**EXPANDING THE ELEMENTAL AND ISOTOPIC TOOLBOX**

**IN SUPPORT OF THE SUSTAINABLE DEVELOPMENT GOALS**

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In this talk, an overview of the potential of modern elemental and isotopic analysis based on (MC)-ICP-(CRC)-MS in environmental-, geo-, life- and materials sciences will be given under consideration of the sustainable development goals (SDGs) as there are many ways chemists are working to support global sustainable development.

With a focus on inorganic mass spectrometry, both recent instrumental developments in ICP-MS will be discussed for elemental as well as isotopic analysis especially emphasizing collision and reaction cell technology in ICP-MS/MS and MC-ICP-MS for elemental and isotopic analysis, respectively.

Selected projects dedicated to the EU Green Deal and Zero-Waste initiatives will be presented with a focus on inorganic pollutants and substances, such as technology-critical elements.

The use of natural variations of isotopic composition (*e.g.* of Sr, Ca, Ni, Fe, Pb) as proxies to study natural and technological processes or trace provenance and migration as well as the application of enriched stable isotope tracers (*e.g.* Sr, Pb, Mg, Ni) will be discussed. The latter approach highlights the importance of data processing based on isotope pattern deconvolution.

The metrological challenges in reliable isotope ratio determination, such as precision, contribution of background levels, interferences, and instrumental isotopic fractionation, will be discussed on specific examples. Finally, research achievements in the field of atomic-weight determination and related tasks by the IUPAC Commission on Isotopic Abundances and Atomic Weights (CIAAW) are presented

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