In situ High Precision Li Isotope Analysis of Spodumene by LA-MC-ICP-MS

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In this study, an in situ technique for high-precision determination of Lithium stable isotope ratios by laser ablation-multicollector-ICP-MS (LA-MC-ICP-MS) was developed. With this technique, the Li isotope compositions of three spodumene（RLi1, RLi2, RLi3） were determined, both by LA-MC-ICP-MS analyses and by solution MC-ICP-MS, the latter in order to verify the results of the in situ analyses. The LA-MC-ICP-MS analyses revealed that all analyzed standard materials were homogeneous within analytical uncertainties and may thus be suitable as external standards for Li isotope determination by in situ analysis of spodumene. Bulk solution MC-ICP-MS and LA-MC-ICP-MS analyses of these spodumene agreed within their analytical uncertainties of 0.5‰ for the solution analyses and <0.7‰ (2SD, over 2 months) for the LA-MC-ICP-MS analyses.With this in situ Li isotope compositions analytical technique, the Li isotope compositions of spodumene from Kaluan spodumene deposit were also determined.