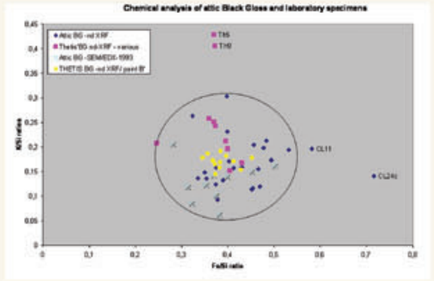
attic

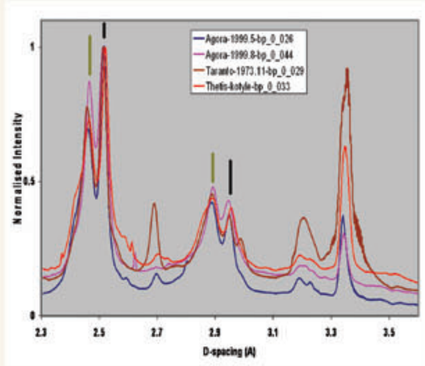
RECOVERY

Following the procedure developed in THETIS' Laboratory during the period 1999-2002, a number of clay suspensions based on three clay materials without the use of commercial deflocculants were analyzed chemically and mineralogicaly. A set of the black glosses thus produced was analyzed for comparison with the ancient sherds.

The validation of the particular clay slip formulation involved the preparation and firing of laboratory specimens followed by a detailed comparison with the surface properties of ancient sherds. The results verify the successful replication of the attic black gloss technique.



K/Si ratios vs Fe/Si for the classical Attic black gloss and the laboratory specimens



micro-XRD data from ancient BG sherds from the Athens Agora (2), Taranto (Sicily) and a modern reproduction. The modern BG is similar to the Athenian sherds.

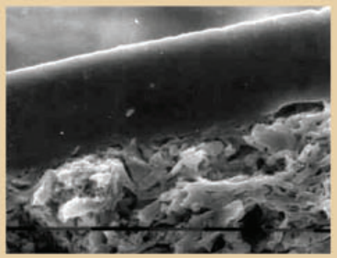
The nature of the ATTIC BG: Several authors in the 70's argued that the Attic black paint is not a real glaze because it is not totally vitrified. They suggested the use of the term "gloss". Our work in the past has shown that it consists of an amorphous phase rich in polycrystalline magnetite particles with sizes <200nm. It can thus be described as an opaque alkali-alumino-silicate glass which is coloured by fine magnetite crystals

The iron reduction technique

(The material used for the decoration of the clay body is the finest fraction of an illitic clay rich in iron oxides with low CaO content, which when concentrated with boiling produces a thick "paint". The paint is applied on the unfired clay body and the vases are fired in a complex firing cycle up to 950°C involving three stages

(a) Oxidising stage, during which both the paint layer and the body become red due to the formation of hematite Fe_2O_3

(b) Reducing stage at which the body and paint layer become black as the red hematite (Fe_2O_3) transforms to the black magnetite (Fe_3O_4) (i.e. partial reduction of FeIII?⇨FeII)



At this stage the paint layer vitrifies (due to its fine particle size, the lack of CaO, and the higher alkali K_2O content, see the table below) while the moderately calcareous body becomes porous (see SEM micrograph, 2000x, 1 bar =10μm).

(c) in a third Oxidizing stage the porous body reoxidizes to brick red (Fe_3O_4 ⇨?Fe_2O_3), but the vitrified paint layer remains black).

Full-scale reproduction

Collaboration with traditional potters, vase painters and other artists or artisans (ceramists) in order to establish a pool of skills for later full scale ceramic reproduction. The work involved trial reproduction experiments of full scale artifacts using the documentation of the most common ceramic types of classical vases based on photographs, line drawings, measurements of dimensions, weight, volume etc.

The full-scale reproduction process presented technical difficulties to the traditional potters due to the complexity of certain ancient shapes. Other problems encountered concerned vase painting details (i.e. failure to reproduce the so called relief line of Attic vases).

People involved

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ΘΕΤΙΣ