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Acta Cryst. (2011) A67, C524**Archaeometric study of terra sigillata hispanica from baetican workshops**

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Terra Sigillata was a pottery of great success during the Roman Empire. It was easily recognized by its characteristic high gloss red coating slip. These ceramics, usually decorated, were quickly established as semi-luxury earthenware replacing *Campanian* crockery characterized by their black slips inspired from Greek tradition. The production of *Terra Sigillata* began in Central Italy in the mid-1st century BC, and from there, it spread to the rest of the Italian peninsula and then to the Mediterranean coast. Great Centers of production were set up at the south of Gaul (Montans and La Graufesenque) and in the Roman province of Hispania (Tricio and Andújar). From archaeological data available it is known that there were several sigillata workshops at the *Baetica*. The most important one was at *Isturgi* (Los Villares de Andújar, Jaén). From the study of decorative motives, the smaller workshops are suspected to be branches of the first one. The study of sigillata is very important to get data about Roman technological achievements. There are already papers dealing with Andújar sherds among several other samples [1] [2], but to the best of our knowledge, there is not a systematic archaeometric study about *Baetican Sigillata*. Here, we will report a full characterization of selected samples (both plain and decorated) from the main Baetican workshops: Andújar (Jaén), Cartuja and Albayzin (Granada), Alameda, Antequera, Singilia Barba and Teba (Málaga). Several Gallic and Italian samples have also been analysed, for the sake of comparison. The pastes characterization includes elemental analysis from X-ray fluorescence and Rietveld quantitative phase analysis (RQPA) of X-ray powder diffraction data. Scanning electron microscopy combined with energy dispersive X-ray and grazing-incident X-ray powder diffraction have been used to characterize the slips of the pottery.

The present work is framed within an on-going research project [3], whose objective is the elaboration of a database, ANDARDIDA (ANDalusian ARchaeological Difrraction DAtabase) that contains archaeometrical information that can be extracted from certified/stamped samples. The objective of this database is to have reference information for sample comparison with future sherds extracted in archaeological excavations. In this way, we may be able to establish relationships between new samples and those already studied, to deduce historic information related to its origin and/or circulation.

[1] A.J. López, G. Ncolás, M.P. Mateo, V. Piñón, M.J. Tobar, A. Ramil, *Spectrochimica Acta Part B* **2005**, *60*, 1149-1154. [2] A. Gómez-Herrero, E. Urones-Garrote, A.J. López, L.C. Otero-Díaz, *Appl. Phys. A* **2008**, *92*, 97-102. [3] J.M. Compañá, L. León-Reina, M.A.G. Aranda, *Bol. Soc. Esp. Ceram. V.* **2010**, *49(2)*, 113-119.

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Acta Cryst. (2011) A67, C524**Moroccan geometric patterns & Symmetry**

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Since the seventh century the Islamic world has had great artistic and decorative traditions. In this vast space that was spread across Europe, Africa and Asia, we find artistic treasures of unrivalled beauty. The Islamic ornamental art that is found on diverse materials such as tiles, bricks, wood, brass, and plaster may be classified in two types: the tri-dimensional ornamental art called Muqarnass (Stalactites) and the plane ornamental Arabesque. Most of all these realisations are characterized by its symmetry. The term symmetry is most often employed to describe the exact correspondence of size and shape. It may refer to other kinds of regularities which are displayed by objects which are made up of identical or similar parts. The term is also used to refer to harmony of proportions. But in ornamental arts the symmetry is associated with what is beautiful, attractive, and perfect [1]. We are interested here in the plane ornamental art and to the patterns achieved by the method used by the Moroccan craftsmen, called "Hasba" method (unit measure). It is a geometric construction or "Tastir" rather used by craftsmen working on wood [2], [3]. The greater part of these achievements has a group of symmetry P4m. Starting from existing motifs, we will achieve a large variety of patterns with different symmetry group.

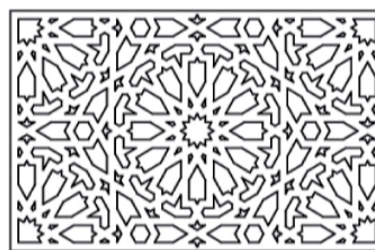


Figure 1: A pattern with symmetry group P6m.

[1] S.J. Abbas, A. Salman, *World Scientific*, Singapore. New Jersey. London . Hong Kong, **1995**. [2] A. Thalal, M.J. Benatia, A. Jali, Y. Aboufadii, M.A. Elidrissi Raghni, *Accepted for publication in the Special Issue on Tessellations of the Symmetry journal Hungary* **2010**. [3] A.Thalal, J. Benatia A. Jali, *Acta Cryst.* **2008**, *A64*, C635.

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Acta Cryst. (2011) A67, C524-C525**Provenance determination of 18th-century ceramic pastes by x-ray powder diffraction**

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We use x-ray powder diffraction (XRD) to investigate a series of 18th-century pharmaceutical ceramic jars manufactured in different workshops of the Iberian Peninsula. The aim of this work is to assess the usefulness of XRD, in combination with statistical analysis techniques, in order to determine the workshop where the objects were elaborated. For this purpose, two types of samples are analyzed: i) ceramic jars with a well-established manufacture location (i.e., authenticated by independent methods). Objects from several workshops around the Iberian Peninsula are included in the study; ii) ceramic jars of unknown origin.