

Gold enrichment in Staffordshire Hoard K811: results of SEM-EDX analysis

Object Type Hilt-collar  
 Date 620-650  
 Decoration Filigree  Glass   
 Garnet  Other

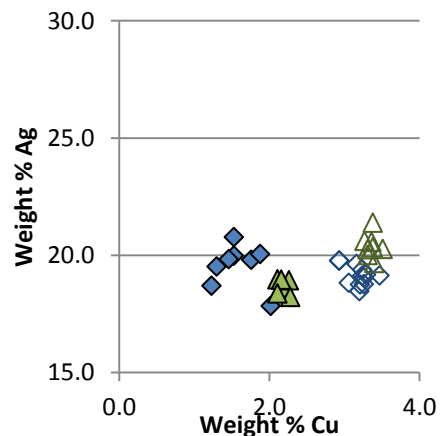
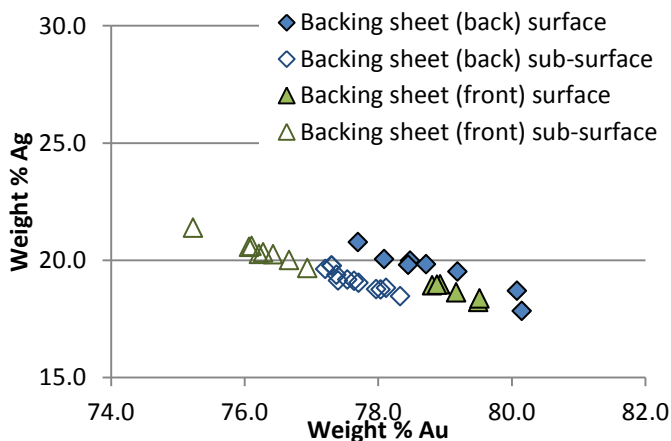


SEM-EDX analysis was undertaken on the back and front of the base sheet to which the filigree wires were attached.

Area analysed	No of analyses		Wt% Au	Wt% Ag	Wt% Cu
Backing sheet (back) Surface	6	Average	78.8	19.6	1.6
		Standard Deviation	0.89	0.91	0.28
Backing sheet (back) Sub-surface	12	Average	77.6	19.2	3.2
		Standard Deviation	0.37	0.42	0.15
Backing sheet (front) Surface	6	Average	79.1	18.7	2.2
		Standard Deviation	0.31	0.33	0.07
Backing sheet (front) Surface	8	Average	76.2	20.4	3.4
		Standard Deviation	0.50	0.50	0.07

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

Analysis of the front revealed a c.1.7 wt% loss of silver from the surface, and a difference of less than 10% from surface to core, which could be 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 of the hilt collar revealed a small loss of copper at the surface, most likely indicative of corrosion that can occur during burial which results in natural surface enrichment. There was a small increase in silver at the surface which may be due to the solder or could have occurred from close contact to corroding silver objects in the burial environment.



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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