

## In situ B isotope analysis of reference material by femtosecond LA-ICP-MS with application to the paleo carbonate chemistry of the ocean

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Laser ablation coupled to MC-ICP-MS presents a robust tool for in situ analysis of isotope ratios. Here we explore the potential of our customized 193 nm femtosecond laser ablation system coupled to a Nu Plasma II MC-ICP-MS for in situ measurements of B isotope ratios. B isotopes are detected using ion counters at low mass resolution. The instrumental mass bias and drift are corrected by the standard-sample-bracketing method using reference material SRM NIST 610 as bracketing standard. We determined the B isotope composition of various matrixes with different B concentration including the MPI-DING reference glass series of rhyolitic to komatiitic compositions, a clay standard (IAEA-B-8) and carbonate standards (JcT-1 and JcP-1). The results agree well with published data. Furthermore, we employed this technique to investigate the B isotope composition of foraminifera, which are widely used as a paleo pH proxy to reconstruct the evolution of the ocean carbonate chemistry. The low sample consumption provides an opportunity to produce precise B isotope data for low sample amounts, which is essential for some marine archives. However, single shell analysis show small-scale isotope variation indicating a complex relationship between B isotope composition of biogenic carbonates and pH value of seawater, a process which is still not fully understood.