

Accurate measurement of Mg isotopic ratios in silicate samples by fs-LA-MC-ICP-MS with low mass resolution under wet plasma

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For the Mg isotopic analysis by LA-MC-ICP-MS, we demonstrated that the main interferences ($^{12}\text{C}^{14}\text{N}^+$ and $^{48}\text{Ca}^{2+}$) in Mg isotopic analysis can be significantly suppressed, and the matrix effect can be significantly reduced with wet plasma by fs-LA-MC-ICP-MS. Thus, the accurate and precise Mg isotopic composition can be performed with the low mass resolution and non-matrix-matched calibration method by fs-LA-MC-ICP-MS. The applicability of the combination of the low mass resolution and wet plasma was systematically evaluated by the assessment of the interferences, the Mg three-isotope plot, the instrumental long-term reproducibility as well as the intensity mismatch effect. Applying the optimized method, accurate and precise Mg isotopic compositions in silicate reference materials with various matrices can be achieved.