

Gold enrichment in Staffordshire Hoard K451: results of SEM-EDX analysis

Object Type    Sword pyramid  
 Date            625-650

Decoration    Filigree     Glass          
                   Garnet       Other       

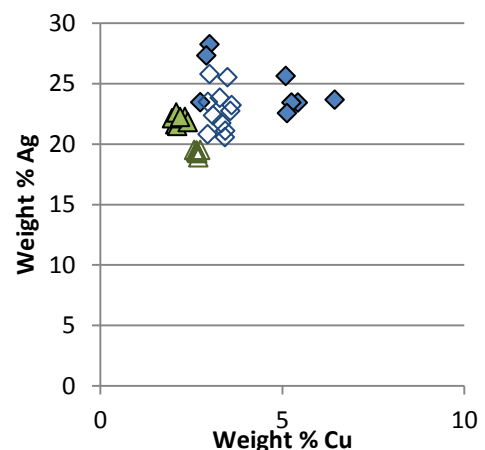
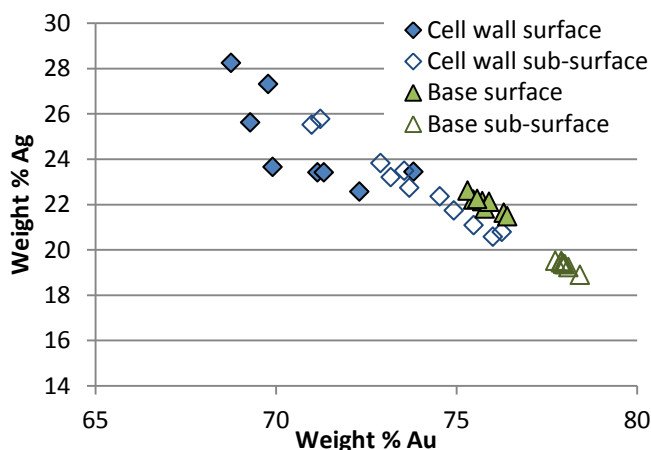


SEM-EDX analysis was undertaken on the cell wall on one side of the pyramid as well as the base.

Area analysed	No of analyses		Wt% Au	Wt% Ag	Wt% Cu
Cell wall surface	8	Average	70.8	24.7	4.5
		Standard Deviation	1.69	2.10	1.40
Cell wall sub-surface	11	Average	73.9	22.8	3.3
		Standard Deviation	1.77	1.76	0.25
Base sheet surface	8	Average	75.8	22.0	2.2
		Standard Deviation	0.39	0.37	0.14
Base sheet sub-surface	8	Average	78.0	19.3	2.7
		Standard Deviation	0.20	0.20	0.05

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 on the surface of the base sheet, most likely indicative of corrosion that can occur during burial which results in natural surface enrichment. There was a small increase in silver at the surface, and of copper on the surface of the cell wall, which may be contributions from the solder or from close contact to corroding silver objects in the burial environment. Comparison of the sub-surface compositions of the cell wall and base suggests that these components were most likely made from different gold alloys.



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.

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 Analysed September 2013

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