CHEMOMETRIC ANALYSIS OF SEM-EDAX DATA FOR ARCHAEO-CERAMICS

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SEM online EDX analysis is one of the analytical techniques in routine use for the analysis of archaeo-ceramics and it provides analytical data of comparable quality together with imaging facilities. It is particularly useful to investigate the inhomogeneity of elemental distribution of samples, and thus heterogeneously distributed inclusions and their distinctive structure can be known. Besides, the method yields large amounts of data, and therefore needs mathematical and statistical techniques to be evaluated.

The aim of this study is to provide information about the compositional groups of body, slip, and glaze parts of archaeo-ceramics belonging to different centuries and provenance in order to classify them by applying clustering and principle component analysis which are the most wide spread multivariate statistical methods in chemometry. Statistical evaluation of the data and visual displays were performed by using SSPC and PCA computer programs.

As a result, Cluster and Principle Component Analysis supported each other. Some of the fundamental elements of ceramic composition are responsible variables for the classification in a group of sample, while different fundamental elements play main role for the classification in the other group of sample. Although ceramics belonging to different ages and provenance show compositional similarities, some differences can be observed, probably, due to the different workshop production.

References
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