

K689

K689 is a hilt collar with filigree decoration of S- and Z-scroll patterns. The two lines of these scroll patterns are separated by pseudo-plaits made of two juxtaposed two-ply wire ropes twisted in opposite directions and the panels are edged by a three-strand band composed of an outer beaded wire and inner pseudo-plait, Figure 8a. There is also a beaded wire bordering each side and around the two rivet holes.

The bead diameter varies between ca. 0.25-0.35 mm for finer wires and around 0.65 mm for the broader border wire. The distance between beads varies between ca. 0.2-0.3 mm for finer wires and around 0.45 mm for the border wire. These measurements point towards the use of two grooved swages, one of larger gauge than the other. The diameter of plain wires used in the pseudo-plaits varies closely around 0.3 mm, which seems to match the diameter of finer beaded wires, hence only two diameter sizes of wires would have been used.

The wires were soldered to a flat backing sheet and in some areas where the beaded wires became detached, solder residues can be seen, Figure 8b right. Surface EDX analysis of one such area showed higher contents in copper and in silver than the backing sheet which suggests the use of a gold solder rather than copper salts. The straight grooves visible on the backing sheet where wires are missing (lower right of SEM image in Figure 8a and in photomicrograph Figure 8b right) are outline markings for positioning the filigree wires.



Figure 8a. Photomicrograph (left, field of view ca. 25 mm) and SEM BSE image (right, field of view ca. 12 mm) of artefact K689 showing S- and Z-scroll patterns separated by pseudo-plaits and edged by a border of an outer beaded wire and an inner pseudo-plait. The goldsmith's marking out lines are still visible, bottom right.

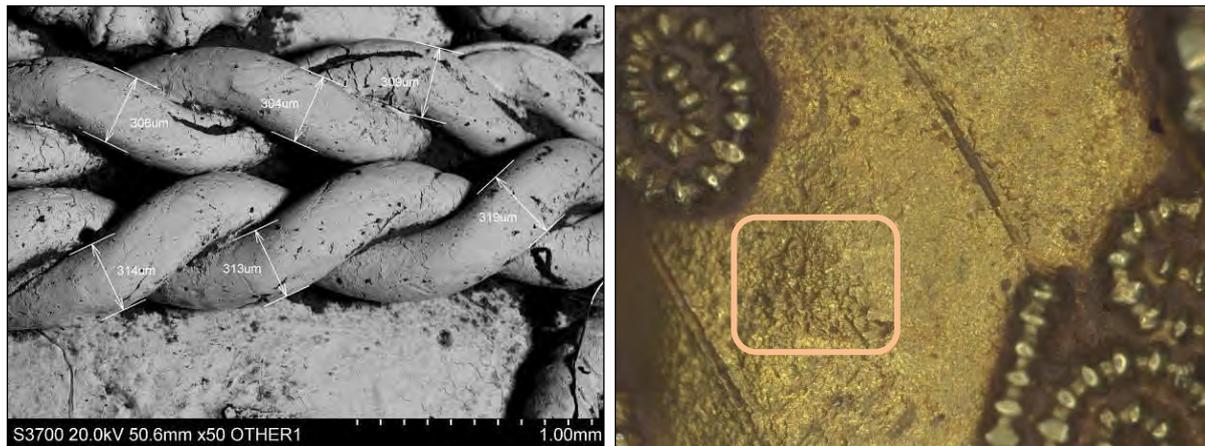


Figure 8b. Left: SEM BSE image showing the helical seams on the block-twisted wires of the pseudo-plaits (field of view *ca.* 2.5 mm); Right: photomicrograph showing an area where the wires became detached from the base plate, leaving behind some hard solder residue. Note the straight grooves on the backing sheet used as outline markings for positioning the filigree wires (field of view *ca.* 4 mm).

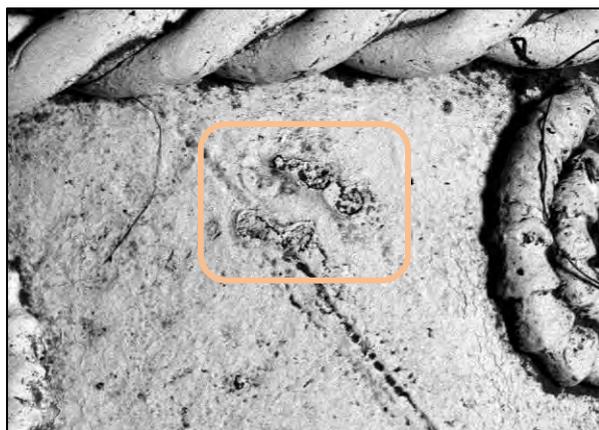


Figure 8c. SEM BSE closer view of the right image in Figure 8a, showing residues on the back sheet of hard gold alloy solder. The composition of these residues analysed by SEM-EDX and compared to the neighbouring sheet showed increased levels of copper and silver, further suggesting the use of a hard gold-silver-copper alloy solder (field of view *ca.* 3.5 mm).

K689

a	Thin beaded wire			
	Bead diameter (µm)	Average (µm)	Bead length (µm)	Average (µm)
Z-scroll pattern	300-334	314 (19) ¹³	226-286	262 (22)
Z-scroll pattern	263-366	313 (18)	200-295 (172)	247 (26)
S-scroll pattern	279-360	299 (25)	253-302	280 (28)
S-scroll pattern	291-354	333 (27)	220-298	257 (29)

b	Thick beaded wire				Plain wire
	Bead diameter (µm)	Average (µm)	Bead length (µm)	Average (µm)	Wire diameter (µm)
Outer border	639-669 (590)	641	427-496	461	
Two-ply twisted wire rope					293, 309 303
Two-ply twisted wire rope					306, 309 304
Two-ply twisted wire rope					314, 319 313

Tables 30a and 30b. Filigree wire measurements for K689.

¹³ Figures in brackets next to the average correspond to the number of measurements from which the average has been calculated.