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P51 - The collection of Hispano-Moresque tiles from the Museum of the Roman Theatre, in Lisbon: chemical characterisation by μ-PIXE

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

The great earthquake that partially destroyed the city of Lisbon in 1755, brought to light the ruins of a Roman theatre that was used as a structure for later constructions up until the 18th century. Those constructions included private middle-class houses, some exhibiting interesting decorations. One of such houses was decorated with Hispano-Moresque tiles dated from the 15th-16th century. The collection includes flat monochromatic, arista and cuerda-seca tiles.
The chemical characterisation of these Hispano-Moresque tiles was performed by particle-induced X-ray spectrometry (μ-PIXE) on small polished fragments so to avoid surface corrosion and/or contaminants contribution. Both the glaze and the ceramic paste were analysed. Five colours were identified: white, blue, green, amber and brown, which are in agreement with the typical colour palette for these type of tiles. All glazes contain high contents of lead oxide (ca. 40-50 wt%), with higher amounts for white and blue glazes. Also, two groups of colours can be distinguished based on the SnO2 content, used for opacifying white and blue glazes and, therefore, with higher contents in these colours (ca. 5-10 wt%) than in the others (0-2 wt%).
Calcitic clays were used for the ceramic bodies of the tiles, as the chemical composition shows: all samples display a similar composition, with CaO contents between 15-27 wt% and relatively low Fe2O3 contents (< 5 wt%).
The archaeological collection of the Museu do Teatro Romano is the first collection from Lisbon to be characterised and the results are part of a wider study that aims at comparing several Portuguese and Spanish collections.

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