

Direct Determination of Lanthanides in Environmental Samples using Ultrasonic Nebulization and ICP OES

*Fabrina R. S. Bentlin and Dirce Pozebon**

*Instituto de Química, Universidade Federal do Rio Grande do Sul, Av. Bento Gonçalves, 9500,
 91501-970 Porto Alegre - RS, Brazil*

Table S1. Spectral lines of the lanthanides elements and respective ICP OES limits of detection values (in $\mu\text{g L}^{-1}$) as a function of the nebulizer and plasma view

Element/ Spectral Line	Nebulizer and Plasma View				Element/ Spectral Line	Nebulizer and Plasma View			
	Pneumatic		Ultrasonic			Pneumatic		Ultrasonic	
	Axial	Radial	Axial	Radial		Axial	Radial	Axial	Radial
La (II) 398.852	0.164	0.818	0.0096	0.0726	Eu (II) 393.048	0.0666	0.273	0.0051	0.0483
La (II) 408.672	0.442	1.00	0.0183	0.103	Gd (II) 342.247	0.196	0.659	0.0117	0.106
La (II) 379.478	0.304	0.886	0.0129	0.0921	Gd (II) 336.223	0.875	2.22	0.105	0.378
La (II) 333.749	0.204	0.899	0.0267	0.358	Gd (II) 335.047	0.504	2.68	0.0360	0.309
La (II) 379.083	0.214	1.45	0.0105	0.0849	Gd (II) 376.839	0.701	2.15	0.0246	0.191
La (II) 403.169	0.482	1.34	0.0185	0.0753	Tb (II) 350.917	0.349	1.94	0.0276	0.211
La (II) 407.733	0.368	0.842	0.0153	0.150	Tb (II) 384.873	0.643	3.26	0.0425	0.165
La (II) 384.902	0.533	1.90	0.250	0.259	Tb (II) 367.635	1.35	4.61	0.0393	0.239
Ce (II) 413.764	2.12	4.98	0.244	0.691	Dy (II) 353.170	0.165	0.579	0.0072	0.0450
Ce (II) 418.660	2.32	7.48	0.0996	0.229	Dy (II) 364.540	0.252	1.09	0.0159	0.145
Ce (II) 413.380	1.44	4.80	0.0693	0.272	Dy (II) 394.468	0.557	2.19	0.0478	0.131
Ce (II) 394.274	4.98	9.52	0.127	0.529	Dy (II) 407.796	2.56	8.28	0.0495	0.226
Ce (II) 456.236	2.41	4.11	0.0756	0.577	Ho (II) 339.898	0.460	2.68	0.0198	0.154
Pr (II) 390.844	0.834	3.40	0.0408	0.206	Ho (II) 347.426	0.645	1.03	0.0767	0.162
Pr (II) 414.311	1.11	2.77	0.0357	0.237	Ho (II) 345.600	0.167	0.511	0.0078	0.065
Pr (II) 422.293	2.08	3.31	0.0204	0.247	Er (II) 337.271	0.273	0.518	0.0117	0.0426
Nd (II) 406.109	1.25	2.70	0.0594	0.193	Er (II) 369.265	0.492	1.15	0.0156	0.0848
Nd (II) 401.225	1.62	7.76	0.0474	0.203	Er (II) 349.910	0.161	0.922	0.0129	0.137
Nd (II) 430.358	2.46	4.91	0.0492	0.283	Tm (II) 384.802	0.433	1.05	0.0090	0.0798
Nd (II) 424.738	6.41	7.22	0.0469	0.304	Tm (II) 346.220	0.486	1.72	0.0213	0.0984
Nd (II) 384.824	7.16	18.0	0.123	0.709	Tm (II) 313.126	0.453	1.26	0.0123	0.0192
Sm (II) 359.260	2.08	3.40	0.0387	0.221	Tm (II) 336.261	0.570	1.98	0.0282	0.249
Sm (II) 442.434	3.54	11.6	0.215	0.124	Tm (II) 324.154	2.49	4.26	0.0651	0.265
Sm (II) 360.949	0.804	2.02	0.0615	0.417	Yb (II) 369.419	0.0297	0.116	0.0012	0.0699
Sm (II) 388.529	1.08	3.48	0.0906	0.388	Yb (II) 328.937	0.0177	0.0600	0.0027	0.0898
Sm (II) 428.079	1.63	6.97	0.0909	0.338	Yb (II) 289.138	0.127	0.762	0.0177	0.152
Eu (II) 381.967	0.0342	0.140	0.0027	0.019	Lu (II) 261.542	0.0171	0.124	0.0030	0.0135
Eu (II) 412.970	0.0642	0.187	0.0030	0.0210	Lu (II) 291.139	0.0933	0.858	0.0151	0.141

*e-mail: dircepoz@iq.ufrgs.br