



Evidence for maghaemite in baked adobe from Spanish archaeological sites: possible implications for archaeomagnetic data

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Archaeomagnetic studies of baked adobe from 3 sites in central and southern Spain revealed a common NRM behaviour showing discrete unblocking temperature spectra at 300-350 °C and 580-600 °C. Detailed rock magnetic measurements have been carried out on bulk samples and on magnetic extractions in order to determine the magnetic phases contained in those materials. Acquisition and demagnetisation of isothermal remanence confirms the presence of a low-intermediate coercivity phase which demagnetises at 300-350 °C. The shape of the hysteresis loops and the magnetisation and coercivity ratios are consistent with those quoted for maghaemite. X-ray diffractograms support the dominance of maghaemite in the samples.

The occurrence of maghaemite has been inferred for adobes of different settings and ages (from the 2nd century BC to the 9th century AD). It may represent a primary a heating-related combustion product, an oxidation (ie. weathering) product associated with burial, or a primary oxide of the original material. It may be of greater importance in archaeomagnetism than previously thought, especially if it exhibits thermal instability during palaeointensity experiments.