

Gold enrichment in Staffordshire Hoard K468: results of SEM-EDX analysis

Object Type Mount
Date 625-650

Decoration Filigree Glass
Garnet Other



SEM-EDX analysis was undertaken on the front and back of the sheet to which the wires were attached. A scratch on the back was also examined.

Area analysed	No of analyses		Wt% Au	Wt% Ag	Wt% Cu
Front base sheet surface	8	Average	76.4	19.9	3.7
		Standard Deviation	0.27	0.20	0.12
Front base sheet sub-surface	12	Average	75.1	20.9	4.0
		Standard Deviation	0.26	0.34	0.26
Back base sheet surface	12	Average	73.9	22.1	4.0
		Standard Deviation	0.88	1.19	0.43
Back base sheet sub-surface	18	Average	74.9	21.8	3.3
		Standard Deviation	1.31	1.33	0.07
Back base sheet scratch	4	Average	73.8	22.3	3.9
		Standard Deviation	0.34	0.59	0.42

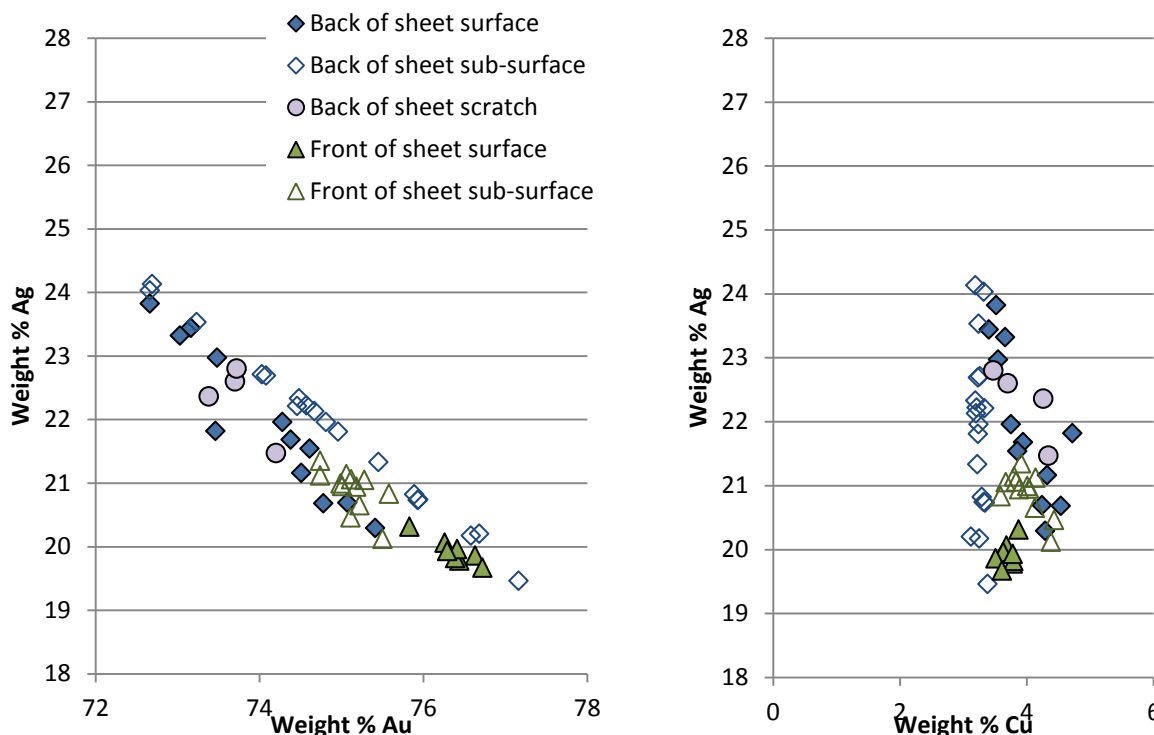
SEM-EDX surface and sub-surface compositions for each component analysed (the results are normalised). This analysis was carried out as part of the gold enrichment study. For full details of methodology and associated results see report PR07444-10 and PR07444-15

The analysis revealed a c.1.0 wt% loss of silver from the front surface of the base sheet, and a difference of less than 5% from surface to core, most likely indicative of corrosion that can occur during burial which results in natural surface enrichment but could also be the result of some deliberate surface treatment.

The analysis of the back revealed a small increase in copper and silver at the surface which may have come from the solder used, although the analysis of the surface of a scratch from antiquity suggests that this may have occurred post-deposition from close contact with corroding silver objects in the burial environment. The surface of the scratch on the back sheet had a similar composition to the surface, possibly confirming that this sheet had not been enriched.

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SEM-EDX analysis of K468



Plots of gold vs silver and copper vs silver contents, based on SEM-EDX analysis, showing the differences between the sub-surface and surface analyses.

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Analysed September 2013

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