

Gold enrichment in Staffordshire Hoard K458: results of SEM-EDX analysis

Object Type Pommel
Date 620-650

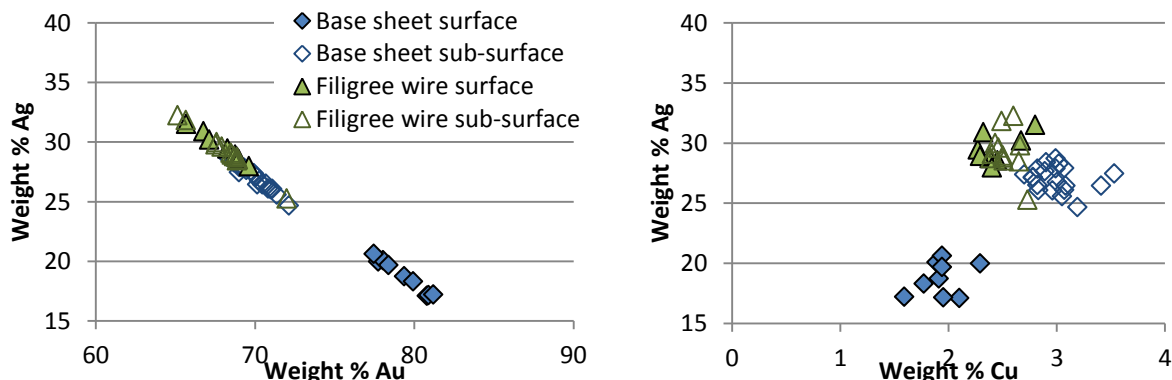
Decoration Filigree Glass
Garnet Other



SEM-EDX analysis was undertaken on the 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	9	Average	79.3	18.8	1.9
		Standard Deviation	1.46	1.39	0.19
Base sheet sub-surface	20	Average	70.0	27.0	3.0
		Standard Deviation	1.02	1.04	0.21
Filigree wire surface	8	Average	68.1	29.5	2.4
		Standard Deviation	1.34	1.23	0.19
Filigree wire sub-surface	12	Average	68.2	29.3	2.5
		Standard Deviation	1.73	1.76	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.

The analysis revealed a c.8.3 wt% loss of silver from the surface of the base sheet (a difference of c.31% 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 filigree wire revealed a loss of copper from the surface, most likely indicative of corrosion that can occur during burial which results in natural surface enrichment. Comparison of the sub-surface compositions of the base sheet and wire suggests that they may have used the same, or a similar, gold alloy. The base sheet is the only component showing gold enrichment and therefore this suggests that the sheet was treated separately before being incorporated into the pommel.

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Analysed August 2013

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