

REQUIREMENTS FOR SAMPLE PREPARATION

The flexibility and low requirements for sample preparation in the ICP-MS do not mean, however, that the technique can be used for the analysis of 'everything' and no assistance from the user is required. The analysis of oxygen, nitrogen, fluorine and noble gases by ICP-MS is either entirely impossible or associated with serious compromises because of the high ionisation potential of these elements and high background signals. Carbon can be measured with reservations.

The same applies to chemical elements and samples requiring a special standardisation. This problem is particularly important in the laser ablation ICP-MS. Our standards for trace element LA-ICP-MS include synthetic calcium-sodium aluminosilicate glasses NIST SRM 610 and 612, synthetic basaltic glasses GSD-1 and GSE-1, basaltic glass BCR-2 and pressed pellets of sulphide standard MASS-1. For the quantitative LA-ICP-MS analysis of polymers, wood and some metal alloys, the user is kindly advised to make an effort to supply suitable standards. The preparation of samples and standards for the solution nebulisation analysis also remains the responsibility of the user and is done on an individual basis, based upon our advices. You can use a number of mono- and multi-element standard solutions available in the laboratory.

In order to help you to better prepare your samples, please contact us and get answers to your questions in advance. In particular, remember that (1) natural solutions to be analysed must first be stabilised, usually by acidification, they cannot be kept in their natural state for long time, (2) thin sections for LA-ICP-MS should usually be thicker than 30 μm . We recommend 50 μm as a thickness suitable for general LA-ICP-MS work, when neither very low detection limits nor the ablation of quartz and feldspars is required. Thin sections with a thickness of 50 μm still reasonably well preserve the optical characteristics of transparent minerals. If the best possible detection limits are required, e.g. for the analysis of LREE in garnet, olivine or orthopyroxene, the thin section thickness must be 100-200 μm . If quartz or feldspars are going to be analysed, the thin sections should be 200 μm thick; alternatively, polished slabs can be prepared. Please, order your thin sections accordingly to avoid unnecessary compromises on the quality of data.

For those who would like to date zircons: the grains to date have to be mounted in cylindrical epoxy resin blocks. Such blocks can be 25 or 6 mm in diameter. On 25 mm blocks, which are commonly used, enough space must be left on the upper surface of the block to bore a 6 mm hole, where we insert a small cylindrical mount containing primary and secondary standards. The thickness of the blocks is of no crucial importance and can be in the range of 5 to 10 mm.

