

Union Geofisica Mexicana, 3-8 November 2013, Puerto Vallarta, Mexico

GEOS, Vol. 33, No 1

**Archaeomagnetic and thermoluminescence combined analysis as a promising dating tool in archaeology:  
A case study of an ancient workshop, Kato Achaia, Greece.**

Tema, E.<sup>1,2</sup>, Polymeris, G.<sup>3</sup>, Morales, J.<sup>4</sup>, Goguitchaichvili, A.<sup>4</sup>

<sup>1</sup> *Dipartimento di Scienze della Terra, Università degli Studi di Torino, via Valperga 35, 10125, Torino, Italy, [evdokia.tema@unito.it](mailto:evdokia.tema@unito.it)*

<sup>2</sup> *ALP-Alpine Laboratory of Palaeomagnetism, via G.U. Luigi Massa 6, 12016, Peveragno, Italy*

<sup>3</sup> *Aristotle University of Thessaloniki, Solid State Physics Section, 54124 Thessaloniki, Greece*

<sup>4</sup> *Laboratorio Interinstitucional de Magnetismo Natural, Instituto de Geofísica, UNAM, Campus Morelia, Michoacan, Mexico, [jmorales@geofisica.unam.mx](mailto:jmorales@geofisica.unam.mx), [avto@geofisica.unam.mx](mailto:avto@geofisica.unam.mx)*

We present here the results of a detailed archaeomagnetic and thermoluminescence investigation of two ancient kilns excavated at Kato Achaia, Greece. The studied kilns were part of a rescue excavation and were discovered during the works for the construction of a new building. Both of the sampled kilns, are circular and were part of a bigger production workshop, probably used for the production of bricks or ceramics. Systematic archaeomagnetic sampling was carried out collecting 9 brick samples from the first kiln (KL3) and 12 brick samples from the second kiln (KL5). Magnetic mineralogy measurements have been carried out in order to determine the main magnetic carrier of the samples and to check their thermal stability. The archaeomagnetic direction of each kiln was determined by standard thermal demagnetization experiments and their archaeointensity was defined using the Thellier modified by Coe method. The archaeomagnetic ages of both kilns were calculated after comparison of the kilns' full geomagnetic field vector with the reference secular variation curves calculated at the site coordinates. In addition, thermoluminescence study has been performed on representative samples from both kilns, using conventional laboratory procedures. The dating results obtained from the two methods have been compared and the last firing of each kiln has been estimated from the combination of the two techniques. The obtained results are in good agreement with archaeological evidence of the site and suggest that both kilns were in use during Hellenistic times. These results show that archaeomagnetic and thermoluminescence dating can be successfully combined and can offer a powerful dating tool for archaeological research.