

SUMMARY

The following example deals with methods of determining major and trace elements in a particular special kind of natural glasses - tektites.

Measurements were performed on seventeen samples. Two of them belonged to a group of Libyan desert glass and the remaining fifteen were originally from the Australasian tektite field. For these purposes, optical microscopy was used in the preparatory phase of study of the samples. The studied samples were prepared in the form of cross-sections. Microscopy was employed to ensure the correctness of the procedure for selecting appropriate samples and precise areas of cross-sections that are suitable for analysis.

The main elements were determined by electron microanalysis. The values obtained in these measurements confirmed existing knowledge about the composition of tektites. The chemistry of Libyan desert glass corresponded to 98 weight percent of SiO₂. In the Australian-Asian samples, this value was equal to 73 wt.%. The other major oxides include Al₂O₃, FeO, MgO, etc. The contents of these elements in the Libyan desert glass were determined in the range of 0.154 to 0.727 percent by weight. The Australasian tektites contained 0.598 to 0.875 wt.% of these elements.

The most important data were obtained by inductively coupled plasma mass spectrometric (ICP-MS) measurements with additional equipment for laser ablation (LA). This is an important apparatus for measurement of solid samples. The results are characterized by higher values for Cr, Ni, or Y and Zr compared to the upper crust. Lower values were exhibited by Cu, Zn etc. The percentages of trace elements were also determined, for example, Zr 240-440 ppm Pb and 5-9 ppm in Lybian glasses or Cr 60-80 ppm for the Australia-Pacific region. The analyzed materials are fairly consistently enriched, for example, in Cr, Ni, Y and Zr.

Finally, the values always emphasize different performance of the assay for these materials, but thanks to modern methods for the analysis is not usual, allowing them to refine and identification of new opportunities for further analysis.