

Gold enrichment in Staffordshire Hoard K685: results of SEM-EDX analysis

Object Type Buckle
Date 600-650

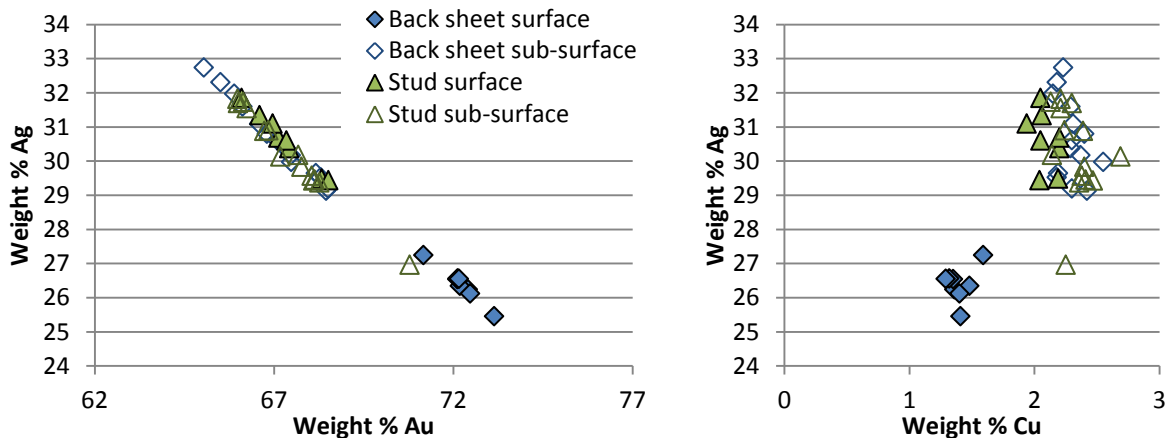
Decoration Filigree Glass
Garnet Other



SEM-EDX analysis was undertaken on the back of the buckle and also on one of the studs.

Area analysed	No of analyses		Wt% Au	Wt% Ag	Wt% Cu
Back surface	8	Average	72.2	26.4	1.4
		Standard Deviation	0.54	0.50	0.10
Back sub-surface	14	Average	67.0	30.7	2.3
		Standard Deviation	1.12	1.16	0.11
Stud surface	8	Average	67.3	30.6	2.1
		Standard Deviation	0.81	0.85	0.10
Stud sub-surface	14	Average	67.4	30.3	2.3
		Standard Deviation	1.29	1.32	0.15

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.

Both components had a very similar core composition suggesting they were made from the same gold alloy. The analysis of the back sheet revealed a c.4.3 wt% loss of silver from the surface (a difference of c.14% 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 stud only revealed a loss of copper from the surface, most likely indicative of corrosion that can occur during burial which results in natural surface enrichment.

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Analysed October 2013

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