

Gold enrichment in Staffordshire Hoard K462: results of SEM-EDX analysis

Object Type Sword pyramid
Date 600-635

Decoration Filigree Glass
 Garnet Other

SEM-EDX analysis was undertaken on a range of components including, the base of the pyramid, the suspending bar and a cell wall.



Area analysed	No of analyses		Wt% Au	Wt% Ag	Wt% Cu
Base surface	8	Average	82.2	16.6	1.2
		Standard Deviation	0.50	0.51	0.03
Base sub-surface	12	Average	86.5	12.4	1.1
		Standard Deviation	0.38	0.38	0.05
Suspending bar surface	8	Average	84.7	14.0	1.3
		Standard Deviation	0.61	0.59	0.09
Suspending bar sub-surface	12	Average	87.8	10.9	1.3
		Standard Deviation	0.70	0.71	0.13
Cell wall surface	8	Average	81.6	17.2	1.2
		Standard Deviation	0.77	1.08	0.40
Cell wall sub-surface	12	Average	86.3	11.4	2.3
		Standard Deviation	0.55	0.82	0.79

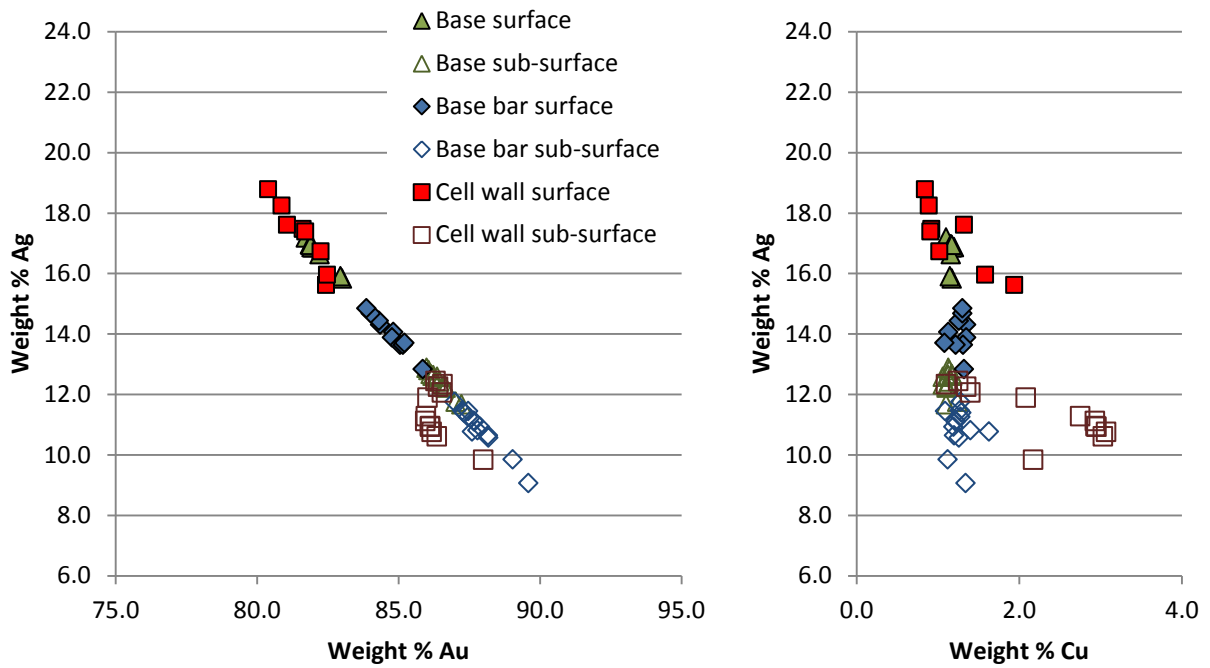
SEM-EDX surface and sub-surface compositions for each component analysed (the results are normalised). This analysis was carried out as part of the gold enrichment study. For full details of methodology and associated results see report PR07444-10 and PR07444-15

The analysis revealed a small loss of copper at the surface of most components, which is indicative of natural surface enrichment that can occur during burial. There was an increase in silver at the surface which may have come from the solder used or is perhaps re-deposited silver from close contact to corroding silver objects in the burial environment.

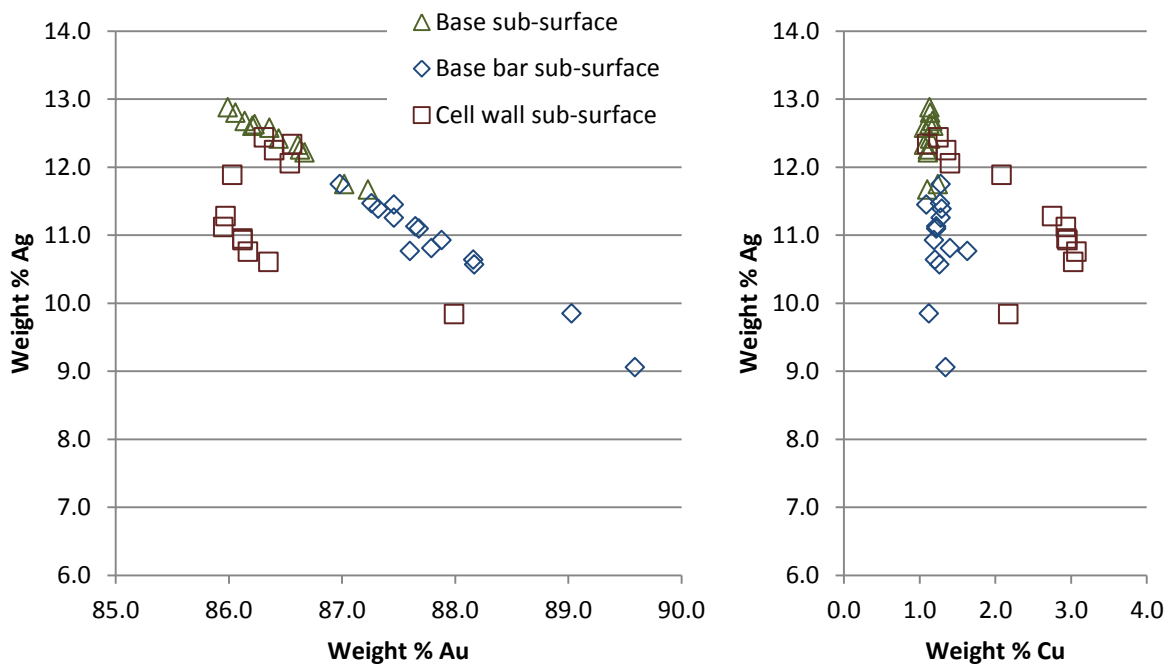
Comparison of the sub-surface compositions suggests that all the components were most likely made from a different gold alloy.

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SEM-EDX analysis of K462



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.



Plots of gold vs silver and copper vs silver contents, based on SEM-EDX analysis, showing the differences between the sub-surface analyses of each component analysed.

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Analysed October 2013

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