



From left: Three-row necklace featuring natural pearls with a maximum diameter of about 15.5mm; this is an extremely valuable item, usually traded in auction houses; Non-nacreous natural pearls, such as these Melo pearls, are very rare. They consist of fibrous aragonite and usually display a flame or spotted pattern. The largest pearl in this picture has a diameter of 26mm; and X-radiography of a four-row necklace, showing the growth structures of all the pearls in the strands. The only cultured pearl is marked "CP"; all the others are saltwater natural pearls (photo courtesy of Henry A Hänni, SSEF)

More natural pearls tested in labs

Prof Henry A Hänni of the SSEF Swiss Gemmological Institute, Basel, talks about the nature and characteristics of natural pearls, of which an increased number are being submitted to the lab for identification.

The SSEF Swiss Gemmological Institute recognises an increased appearance of natural pearls in the lab. In addition to the classic nacreous pearls, such as Oriental pearls, a greater number of non-nacreous, or porcellaneous, pearls, including Melo pearls, are reaching the testing facility for gemmological reports.

The identification of pearls is done safely using X-ray testing methods – mainly direct radiography. Scientific methods and a highly educated staff guarantee safe results and ensure the trade in valuable pearls.

Formed accidentally by wild shells without any intervention by man, natural pearls are extremely rare compared to cultured pearls. Natural pearls may grow in seawater oysters or freshwater shells. Approximately 15 species of seawater oysters and about 10 species of freshwater shells have been found to produce nacreous concretions, i.e.

pearls. Damaging the mantle epithelium on the outer rim of the shell, where it is thin and fragile, may lead to a natural pearl. Crabs, parasites and other enemies that attack the shell can wound the epithelium and disconnect some cells from the tissue. Embedded in the mantle, these cells may survive and form a small pocket in which they secrete their product: calcium carbonate. The pocket is called a pearl sac and grows with time, as does the shell itself. After a couple of years, a pearl may have formed.

Among the pearl-producing shells, there are species with different colours of nacre. Thus, we encounter white, cream, golden, rose, grey and black pearls. A natural pearl of a certain size, for example 100 carats, is considered historically important, for example the Hope Pearl, which weighs 454 carats. Natural pearls may sometimes survive for centuries and still maintain a good appearance.

Porcellaneous pearls

Except for nacreous pearls produced by shells (bivalves), we repeatedly see rare porcellaneous pearls produced by seawater gastropods (snails), which lack the pearly sheen with a lustre as high as glazed ceramic. The best-known non-nacreous or porcellaneous pearls are the Caribbean conch pearls or pink pearls, which often show a flame structure on the surface. Another rare kind of porcellaneous pearl is the orange Melo pearl, which can reach sizes up to 30mm. These are occasionally found in Halong Bay, Vietnam. Non-nacreous pearls are also composed of calcium carbonate but, instead of aragonite tablets, they consist of bunches of aragonite fibres.

Natural pearls are quite rare today and highly priced when in good shape, colour, and with appealing lustre and orient. Today, natural pearls are still fished and may come from the Persian Gulf, the Gulf of Mannar and Central America. **JNA**