

Gold enrichment in Staffordshire Hoard K552: results of SEM-EDX analysis

Object Type Hilt-collar
Date 580-610

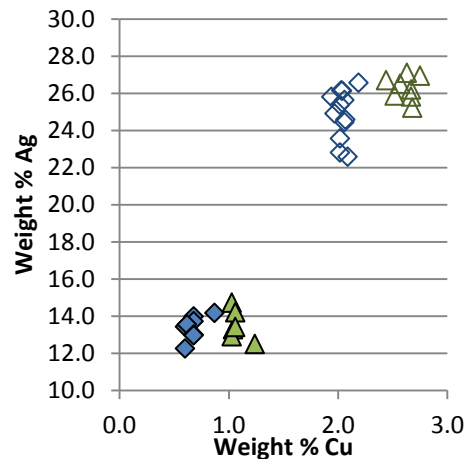
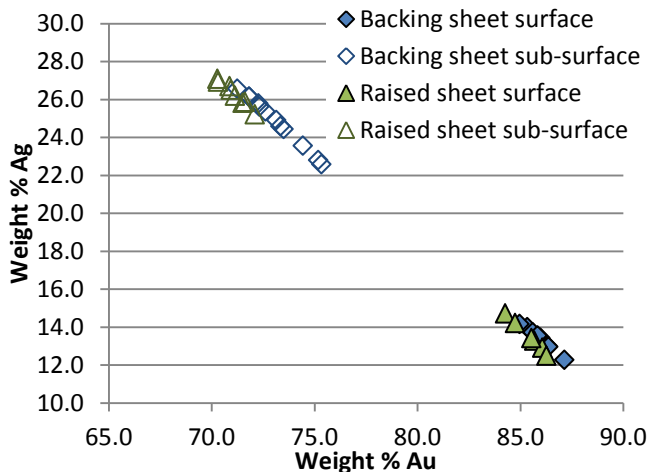
Decoration Filigree Glass
Garnet Other



SEM-EDX analysis was undertaken on the base sheet and also on the sheet used to raise the filigree wire.

Area analysed	No of analyses		Wt% Au	Wt% Ag	Wt% Cu
Backing sheet surface	8	Average	85.9	13.4	0.7
		Standard Deviation	0.67	0.62	0.09
Backing sheet sub-surface	12	Average	73.1	24.9	2.0
		Standard Deviation	1.33	1.33	0.06
Raised sheet surface	6	Average	85.4	13.5	1.1
		Standard Deviation	0.78	0.82	0.08
Raised sheet sub-surface	10	Average	71.1	26.3	2.6
		Standard Deviation	0.63	0.64	0.10

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.11.5 wt% loss of silver from the surface of the base sheet (a difference of c.46% 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 sub-surface composition of both sheets is similar suggesting the same, or a similar, gold alloy was used and both had been enriched to the same level.

Eleanor Blakelock
Analysed January 2014

This report contains unpublished research. Its contents should not be published without the permission of the Keeper of the Department of Conservation and Scientific Research.