**Call for applications**

EUR ODYSSEE opens a call for applications for a Ph.D. contract of a duration of 36 months starting October 1st, 2020 in **prehistoric pyrotechnology.** The research will be carried out at the CEPAM laboratory (Nice, France) under the supervision of Isabelle THÉRY-PARISOT and Auréade HENRY.

**Procedure, applying conditions and recruitment**

* This call closes **on** **September 5th, 2020, at 23 :59 CET**.
* The application should comprise:
	+ A detailed CV
	+ A doctoral thesis project:

Based on the text Description of the Doctoral Research Project below, the applicant will write a doctoral project of **5 pages maximum**, by **using the template provided** for this purpose (see Template further below)*.*

* The main evaluation criteria of the proposal are the following:
	+ Quality, interdisciplinarity and originality of the project and its scientific positioning at the national, european and international levels ;
	+ Adequacy between the applicant’s academic background and the proposed research ;
	+ Ability of the project to fit within the research guidelines presented in this call for applications
	+ General coherence, theoretical and methodological orientations
	+ Feasibility aspects (implementation, duration…)
* The applications will be examined by a commission composed of the thesis advisor, a member of the Host Laboratory (CEPAM), as well as the desk officer of the EUR ODYSSEE.
* This commission will select a restricted number of candidates to audition. Interviews will take place in Mid-September 2020, either in person or through a videoconference. The final ranking will be established within a week, the doctoral contract starting on October 1st.

**Submission procedure**

Save the CV and the Doctoral Project as a **pdf** and send the file per **e-mail** at the following addresses : isabelle.thery@cepam.cnrs.fr; aureade.henry@cepam.cnrs.fr

**No application will be considered after the deadline**.

**Description of the Doctoral Research Project**

Pyrotechnology as a marker of human adaptations to the environment :

Multi-proxy approaches of archaeological combustion remains

**Introduction : fire, societies, environments**

At the heart of prehistoric techno-economies and cultures, fire is maybe one of the most important vectors of human evolution, from the manufacture of the first palaeolithic adhesives to the fabrication of pottery and metal smelting[[1]](#footnote-1); [[2]](#footnote-2); [[3]](#footnote-3). The productions linked to- and the uses of fire are deeply intertwined with a society’s traditions and know-hows, their expression being variable according to each group’s needs and the resources the environment offers[[4]](#footnote-4). In other terms, when it comes to fire, the *chaînes opératoires* at play are as diverse as they are imbricated: hence, the study of ancient practices around the hearths allows shedding light on all sorts of human-environment interactions and their evolutions.

Archaeologists are gradually realizing the diversity of clues that can be found within combustion structures[[5]](#footnote-5). Ash and charcoal, hearth sediments, burned crusts mand materials are only now starting to be properly documented and sampled according of the methodology of different disciplines. Analysed at different scales, from the macro- and microscopic to the molecluar level, these remains provide invaluable information on the spatial organization, the depositional processes and the contents of combustion structures, used to trace the human practices and environmental conditions that led to their formation[[6]](#footnote-6).

Thus, archaeological contexts from different regions and time periods are currently unveiling functional, technical or even cognitive aspects linked to the use of fire, from the acquisition of resources needed for subsistence, fuel, or as raw materials- to the construction, the use and finally, the abandonment of the hearth and the discard of the remains. Within this general context, experimental archaeology, ethnoarchaeology or computer modeling are often imprescindible tools for a finer interpretation of the results.

**Observation scales, thematical and disciplinary fields**

The variability of fire-related behaviours is considered as being related to bioclimatic or societal factors, which have to be identified and decrypted at different spatial and temporal scales: is it possible to highligh different behaviours on the long or the very long term ? Through which clues and research angles? How is it possible to approach much finer variations from an occupation to another -or even within a same occupation- that would reveal seasonal, functional or spatial patterns linked to varying uses of fire ?

The candidate is free to build her or his research on pyrotechnology around one or more of these aspects:

* The **function** and/or **functioning** of **combustion structures**
* **Heat treatment techniques** of one orseveral **materials**
* **Territorial aspects** of fire management (landscape physiognomy, mobility…)

These issues will be addressed through one or several subdisciplines stemming from the following research areas :

* **bioarchaeology** (archaeology of biological remains) **of burned remains**
* **micromorphology** (microstratigraphical analysis) **of combustion structures**
* **archaeochemistry** (biomolecular isotopic analyses) **of heated/burned materials**

**Research of the Host Laboratory and archaeological corpuses**

The CEPAM laboratory (CNRS UMR 7264, Nice, France) contributes to the development of interdisciplinary research in pyroarchaeology through work in geomorphology/micromorphology, bioarchaeology and archaeochemistry. This research relies on a network of collaborations with other institutions in France and abroad, from which the candidate will be able to benefit.

The topics more specifically targeted by this call for applications are: (i) **environmental and societal changes** happening between the **Late Glacial and the Early Holocene** (14.6– 8.2 ka cal. BP) (ii) **prehistoric hunter-gatherer adaptations to harsh environments** (mainly arctic and subarctic climates) and (iii) **Last hunter-gatherers** **and first farmers** in Western Europe (8-6 ka cal. BP). In order to create new knowledge on these wide issues, the CEPAM Laboratory has access to a corpus of multi-layered, well-preserved and well-dated, recently or currently excavated sites, located in France, the US and the Russian Federation.

While preferably addressing at least one of these three topics, the perspective of the doctoral research can be **diachronical or synchronical**, andrely on one to several occupation levels from one to several archaeological sites, depending on the objectives developed in the research. **The choice of the study corpus will take place according to two modalities :**

1. The candidate **already** **possesses a study corpus** (an entire or a partial one) on which she/he wishes to work. **Note** that in this case, access to the material will be a criterion in the evaluation of the project’s feasibility. If needed, the CEPAM can complete a corpus by providing study materials that will be consistent with the candidate’s project.
2. The candidate **does not have a study corpus yet**, butshe/he possesses a precise idea of the approach she/he wishes to develop and of the type of context(s) needed to implement the research. In this case, the CEPAM will propose corpus options that are consistent with the nature of the research.

In any case, it is expected that the candidate participates to fieldwork, which will allow her/him to increase her/his knowledge of the archaeological context and to collaborate with different research teams.

**Indicative Bibliography**

Aldeias, V. 2017. *Experimental Approaches to Archaeological Fire Features and their Behavioral Relevance.* Current Anthropology 58, S16: S191–S205.

Audiard B., Théry-Parisot I., Blasco T., Mologni C., Texier P.-J., et al.. 2019. Crossing taxonomic and isotopic approaches in charcoal analyses to reveal past climates. New perspectives in Paleobotany from the Paleolithic Neanderthal dwelling-site of La Combette (Vaucluse, France). *Review of Palaeobotany and Palynology* 266 : 52-60.

Buonasera, T., Herrera-Herrera, A.V., Mallol, C. 2019. Experimentally Derived Sedimentary, Molecular, and Isotopic Characteristics of Bone-Fueled Hearths. *J Archaeol Method Theory* 26, 1327–1375.

Delhon C., Didier Binder, Pascal Verdin, Arnaud Mazuy. Phytoliths as a seasonality indicator? The example of the Neolithic site of Pendimoun, south-eastern France. *Vegetation History and Archaeobotany*, Springer Verlag, 2020, 29, pp.229-240

Choy, K., Potter B. A., McKinney H. J., Reuther J. D., Wang A. W., Wooller M. J. 2016. “Chemical Profiling of Ancient Hearths Reveals Recurrent Salmon Use in Ice Age Beringia.” PNAS. doi:10.1073/pnas.1606219113.

Henry A., Théry-Parisot I., 2014. Fuel Use and Management during the Mesolithic: Recent Approaches in Archaeobotany. *P@lethnology* 6: 65-83.

Holdaway S. J, Davies B., Fanning P. C. 2017. Aboriginal Use of Fire in a Landscape Context: Investigating Presence and Absence of Heat-Retainer Hearths in Western New South Wales, Australia. *Current Anthropology* 58, S16: S230-S242.

Mallol C, Henry A. 2017. Ethnoarchaeology of fire: methodological considerations. *Current Anthropology* 58, S16: S217–S229.

Rageot, M., I. Théry-Parisot, S. Beyries, C. Lepère, A. Carré, A. Mazuy, J.-J. Filippi, et al. 2019. Birch Bark Tar Production: Experimental and Biomolecular Approaches of a Common and Widely Used Prehistoric Adhesive. Journal of Archaeological Method and Theory26: 276–312.

Robson H.K. *et al.* 2018. Illuminating the prehistory of northern Europe: organic residue analysis of lamps. In: Lozovskaya O.V., Vybornov, A. A., Dolbunova E. V., eds. *Subsistence strategies in the Stone Age, direct and indirect evidence of fishing and gathering. Materials of the international conference dedicated to the 50th anniversary of V. M. Lozovski*, Saint-Petersburg.

Théry-Parisot I., Chabal L., Costamagno S., eds. 2010. The taphonomy of burned organic residues and combustion features in archaeological contexts. *P@lethnologie* 2.

Thoms A.V., Short L. M., Kamiya M, Laurence A. R. 2018. Ethnographies and Actualistic Cooking Experiments: Ethnoarchaeological Pathways toward Understanding Earth-Oven Variability in Archaeological Records, *Ethnoarchaeology* 10:2, 76-98.

Wroth K., Cabanes D., Marston J. M., Aldeias V., Sandgathe D., Turq A., Goldberg P., Dibble H. L. (2019). Neanderthal plant use and pyrotechnology: phytolith analysis from Roc de Marsal, France. *Archaeological and Anthropological* *Sciences* 11: 4325–4346.

Zhou, Z., Y. Guan, X. Gao, and C. Wang. 2013. Heat Treatment and Associated Early Modern Human Behaviors in the Late Paleolithic at the Shuidonggou Site. *Chinese Science Bulletin* 58 (15): 1801–1810.

**Template :**

**Doctoral Research Proposal**

**2020-2023**

**Title Page**

*Insert the title of your project*

*here*

**Start page count : maximum 5 pages**

1. **Contextualization of the proposed research**

This section should highlight the novel and/or interdisciplinary aspects of the research

* 1. **Overview**
	2. **State-of-the-art**
	3. **Objectives**
1. **Materials and Methods**

Emphasis should be put on the appropriateness of the materials and methods to answer the research question(s)

* 1. **Materials to be studied**
	2. **Methods implemented**
1. **Results**

It should be specified what potential regional/national/international impact the expected results will have

* 1. **Expected scientific outcomes**
	2. **Dissemination of the results**
1. **Transfer of knowledge**

Suitability of the candidate to carry out the proposed research and adequacy of the Host Institution

* 1. **Skills previously acquired by the candidate**
	2. **New skills the candidate aims at developing**
1. **Strengths of the proposal**

The workplan is expected to be coherent with the proposed activities and the duration of the doctoral contract.

* 1. **Feasibility**
	2. **Coherence**
	3. **General impact**

**Stop page count= maximum 5 pages**

1. Roberts B. W., Radivojević M. (2015). Invention as a Process: Pyrotechnologies in Early Societies. *Cambridge Archaeological Journal* 25: 299-306 [↑](#footnote-ref-1)
2. Perlès, C. 1977. Préhistoire du Feu. Paris: Masson.  [↑](#footnote-ref-2)
3. Hauptmann A., ed. 2000. La pyrotechnologie à ses débuts. Evolution des premières industries faisant usage du feu*. Paléorient* 26 (2). [↑](#footnote-ref-3)
4. Théry-Parisot, I., Costamagno S., Henry A., eds. 2009. *Fuel Management During the Palaeolithic and Mesolithic Periods: New Tools, New Interpretations*. BAR International Series 1914, Oxford: Archaeopress. [↑](#footnote-ref-4)
5. Mallol C., Henry A. 2018. Introduction. Ethnoarchaeology of fire and combustion residues: Current approaches. *Ethnoarchaeology* 10 (2): 73-75. [↑](#footnote-ref-5)
6. e.g., Leierer L., Jambrina-Enríquez M., Herrera-Herrera A. V.,  Connolly R.,  Hernández C. M.,  Galván B., Mallol C. 2019. Insights into the timing, intensity and natural setting of Neanderthal occupation from the geoarchaeological study of combustion structures: A micromorphological and biomarker investigation of El Salt, unit Xb, Alcoy, Spain. *PLOS ONE* **14**:4 [↑](#footnote-ref-6)