

## Source identification of pottery based on chemical analysis of volcanic glass contained in ceramic paste

### - Example for Usulután pottery in Chalchuapa, El Salvador, Central America -

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In volcanic area, volcanic ash is generally utilized for making pottery as one of materials. Then the chemical analysis of the volcanic glass contained in the paste of the pottery can provide available data to clarify the production and the distribution of the pottery. This approach, which is recently being developed in Japanese archaeology, is supposed to be valuable also in El Salvador, Central America, because chemical composition of volcanic glass from the late quaternary tephras in the area has been previously obtained by using a wave-length-dispersive electron microprobe analyzer (WDS).

The present preliminary work aims at illustrating chemical composition of volcanic glass contained in the paste of Usulután pottery, which is a kind of mesoamerican pottery style in the period from 400 B. C. to 600 A. D. and has been found out in a broad area of Central America. Chemical analyses for two samples, both of which are Usulután-type ceramic pieces and are collected in Chalchuapa, El Salvador, were performed using the WDS (JEOL JXA-8800RL) in the Department of Global Environment and Disaster Prevention Sciences, Hirosaki University. As a result, the volcanic glass in the both samples is chemically similar to the Arce tephra, ejected from Coatepeque Caldera in 72 ka, particularly to the middle unit of the tephra. This result indicates that the Usulután potteries analyzed in the study would be produced in the distribution area of the Arce tephra including Chalchuapa. Moreover, volcanic grains with particular size were possible to be collected selectively to make the potteries, because the middle unit of the Arce tephra is finer than the other units around Chalchuapa.

Keywords: a wave-length-dispersive electron microprobe analyzer , analysis of ceramic paste, Arce tephra