

ArtScience Museum
Presents



THE ART & SCIENCE OF GEMS

Van Cleef & Arpels

Educators Resource

Van Cleef & Arpels

The Art and Science of Gems



EXHIBITION OVERVIEW

The “*Van Cleef & Arpels: The Art and Science of Gems*” exhibition invites students to explore and understand the mineralogy and geology processes of gems while appreciating the beauty and heritage of one of the oldest jewellery Maisons in the world. Throughout the exhibition, over 450 pieces of Van Cleef & Arpels creations are on display with influences and inspirations from the various themes that the Maison has drawn upon from. At the same time, exhibits from the French National Museum of Natural History invited by l’Ecole Van Cleef & Arpels seek to assist students as a tool to understand the scientific aspect of the gem formation through the seven processes.

This resource provides information about what your students will encounter during their visit to ArtScience Museum, enabling you to explore the themes with them prior to their visit or subsequently.

INTERACTIVE GUIDED TOUR AND ENHANCEMENT ACTIVITIES: 45MINS

Guided by our trained facilitators, students can enjoy an interactive tour of the exhibition which aims to introduce the beauty and art of jewellery design and making, as well as elaboration and explanation of the seven mineralogical processes. Along the exhibition, students can participate in various enhancement activities placed in the galleries.

A printed resource will be provided for all students, which include engaging activities relating to the themes the students have encountered on the tour.

EDUCATION FOCUS

At the end of the exhibition, students would be able to grasp a deeper understanding about the various principles of mineralogy and gemology through various ways of learning that the activity booklet has incorporated for as well as gaining a deeper understanding and appreciation of high jewellery.

Learn about

- **Mineralogy:** Formation of Earth and minerals
- **Gemology:** Precious and semi-precious gems
- **Jewellery:** Jewel design, Stones cutting and Gems placing

Learn through

- **Observation:** To look at the exhibited item in a new light
- **Exploration:** To explore history or science
- **Creativity:** To take inspiration and express creativity

EXHIBITION HIGHLIGHTS

The exhibition is divided into 9 galleries. The 6 activities from the student's activity booklet correspond to the art and science element of this exhibition in no chronological order of the exhibition.

Gallery 2: Couture and The Earth

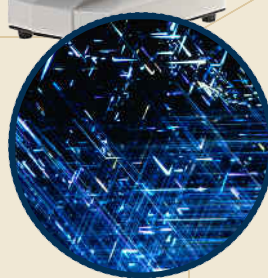
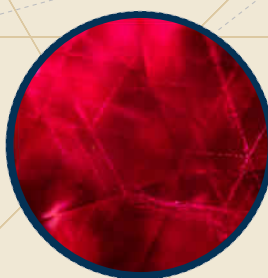
Paris is the birthplace of Couture. The elegance of couture has enabled the Maison to develop groundbreaking techniques. Delicate fabrics such as ribbon and lace have been transformed into 3 dimension creations without compromising the characteristics of it. The economic crisis has also inspired the Maison to create pieces that are transformable hence one can expect several creations to be used for different purposes in various ways such as a brooch clip transformed into a pair of earrings. Before the Maison is able to source for precious stones, students will understand these stones were created from the beginning of time since the creation of our Earth. It was estimated that Earth was created 4.6 billion years ago and since then, Earth has been shaped through various geological activities such as volcanic activity, tectonic shifts, meteorite impacts, deep oceans, weathering and biology. This is also the introduction to the seven processes where students will learn about and they are pressure, temperature, transport, water, oxygen, life and metamorphism. These processes are not isolated but complement each other.

Gallery 3: Abstractions and Pressure

The theme of abstractions was influenced by the art movement, paying tribute notably to minimalist, modernist, abstract and op art movements. Van Cleef & Arpels then echoed images from paintings of Pablo Picasso, graphic prints by Pucci and many others. The designers then experimented freely with new shapes, forms and textures, juxtapositions of opposing arcs, inverted triangles and many others. As the first ingredient of the seven processes, pressure is derived from the weight of the objects above ground. From pressure, diamonds and peridots are formed due to the surface pressure potentially increasing 50,000 times at a depth of 150 kilometers. As such, the diamonds' exceptional hardness and fieriness are directly related to the pressure of Earth when crystallised at the upper mantle. Peridots on the other hand, often travel towards the surface inside a kimberlite. A peridot can also be called as Forsterite.

ACTIVITY: HOW DO I LOOK LIKE INSIDE

Education Focus: Observation of the gems' characteristics while understanding the mineralogical formation of the minerals and the scientific terms.



A corundum is a hard mineral that consists of aluminum oxide. Sapphires are a type of corundum. The needle-looking inclusions show that the colour is natural. If the sapphires were heated, the lines of the inclusions would be dissolved.

Diamonds consists of a clear or almost-colourless crystalline form of pure carbon. Known as the hardest mineral on earth, rough diamonds naturally form in geometric shapes, due to uniform arrangement of carbon atoms in its structural composition.

Cracks and inclusions are commonly found in emeralds, they look like short rods or long fibres. These inclusions make the emeralds look like leaves inside. Experts refer to these inclusions as "jardin".

A ruby is a variety of the mineral corundum. All natural rubies have imperfections in them, including color impurities and inclusions. The shape of its crystals is often hexagonal.

Gallery 4: Influences and Temperature

During the 30s, many jewellery houses draw upon inspiration from various cultures all over the world, notably Egyptian, Chinese and Japanese culture. Van Cleef & Arpels then took the icons relating to each culture and transforming each of them accordingly to its meaning into various creations. The Mystery Setting™ which Van Cleef & Arpels has created and patented it in the 1930s is a key characteristic that separates its creations from other high jewellery maisons. An invisible setting technique set to hold the gems in place, the technique helps to create volume and a 3 dimension design, enabling the creation to be brought to life. The second process, temperature can create an effect on the minerals. For example, quartz crystallised at a greater speed when temperature decreases. Before the 18th century, it was thought that Quartz came from irreversible freezing of water. However, this theory was dismissed by Professor René Just Haüy. Gemstones associated with Temperature are Quartz and Tourmaline.

ACTIVITY: AROUND THE WORLD

Education Focus: Exploring jewellery through observation. Developing critical tools of engagement and appreciating art, and its role in society.



Egyptian

Angular, Praying, Headgear, Pharaohs and others

*Egyptian Inspiration bracelet, 1924.
Platinum, sapphires, rubies,
emeralds, diamonds, onyx.
Van Cleef & Arpels Collection.*

Chinese

Dragon, Jade, Gold, Curves, Luck, Mystical, Royalty, Strength, Yellow, Royal Colour, Emperor and others



*Dragon clip, 1969.
Gold, emeralds, coral.
Van Cleef & Arpels Collection.*

THROUGHOUT THE EXHIBITION

Throughout the exhibition, it is noted that the seven processes complement each other and without any of it, the mineralogy process would not be able to be carried out.

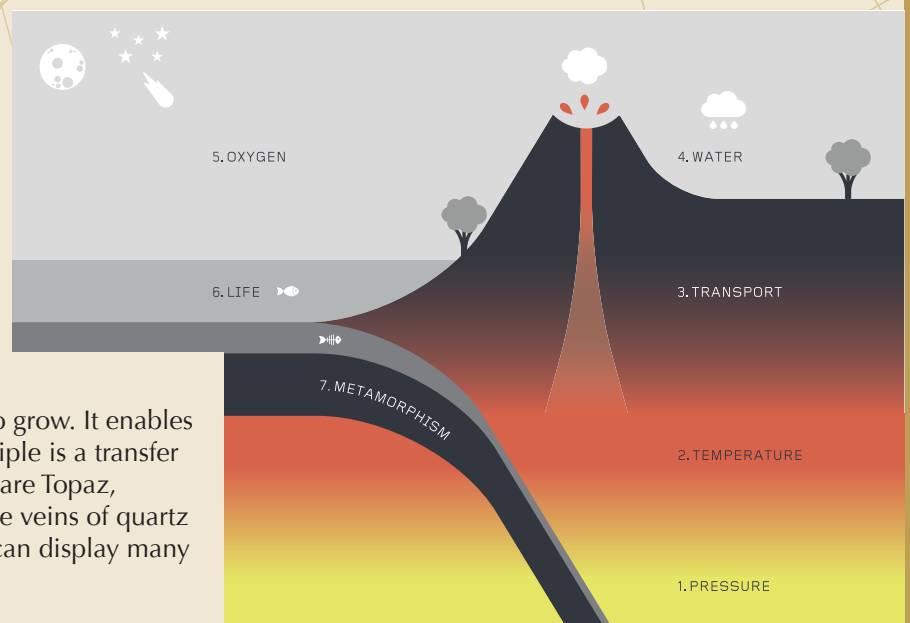
ACTIVITY: JOURNEY OF A GEMSTONE

Education Focus:

Mineralogy, Gemology, Jewelry explored and creatively using descriptive language

Gallery 5: Education Room and Transport

Transport is an important process for minerals to grow. It enables the minerals to move and mineral making principle is a transfer due to motion. Gems associated with Transport are Topaz, Aquamarine, Gold. Topaz are crystallised in large veins of quartz and can be found in specific volcanic rocks. It can display many colours from green to blue and red to yellow.



Gallery 6: Movie Gallery and Water

The Mains D'or™ or known as "Golden Hands" in English are the soul of the Maison. Consisting of various occupations, each of them plays a significant role in the creation process. Each of the Mains D'or™ has unique responsibilities and skills ranging from the designer to the polisher. After transport, water is the next important element in the formation of new minerals. Water is able to dissolve many elements in minerals hence precious stones such as opal, amethyst and emeralds are created due to the recombination of its elements. Columbian emeralds are formed by water percolation with moderate input from pressure and temperature. They can be found in sedimentary rock rich in pyrite and calcite.

ACTIVITY: WORK OF THE MAINS D'OR™

Education Focus: Jewellery making process and exploration.

6. Polisher

Not only do I polish the gems but also the precious metals holding the gems! I would apply a special abrasive paste to one of the threads and then passing it through each metal slot. Polishing is crucial because everything must be perfect, even what remains unseen.

2. Mock Up Designer

Part of my work requires interpretation! I will build the piece by soldering, sculpting and working with the materials in particular pewter. The mock up is important as it preserves the historical memory of the creations!

1. Designer

I am the person that gets inspired by a theme set by Van Cleef & Arpels. I draw my ideas out by hand and paint them using a brush and watercolours. Everything is still done by hand from sketching to painting.

4. Jeweller

I have the responsibilities to make an object from a design in order to transform it into a prestigious piece in metal.

3. Expert Stone Buyer

Sometimes in my job, luck plays an important role because at times, it takes a long time to search for the best stones. I pride myself in maintaining a high quality standard and sourcing for the very best gems for the Maison.

5. Gem Setter

I place the stones and hammer the metal above. Each of us have a specific technique in setting the gems but the end result looks the same!

From the interviews of the Van Cleef & Arpels Mains d'Or™ by Loïc Prigent

Gallery 7: Precious Objects and Oxygen

Van Cleef & Arpels has commissioned many different creations as requested by their clients. Paying homage to the modern women in the 1930s, the Maison recreated an accessory for all women to benefit from; the Minaudière™. The Minaudière™ is closely associated to Van Cleef & Arpels and came from the inspiration of The Lucky Strike cigarette case where women during the 20s used to store all their trinkets while attending parties. It is all what the modern women needed. It can be used as a versatile accessory for all events from casual to formal. It has also several compartments inside, making it a functional accessory. Moving onto the next ingredient of the process; oxygen has deeply modified the mineralogy of Earth's surface by producing a huge amount of "new" minerals, meaning "minerals that did not exist as extensively before that". As a result, malachite (a carbonate) and turquoise (a phosphate) is green and blue due to the colouration by an oxidized form of copper which is not encountered other than on Earth's surface.

Gallery 8: Nature and Life

One of the recurring themes for Van Cleef & Arpels is Nature. When Van Cleef & Arpels creates creations inspired by nature, one can expect to see a mixture of flora and fauna.

Life is also a major process for gemstone formation. Living organisms are responsible for creating other minerals such as ivory, coral and pearls due to the bio-minerals produced. Bio-minerals can be in a form of calcium carbonate or calcium phosphate.

ACTIVITY: INSPIRED FANTASY

Education Focus: Jewellery, exploration and creativity. The activity consolidates a curiosity, interest in the Environment; as well as artmaking.



Bouquet Clip, 1940. Gold, sapphires, rubies.
Van Cleef and Arpels Collection



Pastilles clip, 1951. Platinum, gold,
Mystery Set rubies, diamonds.
Van Cleef & Arpels Collection.



Bird clip, 1963. Platinum, gold, sapphires, rubies,
emeralds, diamonds. Van Cleef & Arpels Collection.



Passe Partout jewel transformable into a
bracelet or a belt with detachable clips,
1939. Gold, yellow and blue sapphires,
rubies, diamonds. Van Cleef & Arpels
Collection.



Ryusui butterfly clip, 2012. Gold, lacquer,
mother-of-pearl, diamonds.
Van Cleef & Arpels Collection.

Gallery 9: Ballerinas, Icons and Fairies and Metamorphism

Dance has been a key inspiration theme for Van Cleef & Arpels ever since the meeting of Claude Arpels and George Balanchine. The meeting also led to creation of the 3 act ballet "Jewels" choreographed by George Balanchine. The 3 act was named after three gems; Emeralds was set to the music by Fayre, Rubies with music set to Stravinsky and finally Diamonds with music set to Tchaikovsky.

The Maison has also created various creations in tribute to famous individuals such as Her Serene Highness Princess Grace of Monaco, the Duchess of Windsor, Jacqueline Kennedy Onassis, Elizabeth Taylor and many others. Finally, metamorphism occurs when there is a change of chemical composition and structure without melting. Therefore, this involves heat, pressure and active fluids in motion. As a result, Lapis Lazuli, Corundum and Jadeite are associated with Metamorphism. Metamorphism can also take place when two continents collide together.

ACTIVITY: TWIRLING AROUND STONES

Education Focus: Gemology and Jewellery using observation and creativity.

THROUGHOUT EXHIBITION

ACTIVITY: REFLECTIONS

Education Focus: Mineralogy, Gemology and Jewellery reflecting on everything the students have observed and uncovered throughout the visit. Appreciation of Earth sciences and their processes, as well the artist's methods and expressions for the exhibited works.



WORKSHOP DESCRIPTION

A DAY IN THE LIFE OF A MINERALOGIST- 1 HOUR

Discover the world of gemstones in this hands-on demonstration revealing the working methods and collection of a mineralogist. Try your hands at using tools to examine minerals and their physical properties.

CURRICULUM LINKS

Source: Ministry of Education Singapore Subject Syllabuses

ART (Applicable to workshops and exhibit interactives)

- Appreciation -
To enjoy looking at art or artefacts, and talk about what they see and experience.
- Art Discussion -
To engage students in critical appraisal of artworks.

To build the tools for students to appreciate and enjoy the exhibited pieces as works of art and craft, by encouraging their powers of observation and their descriptive language.

- To develop greater appreciation for art and its role in society.
- To help the students understand the works within a larger cultural context.

LANGUAGE AND LITERACY

- Language -
To develop effective language use and oral communication.
- To exercise cognitive and affective engagement, and interaction.
- Artmaking -
To engage students to express their thought and feelings in various forms.

To encourage creative responses to the exhibited items.

- Expression -
To communicate thoughts, ideas or feelings by speaking, writing, drawing or in some other way.

SCIENCE

- To stimulate curiosity, interest and enjoyment in science and its methods of inquiry; interest in, and care for, the environment.

We want to open up the world of earth sciences for our students and introduce them to key methods and approaches.

- To promote an awareness that the study and practice of science are co-operative and cumulative activities and are subject to social, economic, technological, ethical and cultural influences and limitations.

We want to demonstrate how the earth sciences in this instance have a close symbiotic relationship with artistic expression and artistic flair.



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MARINA BAY SANDS