

10th May 2019 – h. 09:00-11:00

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Archaeomagnetic dating and applications in Cultural Heritage

During the last decades, the number and the variability of the scientific laboratory techniques applied to the cultural heritage research have been significantly increased and nowadays the natural sciences offer valuable tools for better understanding the traces of our past. Among other techniques, archaeomagnetism, is now considered a well-established and reliable method for the study, evaluation and rescue of our cultural heritage, thanks to the great advances on the technology and laboratory protocols applied to the study of the variations of the Earth's magnetic field in the past. Archaeomagnetic dating is based on the principle that the magnetic minerals contained in many baked clay archaeological artefacts (e.g., kilns, hearths, bricks, pottery), when heated at high temperatures and cooled in the presence of the Earth's magnetic field, may acquire a thermal remanent magnetization (TRM) with direction parallel and magnitude proportional to the ambient magnetic field. For the regions where a detailed reference secular variation (SV) curve is available, archaeomagnetic dating is possible after the comparison of the remanent magnetization measured on the undisturbed archaeological artefacts with the reference SV curves. Apart from an absolute dating method, archaeomagnetism may also offer several other useful information for cultural heritage research, such as information on the heating temperatures of baked clays, ancient technology, interaction of volcanic eruptions with human settlements, authenticity of ancient artifacts, palaeoclimate changes and many others. In the proposed lecture, the main theoretical principles of archaeomagnetism will be presented and the most important applications of archaeomagnetic research in cultural heritage investigation will be shortly discussed. The aim of such a lecture is to provide at the young researchers a general introduction on archaeomagnetism, in order to be able to independently evaluate its applicability and benefits in their own research in the future.