CANCELED - Investigating ancient glazing processes: Lead-glazed earthenware of Bernard Palissy (1510-1590)

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Abstract

Bernard Palissy (1510-1590) produced outstanding lead-glazed ceramics that made him very famous during his life and are still regarded as an example of technical skill today. Since the sixteenth century, many potters have risen to the challenge heard by Palissy and have tried, more or less successfully, to imitate his work. The question of his original glazing process remains nonetheless unresolved.
By chance, we have today access to a unique archaeological material excavated between 1984 and 2003 from his workshop in in Paris, that give us a chance to discover his manufacture process through a replication and comparison approach between glazes originating from Palissy's workshop and synthesized in our laboratory. In this work, we focus on the characterisation of yellow to brown transparent glazes.

The analysis of 15 archaeological samples (SEM-EDS) attests that Palissy used of an iron coloured (3-5 wt% Fe2O3) high lead alumino-silicate glaze (55-65 wt% PbO, 5-7 wt% Al2O3, 26-32 wt% SiO2). The iron richest glazes contain PbFe12O19 crystalline inclusions, which are a marker of the firing process of the artist.

The replication of this chemical system allowed us to study its crystallisation behaviour. It appears that the nature of the iron bearing crystalline phases formed in the glaze during firing (Fe2O3, Pb2Fe2Si2O9, PbFe12O19), their abundance and microstructure strongly

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depend on the firing temperature, cooling rate and iron content (2.6 – 10.5 wt% Fe2O3). These results obtained from replicated glasses enlighten our observations of Palissy's work and allow us to make some assumptions about the temperatures Palissy may have used.
Unfortunately, replicating the glaze alone is not completely satisfying because of the existence of chemical interactions between the ceramic body and the glaze. Therefore, we replicated glazes of different compositions with a ceramic body and we investigated their reactivity during various firing processes, through measuring the Al2O3 composition profiles in the glazes. Understanding the thermal behaviour of the glaze and the paste together is essential to hypothesise the process used by Palissy.

Keywords: Palissy, lead glazes, magnetoplumbite, glaze, clay interaction