

Co and Cu K-edge XANES study of the glazed tiles from the Fronteira Palace (Lisbon, Portugal)

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The Fronteira Palace located in Lisbon was built during the second half of the seventeenth century. The Palace is known for its unique azulejos (Portuguese glazed tiles) dated from the 17th and 18th century which were profusely used both in the interior of the palace and on its magnificent formal gardens. The gardens have a unique cladding of high relief lustre tiles combined with blue-and-white tiles adorning the Gallery of the Kings (Figure 1). Samples of azulejos from Gallery of the Kings, were characterized in a previous work by PIXE [1]. They display a silica alkali-lead glass or silica alkali glass and chromophores based on Co for the blue colouring and Cu for the red-lustre effect [1]. In fact, the analyses showed that the colourless glaze has a lead-alkali silicate composition and a copper-rich lustre overlay, in agreement with the Manise lustreware production (Spain) after the XVII century [2]. To achieve a comparison between manufacturing techniques and pigments used samples were characterized using X-Ray Absorption Spectroscopy. XANES techniques can provide information on the structural behaviour of transition metals in the vitreous matrix - namely, their bonding state and coordination environment, providing relevant information regarding the Co and Cu as chromophores [3][4].



Figure 1: Gallery of the kings in the gardens of the Fronteira Palace (A), detail of a Lustre tile (B).

References

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