

Results of non-destructive SEM-EDX and PGAA analyses of Jade and Eclogite polished stone tools in Hungary

Szakmány Gy., Bendő Zs., Kasztovszky Zs.

Neolithic polished stone tools made of HP-metaophiolites (jade and eclogite) are widespread in Northern and Western Europe, but generally very rare in Central and Eastern Europe. They were identified fairly recently among the Hungarian archaeological finds as well. Most of the relevant pieces are small sized triangular flat axes. The number of jade axes proved to be higher here than the number of the eclogite artefacts. Their characterisation and proper analysis requires absolutely non-destructive and highly reliable techniques. In our lecture, we present a summary of „original surface analyses” by SEM-EDX and bulk elemental analyses by PGAA on the recently discovered Hungarian HP metaophiolite artefacts. Both methods are non-destructive and very effective for proper characterisation of the petrology, geochemistry and mineral chemistry of these rare and special rocks. The textural arrangement of the rock forming minerals are very well recognizable by the electron-microscopic SEM-EDX analyses, moreover elemental composition of the individual crystals can be determined, too. Our results show that ratios of jadeite and omphacite have quite a large variation among the investigated objects. Moreover, we detected quite a lot of accessories (zircon, monazite, allanite, a TiO₂ variety, most likely rutile, some xenotime and barite). In addition, eclogite contains also garnet. PGAA analyses is suitable to quantify all the major and some trace elements of the analysed samples. The results show that the chemical composition of the analysed HP metaophiolites are more or less similar, but small and hopefully meaningful differences were also noticed. The chemical composition of the Hungarian artefacts was compared to similar data on primary or secondary sources of HP metaophiolites from territory of Italy.