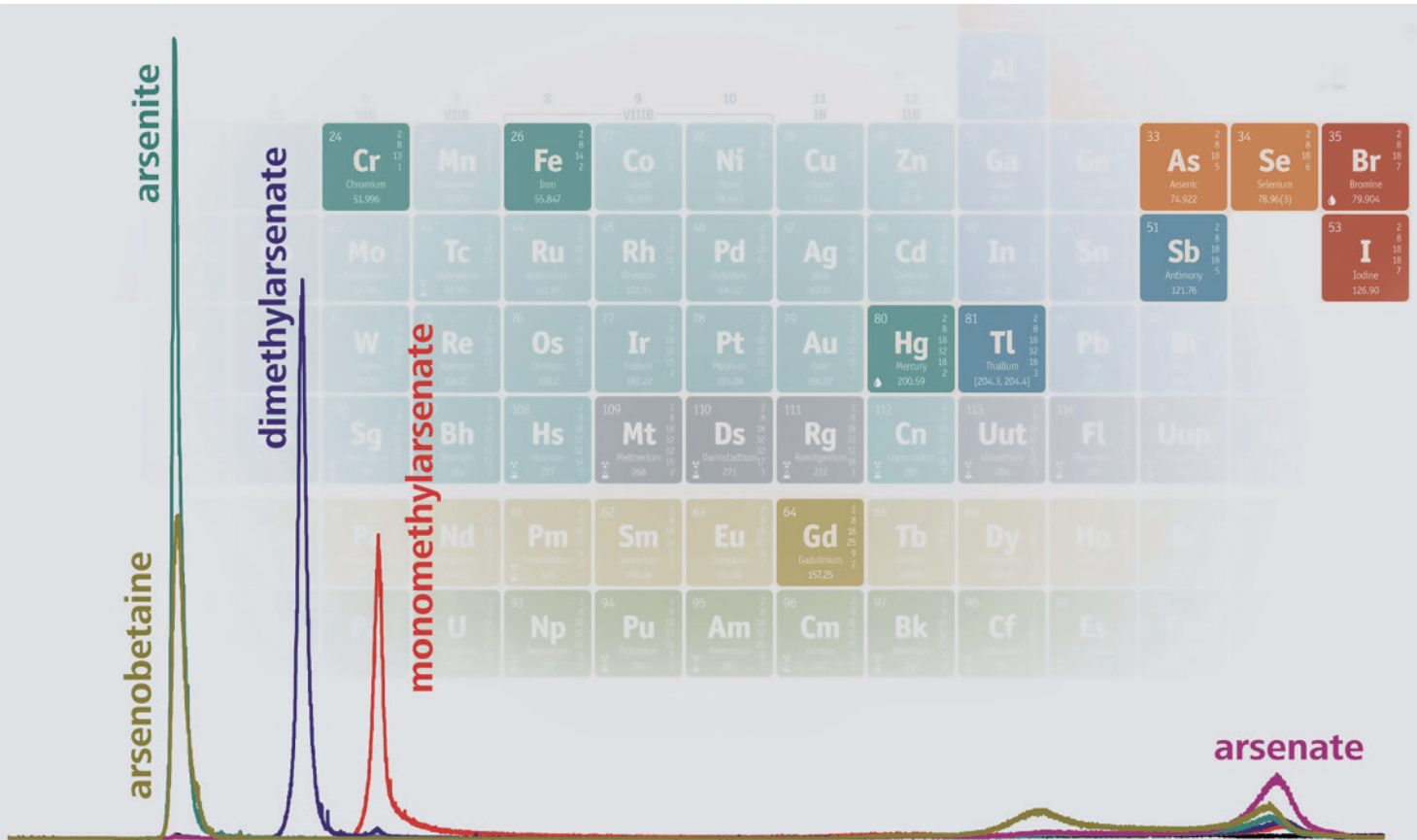


IC-ICP/MS – with Metrohm



Coupling of Metrohm ion chromatography and mass spectrometry with inductively coupled plasma

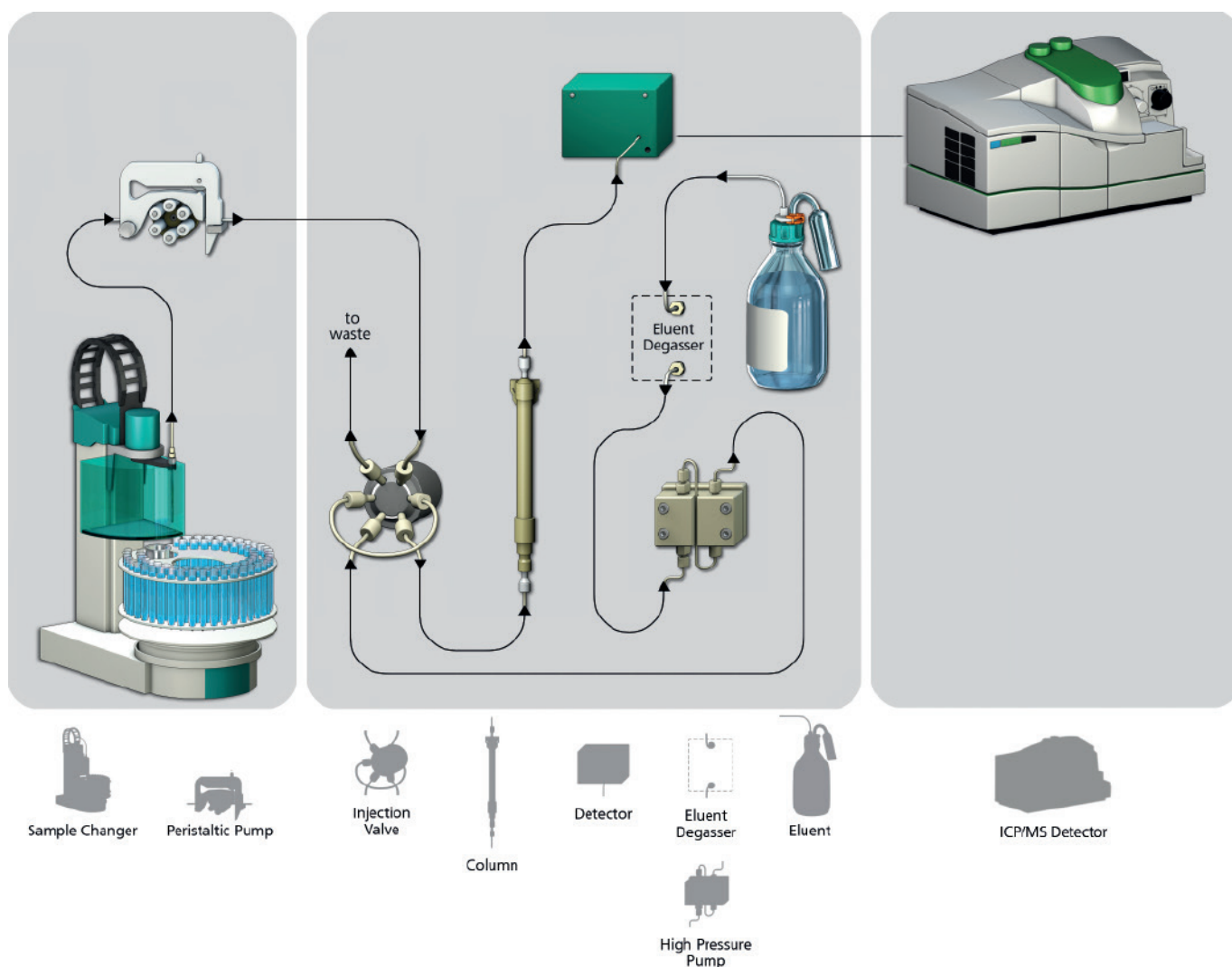
Take advantage of the benefits of IC-ICP/MS with Metrohm ion chromatographs

02

Is the determination of individual species more important to you than the total content, for instance the distinction between chromium III and chromium VI? Do you need to work in compliance with the standards and, say, determine bromate according to the EPA method 321.8?

Combining ion chromatography and mass spectrometry with inductively coupled plasma (IC-ICP/MS) is the method of choice for such analytical challenges:

- With the selectivity of ion chromatography, you separate ionic analytes by their chemical structure and binding properties.
- Then, due to the element-specific selectivity and high sensitivity of ICP/MS detection, you achieve the lowest detection limits.



The advantages of IC-ICP/MS

03

• Correct assessment of toxicity of samples

If you want to assess the toxicity of a sample correctly, knowing the total content of the element concerned as a sum parameter does not help. Health hazards often arise from the presence of a particular species, which is why only the selectivity and high sensitivity of IC-ICP/MS allow an accurate assessment.

• Prevention of matrix effects

Interfering sample components can be separated by means of automatic sample preparation and custom chromatographic conditions, so that matrix effects are prevented.

• Lowest detection limits

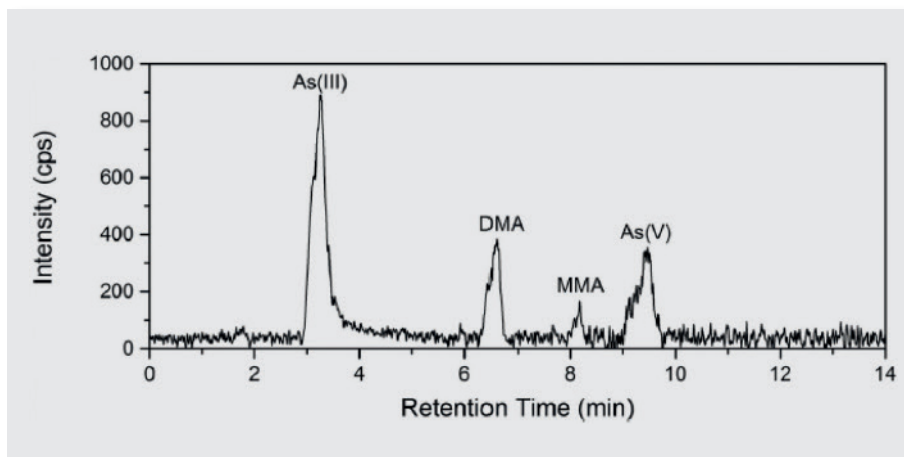
With an ICP/MS, you can connect a high-sensitivity detector in series to the traditional ion chromatography detectors (conductivity, UV/VIS, or amperometry). This can significantly increase the sensitivity of your analytics.

• Convenient operation with only one software

Metrohm ion chromatographs coupled with ICP/MS (e.g., Metrohm IC + Perkin Elmer ICP/MS) can be controlled with Empower™ 3, Waters' world-leading chromatography data software (CDS). With Empower™ 3, you benefit from excellent compliance and traceability of your data as well as comprehensive security features and audit trails.



Please note: In general, Metrohm ion chromatographs can be coupled with ICP/MS devices from all manufacturers!



Speciation of arsenic in rice, column: Metrosep Carb 2 - 250/2.0, gradient eluent A: 4 mmol/L ammonium bicarbonate, eluent B: 4 mmol/L ammonium bicarbonate + 40 mmol/L ammonium nitrate, pH 8.6; column temperature: 40 °C; sample volume: 20 µL; flow rate: 0.2 mL/min; plasma output: 1550 W; plasma gas flow: 17 L/min; auxiliary gas flow: 1 L/min; nebulizer gas flow: 0.94 L/min; integration time: 0.1 s (Source: *Use of the IC-ICP-MS and IC-ESI-MS coupling for the anion-chromatographic elemental species analysis of arsenic, bachelor thesis by Lukas Bischof, Marburg 2017*)

For further application examples please refer to white paper WP-008 at www.metrohm.com

Why ion chromatography from Metrohm?

Easy to use, extremely robust, highest measuring sensitivity, and incomparable service and support – that's Metrohm ion chromatography. You will also benefit from these advantages:

- Automatic sample preparation techniques (e.g., Inline Ultrafiltration, Inline Dialysis, etc.) for more user convenience, time savings, and reproducible results
- Metal-free flow path – no risk of contamination when determining ultratracés and transition metals
- Robust and reliable hardware ensures maximum instrument availability, especially during routine operation
- Intelligent monitoring of all system parameters with warning and intervention limits prevents incorrect operation
- Premium Swiss quality – 3-year instrument warranty and 10-year warranty on the anion suppressor



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 **Metrohm**