# A Micro-Contextual Approach to Neandertal use of fire at the site of Pech de l'Azé IV (Dordogne, France)

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**Résumé**

Long assumed to be a fundamental technological achievement essential for human adaptation, pyrotechnology is increasingly the subject of Paleolithic research, both in documenting the evidence for fire in sites [e.g. 1] and in developing new methods for analyzing fire residues [2, 3]. Recent studies have shown that the use of fire varied considerably during the Middle Paleolithic (_˜250– 40 ka) of southwest France, with significantly less evidence of fire during colder periods even though it was regularly used during warmer periods [4-9]. These findings suggest that fire did not immediately assume the importance it now has, highlighting the questions of how Neandertals used fire and its role in their overall adaptation. Here we present a new project to re-excavate numerous combustion features contained in Layer 8 (MIS 5c) at Pech de l'Azé IV [10, 11]. Our goal is to understand variability in fire signatures by characterizing combustion zones in terms of their surficial features, and their subsurface attributes, which reflect alterations of sediment and objects within the three-dimensional volume affected by the heat. Employing a micro-contextual approach, the excavations will be performed at a much finer scale than typically done for archaeological deposits of this age and will benefit from the application of several recently developed techniques for analyzing prehistoric fire residues. Our methodology will be based on the removal of individual blocks of sediment (_˜10 cm thick), with further work carried out under laboratory conditions. Some of these blocks will be resin impregnated and used for micromorphology sampling, while others will be excavated. In addition to proveniencing artifacts, all sediments will be provenienced and collected directly into 5 cl vials, permitting multiple samples to be taken from any particular micro-context. Further analyses will provide data on fire attributes, including temperatures achieved, depth of heat penetration, presence/absence of organic residues, and the type of fuel used. This permits study the sediment itself at the same level of detail as is normally given to artifacts, and will provide a means of more accurately reconstructing the deposit and its components in their original associations.

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