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Remeasurements and rock magnetic study of legacy samples from Suemura ancient kilns

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Well-known, archeomagnetic secular variation (ASV) curve from Kinki district of Japan has been proposed by Hirooka (1971) and Shibuya (1980), respectively. The best estimated time interval of those ASV curves is ranging from 5th to 8th centuries, which was based on the data from the numbers of Sue-type kilns from Suemura ruin, Osaka Prefecture. Sue-type kilns were operated under reducing condition at very high temperature more than 1200°C. Samples collected from those kilns have been believed to carry very stable thermoremanence and thus being ideal samples for the archeomagnetic study. Detailed demagnetization and rock magnetic study has been therefore regarded as that of secondary importance in the early stage of study.

We could remeasure those legacy samples measured by Hirooka and then stored in the Museum of Osaka Otani University. Detailed AF demagnetization and thermal demagnetization revealed that some of the samples show more than two components beside VRM. Low-coercivity and high-unblocking temperature component ($A1=T2$) and high-coercivity and low-unblocking temperature component ($A2=T1$) are found to exist for the samples of lower $S_{0.3T}$. The Curie temperature measurements and thermal demagnetization of orthogonal 3-axes IRM experiments all suggest the co-existence of those two remanence components. $A2=T1$ component could be the primary TRM origin carried by titanomagnetite, whereas $A1=T2$ component could be CRM origin carried by titanomaghemite.

Keywords: paleosecular variation, archeomagnetism, Suemura