

Amphibolite; tools, slabs and outcrops. A preliminary study of provenances using Micro-X ray Diffraction

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During the Neolithic period amphibolite is a raw material that seems to have been highly regarded for its hard and durable qualities, and used in the production of ground stone tools [1]. Less noticeable has been the use of amphibolite as building material, namely slabs as described in [2]. In fact, this type of rock outcrop is less abundant than e.g. a granite and does not allow the extraction of blocks large enough to be used as anchors of medium and big size dolmens. Rabuje 5 (R5) is a small dolmen dated to the middle-second half of the 4th millennium BCE [3], located in Monforte, (Portugal). This tomb is of particular interest to be used as a case study since it was built solely with slabs of amphibolite, and within only amphibolite ground stone tools were found.

This study aims to compare, through μ XRD, the provenance of amphibolite artefacts and slabs from R5 with those of outcrops located at a distance less than 1000 meters. In this sense three ground stone tools (two axes and one adze), two sampled slabs, and one outcrop sample were analysed. μ XRD is a powerful non-destructive technique that allows the identification of crystalline phases of a rock/artefact. Because amphibolite is a very strong anisotropic lithology (minerals are aligned defining a lineation) it were performed analyses with the samples with several orientation that nevertheless gave similar results.

The μ XRD results (Fig.1), suggests a different provenance for axe and slabs. The mineralogy of the slab matches the mineralogy of the nearby outcrop (namely hornblende and albite), whereas the axe diffractogram does not exhibit hornblende but actinolite. In a preliminary conclusion the slabs come from the studied and nearby outcrop; similar mineralogical composition, and compatible dimensions, however axe was produced from different source/outcrop.

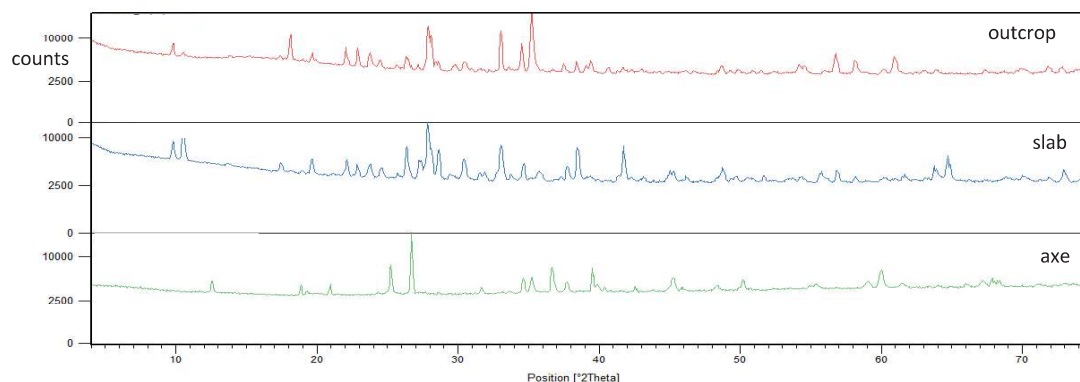


Figure 1- Diffractograms from outcrop, slab from R5 and axe found in R5.

Financed by MEGAGEO (PTDC /EPH-ARQ/3971/2012) and LARES(ALENT-07-0224-FEDER-001761)

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