

Gold enrichment in Staffordshire Hoard K354: results of SEM-EDX analysis

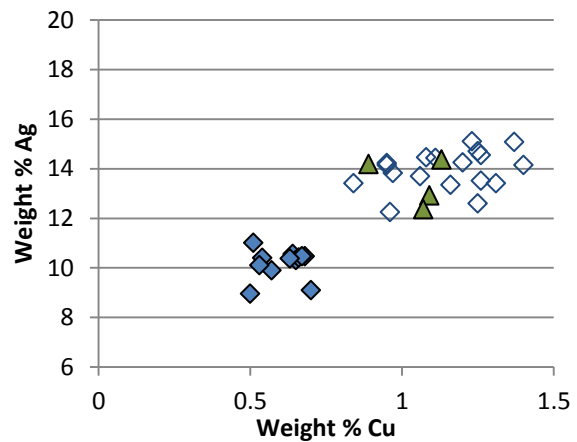
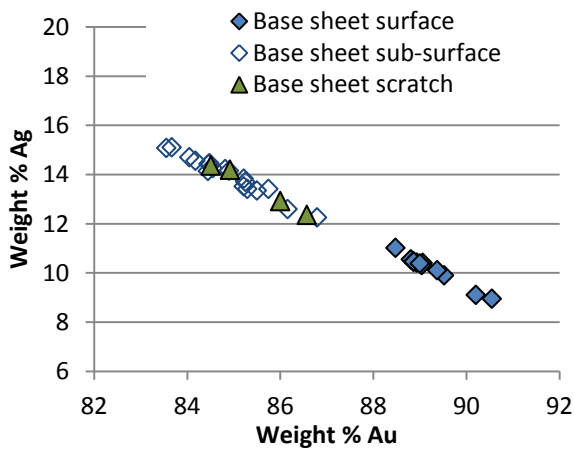
Object Type Hilt Collar  
 Date 620-650  
 Decoration Filigree  Glass   
 Garnet  Other



SEM-EDX analysis was undertaken on the gold sheet at the base of the hilt collar.

Area analysed	No of analyses		Wt% Au	Wt% Ag	Wt% Cu
Surface	12	Average	89.2	10.2	0.6
		Standard Deviation	0.60	0.60	0.07
Scratch	4	Average	85.5	13.5	1.0
		Standard Deviation	0.95	0.97	0.11
Sub-surface	18	Average	85.0	13.9	1.1
		Standard Deviation	0.84	0.78	0.16

SEM-EDX surface and sub-surface compositions (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.

SEM-EDX analysis of the sub-surface indicated a composition of approximately 84-86 wt% gold, 13-15 wt% silver, the rest being copper. The analysis revealed a c.3.7 wt% loss of silver from the surface (a difference of c.27% 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 surface of the scratch had a similar composition to the sub-surface, with a relatively small loss in copper most likely due to corrosion, confirming that the treatment was carried out prior to burial.

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 Analysed July 2013

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