

Early proto-porcelain from China likely made from local materials

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Impressed stoneware and proto-porcelain sherds excavated from Piaoshan (PS) kiln site. Credit: Huansheng Cheng

Early Chinese proto-porcelain was likely made from materials gathered locally, according to a study published November 4, 2015 in the open-access journal *PLOS ONE* by Yu Li from the Fudan University, Shanghai, China, and colleagues.

Researchers excavated the Piaoshan kiln site in June 2012 and found evidence that the sites contents may be the earliest known Chinese proto-porcelain, a type of early Chinese porcelain. Based on the decorated patterns on the impressed stoneware and proto-porcelain sherds, the site is estimated to date to the late Xia (2070-1600 BC), the first dynasty of China. The authors of this study conducted proton-induced X-ray emission analyses of 118 proto-porcelain and 35 impressed stoneware sherds (pottery fragments) from Piaoshan and five subsequent kiln sites in the vicinity.

"The chemical composition of proto-porcelain samples from Piaoshan kiln site is studied for the first time in history", said Yu Li. "The research clearly show the relationship of inheritance of early Chinese proto-porcelain, and fill the large gaps in knowledge regarding the origin of Chinese proto-porcelain."

The authors found that impressed stoneware and proto-porcelain samples from the six kiln sites had distinct chemical profiles. This may indicate that the raw materials at each site were procured locally. They also found what may be one of the earliest attempts at applying artificial calcium-based glaze by mixing woody plant ashes with increased calcia-potash ratios into the glaze formula, the ashes likely leftover from firewood used to heat the kilns.

More information: Li Y, Zhang B, Cheng H, Zheng J (2015) The Earliest Chinese Proto-Porcelain Excavated from Kiln Sites: An Elemental Analysis. *PLoS ONE* 10(11): e0139970. [DOI: 10.1371/journal.pone.0139970](https://doi.org/10.1371/journal.pone.0139970)

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