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Using phytolithy assemblages to analysis of an Sarmatian kiln for baking pottery

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ABSTRACT

The kilns are relative little just then very composite objects of archeological sites. The purpose of our work is the environmental historical analysis of the kilns, namely can we extract information from the former vegetation or fuel (wood, straw) by the analysis of the samples from the kilns? We have analised phytolith assemblages, because the biogenic opal is very resistant and it can remain so hard circumstances too where the pollen assemblages go bankrupt. We have analised 12 samples from an Sarmatian kiln for baking pottery. The phytolith, organic matter and carbonate content of every samples have been analised, and in our presentation we would like to present the results and their relationships.

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WHAT IS A PHYTOLITH?

"Phytolith" comes from Greek roots phyto (plant) and lithos (stone). "Plant stones." More technically, they are silica casts of plant cells or spaces between cells in plants. Silica, dissolved in groundwater as monosilicic acid, is taken up into the plant during its life. The silica is deposited in the plant as opal silica, chemically identicalto the "opal" you know as a semi-precious stone. These tiny opal particles take on the shape of cells, or "negative" casts of the space between cells. Hairs, prickles, and other surface structures of plants also often become phytoliths.

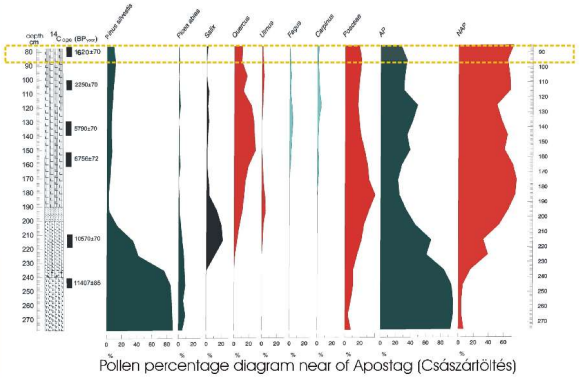
Phytoliths are of particular interest to archaeologists because they are highly resistant to decay, more so than most other types of archaeological plant remains. Because they are essentially stone, they preserve indefinitely in all but the most extremely alkaline burial conditions.

CONCLUSIONS

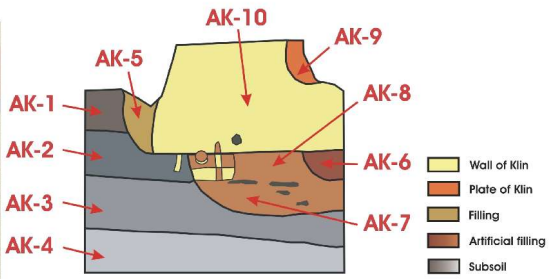
1. Three character classes were created on the pahytolith samples:
   a. Infill from the eroded Sarmatian soil horizon
   b. Subsoil
   c. Bulding material of the Sarmatian kiln
2. Phytolith analysis helped in the reconstruction of the vegetation of the eroded Sarmatian soil horizon.
3. The samples AK-5 and AK-6 come out of the Sarmatian horizon. The trees, burnt phytolith and charcoal maximum indicate that wood was the main fuel in the searched kiln.
4. The samples from the paleosoil (from AK-1 to AK-4) show a gentle climate change – a fall in temperature (The rate of trees and festucoid shapes increase in the phytolith diagram.)
5. The local phytolith diagramm is congruent with the pollen diagramm prepared for the larger area of the site.

Apostag locality in the Carpathian Basin

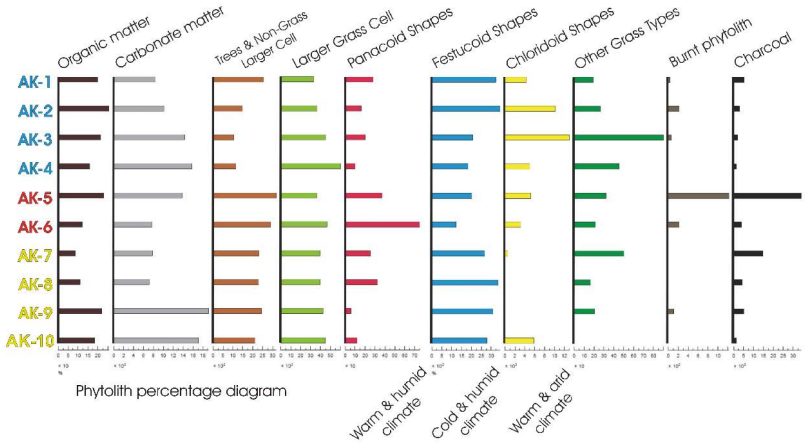
Sarmathian kiln from Apostag



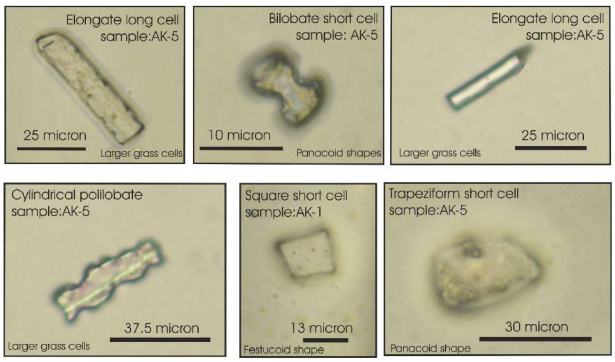
Pollen percentage diagram near of Apostag (Császártöltés)



Section of the kiln and the sampling



Phytolith percentage diagram



Phytoliths from the samples

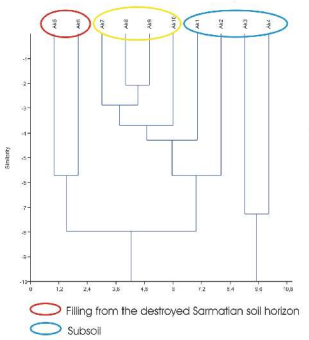
Interpretation of phytolith characteristics

Upper soil horizons
Mature assemblages
Forest-steppe/dry steppe zone
Hydromorphic or arid conditions
Trees & Non Grass Phytolith maximum
Burnt Phytolith maximum
Charcoal maximum

Upper soil horizons
Forest-steppe zone
Hydromorphic or arid conditions
Mature assemblages

Lower soil horizons
Supressed vegetation
Forest-steppe zone
Change: Hydromorphic or arid conditions
→ Manure
Evidence of rapid changes in vegetation

Euclidean Cluster Analysis



Multivar Principal Components