Contribution ID: **10** Type: **Poster**

P42 - Archaeometric studies of Byzantine pottery from Harsova (Carsium), Romania

Friday, 11 July 2014 13:00 (1 hour)

A set of ceramic shards excavated from Hârsova (Carsium), Romania, dated to the 11th century A.D. were subjected to archaeometric investigations, aiming to reveal the manufacturing techniques and raw materials employed by the potters from Low Danube region during the Middle Byzantine period.
The initial division of the shards into fine and coarse ceramics was refined by a subsequent petrographic study. Optical microscopy observations detailed the potteries fabric, identifying - up to a certain point - the mineralogical composition. Petrographic investigations agree with the original separation of the shards into fine and coarse fabric, but indicate an important variability in terms of mineral composition, homogeneity and porosity. Two main categories of shards were found: one defined by the use of kaolinitic clays, occurring in Southern Dobrogea, approximately 80 km away from the archaeological site, and a second more heterogeneous one, based on the use of several sedimentary sources. The coarse inclusions present in some samples were identified as sand grains (quartz). The firing took place either in reducing or oxidizing conditions. The surface treatment of the fine fabric shards consists in a very thin shimmering golden engobe, a rare occurrence in Byzantine pottery, while other fragments were decorated with a green-olive glaze. Some fragments of coarse fabric have a fine engobe located both on the internal and external side of the shard.
Micro-PIXE measurements of the ceramic shards performed with the nuclear microprobe facility of AN2000 accelerator of LNL, INFN Italy allowed the identification of their chemical composition. The statistical analysis of the PIXE data evidenced two main categories of pieces with distinct compositional signatures. Thus, the fragments from kaolinitic clays were clearly dissimilar from the rest of the samples. Micro-PIXE scans of the interfaces between the decorated surfaces and the ceramic bodies provided hints about the minerals present in the golden engobe and the green glaze. Clear changes in the chemical composition were revealed for the glazed shards, characterized by a strong enrichment of the lead oxide content compared to the corresponding ceramic body.
This study on Byzantine ceramic will continue with micro-PIXE analyses on shards from other archaeological sites, trying to identify possible commercial exchanges in the Low Danube region during the 11th century A.D.

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Session Classification: Poster Session with Cheese and Wine