

Gold enrichment in Staffordshire Hoard K381: results of SEM-EDX analysis

Object Type Pommel
Date 610-630

Decoration Filigree Glass
Garnet Other

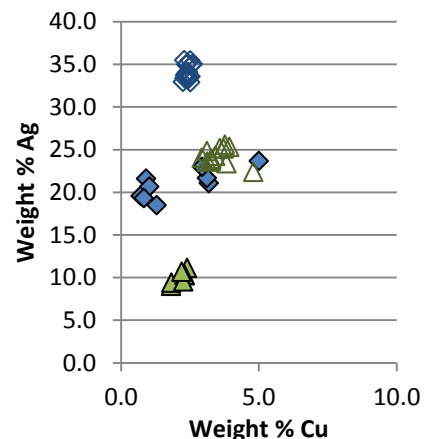
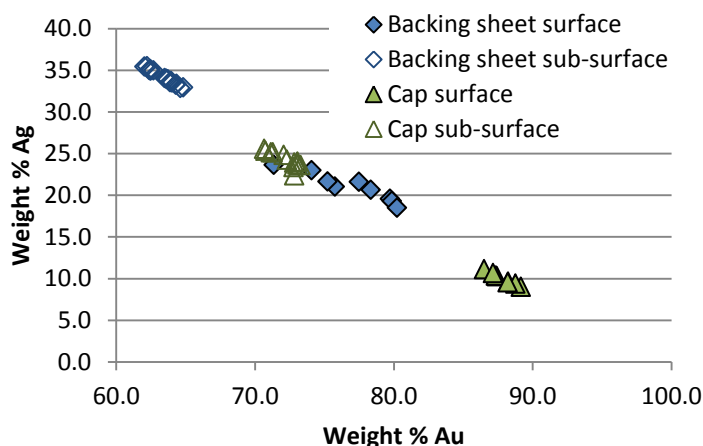


SEM-EDX analysis was undertaken on the base sheet and the cap.

Area analysed	No of analyses		Wt% Au	Wt% Ag	Wt% Cu
Base sheet surface	9	Average	76.9	21.0	2.1
		Standard Deviation	3.02	1.70	1.50
Base sheet sub-surface	16	Average	63.5	34.1	2.4
		Standard Deviation	0.93	0.89	0.10
Top of cap surface	8	Average	87.8	10.0	2.2
		Standard Deviation	0.89	0.71	0.22
Top of cap sub-surface	12	Average	72.1	24.3	3.6
		Standard Deviation	0.96	0.95	0.50

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.13.1 wt% loss of silver from the surface of the base sheet (a difference of c.39% from surface to core), which is indicative of treatment to deliberately enhance 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 cap also revealed it was treated with a c.14.3 wt% loss of silver from the surface of the base sheet (a difference of c.59% from surface to core). Comparison of the sub-surface compositions revealed that both components were made of a distinct gold alloy.



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.

Eleanor Blakelock
Analysed December 2013

This report contains unpublished research. Its contents should not be published without the permission of the Keeper of the Department of Conservation and Scientific Research.