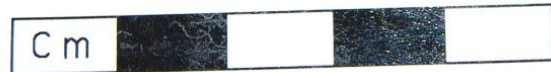


**Gold enrichment in Staffordshire Hoard K545: results of SEM-EDX analysis**

Object Type Mount  
Date 630-670

Decoration Filigree  Glass   
Garnet  Other



SEM-EDX analysis was undertaken on the side of the circular mount, on the two different sheets and wire used to construct it. A repeat analysis was carried out on the sheet on the back of the mount.

| Area analysed                     | No of analyses |                    | Wt% Au | Wt% Ag | Wt% Cu |
|-----------------------------------|----------------|--------------------|--------|--------|--------|
| Backing sheet (back) surface      | 6              | Average            | 85.5   | 11.8   | 2.7    |
|                                   |                | Standard Deviation | 0.70   | 0.64   | 0.07   |
| Backing sheet (back) sub-surface  | 10             | Average            | 88.6   | 8.2    | 3.2    |
|                                   |                | Standard Deviation | 0.29   | 0.30   | 0.09   |
| Centre wire surface               | 6              | Average            | 68.3   | 30.7   | 1.0    |
|                                   |                | Standard Deviation | 1.33   | 1.36   | 0.10   |
| Centre wire sub-surface           | 9              | Average            | 69.9   | 27.9   | 2.2    |
|                                   |                | Standard Deviation | 1.11   | 1.10   | 0.09   |
| Backing sheet (front) surface     | 6              | Average            | 86.4   | 10.9   | 2.7    |
|                                   |                | Standard Deviation | 0.35   | 0.44   | 0.09   |
| Backing sheet (front) sub-surface | 10             | Average            | 88.9   | 8.0    | 3.1    |
|                                   |                | Standard Deviation | 0.22   | 0.17   | 0.11   |
| Back sheet surface                | 4              | Average            | 85.7   | 11.7   | 2.6    |
|                                   |                | Standard Deviation | 0.52   | 2.45   | 0.36   |
| Back sheet sub-surface            | 6              | Average            | 88.2   | 8.7    | 3.1    |
|                                   |                | Standard Deviation | 0.25   | 0.77   | 0.10   |
| Front cell wall surface           | 6              | Average            | 85.1   | 12.0   | 2.9    |
|                                   |                | Standard Deviation | 0.21   | 0.19   | 0.05   |
| Front cell wall sub-surface       | 6              | Average            | 88.1   | 8.8    | 3.1    |
|                                   |                | Standard Deviation | 0.26   | 0.31   | 0.08   |

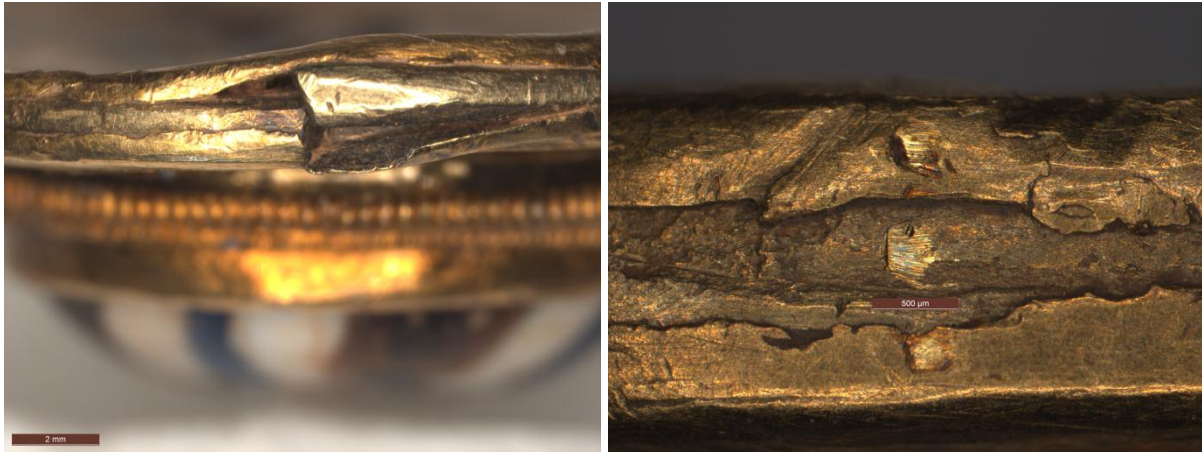
SEM-EDX surface and sub-surface compositions for each component analysed (the results are normalised). This analysis was carried out as part of the gold enrichment study. For full details of methodology and associated results see report PR07444-10 and PR07444-15

The analysis of all the components revealed a small loss of copper at the surface, which is indicative of natural surface enrichment that can occur during burial. There was a small increase in silver at the surface which may have come from the solder used, but since it was also present on all components it is most likely a post depositional effect caused by close contact with corroding silver objects.

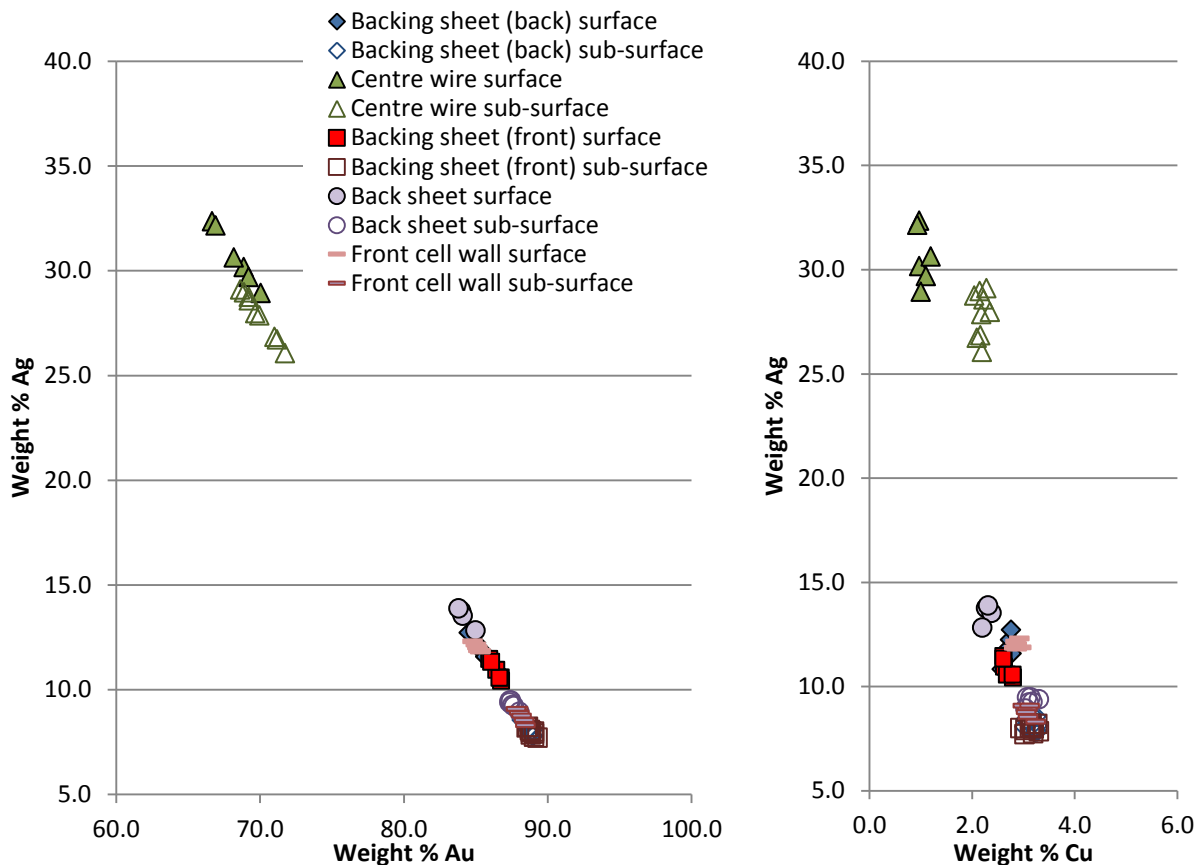
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## SEM-EDX analysis of K545

Comparison of the sub-surface compositions of the various components suggests that the gold used for the central wire in the construction of this piece was a different composition than the sheets used for the front and back. The rest of the components used the same gold alloy.



Details of the construction of the stud with the front and back sheets and a central wire, right) three sub-surface areas. Scale bar left) 2mm and right) 500µm.



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 May 2013

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