



## Multi-disciplinary dating of a baked clay kiln excavated at Chieri, Northern Italy

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A combined archaeological, archaeomagnetic and thermoluminescence study has been carried out on a rescue excavation kiln, discovered at Chieri, Northern Italy. Rock magnetic experiments indicate the dominance of a low coercivity magnetic phase, such as magnetite and/or Ti-magnetite as the main carrier of the remanent magnetization. Stepwise thermal demagnetization experiments generally show a stable characteristic remanent magnetization (ChRM). The mean archaeomagnetic direction, calculated from 17 independently oriented samples, is  $D=18.2^\circ$ ,  $I=66.8^\circ$  with  $\alpha_{95}=2.6^\circ$  and  $k=184$ . Archaeomagnetic dating of the kiln has been obtained after comparison of the kiln's ChRM direction with the reference curves produced by the SHA.DIF.3K European regional geomagnetic field model.

Independent dating of the kiln has also been obtained from thermoluminescence (TL) study of two baked clay samples coming from the kiln's walls. The environmental dose has been measured *in situ* using field dosimeters. Accurate TL procedures have been followed for the calculation of annual dose and eventually the TL age.

The combination of the archaeological evidence, archaeomagnetic and TL datings suggest that the last usage of the kiln occurred around the 17th century AD. Comparison of the results obtained from the different methods shows the relevant potential of these techniques on dating of baked clay artefacts; yet it also highlights the range of uncertainty sources affecting measurements, related to the samples and/or to the environment, and the utility of dating cross-checking for obtaining reliable dates.