Spectroscopic studies in Archaeomagnetism: Unveiling the Earth's past through light and magnetism

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Abstract:

Paleomagnetic analysis of archaeological materials is crucial for understanding the behaviour of the past geomagnetic field. It enables us to know the past variations of the geomagnetic field through the study of the remanent magnetization acquired by the archaeological materials, which are made up of baked clay-rich minerals when heated at high temperatures.

In the archaeomagnetic study, spectroscopic analysis is crucial in distinguishing between transported and locally produced artefacts to perform archaeomagnetic investigations. It provides valuable scientific data that helps identify the composition, elemental signatures, firing conditions, and mineralogy of artefacts, which are key factors in determining whether they were made locally or transported from elsewhere. By comparing these spectroscopic results with known local sources or regional patterns, we can identify inconsistencies that indicate whether the artefacts are transported or locally produced materials. In this present talk, we will discuss an overview of the archaeomagnetism concept and spectroscopic analyses and how they will be helpful in discarding transported artefacts. In addition, some specific spectroscopic techniques and their results in the literature on X-ray Diffraction (XRD), Fourier Transform Infrared spectroscopy (FTIR), and Mossbauer spectroscopy, as well as my preliminary work on it, will be discussed.

References:

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