

## **Comparison between major and trace element contents using EPMA and LA-ICP-MS**

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We have analyzed garnet mineral in thin-section (30um) and obtained comparable concentrations for major and trace elements using electron probe microanalyzer (EPMA) and laser ablation inductively coupled plasma mass spectrometer (LA-ICP-MS) techniques. EPMA is a very well established analytical tool for the spot (1-10um) analysis of major elements of a wide variety of solid materials, and LA-ICP-MS which is very sensitive to trace components, is a popular and widespread sampling technique for direct solid sample analysis. LA-ICP-MS has the advantage of low to sub-ppm detection limits yield information for trace elements in situ performance, and the disadvantage of the necessity of matching the matrix of the calibration standard with that of the sample.

We have compared trace elements data of garnet mineral acquired from EPMA and LA-ICP-MS. Major elements data show a smoothed and continuous compositional zoning characters while trace elements data show smoothed and flat patterns. The combination of EPMA 2D maps and quantitative microanalyses using EPMA has allowed to evaluate the distribution of major elements, but its trace elements profiles has not shown well defined patterns. The LA-ICP-MS has been successfully applied to quantitatively map the lateral elemental distribution of trace elements. Consequently, a good agreement was found between EPMA and LA-ICP-MS major element data, when concentrations are is higher than sub-wt.%. However, in case of lower concentrations, LA-ICP-MS technique has shown a better performance.