

Decoding the interfering L-lines by artificial neural network-based modeling for direct analysis of lanthanides in water samples using Total reflection X-ray fluorescence spectrometry

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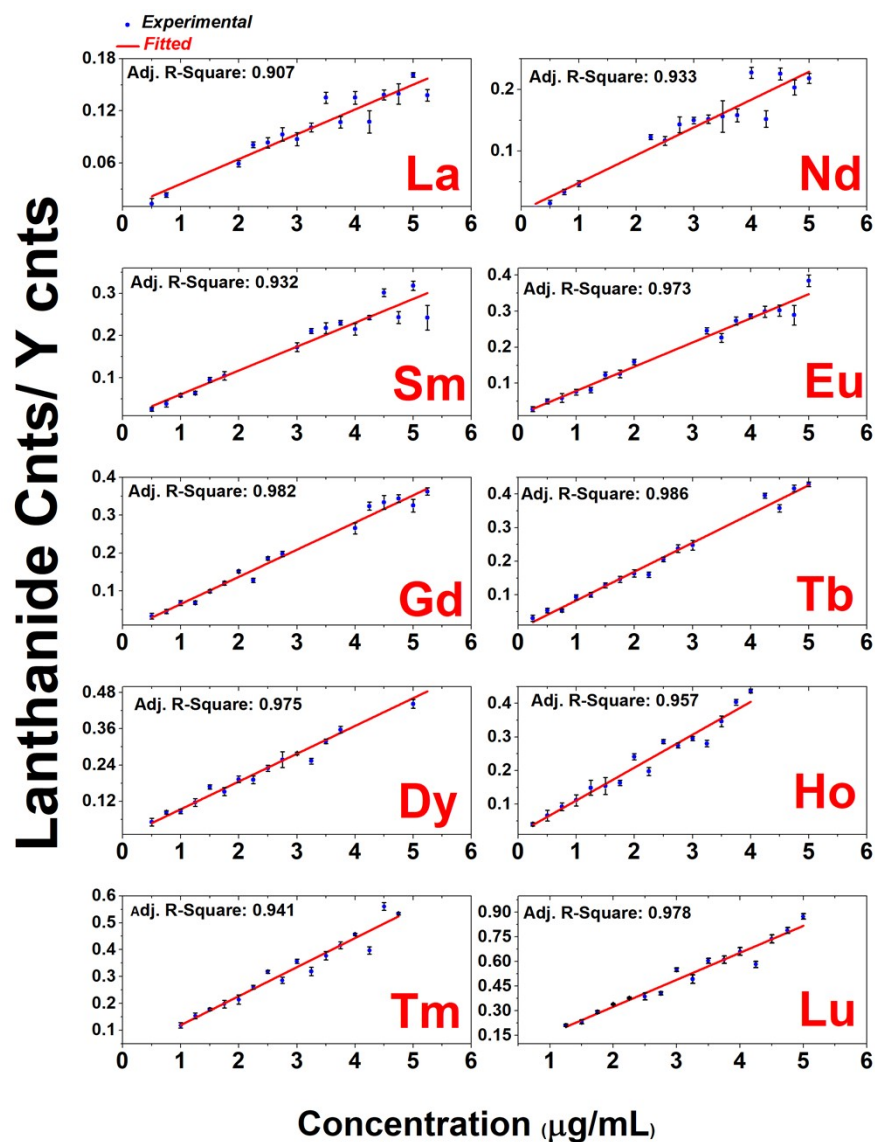


Fig. S1: Calibration curve for each lanthanide elements obtained using AXIL based fitting algorithm

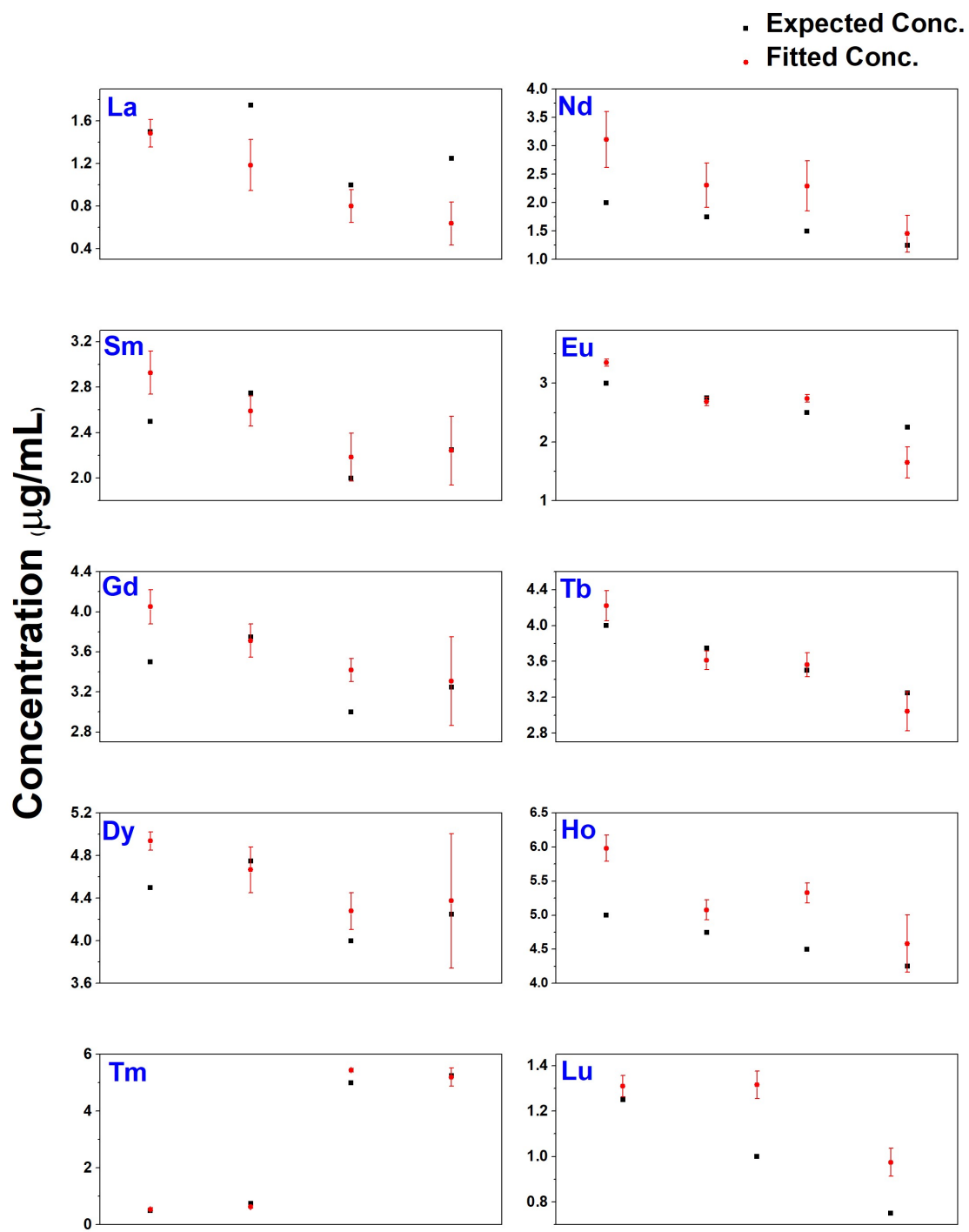


Fig. S2: Expected concentration vs. fitted concentration obtained using AXIL based algorithm

Table S1: Details of the sample preparation of the lanthanide mixture

Sample name	La (mg L⁻¹)	Nd (mg L⁻¹)	Sm (mg L⁻¹)	Eu (mg L⁻¹)	Gd (mg L⁻¹)	Tb (mg L⁻¹)	Dy (mg L⁻¹)	Ho (mg L⁻¹)	Tm (mg L⁻¹)	Lu (mg L⁻¹)
Ln _{CS} 1	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5
Ln _{CS} 2	1.5	2	2.5	3	3.5	4	4.5	5	0.5	1
Ln _{CS} 3	5	0.5	1	1.5	2	2.5	3	3.5	4	4.5
Ln _{CS} 4	5.25	0.25	1.25	1.25	2.25	2.25	3.25	3.25	4.25	4.25
Ln _{CS} 5	3.5	3	2.75	2	2.5	2	2.5	3	3.5	2.75
Ln _{CS} 6	4.75	4.75	0.75	0.75	1.75	1.75	2.75	2.75	3.75	3.75
Ln _{CS} 7	4	4.5	5	0.5	1	1.5	2	2.5	3	3.5
Ln _{CS} 8	4.25	4.25	5.25	0.25	1.25	1.25	2.25	2.25	3.25	3.25
Ln _{CS} 9	3.5	4	4.5	5	0.5	1	1.5	2	2.5	3
Ln _{CS} 10	3.75	3.75	4.75	4.75	0.75	0.75	1.75	1.75	2.75	2.75
Ln _{CS} 11	3	3.5	4	4.5	5	0.5	1	1.5	2	2.5
Ln _{CS} 12	3.25	3.25	4.25	4.25	5.25	0.25	1.25	1.25	2.25	2.25
Ln _{CS} 13	2.5	3	3.5	4	4.5	5	0.5	1	1.5	2
Ln _{CS} 14	1	1.5	2	2.5	3	3.5	4	4.5	5	0.5
Ln _{CS} 15	2	2.5	3	3.5	4	4.5	5	0.5	1	1.5
Ln _{VS} 16	2.25	2.25	3.25	3.25	4.25	4.25	5.25	0.25	1.25	1.25
Ln _{VS} 17	0.75	0.75	1.75	1.75	2.75	2.75	3.75	3.75	4.75	4.75
Ln _{VS} 18	1.75	1.75	2.75	2.75	3.75	3.75	4.75	4.75	0.75	0.75
Ln _{VS} 19	2.75	2.75	3.75	3.75	4.75	4.75	0.75	0.75	1.75	1.75
Ln _{VS} 20	1.25	1.25	2.25	2.25	3.25	3.25	4.25	4.25	5.25	0.25