

Ancient burned Human Remains Probed by Neutron and Optical Vibrational Spectroscopy

G. Festa^{1,2}, O. Rickards¹, C. Martinez – Labarga¹, F. Martini³, M.P.M. Marques^{4,5}, L.A.E. Batista de Carvalho⁶, D. Gonçalves⁶, S.F. Parker⁷, C. Andreani^{1,2}

Context

Burned bones are abundant in archaeological and paleontological sites as a result of ancient burial practices. The effect of burning on bones are mainly colour changes, shrinkage, crystallization, and surface alterations. The effect in the crystallinity index can be used to assess parameters of the burning process (temperature and time exposure).



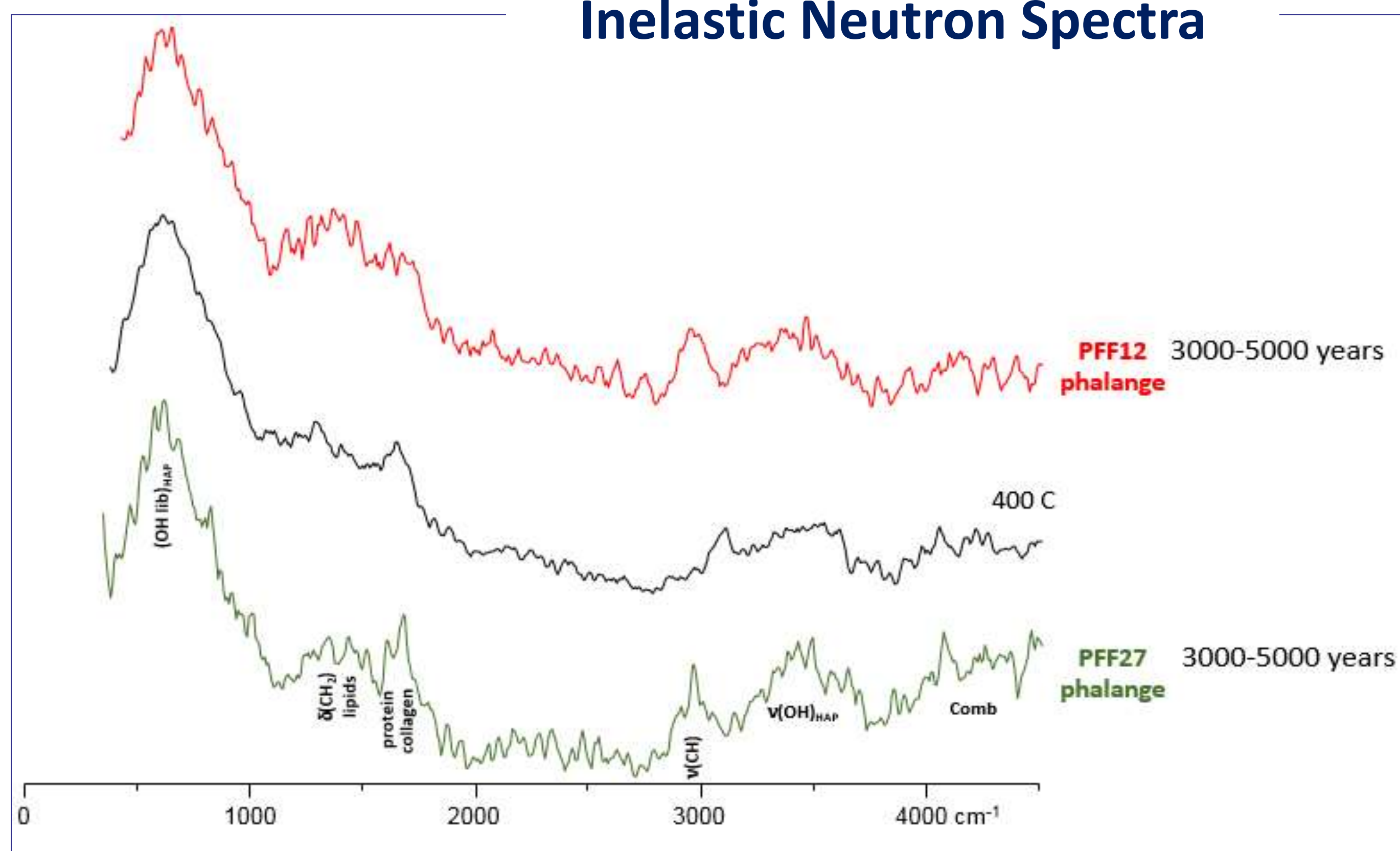
Neutron Analysis

This study aims at developing a reliable method for probing heat-induced diagenesis in human bones of archaeological interest, by INS spectroscopy. The results were coupled to Raman and FTIR data, will lead to an improved understanding of the changes undergone by bone upon burning events, allowing a reliable assessment of the burning conditions.



Samples from Neolithic and Medieval period are investigated with neutron probe.

Inelastic Neutron Spectra



The archaeological samples Inelastic Neutron Scattering spectra to see the whole vibrational profile of the system.

Cofinanciato por:



FCT Fundação para a Ciência e a Tecnologia
MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E ENSINO SUPERIOR Portugal

¹Centro NAST– University of Rome Tor Vergata, Italy
²Museo Storico della Fisica e Centro Studi e Ricerche "Enrico Fermi", Rome, Italy
³Università degli Studi di Firenze, Florence, Italy
⁴"Molecular Physical Chemistry" R&D Unit, Univ. Coimbra, Portugal
⁵Dep. Life Sciences, Fac. Science and Technology, Univ. Coimbra, Portugal
⁶Lab. Forensic Anthropology, Centre of Functional Ecology, Univ. Coimbra, Portugal
⁷ISIS Facility, STFC Rutherford Appleton Laboratory, Didcot, UK