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Bullion production in imperial China and its significance for sulphide ore smelting world-wide

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Supplementary Material for

Precious metal production in imperial China and its significance for sulphide ore smelting world-wide

Experimental conditions

A series of re-melting of the Baojia slag determined that this became fully liquid at 1100 °C. As a result, this was adopted as the experimental temperature. All batches were charged in clay-bonded graphite crucibles 10cm high and 8cm wide at the rim, and fired in a programmable electric furnace (Figure 1). Heating protocols were set as following: the furnace was first heated to the experimental temperature before the crucibles were placed inside; after holding at 1100 °C for one hour, the crucibles were taken out to cool down to room temperature. The air flow and composition within the furnace were not controlled and it was assumed that the graphite crucibles only provide a mild reducing to neutral redox condition for reactions inside since we did not observe significant reduction of wall thickness in any of these crucibles. Redox conditions of the reactions were mainly controlled by the composition of the slag and the added metallic iron.

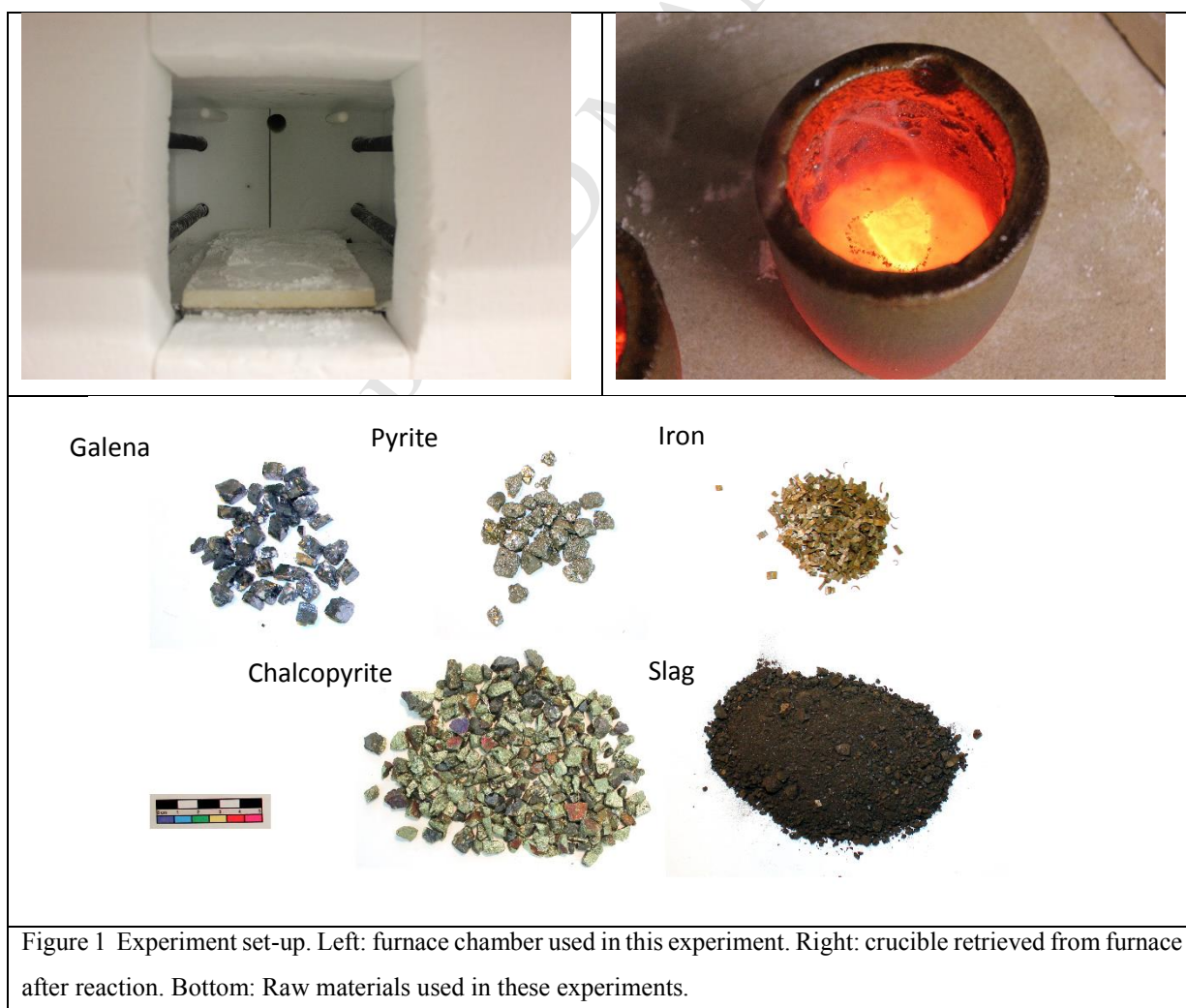


Figure 1 Experiment set-up. Left: furnace chamber used in this experiment. Right: crucible retrieved from furnace after reaction. Bottom: Raw materials used in these experiments.

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