

ESI Table S1 Experimental design matrix corresponding to the fractional factorial design 2^{7-4}

	1	2	3	4	5	6	7	8		9	10	11	12	13	14	15	16	Means
(1)	-1	+1	-1	+1	-1	+1	-1	+1	(1)	-1	+1	-1	+1	-1	+1	-1	+1	+1
(2)	-1	-1	+1	+1	-1	-1	+1	+1	(2)	-1	-1	+1	+1	-1	-1	+1	+1	+1
(3)	-1	-1	-1	-1	+1	+1	+1	+1	(3)	-1	-1	-1	-1	+1	+1	+1	+1	+1
(4)=(123)	-1	+1	+1	-1	+1	-1	-1	+1	(4)=(123)	-1	+1	+1	-1	+1	-1	-1	+1	+1
(5)=(12)	+1	-1	-1	+1	+1	-1	-1	+1	(5)=(-12)	-1	+1	+1	-1	-1	+1	+1	-1	+1
(6)=(23)	+1	+1	-1	-1	-1	-1	+1	+1	(6)=(-23)	-1	-1	+1	+1	+1	+1	-1	-1	+1
(7)=(13)	+1	-1	+1	-1	-1	+1	-1	+1	(7)=(-13)	-1	+1	-1	+1	+1	-1	+1	-1	+1
R ₁	0.49	1.22	0.43	1.84	0.53	1.08	0.49	1.10	R ₁	0.43	2.18	0.48	1.33	0.63	1.04	0.47	0.84	0.91
R ₂	2.05	1.69	2.88	1.27	2.10	1.55	2.32	1.40	R ₂	2.13	1.47	2.45	1.82	2.25	1.32	2.36	1.80	1.93
R ₃	1.15	0.71	0.35	1.36	0.47	0.92	0.40	2.74	R ₃	0.62	0.18	0.72	1.48	0.78	1.68	0.25	1.50	0.96
R ₄	1.83	1.91	2.89	1.99	1.92	1.67	2.50	1.64	R ₄	2.54	1.99	2.37	2.42	1.69	1.67	4.00	2.05	2.19
R ₅	1.09	2.82	1.23	1.33	1.28	2.47	1.58	1.80	R ₅	1.13	2.52	1.12	1.43	1.36	1.55	1.49	1.25	1.59
R ₆	0.37	1.02	0.61	0.55	0.45	0.90	0.38	0.41	R ₆	0.81	1.04	0.37	0.52	0.60	0.53	0.37	0.77	0.61
T	483	1357	771	670	518	1398	754	585	T	764	1199	613	876	793	608	563	1099	816
S ₁	44669	31529	57118	20386	35510	48007	24452	56720	S ₁	31720	63326	36506	31101	42838	15747	31777	18948	36897
S ₂	32832	63245	92380	40548	18434	71930	23606	62311	S ₂	25352	147164	31925	35454	51495	24559	32564	29012	48926

Level	-1			0			+1			(1) Mobile phase A (%) (2) Gradient time (min) (3) BDSA concentration (mM) (4) MeOH concentration (%) (5) Mobile phase flow rate (mL min ⁻¹) (6) Column temperature (°C) (7) Plasma power (W)	R ₁ Resolution As ^{III} /MMA R ₂ Resolution MMA/DMA R ₃ Resolution DMA/As ^V R ₄ Resolution As ^V /AsB R ₅ Resolution AsB/TMAO R ₆ Resolution TMAO/AsC T Separation time (s) S ₁ Intensity of As ^{III} (cps) S ₂ Intensity of As ^V (cps)
Step	1	2	3	1	2	3	1	2	3		
(1)	95	10	75	97.5	20	80	100	30	85		
(2)	2	3	7	2.5	4	8	3	5	9		
(3)		0			0.05			0.1			
(4)		0			0.1			1			
(5)		0.9			1.2			1.5			
(6)		20			30			40			
(7)		1250			1350			1450			