CHEMOMETRICS IN ARCHAEOMETRY

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Archaeometry is a discipline that involves the use of instrumental techniques for collecting different kind of experimental data. The automatic data collection process and their digital storage make the collected data almost ready for more sophisticated analysis.

Chemometrics as a discipline which deals mostly with analysis of chemical data, during the last forty years, has developed a plethora of suitable techniques capable to extract valuable information from the experimental data. Unfortunately, the literature survey performed showed that most of the advanced chemometric methods in archaeometry are not widely used.

In archaeometry, the most often exploratory data analysis is performed using correlation diagrams, linear discriminant analysis and the use of the straightforward outputs obtained with principal component analysis.

This work demonstrates the importance of the in-depth analysis of archaeometric data by proper use of some of the variants of the previously mentioned algorithms and more sophisticated chemometric tools like self-organizing maps and support vector machines.

The goal of each of the demonstrated examples is to show the importance of the correctly performed data analysis and to show how the suboptimal data analysis could lead to incorrect conclusions. Part of the results presented are based on the experimental work performed at our Institute [1,2], while for demonstration of some additional advantages of a proper chemometric analysis, we used data already published in the literature [3].

References:

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