

# Supporting Information

## Studying and Utilizing Traditional Technologies: Microstructure and Formation

### Mechanism of $\epsilon$ -Fe<sub>2</sub>O<sub>3</sub> on Traditional Japanese Bizen Stoneware

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Table S1. Chemical composition of the ash obtained from pine firewood heated at 600 °C in air.

C	Na <sub>2</sub> O	MgO	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	K <sub>2</sub> O	CaO	MnO	Fe <sub>2</sub> O <sub>3</sub>	SrO	Total
7.70	0.72	7.80	0.99	0.75	14.0	54.0	8.60	0.29	0.80	95.7

The sample was analyzed by X-ray fluorescence analysis (XRF). Unit of numbers in the Table S1 is weight percent (wt %).

Table S2. Chemical composition of the ash obtained from pine firewood heated at 1250 °C in air.

C	Na <sub>2</sub> O	MgO	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	K <sub>2</sub> O	CaO	MnO	Fe <sub>2</sub> O <sub>3</sub>	SrO	Total
2.60	–	10.0	3.00	1.60	–	65.0	12.0	1.00	1.10	96.3

The sample was analyzed by XRF. Unit of numbers in the Table S2 is weight percent (wt %).

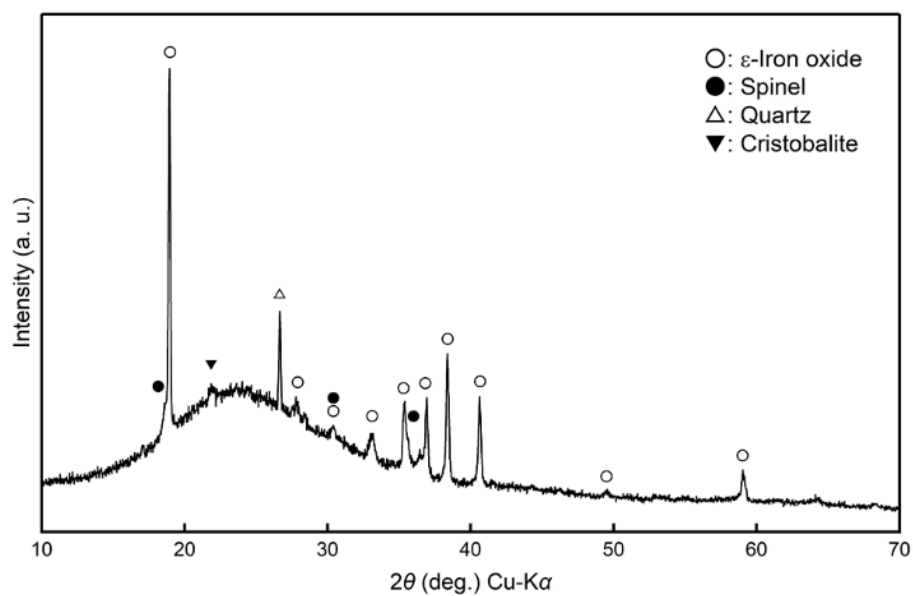


Figure S1. XRD pattern acquired from the surface of a brownish colored Bizen fragment fired in a firewood kiln.

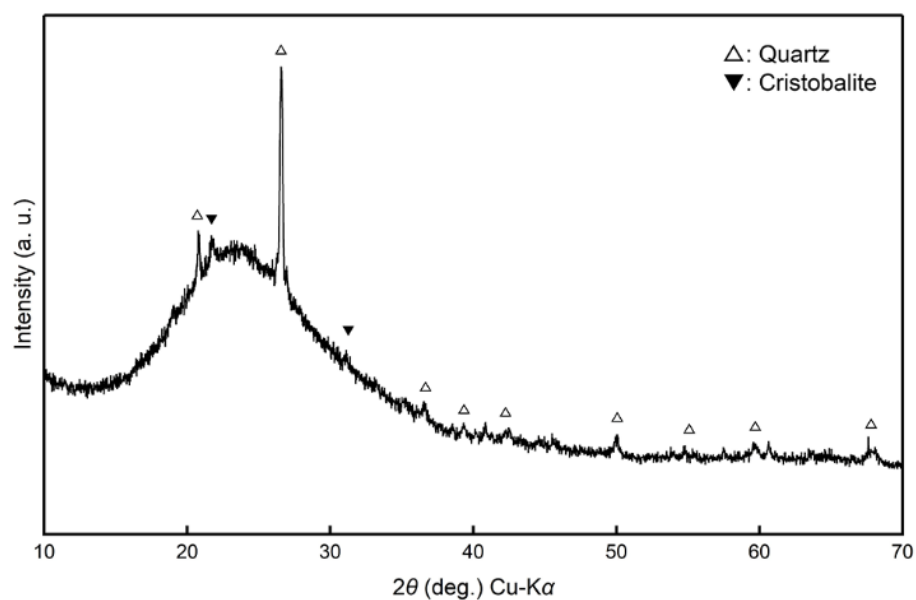


Figure S2. XRD pattern acquired from a reproduced sample surface heated with  $\text{K}_2\text{CO}_3$  to 1230 °C in air, held at the same temperature for 5 h under a mixture of 10 vol% CO gas and 90 vol% Ar gas, and then cooled to room temperature.

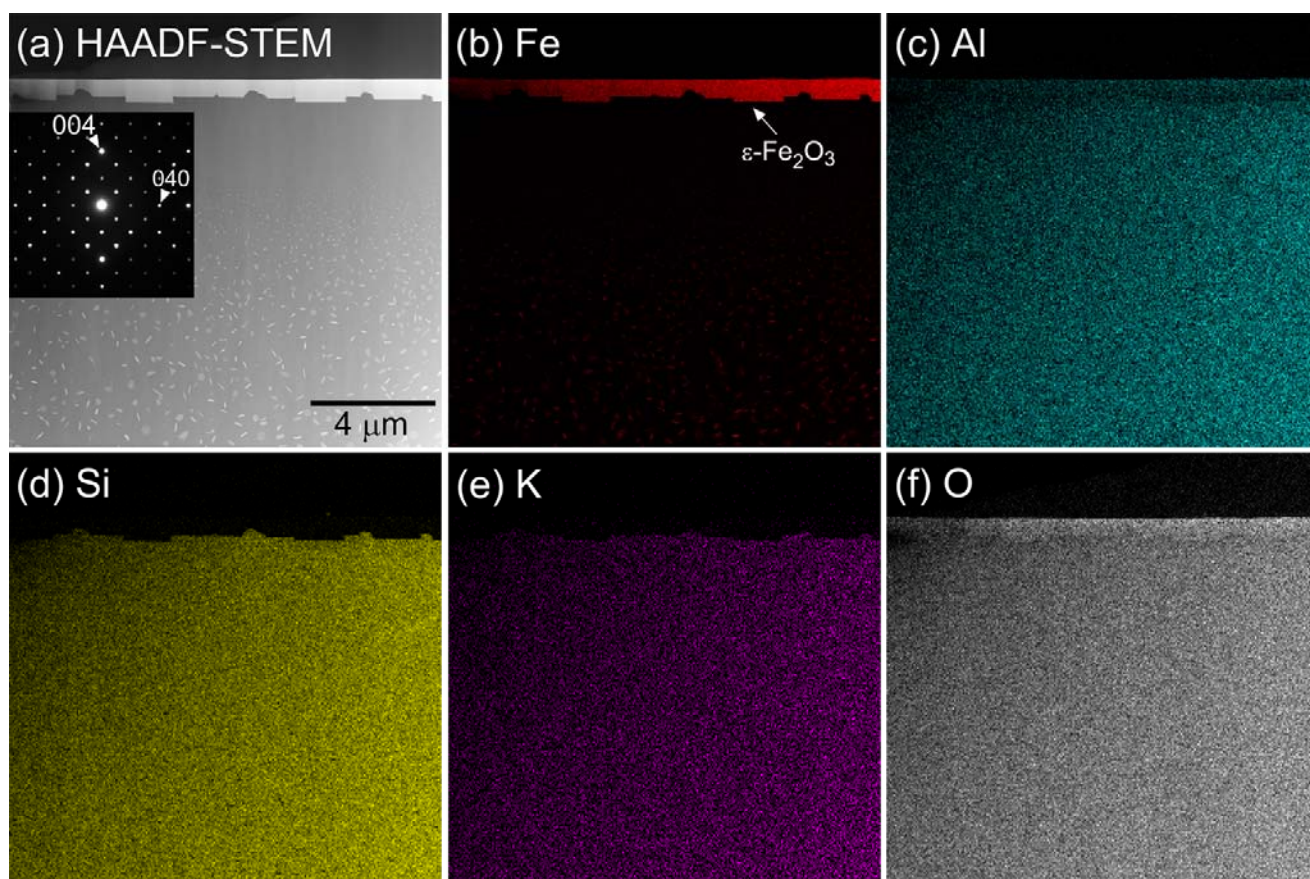


Figure S3. (a) Cross-sectional HAADF-STEM image of the surface of a reproduced brownish Bizen sample and (b) Fe, (c) Al, (d) Si, (e) K and (f) O EDS maps obtained from the same sample.