

Optically Stimulated Luminescence dating of roman mortars in Braga (N Portugal)

Jorge Sanjurjo-Sánchez,¹ Carlos Alves,² Guadalupe Teruel²

¹University Institute of Geology, University of A Coruña,
Edificio Servizos Centrais de Investigación, Campus de Elviña,
15071 A Coruña, Spain, e-mail: jsanjurjo@udc.es

²Centro de Investigação Geológica, Ordenamento e Valorização de Recursos
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Escola de Ciências, Universidade do Minho. 4710 - 057 Braga, Portugal

Building materials provide valuable historical information on the past of ancient and Heritage buildings. Their characterization provides information on the origin of raw materials, manufacture, building technologies and sometimes information on different building phases and periods (chronology). Chronological information can be obtained from written historical documents, but they are unusual or detailed information is absent. As an alternative, relative dating methods are the study of building stratigraphy, chronotypology, mensiochronology and chemical analysis of building materials.

Among stony materials, mortars are very interesting for chronological studies, as they cannot be reused (as usually occurs with rock ashlars or bricks). The use of absolute dating methods (based on ionizing radiation) has been explored in the last decades to be applied on different kinds of mortars. Radiocarbon has been used to date organic matter (e.g. charcoal, bones, vegetal fragments) contained on mortars, and different protocols have also been tested to date the lime component of lime mortars. Such method has been successfully applied in some cases, although some methodological problems have limited its use [1,2]. Luminescence dating has been commonly used to date other building materials (bricks). Optically stimulated luminescence dating (also called OSL) has also been tested on some mortars, including lime, mud mortars and Portland cement. Early works have provided promising results [3-8].

In this work we attempt OSL dating procedures to date ancient mortars from the Roman Theatre of *Bracara Augusta* (Braga, N Portugal). Three mortar samples from the theatre foundations have been collected and OSL was tested to get the absolute age of the building and assess dating procedures on different mineral fractions.

References:

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