Study shows chocolate pearls are 'stained'

Impressed by the variety of the stories presented to explain the colour of chocolate pearls, SSEF Swiss Gemmological Institute in Basel, Switzerland has been seeking assistance in getting hold of test materials to learn more about this chocolate mystery. The laboratory recently obtained four chocolate pearls supplied by a company in Japan and a company in London, and its director, Professor Henry Hanni, has conducted preliminary research on them. Professor Hanni shares his findings with Jewellery News Asia *in this article.*

The stained brown beaded cultured pearls, or so-called chocolate pearls, that we had collected were found through our research to be simply stained pearls with a thin surface layer of brown colouration.

The samples are in a range of colours, with the diameter of the largest being 12.7mm, as shown in Figure 1.

The cross sections of the pearls in Figures 2 and 3 reveal the distinct colour concentrations in the outermost layer of the pearls. The thickness of the dyed layer is about 0.05mm, and the underlying part of the nacre is grey to lighter brown.

Figure 1. SSEF examined four chocolate pearls in a range of colours. The diameter of the largest sample is 12.7mm

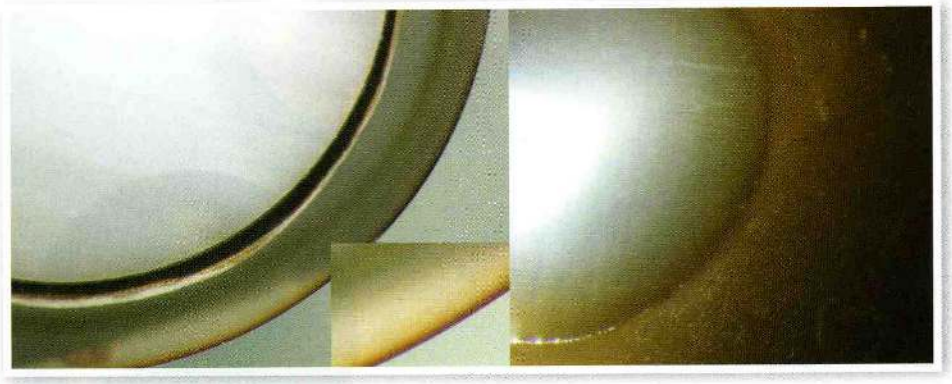
Chocolate pearls with underlying greyish nacre are usually Tahitian pearls, but white or yellowish South Sea pearls are also valid options to produce stained brown pearls. Chinese freshwater pearls could also be used to produce chocolate pearls. However, from the X-rays we have taken of the samples we can see beads in the pearls, so they should be either Tahitian or South Sea pearls (akoya pearls are excluded owing to their size). Beadless Chinese freshwater pearls will look different regarding the shape, as cultured pearls with beads are usually rounder.

Professor Henry Hanni

Silver nitrate was not found as a dyestuff in the samples. We guess that modern dyestuffs, for example those that are used for staining hair, are involved. Since the stained layers of the chocolate pearls tested are very thin, the dyeing effect cannot be satisfactory. Obviously the molecules of the colourant have not penetrated deep enough between the aragonite tablets of the nacre. Whether this is because the molecules are too large or the time provided to enter the nacre structure has been too short is not yet known.

The methods for testing the chocolate pearls are microscopic and Raman-spectroscopic. A simple gemmological test is not yet available. However, a tiny flat polished spot, such as that around a drill hole, will show a colour concentration confined to a superficial layer.

Further research is needed, on a broader selection of chocolate pearls. SSEF welcomes chocolate pearls for testing to increase the experience in this field. **JNA**



From left: Figure 2. The cross section of a chocolate pearl shows a thin surface layer of brown colouration, with underlying greyish nacre and a white bead. Figure 3. Surface colour concentration is clearly visible on the polished flat spot of a chocolate pearl