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## Optically stimulated luminescence dating of Palaeolithic cave sites and their environmental context in the western Mediterranean

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### Citation

Dörschner, N. (2018, May 3). *Optically stimulated luminescence dating of Palaeolithic cave sites and their environmental context in the western Mediterranean*. Retrieved from <https://hdl.handle.net/1887/62212>

Version: Not Applicable (or Unknown)

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**Date:** 2018-05-03

Stellingen behorende bij het proefschrift *“Optically Stimulated Luminescence dating of Palaeolithic cave sites and their environmental context in the western Mediterranean”*,  
Nina Dörschner, Universiteit Leiden, 3 Mei 2018

- 1) Dating of individual quartz grains is a promising technique for age determination of Palaeolithic cave sites in the western Mediterranean. However, special attention needs to be paid to sediment composition and local site formation processes that might lead to heterogeneous dose rates and post-depositional mixing in stratigraphical layers.
- 2) Luminescence characteristics of sediments from the western Mediterranean region are diverse and therefore the suitability of each sample for dating needs explicit testing.
- 3) The lack of chronological control for many discovered sites in the western Mediterranean restricts our knowledge regarding the role of north-western African populations in the colonisation of the European continent during the Pleistocene and the history of Neanderthal populations and their subsistence strategies in southern Iberia.
- 4) The integration of palaeoenvironmental signals stored at Palaeolithic caves into the archaeological and chronological research data enables conclusive statements regarding climatic changes on local and regional scales and their potential influence on human behaviour and dispersal patterns in the past.
- 5) Mineral grains such as quartz and feldspar are ubiquitous in natural sedimentary environments: hence out of all Quaternary dating techniques, OSL dating contains the biggest potential to determine absolute ages for yet undated archaeological and anthropological sites.
- 6) As each Quaternary dating technique has its own restrictions, cross-checks between different dating techniques should be pursued to enhance the reliability of age models for archaeological and palaeoenvironmental sites.
- 7) Given the high complexity of environmental radiation fields within sedimentological cave deposits, in-situ dose rate measurements should be conducted to supplement data from bulk sediment samples.
- 8) Quaternary dating techniques are fundamental to anthropological and archaeological research. The background of dating experts is, however, usually in natural sciences. Universities should therefore more strongly encourage students from those faculties to take courses in archaeology and vice versa.
- 9) Having a baby is hard to combine with a PhD. Everything takes a little longer. But at the end you are rewarded with both.