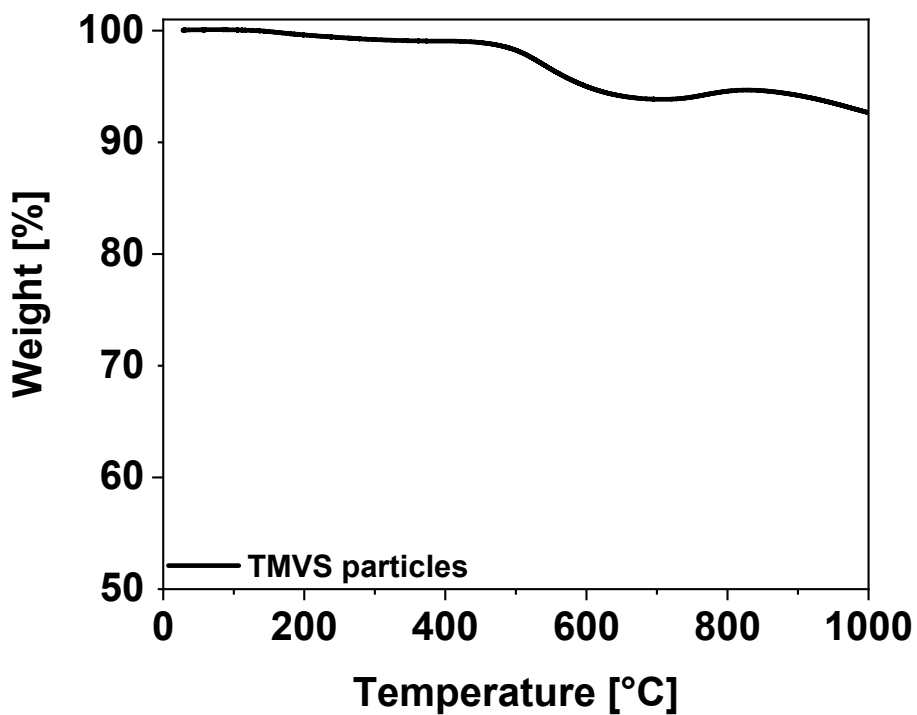

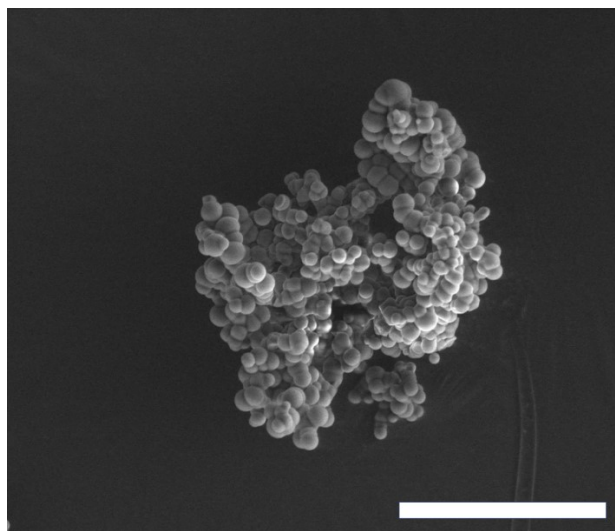Figure S4: Thermogram of vinylated trimethoxyvinylsilane particles. Heating rate: 10 K min^{-1}.

Figure S5: SEM image of vinylated trimethoxyvinylsilane particles after 240 min growing time. Scalebar: 20 μm.
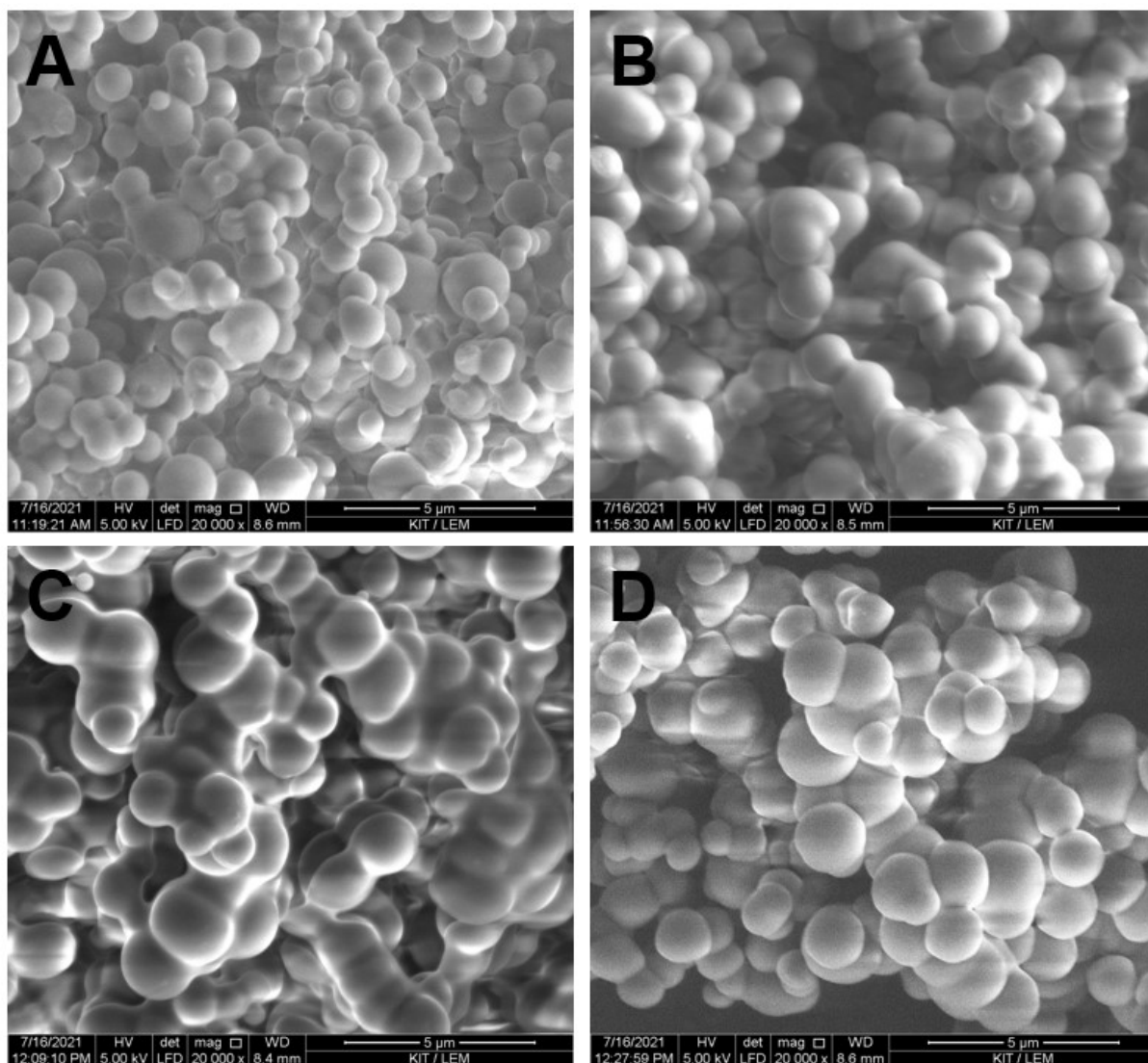

Figure S6: SEM images of vinylated trimethoxyvinylsilane particles after 30 (A), 60 (B), 120 (C), and 240 min (D) growing time. Average particle diameters are: 0.91 μm (SD: 0.41 μm), 1.28 μm (SD: 0.26 μm), 1.62 μm (SD: 9.47 μm), and 1.52 μm (SD: 0.43 μm), respectively. Scalebars: 5 μm.
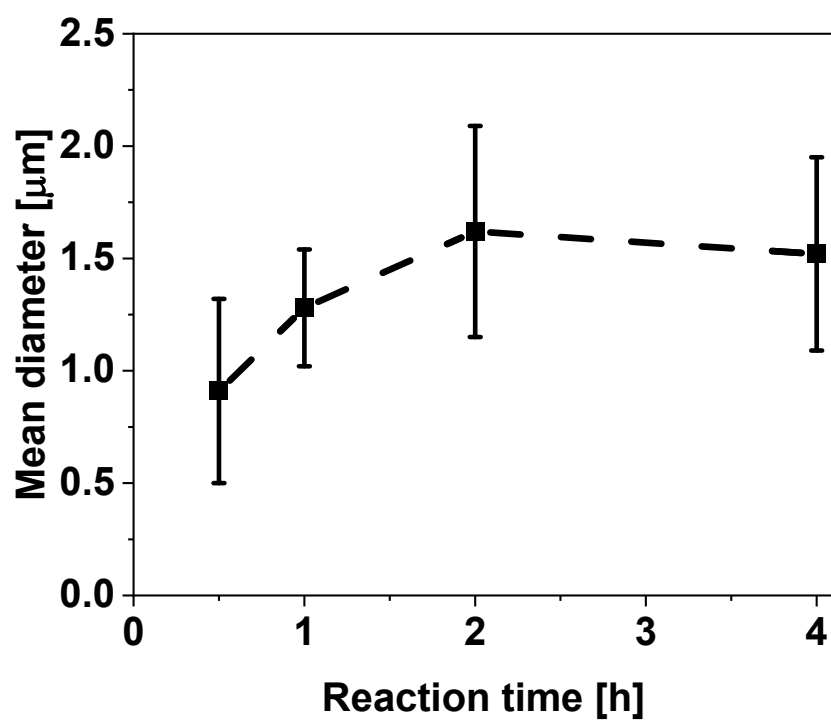
Figure S7: Respective average particle size of vinylated trimethoxyvinylsilane particles after 0.5, 1, 2, and 4 hours growing time. Standard deviation included as error bars.
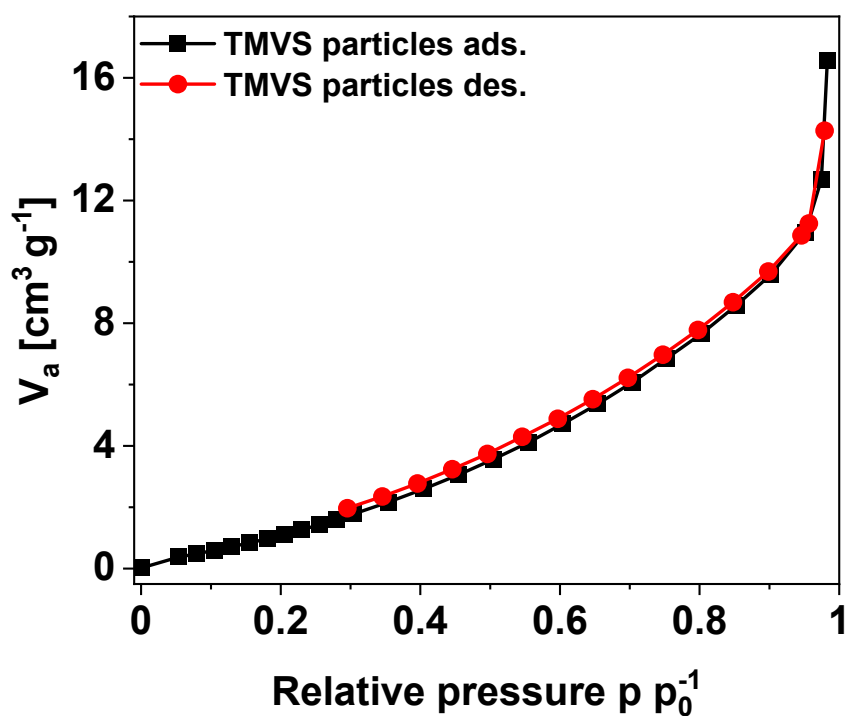

Figure S8: Adsorption (black) and desorption (red) isotherm of N_2 of TMVS particles.
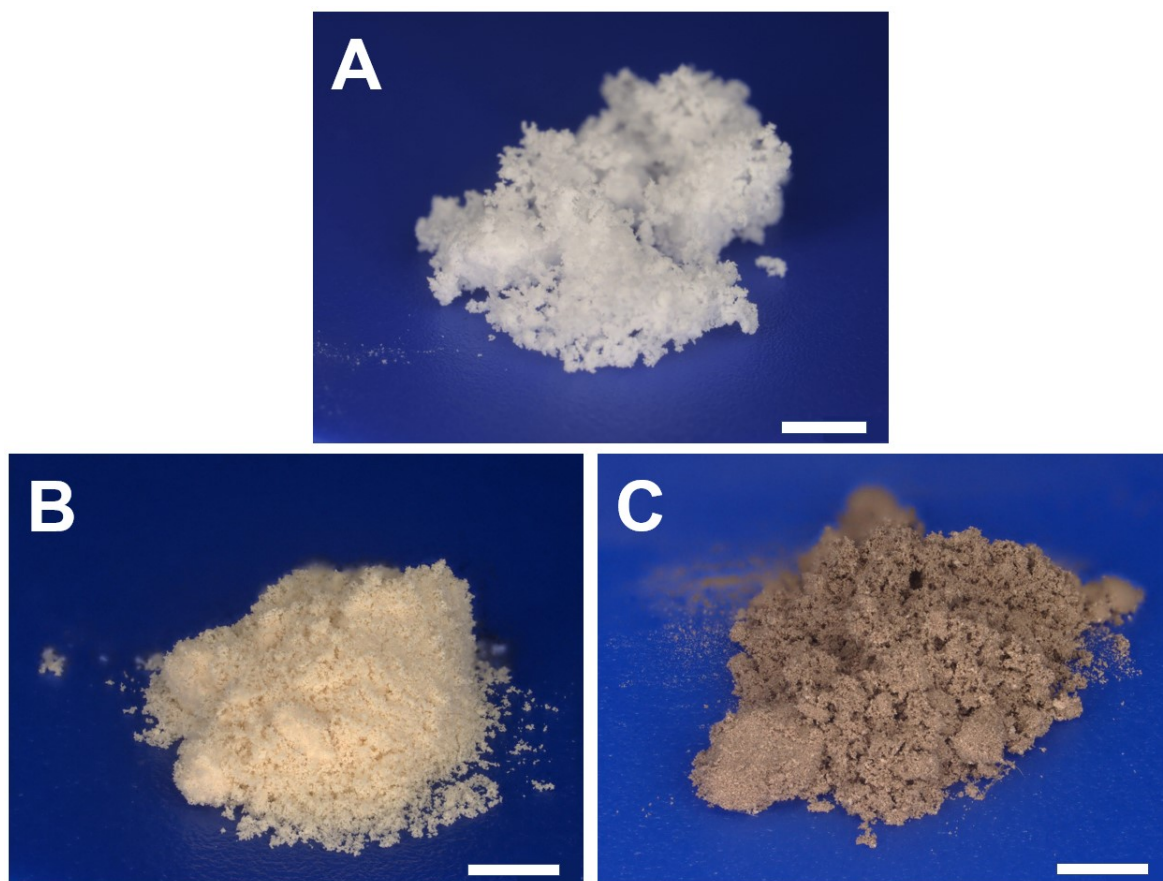
Figure S9: Digital light microscopy images of trimethoxyvinylsilane particles (A), inverse vulcanized trimethoxyvinylsilane-sulfur particles (B), and post-modified trimethoxyvinylsilane-sulfur-*N*-vinylimidazole particles (C). Scalebars: 2 mm (A) and 1 mm (B and C).
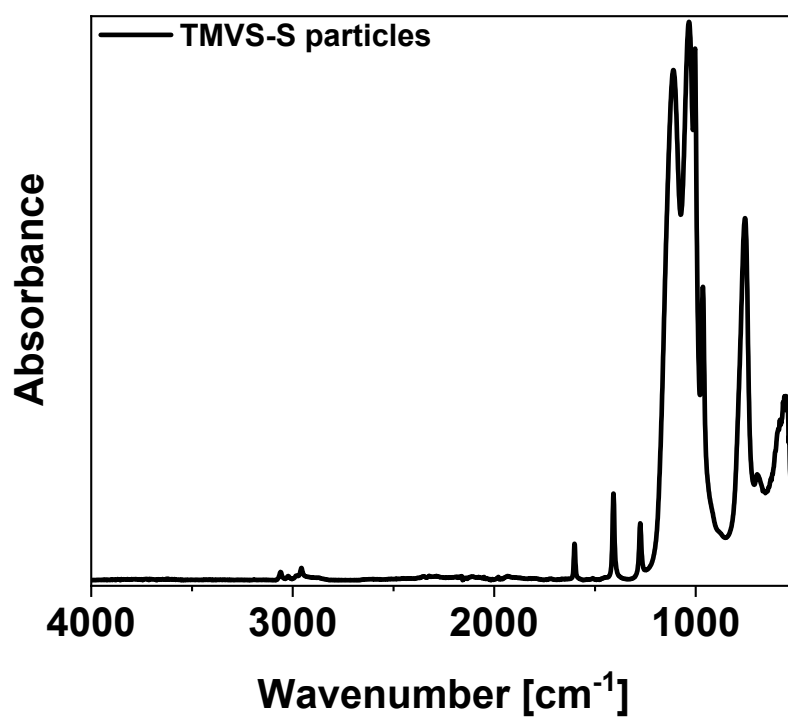

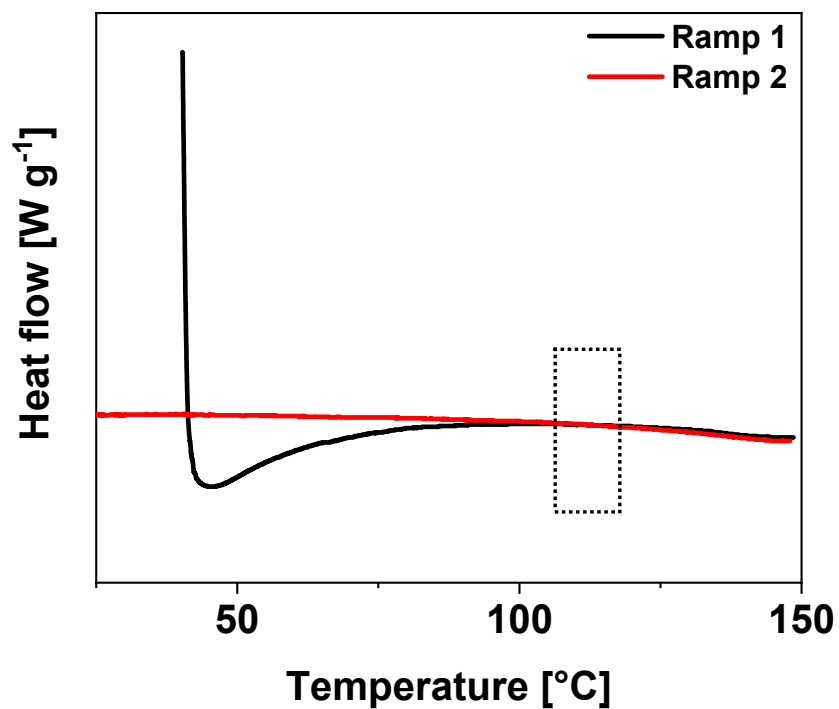Figure S10: ATR FT-IR spectrum of inverse vulcanized trimethoxyvinylsilane-sulfur particles. Resolution: 2 cm^{-1}.

Figure S11: DSC curves of TMVS-S particles. The melting area of residual sulfur is highlighted by the dotted line. Heat rate: 10 K min^{-1}. Exo up.
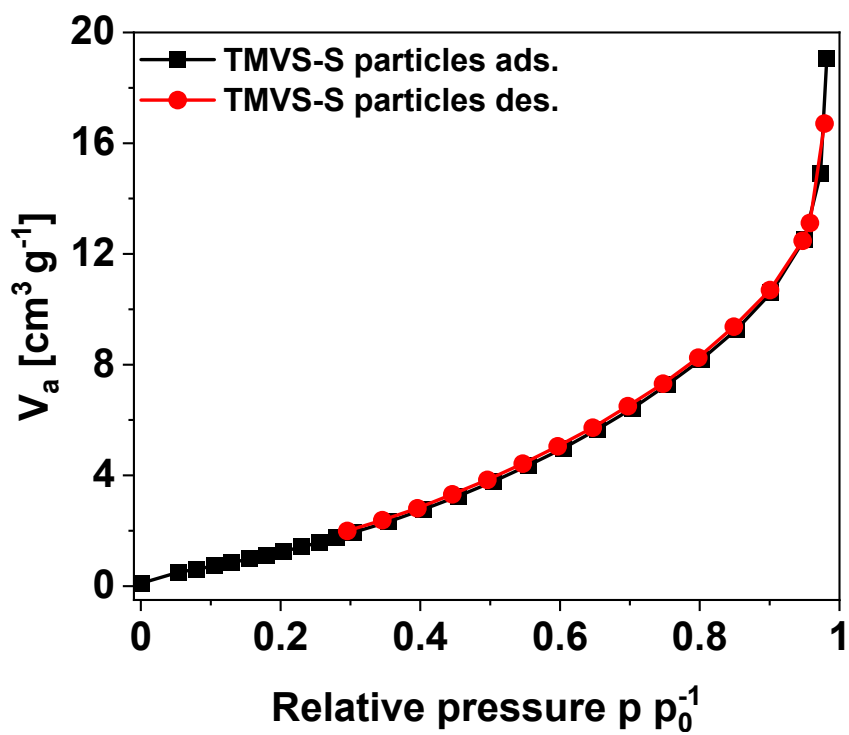

Figure S12: Adsorption (black) and desorption (red) isotherm of N$_2$ of TMVS-S particles.
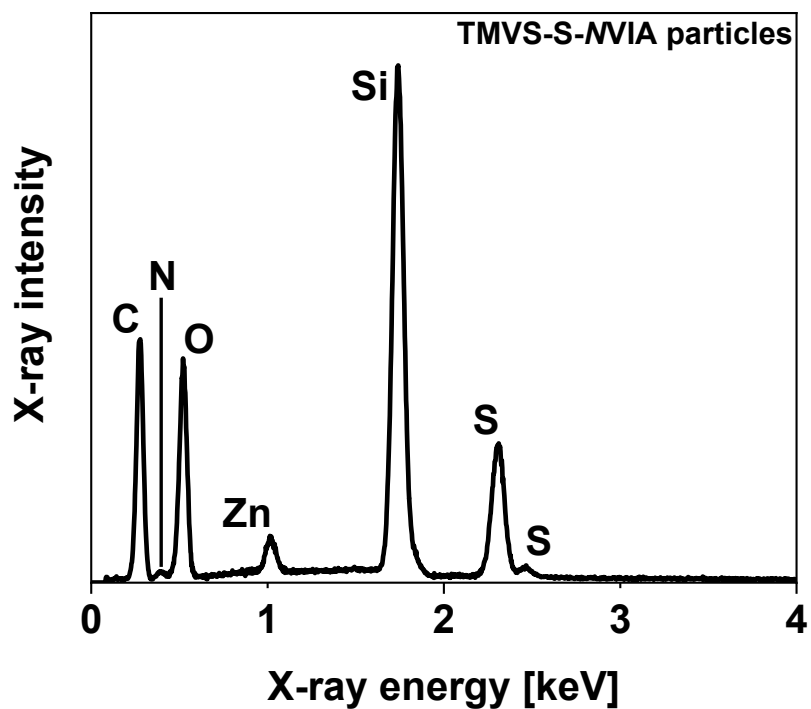
Figure S13: EDX spectrum of trimethoxyvinylsilane-sulfur-*N*-vinylimidazole particles. Accelerating voltage: 10 kV.
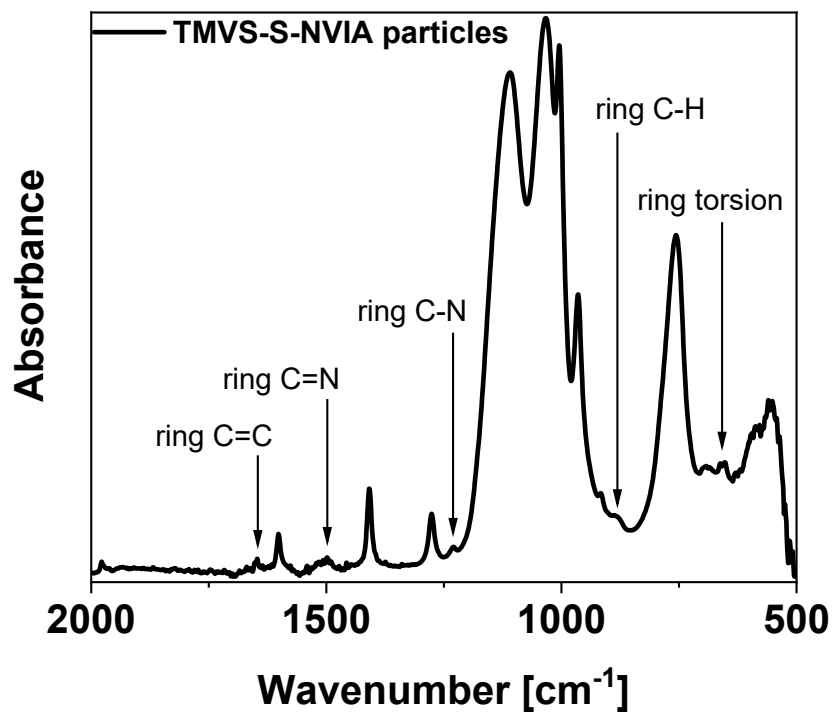

Figure S14: ATR FT-IR spectrum of trimethoxyvinylsilane-sulfur-*N*-vinylimidazole particles. Resolution: 2 cm^{-1}.
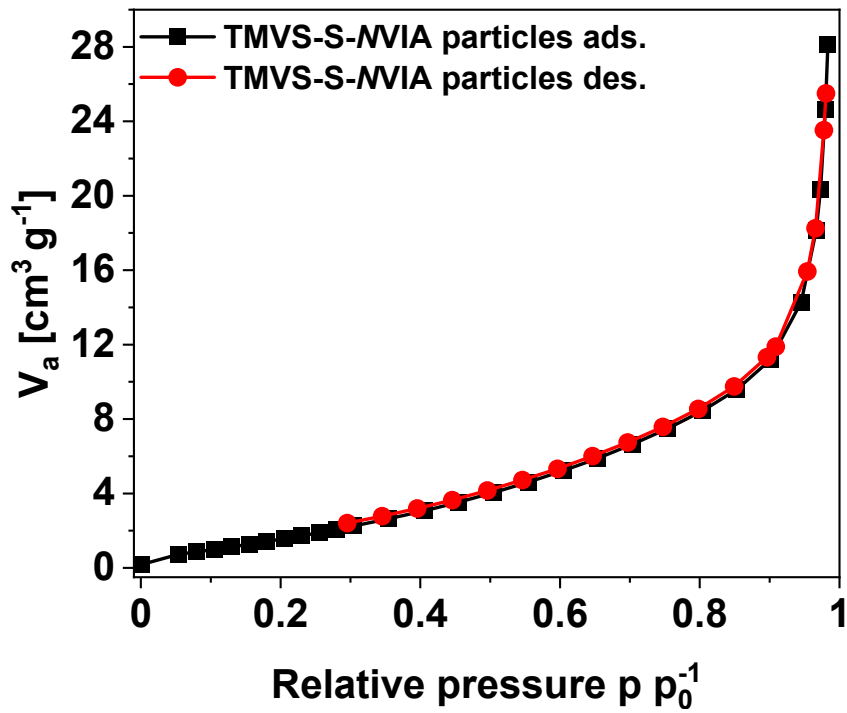
Figure S15: Adsorption (black) and desorption (red) isotherm of N_2 of TMVS-S-*N*VIA particles.
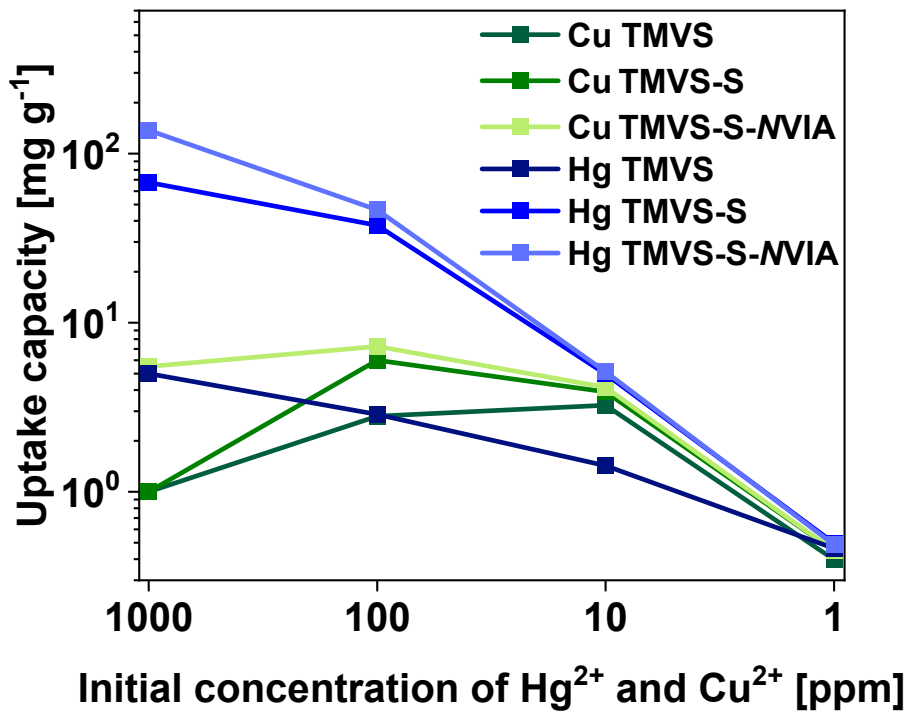

Figure S16: Uptake capacities of TMVS-S particles and TMVS-S-NVIA particles plotted against the initial concentration of Hg^{2+} and Cu^{2+} ions in aqueous solution. V (solution) = 100 mL, m (particles) = 200 mg, t = 24 h.

Table S1: Distribution coefficients and uptake capacities of copper(II) and mercury(II) ions of TMVS particles in dependency of initial metal concentration; V = 100 mL, m = 200 mg, t = 24 hours.

Ion	Initial concentration [ppm]	Removed [%]	Distribution coefficient [ml g^{-1}]	Uptake capacity [mg g^{-1}]
Cu^{2+}	1000	0.20	0.98	1.00
	100	6.22	33.18	2.80
	10	65.66	955.88	3.25
	1	99.38	79500.00	0.40
Hg^{2+}	1000	1.00	5.05	5.00
	100	5.75	30.53	2.87
	10	28.61	200.42	1.43
	1	92.98	6621.43	0.46

Table S2: Distribution coefficients and uptake capacities of copper(II) and mercury(II) ions of TMVS-S particles in dependency of initial metal concentration; V = 100 mL, m = 200 mg, t = 24 hours.

Ion	Initial concentration [ppm]	Removed [%]	Distribution coefficient [ml g^{-1}]	Uptake capacity [mg g^{-1}]
Cu^{2+}	1000	0.20	1.00	1.00
	100	12.12	68.97	6.00
	10	78.79	1857.14	3.90
	1	99.44	89500.00	0.45
Hg^{2+}	1000	13.53	78.22	67.50
	100	75.54	1543.85	37.67
	10	99.87	383115.39	4.98
	1	99.70	165666.67	0.50

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Table S3: Distribution coefficients and uptake capacities of copper(II) and mercury(II) ions of TMVS-S-*N*VIA particles in dependency of initial metal concentration; V = 100 mL, m = 200 mg, t = 24 hours.

Ion	Initial concentration [ppm]	Removed [%]	Distribution coefficient [ml g^{-1}]	Uptake capacity [mg g^{-1}]
Cu^{2+}	1000	1.08	5.43	5.50
	100	14.65	85.80	7.25
	10	97.65	20750.00	4.15
	1	99.44	89500.00	0.45
Hg^{2+}	1000	28.35	197.84	137.50
	100	97.74	21616.28	46.48
	10	99.74	192383.90	5.14
	1	99.53	105586.96	0.49