

# SUPPORTING INFORMATION

## Understanding the vanadium-asphaltene nanoaggregate link with silver triflate complexation and GPC ICP-MS analysis

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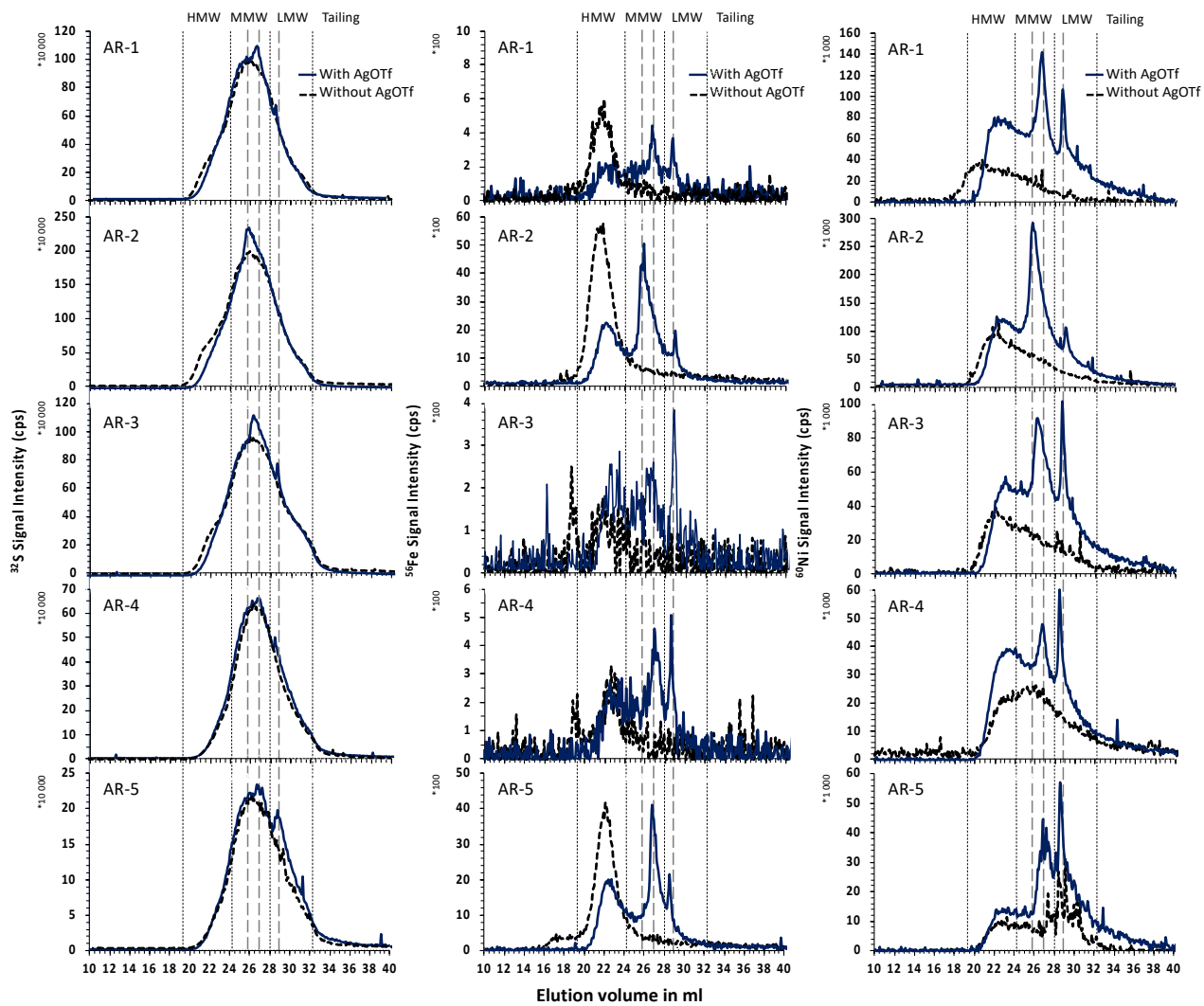
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**Figure S1.**  $^{32}\text{S}$ ,  $^{56}\text{Fe}$  and  $^{60}\text{Ni}$  GPC ICP HR MS Chromatograms of five AT with and without AgOTf (at 100ppm)

**Table S1:** Evolution of  $^{32}\text{S}$ ,  $^{51}\text{V}$  and  $^{109}\text{Ag}$  Peak Areas in the AR-1 Chromatogram during the addition of AgOTf.

Ag (ppm)	Sample	vHMW Area (%)	HMW Area (%)	MMW Area (%)	LMW Area (%)	Tailing Area (%)	Total Area
1	$^{32}\text{S}$	12 272 (0.2)	793 034 (14.5)	2 920 094 (53.3)	1 472 276 (26.8)	298 248 (5.4)	5 483 654
	$^{51}\text{V}$	1 564 (1.1)	58 356 (42.4)	53 970 (39.3)	21 866 (15.9)	3 288 (2.4)	137 481
	$^{109}\text{Ag}$	----	----	----	----	----	----
10	$^{32}\text{S}$	9 568 (0.2)	756 851 (14.3)	2 811 677 (53.3)	1 413 308 (26.8)	296678 (5.6)	5 278 516
	$^{51}\text{V}$	1 289 (1.0)	55 788 (42.1)	52 484 (39.6)	20 996 (15.8)	3307 (2.5)	132 577
	$^{109}\text{Ag}$	----	7 508 (54.3)	3 334 (24.1)	1 840 (13.3)	1144 (8.2)	13 829
100	$^{32}\text{S}$	6 914 (0.1)	709 205 (13.6)	2 804 161 (53.9)	1 407 814 (27.0)	285659 (5.5)	5 206 841
	$^{51}\text{V}$	915 (0.7)	50 328 (39.8)	52 578 (41.6)	20 481 (16.2)	2944 (2.3)	126 332
	$^{109}\text{Ag}$	10 670 (4.9)	157 481 (71.9)	52 802 (24.1)	4 639 (2.1)	4120 (1.9)	219 044
1000	$^{32}\text{S}$	5 097 (0.1)	597 127 (11.7)	2 779 476 (54.5)	143 1966 (28.1)	290294 (5.7)	5 103 962
	$^{51}\text{V}$	569 (0.5)	36 537 (30.6)	56 936 (47.7)	21 185 (17.8)	4042 (3.4)	119 271
	$^{109}\text{Ag}$	26 845 (13.3)	129 606 (64.4)	36 127 (17.9)	3699 (1.8)	4834 (2.4)	201 114

**Table S2:** Evolution of  $^{32}\text{S}$ ,  $^{51}\text{V}$  and  $^{109}\text{Ag}$  Peak Areas in the AR-1 Chromatogram in function of time (after addition of 1000ppm of AgOTf).

Reaction time	Element	vHMW	HMW	MMW	LMW	Tailing	Total Area
		Area (%)					
1 Day	$^{32}\text{S}$	5 097 (0.1)	597 127 (11.7)	2 779 476 (54.5)	1 431 966 (28.1)	290 294 (5.7)	5 103 962
	$^{51}\text{V}$	569 (0.5)	36 536 (30.6)	56 936 (47.7)	21 185 (17.8)	4 042 (3.4)	119 271
	$^{109}\text{Ag}$	26 845 (13.3)	129 606 (64.4)	36 127 (18.0)	3 699 (1.8)	4 834 (2.4)	201 114
8 Days	$^{32}\text{S}$	8 176 (0.1)	606 192 (10.9)	3 018 658 (54.5)	1 586 622 (28.6)	320 300 (5.8)	5 539 950
	$^{51}\text{V}$	586 (0.5)	33 268 (27.9)	58 906 (48.9)	23 576 (19.6)	4 244 (3.5)	120 582
	$^{109}\text{Ag}$	114 746 (40.0)	132 916 (46.4)	23 230 (8.1)	5 419 (1.9)	10 283 (3.6)	286 596
15 Days	$^{32}\text{S}$	9 233 (0.2)	593 324 (11.2)	2 884 823 (54.5)	1 500 584 (28.4)	301 616 (5.7)	5 289 582
	$^{51}\text{V}$	705 (0.6)	32 952 (28.1)	57 641 (49.2)	22 044 (18.8)	3 759 (3.2)	117 104
	$^{109}\text{Ag}$	140 046 (50.4)	120 031 (43.2)	17 167 (6.2)	277 (0.1)	316 (0.1)	277 840