Ultra-trace metal speciation analysis by coupling of sector-field ICP-MS to high-resolution size exclusion and reversed-phase liquid chromatography

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Supporting information

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Tables S1. Description of contents: This supplement describes the technical parameters for adjusting the ICP-MS in order to yield optimal performance for the different tasks described here.

Cu method for aqueous buffer and organic matrix
Total time: 60 min
Runs: 505
Passes: 1
Tune in aqueous buffer and with desolvating unit
Tune with methanol and acetone with spray chamber and no desolvating unit
Resolution: Medium

Analyte	**Mass window %**	**Samples/peak**	**Segment duration (Seconds)**
Mg^{24}	140	20	1.96
Cu^{63}	125	20	2.00
Zn^{66}	125	20	2.00

La method for aqueous buffer
Total time: 270 min
Runs: 1795
Passes: 1
Tune in aqueous buffer
Resolution: Medium

Analyte	Mass window %	Samples/peak	Segment duration (Seconds)
Mg^{24}	125	20	0.625
P^{31}	125	20	0.625
S^{32}	125	20	0.625
Ca^{44}	125	20	0.625
Mn^{55}	125	20	0.600
Fe^{56}	125	20	0.600
Co^{59}	125	20	0.625
Cu^{63}	125	20	1.000
Zn^{66}	125	20	0.625
La^{139}	125	20	1.750

Cd method for organic matrix
Total time: 60 min
Runs: 505
Passes: 1
Tune with methanol and acetone with spray chamber and no desolvating unit
Resolution: Medium

Analyte	Mass window %	Samples/peak	Segment duration (Seconds)
Mg^{24}	140	20	1.96
Cd^{111}	125	20	2.00
Zn^{66}	125	20	2.00

Cd method for aqueous buffer
Total time: 270 min
Runs: 1260
Passes: 1
Tune in aqueous buffer and desolvating unit
Resolution: Medium

Analyte	Mass window %	Samples/peak	Segment duration (Seconds)
Mg^{24}	140	20	1.4000
P^{31}	125	20	0.500
S^{32}	125	20	2.500
Fe^{56}	125	20	0.250
Co^{59}	125	20	1.250
Cu^{63}	125	20	0.250
Zn^{66}	125	20	0.250
Mo^{95}	125	20	1.000
Cd^{111}	125	20	5.000

Cr method for aqueous buffer
Total time: 270 min
Runs: 1160
Passes: 1
Tune in aqueous buffer and desolvating unit
Resolution: Medium

Analyte	**Mass window %**	**Samples/peak**	**Segment duration (Seconds)**
Mg^{24}	140	20	1.4000
P^{31}	125	20	0.500
S^{32}	125	20	2.500
Fe^{56}	125	20	0.250
Co^{59}	125	20	1.250
Cu^{63}	125	20	0.250
Zn^{66}	125	20	0.250
Mo^{95}	125	20	1.000
Cr^{52}	125	20	5.000

Figure S1. Analysis of copper abundance in an LH1 preparation from *Rhodospirillum rubrum* grown on 2 µM Cu^{2+}. Acetone extract from the protein preparation of a replicate experiment. The separation was performed on a metal-free PRP-C18 2.1x250 mm column, leading to a much lower background of Cu than the originally used C18 column with steel housing (Fig. 8b), but otherwise confirming the Cu binding to the pigments (Fig. 8b).

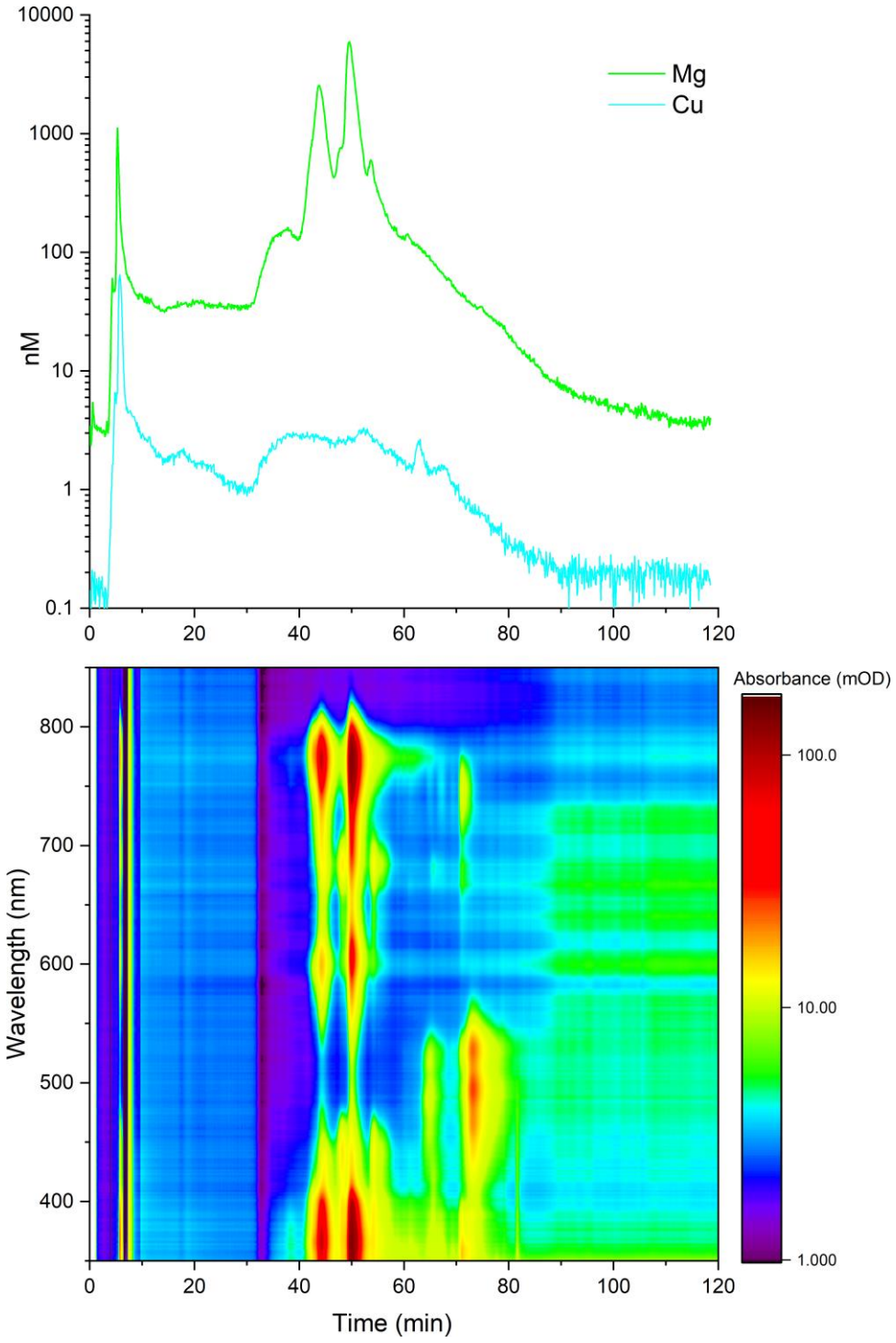

Figure S2. Description of contents: This supplement shows the HPLC-ICPMS measurement of a [Cd]-Chl standard that was prepared by Küpper et al. (2007). The separation was performed on a C18 4.6x250 mm column as described in more detail in the methods section for pigment HPLC-ICPMS