NISTTech

NOVEL QUANTIFICATION STRATEGIES USING SPINNING SAMPLING CHAMBER LASER ABLATION INDUCTIVELY COUPLED PLASMA MASS SPECTROMETRY

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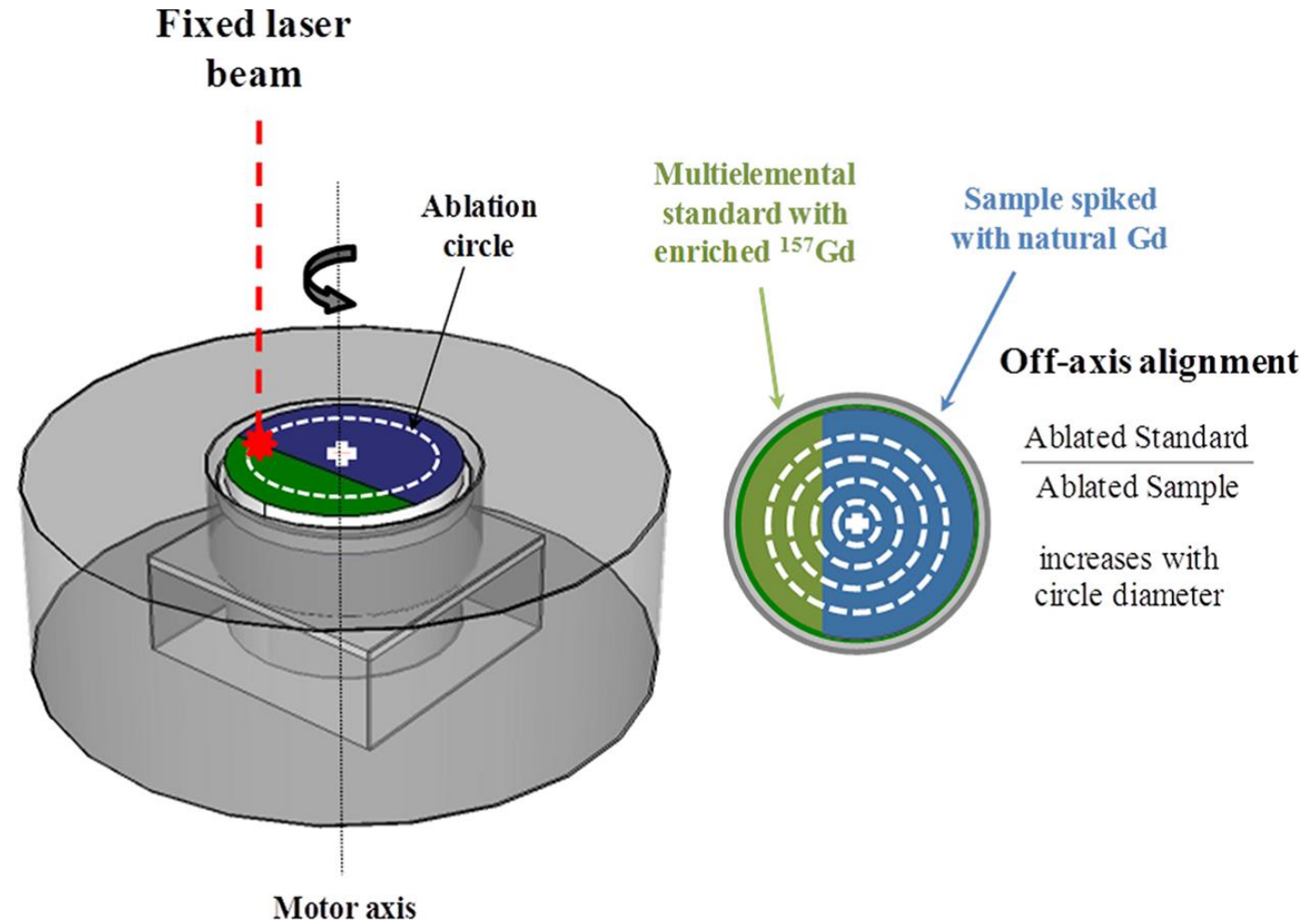
Images



Spinning LA-CPMS

Applications

- **Application**
  LA-ICPMS is often the choice in trace element analysis for geological, archeological, environmental and biological studies.

Advantages

- **Advantage**
  For certain sample types, the spinning cell for LA-ICPMS spectroscopy makes the methods of standard additions and isotope dilution more convenient and less time consuming for chemical analysis. The samples have greater homogeneity compared to other methods, only a single reusable standard needs to be prepared, and calibration time is reduced.

Abstract

The invention is method for sample preparation and measurement of trace amounts of chemical elements and isotopes by a spectroscopic technology known as Laser Ablation Inductively Coupled Plasma Mass Spectrometry (LA-ICPMS). The method uses a spinning platform containing both a known standard and an unknown sample. The known standards are all characterized as "Standard Reference Materials" obtainable from NIST. Both sample and standards are vaporized (ablated) in the ablation chamber by a laser, producing a mixed aerosol for analysis in the remainder of the apparatus. By translating the spinning table relative to the laser source, the quasi-simultaneous ablation of different amounts of standard and sample is possible, thereby providing measurement data for the techniques of standard addition and isotope dilution.
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Citations

1. Analytical Chemistry, 2013, 85, 3584?3591,"Standard Addition Method for Laser Ablation ICPMS Using a Spinning Platform, " Fanny Claverie,* Julien Malherbe, Naomi Bier, John L. Molloy, and Stephen E. Long
2. Anal Bioanal Chem (2013) 405:2289–2299, " Putting a spin on LA-ICP-MS analysis combined to isotope dilution" Fanny Claverie, Julien Malherbe, Naomi Bier, John L. Molloy and Stephen E. Long

References

- 12-027Application

Status of Availability

This invention is available for licensing exclusively or non-exclusively in any field of use.

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