
The thermal alterations of Bruniquel Cave's speleofacts: experimental and archaeometric approach

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Abstract

In archaeological context, heating marks on materials around the fireplace, like wall, supports and cladding still generate many questions. Here, a study on calcite and limestone response to heating, and more specifically on speleothems' calcite, is applied to the understanding of the heated or combustion areas of the Bruniquel Cave's structures. It is based on hearths experimentations and laboratory test in furnace. These experimentations allowed to reproduce the thermal alterations visible on Bruniquel's speleofacts and to propose an estimation of the corresponding temperatures. Moreover, the ability of some fuels (wood and bone) to induce these thermal alterations has been tested. It allows to discuss the minimal fuel quantity required for their reproduction. Finally, many observations on the thermal impacts visible on the experimental hearths' ground, as well as the black deposit presence, identified as a char different than soot, allowed to build relations with the type of fuel used. These results could be used to argue about the question of the heated areas' function in the Bruniquel Cave.

Keywords: Experimentation, hearths, fuels, speleothems, thermal alterations, Neandertal, Bruniquel Cave.

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