

## Further archeointensity study on potteries fired in the reconstructed ancient kiln in Japan

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Yamamoto et al. (2015) reported that baked clay samples from the floor of a reconstructed ancient kiln provided a reliable archeointensity estimate of  $47.3 \pm 2.2$  microT which is fairly consistent with the in situ geomagnetic field of 46.4 microT at the time of the reconstruction. The reconstruction was conducted to reproduce an excavated kiln of the seventh century in Japan and potteries of contemporary style (Sue ware) were also fired (Nakajima et al., 1974). We have been performing archeointensity determinations on the potteries using the Tsunakawa-Shaw (LTD-DHT Shaw) method.

We cut mini specimens from a cup type (CupB-1) and a sake-pitcher type (Tokkuri-1) potteries. For the CupB-1 all the specimens were heated in vacuum for acquisition of laboratory thermoremanent magnetization (TRM), and 15 out of the 17 specimens passed the criteria to yield an archeointensity estimate of  $65.8 \pm 2.5$  microT. This is significantly higher than the in situ geomagnetic field of 46.4 microT (about 40 per cent high). Anisotropy of remanent magnetization is not seemed to be a possible cause of the high archeointensity estimate because it is only 3 per cent between the natural remanent magnetization (NRM) directions and laboratory TRM directions based on measurements of anhysteretic remanent magnetization (ARM). We reported these preliminary results from the CupB-1 in last November (Yamamoto et al., 2016 SGEPS meeting).

Other possible cause of the high archeointensity estimate is uncorrectable laboratory alteration using ARMs. It is expected that different type of alterations could occur between heating in vacuum and air. For the Tokkuri-1 the specimens were split into two groups: one was heated in vacuum while the other was in air. So far we have obtained 6 successful results:  $67.1 \pm 12.5$  microT for the vacuum group (N=2) and  $49.1 \pm 2.6$  microT for the air group (N=2). We will continue the experiment and discuss these results.