

Gold enrichment in Staffordshire Hoard K833: results of SEM-EDX analysis

Object Type Hilt-mount
Date 600-650

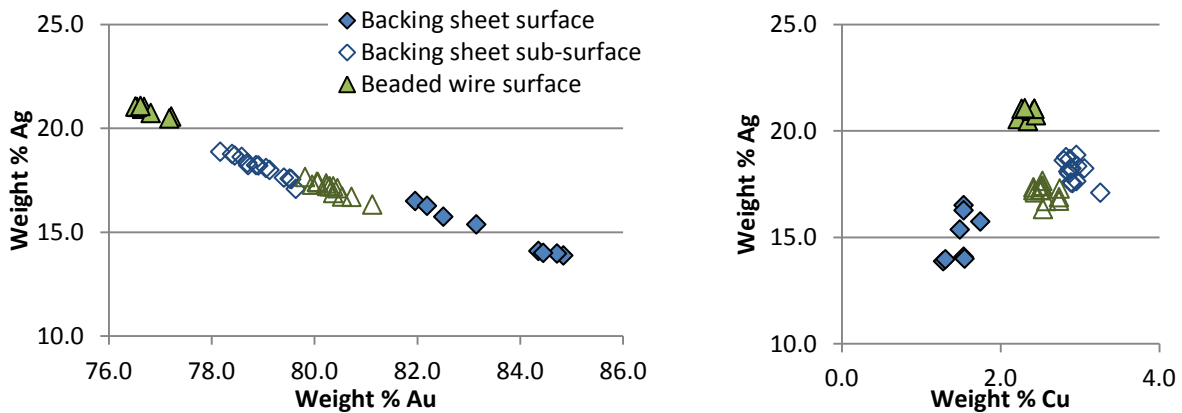
Decoration Filigree Glass
Garnet Other



SEM-EDX analysis was undertaken on a filigree wire and the base sheet to which the wires were attached.

Area analysed	No of analyses		Wt% Au	Wt% Ag	Wt% Cu
Base sheet surface	8	Average	83.5	15.0	1.5
		Standard Deviation	1.20	1.11	0.15
Base sheet sub-surface	14	Average	79.0	18.1	2.9
		Standard Deviation	0.47	0.52	0.12
Filigree wire surface	8	Average	76.7	20.9	2.4
		Standard Deviation	0.27	0.24	0.09
Filigree wire sub-surface	14	Average	80.3	17.1	2.6
		Standard Deviation	0.34	0.36	0.11

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



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.

Comparison of the sub-surface compositions of each component suggests that both components may have been made from a similar gold alloy. The analysis revealed a c.3.2 wt% loss of silver from the surface of the base sheet (a difference of c.17% from surface to core), which is indicative of treatment to deliberately enrich the gold colour of the metal. Only copper and small amounts of silver are normally lost from the surface during burial. The analysis of the wire revealed a small loss of copper at the surface, most likely indicative of corrosion that results in natural surface enrichment in gold that can occur during burial. There was an increase in silver at the surface of the wire which is most likely from close contact to corroding silver objects in the burial environment.

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Analysed January 2014

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