

Exploring the limit of ICPMS in Space and Time and Mass

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Recent developments in inductively coupled plasma mass spectrometry technology have extended its application range quite significantly. Notably the improvements in time-of-flight mass spectrometers, providing signal acquisition at rates of 10s of kHz, allow for a comprehensive analysis of ion signals of less than 200 ms duration at significantly higher sensitivity. This enables the analysis and differentiation of nanomaterials or individual cells, diagnostics of plasma-particle interaction, characterization of individual airborne particles and laser ablation signals of ms duration obtained from latest generation ablation cells.

Additionally, enhanced detection efficiencies of recent sector field instruments provide a means for assessing even lower analyte concentrations for example in spatially resolved analyses by LA and limits of detection below the ng/g range can be achieved in an optimized setup.

This presentation will discuss characteristics of these new developments in the context of geochemical applications and critically evaluate the capabilities of these instruments.