

Gemmology Today

A woman with dark skin and a nose ring is sitting on a mound of red soil. She is wearing a red patterned headwrap, a green t-shirt, and a colorful patterned skirt. She is holding a shovel with a green handle and a silver blade. The background is a dry, wooded area with red soil. The title 'Gemmology Today' is overlaid on the top left, with colorful lines radiating from the 'y' in 'Today'.

September 2023
Quarterly Publication

C
H
A
N
G
I
N
G

L
I
V
E
S

THROUGH

A
F
F
O
R
D
A
B
L
E

G
E
M
M
O
L
O
G
I
C
A
L

Project
AFRICA



EDUCATION IN THE KEY GEM PRODUCING AREAS

POWERED BY THE WORLD GEM FOUNDATION

RUNNING SCARED – LAB-GROWN DIAMONDS – Geoff Dominy looks at the scare tactics being employed by jewellers to protect the natural diamond market.	6	GEMSTONE DETECTIVE – Meet Kim Rix, gemmologist, author, and intrepid traveller.	56
INSIDE AFRICA – Meet Mkhululi Nkosilamandla Ncube, Programmes Officer for the African Minerals Development Centre (AMDC).	16	GEMMOLOGY TODAY QUIZ #28 – Try your luck at 'Word Scramble'! You could win a lifetime subscription to ColourWise, a new digital coloured gemstone grading system.	74
BLUEPRINT – THE AFRICAN MINING VISION – See what is being done to ensure that Africans are the major beneficiaries of their mineral wealth.	20	GAME CHANGERS – THE ARTISANS – Nina Gold looks at a group of gem artisans who are proving that gem cutting is indeed an artform!	76
PROJECT AFRICA – CREATING THE VALUE CHAIN – Building a sustainable value chain that will 'add value' and bring prosperity to the African continent.	28	MEET THE WGF TEAM – a group of professional, dedicated, and passionate educators.	82
WORLD GEM FOUNDATION DIPLOMA PROGRAMS, COURSES AND PRACTICAL WORKSHOPS	36	WORLD GEM FOUNDATION 2023 SCHOLARSHIP – Your chance to get a 'Career Gemmologist' scholarship through the World Gem Foundation	86
NATURAL WONDERS – PEARLS – Dutch gemmologist Leone Langeslag looks at the 'Queen of Gems'.	50	WORLD GEM FOUNDATION ACADEMY LISTING – how to reach us.	87

Published by The World Gem Foundation & Amazonas Gem Publications

Editor Geoffrey M. Dominy

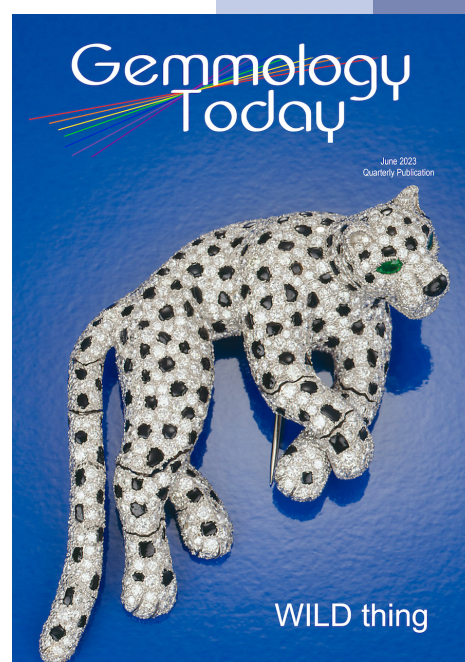
Associate Editor: Haimanot Sisay

Advisory Council: Leone Langeslag, Gérard Quintin, Marie-Hélène Corbin, Dr. Laurent Massi, Kyalo Kiilu, Barickeh Charles Kholifa Koroma, Deborah Mazza, Jack Ghazalian, Nina Zolotukhina and Salomon Lutumba.

No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means electronic, mechanical, photocopying, recording or otherwise without the prior written permission of the publisher. Any opinions expressed in this publication are understood to be the views of the individual contributors and are not necessarily those of the publishers.

Copyright: World Gem Foundation 2023

Cover: Masai Miner Judith Jakob - Photo by Kim Rix



[Click here to read the June 2023 Issue](#)



Geoff Dominy - Founder / Editor

While the last three months have been extremely challenging, I am very happy to announce that on July 8th, we started the first Career Gemmologist Diploma program here in Ethiopia.

Project Africa has now evolved into a complete 'Value Chain' and with the laboratory opening in Addis Ababa on September 6th, we will now have two parts of the value chain operational.

Now we are working on the lapidary school (we hope to be operational in early 2024) and the jewellery making school (Summer 2024). We are also setting up an international buyers consortium to give Ethiopians and eventually Africans, the opportunity to sell their products on a global scale.

THE FUTURE

It is a known fact that Africa (especially East Africa) is the future of the coloured gemstone industry, yet, in my opinion, the industry is not doing enough. The richest areas are still the poorest. If we are going to financially benefit from these gem resources, surely we have a

Editor
at Work

moral obligation to give something back. We have to level the playing field so that Africans also benefit socially and economically from these resources. There is so much rhetoric. Words are cheap. As human beings, we will be remembered by the things we have done, not by the things we said we would do.

THE SOLUTION

To be honest, I find the whole concept of funding completely alien but even after nine months in Ethiopia, I realise the importance of it. Nothing can be achieved without it. It must, however be completely transparent, with a clear action plan and there should be full accountability. We cannot simply throw money at a problem. We must analyse it first and then develop a strategy that will solve it. We have to change the mentality here. There is no point in investing all your money in roofing materials if you don't have the money to pour the foundation and build the walls.

I have spoken to many people about funding and everyone has a different viewpoint. Some advocate stopping all funding to Africa so that Africans are forced to find their own solutions but is this the right strategy? Funding always comes with strings attached. Chinese involvement here in Africa is widespread but few see this as a positive thing. Short-term it might seem like a good idea but what about the long-term ramifications? What will be the ultimate price that Africans pay? In all likelihood, it will be far greater than the economic benefits. It is a slippery slope, one that already has many countries here in Africa hovering over a barrel.

Education remains the key to changing the current dynamic but how do you get education into the hands of those who need it the most?

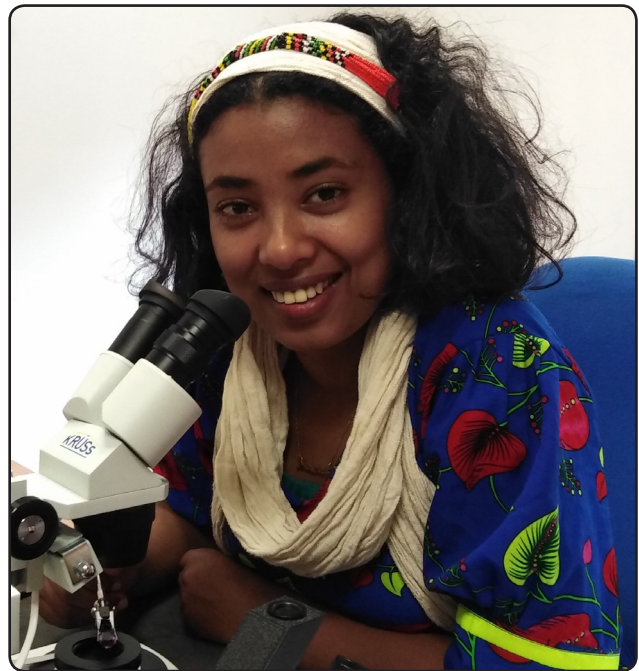
It saddens me to see mothers on the street teaching their two-year old children to hold out their hands and beg. This unfortunate legacy will be passed down to their children and the cycle will never be broken. Again, it is a classic example of short-term thinking. An educated child has a better chance of getting a good paying job and that will benefit the entire family.

I have found from personal experience that if you give something away, the recipient never sees any value in it. This last May, to celebrate my birthday, I cooked for the homeless people outside my compound. Two hours later, those same people were begging me for money. In reality, I had not solved any problem. I had simply provided one meal out of the thousands of meals they will need during their lifetime and given them the 'hope' that every time I pass by with a plastic shopping bag, I will feed them.

Each day teaches me something new about humanity. I am constantly reminded of how far we still have to go. This is the 21st Century yet the majority of people are still struggling to survive. There is so much money in this world but not enough people who want to share it. In the west, we think we have 'real' problems but in reality we don't. Here I am surrounded by real people with real problems. I am truly humbled by the human spirit and what motivates people to get up every morning knowing that nothing will change. This is the reality of life and there is no respite. It would be nice to see more people giving back but I am not sure I will see this happen in my lifetime. I would love to be proven wrong but I am certainly not holding my breath!

WHAT'S IN THIS ISSUE?

Unlike the last four issues, this issue covers a variety of topics from the African Mining Vision, interviews with Mkhululi Nkosilandla Ncube, Programmes Officer for the African Minerals Development Centre (AMDC) and Kim Rix (Gemstone Detective), a look at some extraordinary gem cutting artisans who are breaking all the rules, the scare tactics being used by some jewellers to combat lab-grown diamonds, the wonderful world of pearls, and a detailed overview of our Project Africa Value Chain and the progress our Centre of Excellence has made in the last two months.



Haimanot Sisay - Associate Editor

On the subject of lab-grown diamonds and the strategy many jewellers are taking to discredit them, I simply do not understand the logic. Yes, diamonds are a jewellers bread and butter but why adopt this approach? It is so negative. Once again it comes back to education. We fear the unknown but why not take the time to learn more about them? Personally, I like lab-grown stones provided they are properly disclosed. Different strokes for different folks. Why are jewellers suddenly taking the moral high ground with lab-grown diamonds but still sell low quality gemstones that are often treated?

THE COVER

We looked at countless images but none seemed quite right until Kim Rix sent in her photos from her recent trip to Tanzania. The image of Judith, a Masai ASM really struck a chord. A salute to the 12.8 million women involved worldwide in artisanal small mining.

It is hard to believe that in three months we will find ourselves in the festive season again. November will mark one year here in Ethiopia. Time flies.....

**Associate
Editor at Work**



RUNNING scared

Lab-grown diamonds

On August 14th, 2023, Joshua Hyman posted on Facebook *'The only thing that is going to save the natural diamond market, 5-10 years from now, is reinforcing the idea that women are 'worth' a lot more money than a free or \$200 cost Lab Grown Diamond when getting engaged. This marketing needs to start asap.'* As of August 23rd, sixty-six comments appeared on his FB page. The reaction was varied. Gemmologist Shirley Mitchell responded *'I think the diamond industry needs to focus on education ... and it, and we, need to work together to extol the virtues of both natural and synthetic gems. They both have a place in the market.'*

Before we look at why the jewellery industry is so scared of lab-grown diamonds, let's look at the history of the synthesis of diamond.

GOING BACK IN TIME.....

To gemstone alchemists, the synthesis of diamond had remained the holy grail of all synthetics since the first discovery, by Tennant in 1797, that diamond was composed of pure carbon. Although there had been many well documented reports, dating back to James Ballantyne Hannay, in 1879, Ferdinand Frédéric Henri Moissan, in 1893, Charles Parsons, in 1928 and more recently ASEA (Allemanna Svenksa Elektriska Aktiebolaget) of Sweden, in 1953, it was not until December 16th, 1954, when the first reproducible, verifiable, and commercially successful synthesis of diamond was achieved by Tracy Hall (1919 – 2008).

Using a modified hydraulic-press (belt) that produced simultaneous temperatures of 5000 degrees Celsius at a pressure of 18GPa's (one GPa equals 109 Pascals) or 2,610,684 psi. The belt apparatus incorporated features of both the opposed-anvil and piston-cylinder designs, with two highly tapered piston-like anvils compressing a sample that was confined in a torus, much like a cylinder open at both ends.

Prior to World War II, the United States relied heavily on South Africa to provide industrial diamonds. When the

war started, the need for industrial diamonds increased dramatically since only diamond was hard enough to cut and shape the tools required for making airplane parts, vehicle armour and other military hardware. Fearing the loss of this critical supply, the American government was determined to develop an alternative source of diamonds and believed that the development of 'synthetic' diamonds would not only solve the supply problems but also reduce their reliance on other countries.

In 1941, General Electric had reached an agreement with Norton and Carborundum to jointly develop the syntheses of diamonds. Nevertheless, when the United States joined the war on December 8th 1941, following the bombing of Pearl Harbour, work was interrupted and did not continue until the program resumed in 1951.

At that time, General Electric formed a high-pressure diamond group, called 'Project Superpressure'. Its aim was to make the world's first industrial man-made diamonds with the same properties as natural diamonds. The group included F.P Bundy, H.M Strong, Anthony Nera, Robert Wentorf, and J.E Cheney, and was based at General Electric's Schenectady Laboratory in New York. Shortly afterwards, Tracy Hall joined the project.

The team soon realized that despite its softness, graphite was amazingly resistant to change. Since diamonds were found in the host rock kimberlite and had been formed deep within the earth's surface through a combination of intense heat (1100 to 1650 degrees Celsius) and pressure, believed to be in the region of one million pounds per square inch, they realized that the only way to produce similar results was to subject carbon to similar conditions. They hoped that the carbon atoms would coalesce into the highly compact crystalline form of diamond.

Although they were confident that diamonds had formed over 600 millions years ago, they did not know two important things; how long it had taken for them to form and what combination of heat and pressure was required.



General Electric invested millions of dollars on diamond presses, capable of focusing huge amounts of pressure and intense heat on capsules filled with graphite, without success. Fortunately, they did know one important thing: since diamonds were crystalline, they had to have been formed from a liquid.

One of the G.E. scientists had read that tiny diamonds had been found in the Barringer crater (Meteor Crater), located in Arizona; formed over 50,000 years ago by the Canyon Diablo meteorite.

Upon examining the resultant diamond crystals, they found that they were surrounded by troilite, a metal which lay at the extreme end of the mineral species pyrrhotite, an iron sulphide that was also a rather common trace constituent of igneous rocks all over the world.

They hoped that the troilite would act as a solvent and break down the bonds that held the carbon atoms together in the graphite causing them to dissolve into the molten troilite, and with the right amount of heat and pressure, to crystallize into man-made diamonds.

Although they had no idea how long this transformation would take, they could only risk running the presses for a few minutes. Just as they had done numerous times before, they extracted the capsule, broke it apart, and this time caught sight of the first synthesized diamonds.

Hall is quoted as saying:

'My hands began to tremble; my heartbeat rapidly; my knees weakened and no longer gave support. My eyes had caught the flashing light from dozens of tiny crystals.'

Looking back, it is not hard to understand the excitement they all must have felt. They had succeeded in producing 'synthetic' diamonds from graphite, theoretically a relatively straightforward problem to solve, but in practice more complex than anyone could ever have imagined.

They must also have realized the far-reaching implications their discovery would have on the industrial diamond market. Twelve years later, with the growing need for diamonds

in such applications as abrasives, cutting, and polishing tools, and heat sinks, Hall, in partnership with two other Brigham Young University professors, founded MegaDiamond, a manufacturer of 'synthetic' diamonds and high-pressure equipment.

In 1970, General Electric again succeeded in producing 'synthetic' diamonds using a diffusion technique that involved the use of a molten metal catalyst bath in which the carbon source material consisted of small diamond crystals placed in the hotter section of the bath and 'synthetic' diamond seed crystals placed in the cooler section; however, this proved to be cost prohibitive. A year later, in the USSR, a similar breakthrough was made but again was abandoned due to high costs.

In 1986, Sumitomo Electric Industries of Japan succeeded in producing yellow diamonds up to 1.20 carats. These were subsequently sawn, laser-cut, and partly polished with a finished weight of .40cts.

In 1987 De Beers sent carat-sized lab-grown diamonds to the Gemological Institute of America (GIA) for examination, and in 1988, the largest diamond crystal produced by De Beers was unveiled weighing eleven carats. Like Sumitomo, De Beers stressed that their research was geared to industrial applications.

In 1993, Chatham of San Francisco announced plans to market lab-grown diamonds that had been produced in the USSR, but production problems prevented this from happening.

Eleven years later, Tom Chatham, whose father Carroll had unsuccessfully tried to synthesize diamonds before turning his attentions to the synthesis of emerald, began marketing HPHT diamonds in a variety of colours, ranging in size from a few points to two carats from a source in Asia, cut and polished in China.

Today, lab-grown diamonds produced by both HPHT and CVD methods are readily available especially in melee sized goods. According to reports by GGTL Laboratories, small HPHT grown lab-grown diamonds have been found in practically all parcels of yellow melee diamonds submitted to their laboratory since 2010.

PRICES

In terms of price, how do lab-grown diamonds compare to natural diamonds?

The chart on the opposing page illustrates the % price difference between lab-grown colourless diamonds sold by MiaDonna & Co and natural diamonds sold by Blue Nile (November 13th, 2019 / April 26th, 2022).



Natural Diamonds versus Lab-created Diamonds (Ideal Cut)

November 13th, 2019				April 26th, 2022			
Carat Weight	Colour	Clarity	% Difference	Carat Weight	Colour	Clarity	% Difference
.30ct	I	SI-1	+ 46%	.30ct	I	VS-2	+ 134%
.40ct	J	VS-1	+ 67%	.40ct	G	SI-1	+ 157%
.45ct	G	SI-2	+ 25%	.45ct	H	VS-1	+ 216%
.50ct	I	VS-1	+ 61%	.50ct	I	VVS-2	+ 167%
.55ct	G	VS-2	+ 61%	.55ct	F	SI-1	+ 159%
.60ct	H	SI-2	+ 8%	.60ct	G	VS-1	+ 150%
.65ct	J	SI-1	+ 98%	.65ct	E	VVS-2	+ 310%
.70ct	H	SI-2	+ 50%	.70ct	J	VVS-1	+ 187%
.75ct	G	VS-1	+ 46%	.75ct	F	VS-1	+ 150%
.80ct	I	VS-2	+ 83%	.80ct	H	VVS-1	+ 174%
.90ct	H	VS-2	+ 74%	.90ct	H	VS-2	+ 190%
1.00ct	I	VVS-2	+ 79%	1.00ct	I	VS-2	+ 222%

Since the Blue Nile and MiaDonna websites do not require a username or password to access their database of diamonds, one must assume that these are 'retail prices'.

We can see a marked difference in the percentage differences between the two dates indicating how the price of lab-grown diamonds has decreased over the last three years. This was to be expected. As demand goes up, so does supply and that makes production more cost effective.

IDENTIFYING LAB-GROWN DIAMONDS

Before we start to look at some of the identification methods that can help separate lab-grown diamonds from their natural counterparts, let's make one thing painfully clear. If you deal in diamonds, you must invest in a diamond screener (Diamond Verification Instrument or DVI). Since diamonds are used predominately in the trade, the chances of seeing lab-grown diamonds are far higher than seeing a Chatham emerald, ruby or a sapphire.

Before purchasing a DVI, there are a number of factors that should be considered including the type of diamonds (size, colour, shape, and loose/mounted) to be tested, the quantity of the diamonds to be tested, the level of expertise of your staff, portability and budget. Fortunately DVI's are available in a variety of pricepoints but this is not a time to be budget conscious. Errors can be costly so find the device that works best for you.

The ASSURE program run through the Natural Diamond Council has developed a universal standard to test the performance of Diamond Verification Instruments in a consistent manner.

The ASSURE Program delivers on-going testing of Diamond Verification Instruments to ensure the trade is fully informed of the relative performance of the DVI's in the market. The instruments are rigorously tested in a transparent manner against a unique common sample and standard.

The Diamond Verification Instrument Standard, which details the methods and protocols used to conduct the tests, was developed by the professional standard house UL in collaboration with experts from FSBI TISNCM, GIA, GII, DBIS/IIDGR, NGTC, SSEF and WTOCD who formed the ASSURE Technical Committee.

Each instrument is placed into one of three categories:

Category 1: this includes instruments that can separate diamonds from lab-grown diamonds but cannot identify diamond simulants. Consequently, users of Category 1 instruments must pre-screen all stones to ensure there are no diamond simulants.

Category 2: this includes instruments that can separate natural diamonds from lab-grown diamonds and diamond simulants. These instruments should be able to distinguish between a diamond simulant and a natural diamond. However, these instruments cannot distinguish between a diamond simulant and a lab-grown diamond. The stones that have been categorised as 'non-natural diamond' will require further testing in order to determine whether they are diamond simulants or lab-grown diamonds.

Category 3: this includes instruments that can separate diamonds, lab-grown diamonds and diamond simulants. These instruments can separate lab-grown diamonds from diamond simulants.

Some of the DVI's currently available include:

Alrosa Diamond Inspector, Ams-2, Presidium Ari, ASDI, D-Secure, DiamondDect 3, DiamondDect 5, DiamondSure, DiamondView, Diatrue Cs, G-Certain, Gem3000, Gemlogis Belize, Gemlogis Vista, GemPen, Gia DiamondCheck, Gia Id100, Glis-3000, GLIS-Mini, Gv5000, J-Certain, J-Smart, J.Detect 9000, J-Mini, Leo, M-Screen+, Optimum – I, PL-Mini, Qchkadc, Screen-I, SYNTHdetect, Synthetic Diamond Screener II, The Sherlock Holmes Detector.

MAD DOGS AND GEMMOLOGISTS

If you decide not to invest in a DVI, there are some tests you can employ to separate lab-grown diamonds from natural diamonds but once again, please understand that you are taking a BIG risk.

Diamond Types

To better understand lab-grown diamonds it is important to understand the various diamond classifications. These are determined using primarily Fourier- transform infrared spectroscopy (FTIR) since this is a non-destructive testing procedure. By directing an infrared beam through the diamond and measuring how much of it is absorbed and the corresponding wavelengths, it is possible to detect the presence of nitrogen or boron impurities. This in turn will allow the diamond to be classified into one of the following categories and sub-categories:

Type I – these contain sufficient amounts of nitrogen that are measurable using infrared absorption spectroscopy.

Type 1a – these are typically found in two spectroscopic configurations; type 1aA containing two nitrogen atoms that are adjacent to each other and type 1aB containing four nitrogen atoms that symmetrically surround a vacancy.

Type 1b – these contain isolated nitrogen atoms that have replaced carbon atoms in the crystal lattice.

Type II – do not contain measurable amounts of nitrogen.

Type IIa – contain no measurable amounts of nitrogen or boron.

Type IIb – contain isolated boron atoms that have replaced carbon atoms in the crystal lattice. These boron impurities are directly responsible for their electrical conductivity.

High Pressure, High Temperature (HPHT)

Fortunately, the majority of HPHT lab-grown diamonds are type Ib and this is rare in natural diamonds. Due to the presence of metallic flux, most HPHT diamonds will show a degree of magnetism using a N52-grade neodymium magnet. In some cases, the inclusions may be large enough to induce a pick-up response while in others, the flotation method may be required. Since gold and silver are non-magnetic, mounted diamonds can also be tested using these techniques. Natural diamonds and CVD diamonds do not exhibit any magnetic attraction therefore any diamond that shows a magnetic attraction can be considered lab- created.

Natural type IaB, Ib and II diamonds exhibit a cross-hatched 'tatami' strain pattern under crossed polars (polariscope) due to lattice distortion or plastic deformation while this is not seen in lab- created diamonds.

Spectroscopically, type Ia diamonds, due to the presence of nitrogen, have absorption bands at 415nm, 435nm, 452nm, 465nm and 478nm. Type I diamonds will also show an absorption band at 503nm. Type Ib diamonds, on the other hand, are often characterized by strong general absorption up to 450nm and if this is observed, it is often indicative that the stone is HPHT lab grown.

Ultraviolet light can also help to separate type Ia and type Ib diamonds since the former will often fluoresce blue under both short and long wave radiations, due to the presence of nitrogen, while the latter will either be inert or will fluoresce a weak orange.

Natural Ia diamonds, containing high concentrations of hydrogen, invariably contain clouds of cross-like shapes and are sometimes referred to as 'asteriated' diamonds. Natural type

Ib diamonds often contain clusters of small needle-like inclusions that are associated with yellow colour zoning while lab-grown type Ib diamonds invariably show distinctive colour zoning, and metallic flux inclusions.

Natural and HPHT lab-grown blue type IIb diamonds contain boron and are electrically conductive, however in the latter, the absence of the 'tatami' strain allows us to distinguish them from natural blue diamonds. Natural black diamonds containing magnetite and lab-created black diamonds grown from Fe will both exhibit magnetism.



Photo by Robert Owen-Wahl

DIAMOND VERIFICATION INSTRUMENTS



Alrosa Diamond Inspector



AMS2



ASDI



D-Secure+



DiamondDect 3



GemPen

DIAMOND VERIFICATION INSTRUMENTS



DiamondSure



DiamondView



G-Certain



Gemlogis VISTA



Sherlock Holmes



DiamondView

Chemical Vapour Deposition

Short wave UV light can also be useful in separating type I and type II diamonds. This is significant since most CVD diamonds are type IIa. Due to the presence of nitrogen, type I diamonds absorb the short-wave radiations while type II diamonds freely transmit them. This can be tested by placing a piece of highly fluorescent scheelite above a diamond and directing a beam of short-wave UV light through the diamond. If the diamond is type II, the scheelite will fluoresce.

Like natural blue diamonds, CVD blue diamonds will also conduct electricity but will not show the characteristic 'tatami' strain patterns.

CVD pink diamonds produced by Apollo Diamond Inc. are characterized by moderate to strong orange fluorescence under both short-wave and long-wave UV light, internal graining with indistinct boundaries or well-defined linear outlines, a high degree of internal strain, low to very high order interference colours when viewed with magnification under crossed polars due to anomalous double refraction (ADR), black inclusions, fluorescence images using DiamondView showing a banded structure and striated growth patterns, strong absorptions from GR1, NV centres, 594.3nm, and ND1 in the UV-Vis-NIR region, and Si-related defect features in photoluminescence (PL) and absorption spectra.

THE FEAR FACTOR

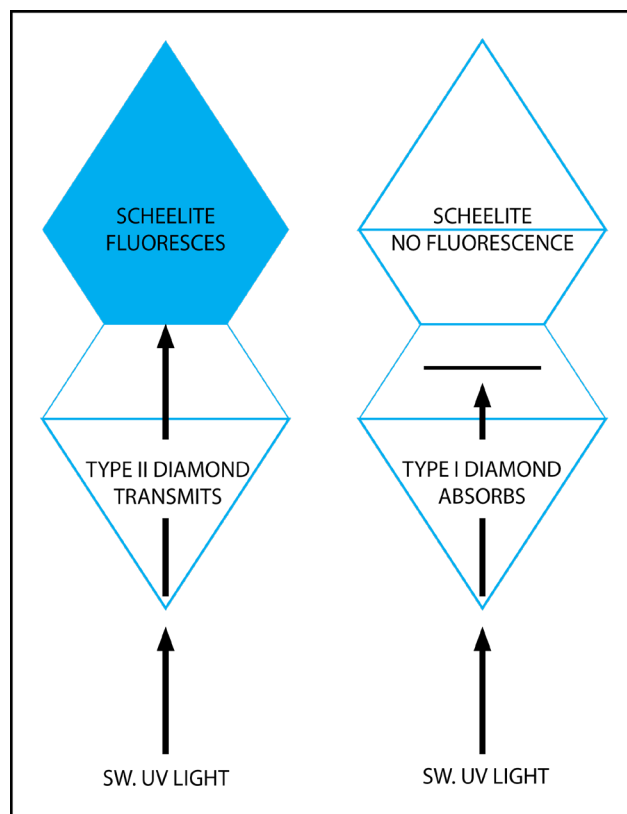
Throughout history, people have used 'ignorance' to induce fear. As an educator, I can attest to the fact that a majority of people engaged in the gem and jewellery trade know little about the products they are selling. Jewellers have always seen education as a cost of doing business rather than an investment in their business.

Jewellers are scared because diamonds account for the majority of their sales and they are worried that consumer confidence will suffer now that lab-grown diamonds have invaded their world.

However, if we look across the broad spectrum of consumer products, we can see that in every area there are 'options'. In some cases, people want the very best and will be prepared to pay for it. This is why so many companies invest millions 'branding' their products.

Remember the arrogance of De Beers telling us that we should pay 'two months' salary when buying a diamond engagement ring? Now it is three months. Can you imagine a car salesperson telling you how many months of salary you should spend on a new car or a realtor using the same strategy? It almost seems absurd.

People should be given choices and the correct information to make informed decisions.



Slighting another product with the false belief that it will make your product more desirable is a short-sighted approach to the problem. What makes natural diamonds better than lab-grown diamonds? Many will argue that because they are produced by Mother Nature, they are better, but others will disagree. What about the environment? Mining has a long history of leaving the abandoned mines and surrounding areas in a far worse state than when they arrived. Others will point to the carbon footprint left by lab-grown diamond manufacturers.

Many people are focusing on the value of natural diamonds and how they will hold their value more than lab-grown diamonds. De Beers still operate on a system that gives a privileged few (sightholders) the right to buy diamonds through 'sights' that are held ten times a year. The system is designed to keep 'sightholders' in check. You cannot afford to challenge De Beers because if you do, you will lose this privileged position. Your business and your livelihood depend on it. In the past, to maintain the artificial pricing of diamonds, De Beers controlled the market. When demand in certain categories was weak, they withheld diamonds. If a producing country dared to challenge their authority and sell their diamonds outside the De Beers Cartel, De Beers would flood the market and drive the price down, forcing the black sheep back into the fold.

We have always been told that diamonds are rare, but are they? If you go into any jewellery store, anywhere in the world, you will find diamonds. Try buying a two-carat unenhanced Burmese ruby or a five-carat Paraiba tourmaline.

Try reselling your natural diamond at the jewellery store you purchased it from or at an auction house or an online auction. You will get pennies on the dollar.

Consumers should be free to buy whatever they want, and the jewellery industry should oblige. Lab-grown diamonds are just another 'product' to sell.

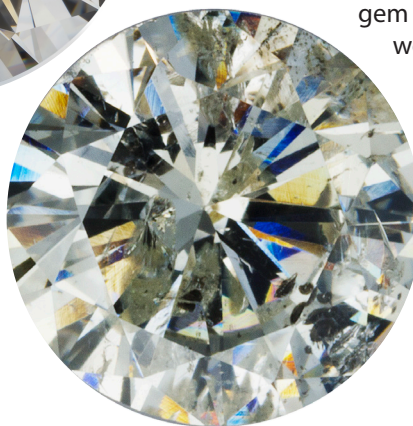
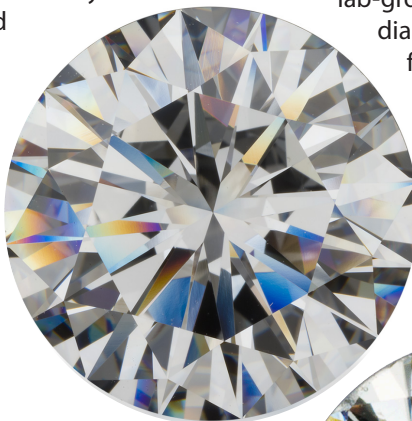
If you look at the July / August issue of GemGuide, you will find that for \$ 1,300 USD wholesale, you can purchase a one-carat D colour, internally flawless lab-grown diamond. For that same cost, you can get a .34 carat D colour, internally flawless natural diamond or a one-carat D colour, I-3 diamond. Try selling that diamond on the secondary market.

When I started in the trade in 1980, the under \$ 1,000 USD retail price point was very important. Today it still is, nothing has changed except for the quality. Now jewellers are happy to sell glass-filled and laser-drilled diamonds, low colours (M and lower), I-1 to I-3 clarities and poorly cut stones yet they seem offended by lab-grown diamonds.

Jewellery now is considered 'disposable'. They don't want you to hand it down to future generations, they want you to keep buying it. While other sectors have 'sold' value, the jewellery industry has not because it is hard to 'up sell' a product when you don't really understand what you are selling. Price has always been the 'crutch' that many jewellers rely on. Inflate the price and then offer discounts. That is a very slippery slope.

Provided there is full disclosure, there is room for lab-grown diamonds in a world of natural diamonds just the same as there is room for Hyundai's in a world of luxury cars. Imagine a Mercedes-Benz advertisement where they criticise their competitors! It would be very unprofessional yet this is exactly what some jewellers are doing.

Educate yourself, then your customers and the gem and jewellery world will be a much better place. This is not a trap you want to fall into. Trust me!



SO MUCH BETTER THAN A HYUNDAI

The new E-Class Cabriolet. Master of Intelligence

Mercedes-Benz
The best or nothing.



EDITORS NOTE: This Mercedes-Benz advertisement is not real. It was simply created to make a point.



INSIDE africa

Meet Mkhululi Nkosilamandla Ncube

Who is Mkhululi Nkosilamandla Ncube? Tell us about your background.

Mkhululi Nkosilamandla Ncube is the programmes officer at the African Minerals Development Centre (AMDC), a specialized agency of the African Union whose mandate is to provide strategic operational support and coordination for the implementation of the Africa Mining Vision and its Action Plan as well as the minerals segment of the Africa Commodity Strategy.

Mkhululi also manages the Artisanal and Small Scale Mining (ASM) Portfolio and workstream at AMDC, that portfolio is currently leading the work that's driving the African Gemstone, Jewellery Exhibition and Conference (AGJEC) series of events around the continent.

He has worked for over sixteen years in varying development, knowledge management and policy research roles within the United Nations Economic Commission for Africa (UNECA), United Nations Development Programme (UNDP) and the Development Policy Management Forum (DPMF) covering natural resources management, regional integration, trade, youth and women empowerment.

In-between roles, he has been a farmer, a small scale mining beneficial owner and an entrepreneur credited with being a start-upper of the year and international finalist in multiple community based social enterprise competitions.

What is the African Mineral Development Centre?

The African Mining Development Centre (AMDC) is a specialised agency of the African Union established by the Assembly of Heads of States and Government in Africa to support Member States in the implementation of policies and programmes for the realization of the African Mining Vision (AMV).

Vision: An integrated, prosperous and peaceful African continent achieved through the promotion and use of mineral and energy resource-based development and structural transformation.

Mission: To support AU member States and their national and regional organizations in the full implementation of the Africa Mining Vision in collaboration with Strategic Partners. Africa Mining Vision (AMV): transparent, equitable and optimal exploitation of mineral resources to underpin broad-based sustainable growth and socio-economic development.

Main Objective: To coordinate and oversee the implementation of the Africa Mining Vision (AMV) and its Action Plan to enable the mineral resources sector to play its role in the socio-economic transformation, inclusive growth and sustainable development of African economies, in conjunction with Member States, Regional Economic Communities (RECs), the private sector, civil society organizations including women and youth organizations, collaborating institutions and other key stakeholders.



What are some of the challenges the AMDC face implementing the African Mining Vision?

The start-stop-start nature of AMV and AMDC led interventions over the years within African Member States, regional economic communities and multilateral institutional engagement has been a hindrance to progressively viewing the implementation of the AMV. This was especially so in the way the AMDC had been viewed till the relaunch of the revamped AMDC in October 2022 as a specialised agency of the African Union from being a project at the United Nations Economic Commission for Africa. What is now being pushed is for AMDC's full establishment through ratification of the AMDC Statutes which currently stand officially at 3 by Guinea-Conakry, Mali and Zambia with another member state yet to deposit instruments of ratification to the AUC towards the minimum 15 Member state ratification.

Regarding the ASM sub-sector, how can the AMV mitigate its negative consequences and enhance its positive benefits?

THE ASM inputs from the AMV implementation tools such as the Country Mining Vision (CMV) guidebook and the African Minerals Governance Framework (AMGF) as a bottom-up and inclusive AMV monitoring and evaluation tool which is being worked on to be put online as well as the existing AMDC ASM policy guidance tool and policy briefs are the start to interfacing with the multitudes of interventions on the continent that align to the tenets of the AMV and consequently mitigate negative consequences aligned to the ASM sub sector.

How has the Yaounde Vision transformed the ASM sub-sector?

The streamlining of the ASM Yaounde Vision tenets into the AMV was a deliberate angling to upscale and continue wins that had been initiated by the Yaounde Vision. Hence there is congruence between what the 2002 Yaounde Vision wished for in transforming the ASM sub-sector and what has been driven forward by the Africa Mining Vision through the work of the African Minerals Development Centre.



What role can the private sector play in helping the AMDC?

The appreciation of how most developmental objectives of private sector mining industry players are mostly impactful from the private sector, is demonstrated by the existence of the AMV private sector compact, launched in 2016, that pushes for the alignment of the private sector players with the AMV. The key drivers for cooperation are the business benefits that the private

sector will derive from AMV's implementation in AU Member States and Regional Economic Communities. These include operational cost reductions and productivity enhancements from aspects of the AMV such as skills development and increased business opportunities for example through public-private partnerships. The private sector is thus encouraged to dovetail its activities into AMV processes and close existing gaps between mining communities, the private sector and governments. The AMV advocates transparency and improved public participation in the formulation and implementation of national policies and legislation. Implementation of the Compact should contribute to strengthening companies' social license to operate, legitimising their projects and reducing the costs of addressing the social tensions that arise from externally imposed projects. Environmentally and socially sustainable business practices should benefit companies through improved community relationships and – since consumer behaviour is increasingly linked to perceptions of production practices and reputation.

In terms of the gem sector, how can the African Mining Vision (AMV) **improve the value chain and maximize diversification of economies.**

The push for skills development through partnerships in public-private partnerships together with the alignment of the ASM subsector tenets of the AMV with the African Union Commodities strategy, which highlights the need for Africa to take full advantage of the African producer power factor through a monolithic approach to the endowment of similar minerals mined across the African continent. This is more so demonstrated by the work that AMDC is doing in ensuring that the African Gemstone, Jewellery Exhibition and Conference (AGJEC) series of events starts bringing together gemstone and jewellery producers on the continent in tandem with African Member States in a manner that will unlock their potential by aligning to the market opportunities being opened by the African Continental Free Trade Agreement.

Looking into the future, where do you see the African Mining sector ten years from now?

A mining sector that will begin harnessing the power of being driven on continental led initiatives, institutions and capital, the least of which will all be in resonance with the tenets of the African Mining Vision.





THE FACE OF AFRICAN MINING





BLUE print

The African Mining Vision

The Africa Mining Vision (AMV) was adopted by Heads of State at the February 2009 African Union summit following the October 2008 meeting of African Ministers responsible for Mineral Resources Development. It was Africa's own response to tackling the paradox of great mineral wealth existing side by side with pervasive poverty. It was designed to define Africa's mining industry's potential and its commitment to building a mining industry that was safe, sustainable, and well-governed, while equitably sharing the value created.

It speaks about the importance of the mining industry in Africa. How it should be a key pillar and vibrant part of the economy, the need to be globally competitive, and its potential to industrialise the continent so that generations to come will benefit from the opportunity to supply these critical resources.

It emphasises that the future of mining will need to connect with emerging and next-generation societal values, such as responsible technologies, innovation, sustainability, and shared prosperity that will shape a different future society.

It highlights the fact that mining needs to be the catalyst not only for economic development, but also the importance of providing a stable and predictable policy environment that will help encourage investor relations. Ultimately it wants to attract value-adding investments that will create jobs, increase living standards, and improve infrastructure in the mining communities while still protecting the environment.

As a 'Vision', it is ambitious. The challenge of course has been getting people to buy into it. With fifty-five member states in five geographic regions, gaining a meaningful consensus was never going to be easy. As we have seen with the European Union, every country has their own agendas and therein lies the problem.

While the AMV represents the continental aspirations, it can only work if it is mainstreamed at the national level through a Country Mining Vision (CMV).

While it is acknowledged that mining could potentially play a transformational role beyond the confines of the sector in many mineral rich African countries, unlocking this potential has been a challenge to many governments. One reason is because existing development frameworks do not adequately situate mining as a catalyst for sustainable development. A new and fully integrated institutional model in mineral dependent countries, which adequately reflects the importance of the sector and provides the necessary platforms for extractives to contribute to national development, is critical. The sectoral approach to mineral sector issues has to be dispensed with if African economies are to benefit fully from the exploitation of minerals.

Africa has an increasing number of resource-rich and mineral-dependent yet poor countries. There is significant scope to leverage the benefits of extractives for a stronger contribution to sustainable economic growth and development. The AMV articulates a vision for the continent on how mining can act as a catalyst for socio-economic development. If that vision is to be fulfilled, it has to be crafted with country-specific structural, economic, social, and political considerations in mind. The CMV will help mainstream the AMV into a country's development vision and policies with the African Mineral Development Centre (AMDC) providing overall strategic operational support for its implementation.

A country's national development policy is made up of sector-specific policies, which collectively seek to achieve overall development goals. The most frequently updated statement of national development policy in many countries is the 'Poverty Reduction Strategy Paper' (PRSP). Yet, the contribution of the extractive industry to reduce poverty is seldom referred in such papers. The PRSP is also the instrument that links the operations of the IMF and the World Bank to national policies, and so sometimes reflects the conditions that are negotiated with the International Financial Institutions when they finance part of government operations or sector-specific reforms. Similarly, five-year national development plans and longer-term country visions set out aspirational

policy objectives, often with a greater focus on economic development objectives compared to poverty reduction targets. Equally, the role of extractives is often omitted in such plans.

Part of the case for developing a CMV is that it would be grounded in the political economy of the policymaking and reform process. It would be able to focus on relevant sectoral policies and seek to help improve coordination across government agencies over a longer time horizon than the fiscal year. This is particularly the case for those economic and public sectors on which mining has some sort of impact, or which can impact the broader development impacts of mining. It can also provide a means to highlight and help resolve policy trade-offs – part of the justification for an overall mining vision is that it can show how a set of sector-specific policies can be optimised collectively, rather than just on an individual policy or individual project basis.

A CMV is an embodiment of national aspirations on the developmental role of the minerals sector and is aligned to a country's overall development vision. It is derived from a transparent and fully participatory multi-stakeholder and cross-sectoral process. As such, a CMV is a means to an end – by helping to coordinate sectoral policies – and not an end in itself; indeed, the CMV is as much a process as a product. The CMV will help countries articulate their respective vision statements of the potential contribution of mining to their national development goals. This integrated vision should be a vision that outlasts political cycles. The involvement of a broad range of stakeholders from society (communities), business and government in developing the CMV will create support rooted in collective national ownership, to ensure continuity beyond electoral cycles.

Catalysing the development potential of the mining sector will require an integration of the specific economic activities that link mining to the rest of the economy – revenue generation, hiring people directly or indirectly through the supply chain, and enterprise and industrial development associated with the supply chain.

At the same time, because it cuts across the specific sectoral responsibilities of government ministries, it will

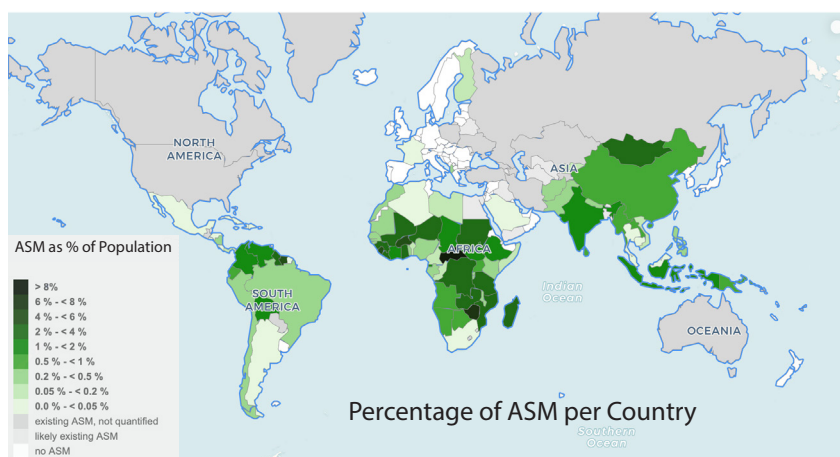
also need to be a high-level statement of government commitment to catalysing mining for broader growth and development.

The CMV process is a starting point for what countries believe mining can do for national development in a broad, holistic way. The tool will ultimately be owned and operationalized by the Minister of Mines to be used as a road map but reflect the integrative thinking of the different sectors of government, the private sector and society. The CMV will offer a common vision on mining and development – including what can be exploited, what shared opportunities exist, what the challenges are and what does not work. The CMV will enrich and not replace country PRSPs and national development plans.

There is also a positive role that companies can play in supporting the compilation of information, and development of a knowledge base. Examples of linking government policies with business activities would include: making the most of feasible dual-use infrastructure, linked with government infrastructure investments; linking extractives local procurement with policy on private investment and industrial development; or developing broad and more differentiated training programmes that can develop skills for the economy at large as well as developing skilled people for the industry to hire during particular phases of project development.

Such demand for a CMV can be identified if a direct connection is made between the adoption and implementation of a CMV, the policy priorities of current governments and the interests of the private sector, local communities, labour, and other stakeholders. For example, if job creation is an overarching goal in a country's PRSP or development plan, the mining sector's potential in terms of

generating direct and indirect employment - and the various policy areas relevant for encouraging the growth that will lead to these job increases - could be emphasised. Support outside of government would also be important – a genuine demand from the private sector, with a strategic interest in building partnerships to enhance developmental outcomes of the mining sector, would be useful, as well as support from civil society and development partners with an interest in this area.



But what about the gem sector? Unlike traditional mining, the majority of gem mining throughout Africa is artisanal.

An artisanal miner or small-scale miner (ASM) is a subsistence miner who is not officially employed by a mining company but works independently, mining minerals using their own resources, usually by hand.

Small-scale mining includes enterprises or individuals that employ workers for mining, but generally still using manually intensive methods, working with hand tools.

Artisanal miners often undertake the activity of mining seasonally – for example crops are planted in the rainy season, and mining is pursued in the dry season. However, they also frequently travel to mining areas and work year-round.

ASM is an important socio-economic sector for the rural poor in many developing nations, many of whom have few other options for supporting their families.

According to Artisanal Mining (www.artisanalmining.org), data collected from eighty-five (85) countries estimates that 49.5 million miners are directly engaged in ASM (range: minimum 42.9 - maximum 64.3 million) with women accounting for 26% (12.8 million), while 37% or 18.2 million are dedicated to gold mining (ASGM miners). Further evidence of ASM exists in 20 additional countries, where the ASM population is not quantified. Additionally, in fourteen (14) countries it is most

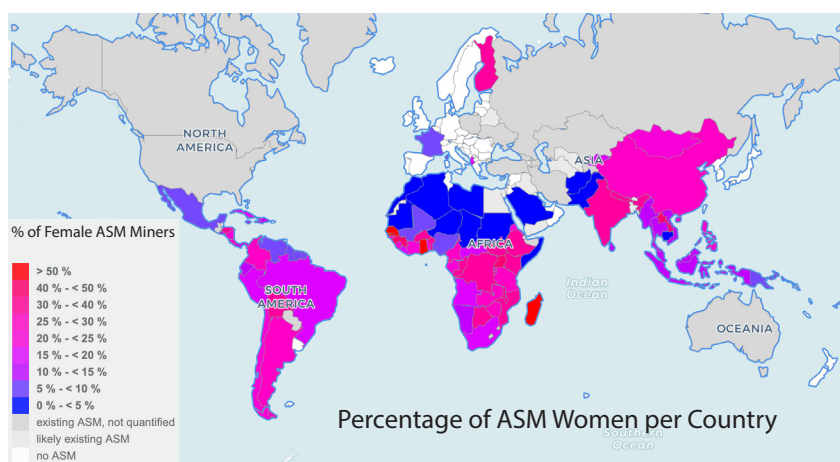
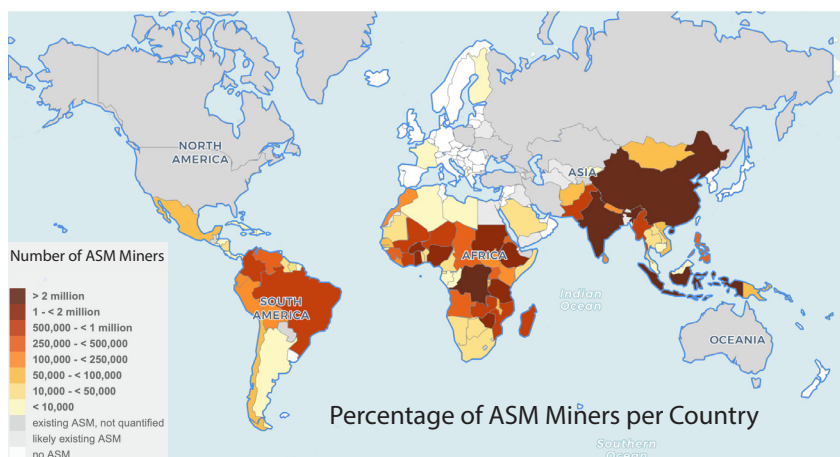
likely that ASM exists, but no documentation has been found so far. In total it is therefore estimated that ASM exists in one hundred and nineteen (119) countries.

Artisanal mining can include activities as simple as panning for gold in rivers, to as complex as development of underground workings and small-scale processing plants. In any of these circumstances, issues can stem from difficulties in achieving regulatory oversight of a large number of small operations (including issues such as security of land tenure for artisanal miners, to enforcement of environment, safety standards, and labour standards).

As a result, child labour and a

large number of fatal accidents have been reported in artisanal mines (especially coal mines, gold mines, and gemstone mines).

In order to improve the situation of small-scale miners and maximize the positive impact of ASM, it must be formalized, responsible and well-governed. The majority of miners worldwide do not have legal title, and often times the regulatory frameworks for national mining policy work to exclude or restrict ASM practices. Mineral rights for ASM are required, including the right to transfer and upgrade mineral concessions, rights to



There are four broad types of ASM:

Permanent artisanal mining

Seasonal (annually migrating during idle agriculture periods)

Rush-type (massive migration, pulled often by commodity price jumps)

Shock-push (poverty-drive, following conflict or natural disasters).



successive permit renewals and exclusivity, access to land for exploration, extraction and processing, access to markets and access to government agencies to support a responsible ASM legal environment.

While ASM accounts for a much higher percentage of women (26%) compared to the large-scale mining (LSM) sector, where less than 10% of mining employees are female, there are many challenges facing women in ASM. Digging, crushing ore, and other extraction tasks are exhausting dangerous work, and yet as the primary livelihood for millions of women, they continue to go to mining sites even while pregnant and nursing young children.

Women have reduced access to mining resources, including land, finance, and tools. Women in mining networks have slowly grown over the years, but much remains to support them. Empowering women, building solidarity, and supporting national associations will ensure that rights are respected, and women gain better opportunities and access to improving livelihoods.

ASM also lacks access to affordable and tailored financial products, which leads to stagnation, eventual abandonment of ASM business ventures, and contributes to the ASM poverty cycle. Improving access to markets and financial products tailored to ASM including credit guarantees and private and public loan facilities, is critical to improving the sector's impact, resilience, and sustainability.

Health and safety also remain a huge challenge since ASM presents a wide range of physical hazards to



Photo: Reuters

workers. These include the use of hazardous materials (ex: mercury, cyanide), poorly constructed pits/shafts/tunnels prone to collapses/landslides/flooding/lack of ventilation, poor waste management leading to water contamination and diseases, lack of PPE (personal protective equipment) or training in proper use leading to silicosis and other health risks, impacts related to dust/noise/exhaustive labour, lack of potable water/latrines/sanitation facilities leading to gastrointestinal and other diseases, and physical risks from inappropriate use and maintenance of mechanical equipment. Improving monitoring and reporting on occupational health and safety is an important first step, as well as training on standards and skills.



A woman miner performing sluice washing while taking care of young children (Photo: Dr. Kevin Telmer, Artisanal Gold Council)

Child labour is pervasive across many ASM contexts, and integrated approaches are needed to target its root causes. Due to its hazardous nature to children's safety, health (physical and mental) and moral development, mining is considered one of the 'worst forms' of child labour as defined by the International Labour Organization (ILO). There are at least one million child miners across the world, although the number is probably much higher due to the difficulty of collecting data. Initiatives such as Pact's Children out of Mining in the DRC, where more than a 90% reduction in child labour at targeted mines was achieved, using novel approaches such as various community governance committees, awareness-raising and positive parenting skills training, peer exchanges, traditional song and dance, sport, children's interactive forums and traditional signage and radio media strategies are essential if we are to stop this practice.

Due to the inherent digging of soil and sluicing involved in artisanal mining, water siltation, erosion, and soil degradation can be an issue in rivers used for mining. Rivers are also commonly diverted as a way to access mineral rich riverbeds. The digging of mines can also dig up and spread harmful materials, such as lead, that are located within the soil.

The conservation of forests is also a great concern as many artisanal mining operations take place in and around forests that are home to vast amounts of biodiversity. One assessment indicates that almost three-quarters of active mining and exploratory sites overlap with areas of high conservation value and high watershed stress. It has also been reported that some

mining operations also work within environmental protected areas. Artisanal mining operations often cut down trees to clear space for their camps, and it is common for miners to hunt, fish, and collect other forest resources for food and medicine, or as a way to supplement their income.

Mercury and other dangerous chemicals, such as cyanide, are commonly used in artisanal gold mining. Mercury is used during the amalgamation process as a cheap way to collect small gold particles from sediment. Once mercury and gold are combined to create amalgam, the amalgam is typically burned with a blowtorch or over an open flame to separate the mercury from the gold. Since gold mines are almost always set up near rivers, often excess chemicals are distributed directly into waterways. Once it becomes imbedded in soil or water, mercury becomes methylmercury that can easily accumulate in fish, which not only harms the fish but all other animals, including humans, who eat fish. According to the U.S. Environmental Protection Agency (EPA), the observed effects on animals exposed to high levels of methylmercury include mortality, reduced fertility, slower growth rates, and abnormal behaviour that affects survival.

ASM AND THE AMV

According to the African Mining Vision, the critical challenge for those working in and with the ASM sub-sector is to mitigate its negative consequences and enhance its positive benefits to transform it and maximise its contribution to poverty reduction and creation of resilient communities. In order for this to happen, it requires a better understanding of ASM issues on the policy, regulatory, environmental, health, cultural, society, and economics domain.

In the past, there have been notable attempts to develop and deploy appropriate assistance to the ASM sub-sector in several parts in Africa, but most of these were technology oriented. Some of the programmes contributed on a micro scale to improving productivity and reducing localized impacts to the environment. However, results at a macro level were less encouraging.

Many past interventions in ASM were top-down, short, ad-hoc, lacked continuity and adequate funding. The focus was mainly on gold and gemstones and less on industrial

minerals, which have greater potential for integration with other sectors of the local economy. In addition, there was poor understanding of the nature of the problem of ASM and its finite and poverty-driven trait. Resource constraints of many governments and organizations limited the scope of their interventions, particularly efforts to formalise the sub-sector, and provide education, training, and appropriate technology to ASM miners. Lack of local infrastructure to support research, development, and innovation of appropriate technology; and inadequate framework for technology diffusion and assimilation also affected impact. More important however, was the fact that the attempts were isolated and very technical-oriented in nature. Other important societal and techno-economic variables were very often ignored.

It is clear that alternative policies are needed to render the sector more sustainable. There is need of a pluralist, holistic and multi-pronged approach that goes beyond providing technology options. It is important to recognise that ASM is both a poverty-driven and a poverty alleviating, finite activity. To raise the profile of ASM and draw more attention and resources to it, there is a need to exploit the sub-sector's broader linkages and identify its entry points to broader development agenda, including the MDGs.

To stop the poverty cycle, the approach should be broadened to include the development of diversified and alternative livelihoods to ASM (artisan training on alternative skills such as carpentry and brick laying, diversifying income sources and broadening non-mining incomes), which would facilitate ASM transitions from artisanal to small-scale mining; from gold and gemstones to industrial minerals; from mining to farming and other businesses; and ensuring that ASM

miners 'Don't make their sons/daughters also miners, they save and invest in their education, health and knowledge'. This should result, respectively, in some miners abandoning mining altogether; fewer miners per unit of area mined; more income for the remaining miners; and ultimately less pressure on the limited resources. This needs to be done in direct consultation and with input from the ASM miners.

Ultimately to improve the impact of ASM programmes, it is important to improve typification of the sub-sector, and government, donors, and CSOs' knowledge on ASM, in particular on local socio-economic and cultural peculiarities and context; differentiation among small-scale miners; the human, social, financial, natural, and physical capital assets of ASM 'miners'; and other dynamics in ASM communities.

Beyond this and equally relevant, there is need to provide ASM miners with analytical skills and training on sound business management. This can

facilitate the transformation of ASM from a transitory and shock-or-coping-responsive activity that takes places in 'marginal enclaves' into a serious business and change ASM communities from vulnerable and marginal enclaves of unorganized groups of miners and other actors into integrated and functionally sustainable and resilient communities.

Finding a long-term solution will involve a huge agenda, requiring a concerted effort on a continental level. It will require mainstreaming ASM in PRS; establishing functional and effective financial schemes for ASM miners; opening-up market opportunities for ASM; enhancing the formalization and the level of organization of ASM miners; improving the delivery of cost-effective and results-oriented ASM services in a context of limited resources; raising the profile of the sub-sector and galvanising interest of the development community; empowering women and eliminating child labour; and addressing environmental and human health issues, including occupational hazards in a more effective manner.



Kenyan Miner
(Photo: Above Whispers)

One would think that a gem producing country would want to exploit their gem resources and maximize their potential, but in the past, this was not the case.

Tom Burgis, a Financial Times investigative journalist sheds some light on this paradox in his book 'The Looting Machine'. He believes that the combination of staggering wealth, rampant violence, and abject poverty is part of a pattern causing devastation across Africa and suggests that the wholesale expropriation of resources

billionaire. Gertler routed the cash through an elaborate network of offshore accounts in tax havens, keeping the details of controversial deals secret.

In the 1980s, bribes consisted of 'cars full of cash' where you simply handed the keys to the official you were trying to bribe. Today, bribery is far more sophisticated, and has become harder to define as bribery if it is done through offshore transactions or people being given equity shares in offshore companies.



Dorcas Ganda follows a worker into the gold mine she co-owns in Penhalonga, Zimbabwe
Photo: Evidence Chenjerai, GPJ Zimbabwe

Responsibility for the plight of resource-dependent nations goes beyond traders and dictators. The global economy still requires a huge supply of raw materials that originate in Africa, creating an imperative to maintain the existing, destructive model.

At every level, delusion is a powerful barrier to change. As Burgis states 'It's human nature. Nobody thinks they are the bad guy.'

If the 'African Mining Vision' is to become an 'African Success Story', it is essential that

during colonial times has barely slowed through the post-independence era, albeit with new beneficiaries.

While Western governments are not supposed to wield commercial and political power at the same time, especially where one benefits the other, this was not the case in colonial states. Here, the foreign powers cultivated a small group of local people who fused political and commercial power to control the economy.

When the foreign powers left, the elite had no division between political and commercial power, and this led to the creation of ultra-corrupt states that were not accountable to their people through a social contract based on taxation and representation. For example, in Angola, in 2011, an IMF audit revealed that \$32 billion had disappeared from official accounts between 2007 and 2010, a quarter of the state's income.

The growth of offshore banking in the late 20th century created new opportunities for resource tycoons to cover their tracks, a practice laid bare in the Panama Papers. Israeli businessman Dan Gertler was an early pioneer. After forging a close friendship with DR Congo President Joseph Kabila, he was granted a near monopoly on exporting the nation's diamonds, and quickly became a

we break the 'cycle', seize this golden opportunity, and ensure that Africans are the main beneficiaries. Failure simply must not be an option.

References:

African Mining Vision & CMV – African Union

'Why the wealth of Africa does not make Africans wealthy' by Kieron Monks (CNN)

Artisanal Mining.org

Wikipedia - ASM

INTRODUCING...

The NEXT GENERATION Colour Grading System for coloured gemstones, pearls and jade designed for the International Gem Trade and Industry.



COLOUR GRADE WITH COMPLETE CONFIDENCE & ACCURACY

VIEW COLOURWISE ON
YOUR PC, LAPTOP,
ANDROID OR
IPAD/IPHONE



POWERED BY THE WORLD GEM FOUNDATION

www.colourwise.info



PROJECT africa

Creating the 'Value Chain'

In keeping with the spirit of the African Mining Vision, WGF Project Africa is designed to not only provide training programmes that will create a pool of skilled professionals but also to address the 'Value Chain'. It is our belief that unless the entire 'Value Chain' is developed, the component parts will be ineffectual.

While there is no credible data available, we all know that gemstones are a finite resource. Exporting gem rough represents the lowest possible 'value' on the value chain but how can you process it and add value if you do not have an established lapidary sector? How can you provide a 'pool of professionals' if you do not have a recognized gemmological educational program? How do you establish the quality and value of these gem resources without a laboratory? If you are going to develop a cutting industry, why not also develop a manufacturing sector? Ultimately, unless you have buyers, who will buy these 'value-added' products?

In order to work, it has to be sustainable and while funding is needed to 'get the ball rolling', it must be self-sustaining. Since financial restraints, here in Africa, will always prevent students from pursuing their educational dreams, certain components of the 'Value Chain' must be revenue generating to support others. This is the challenge, not only here in Ethiopia but in every gem producing country throughout Africa.

Centre of Excellence

Our new classroom is now open. Currently we have twelve students registered in our inaugural Career Gemmologist Diploma program with plans to start the second program in the coming weeks.

Students complete their theoretical studies online and attend class for lectures and practical instruction. The Career Gemmologist Diploma program includes seventy-eight (78) theory lessons, 168 hours of practical instruction and our online practical Coloured Gemstone Grading Colourwise course.

The goal of the school is to not only train gemmologists but also technicians for the laboratory, and provide an outreach program for artisanal miners.

Gem Testing Laboratory

Our new laboratory is now open in Addis Ababa (Ethiopia) and provides a variety of services including Diamond, Coloured Gemstone, Opal, Emerald, Sapphire and Ruby reports.

All reports are available in a digital or print format and can be verified online to ensure their authenticity.

This is an important part of the 'Value Chain' because unless producers understand the quality and value of the goods they are producing, it will be impossible for them to receive a 'fair value'.



The laboratory will also assist the Ethiopian Ministry of Mines by producing important data regarding the value of loose gemstones and gem rough destined for export. This will ensure that the Ethiopian Government receives the correct taxes and will also hopefully act as a deterrent to those engaged in the illegal export of gemstones and gem rough or the deliberate undervaluing of these goods to avoid taxation. The laboratory will also provide a valuable service to

In Ethiopia, numerous attempts have been made to establish cutting schools (at one point seventeen existed) but there is still no lapidary service available.

The WGF Project Africa Lapidary School will offer programs at the beginner, intermediate and advanced levels. International instructors will be brought to the school, giving our students not only the very best instruction but also the opportunity to work with some of the top professional cutters in the world.



overseas buyers, providing assurances that the gems they are buying have been examined and verified. Profits from the laboratory will help fund the Centre of Excellence.

Lapidary School

Unless gemstones are cut to international standards, it will be impossible for African cutters to compete on the world stage. While 'cabbing' has been taught in the past, there has been little offered in terms of top quality faceting.



The goal of the lapidary school is to not only train gem cutters but to also create future employment so that we can create a lapidary service that will be available to local producers. Profits from the lapidary service will also be used to fund the gemmological programs.



Jewellery Making School

Our jewellery making school will train a new generation of African artisans who will learn how to make jewellery to international standards. Again, we will bring in international instructors so that our students receive the highest level of instruction. The school will also provide revenue to underwrite the costs of tuition.



International Buyers Consortium

To complete the value chain, we are setting up an international buyers consortium. This will give producers access to the international market and create new buying opportunities for our buyers. In Ethiopia, foreign currency is badly needed and this will help producers to generate USD and euros.



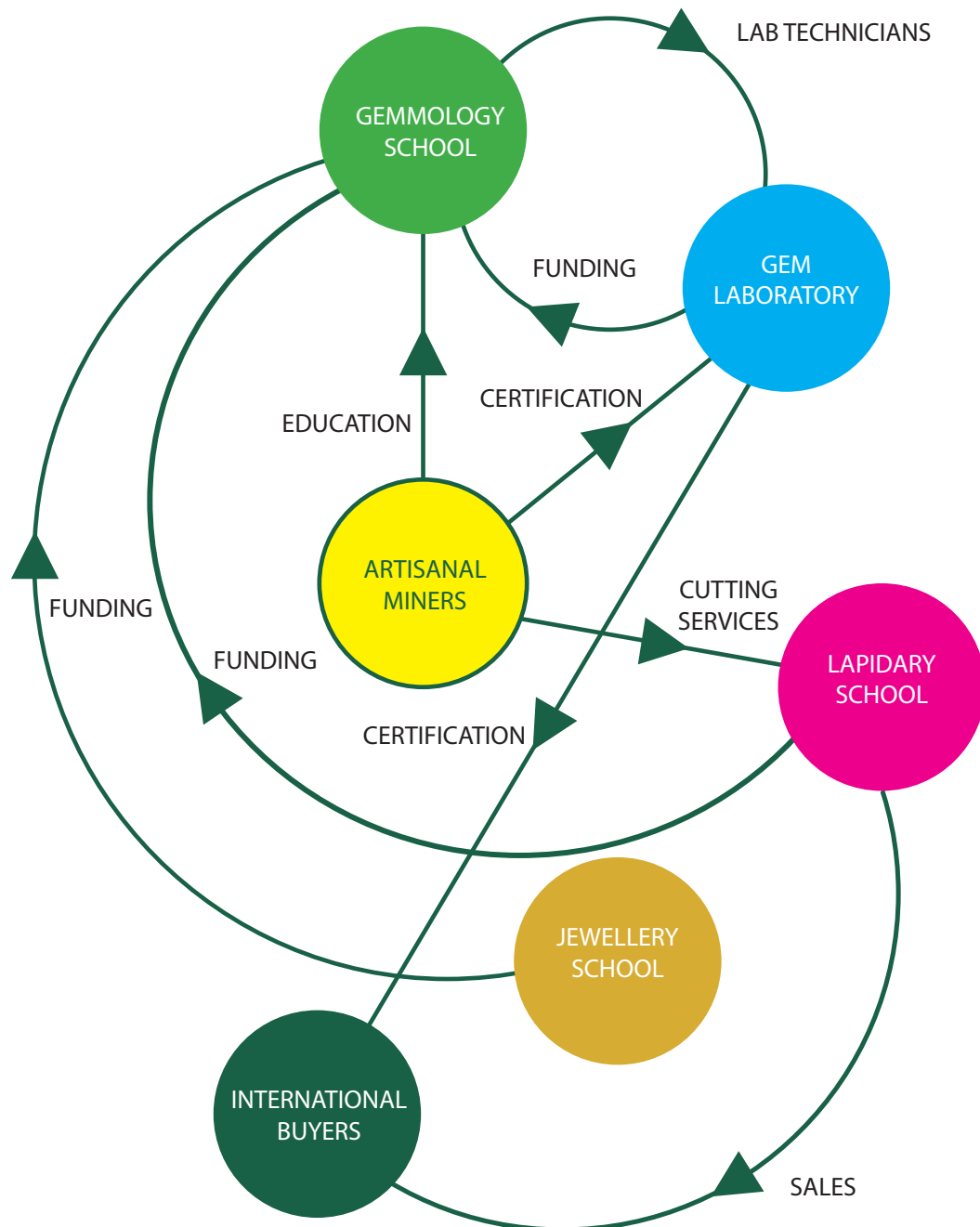
It is an ambitious plan but one we are convinced will create a 'Blueprint' for the rest of Africa.

If you would like to find out more about Project Africa or would like to get involved, please contact us at:

information@worldgemfoundation.com



PROJECT AFRICA VALUE CHAIN



NOW OPEN

GEM TESTING LABORATORY ADDIS ABABA



OVER **50** YEARS OF GEMMOLOGICAL
EXPERIENCE AT YOUR FINGERTIPS

SERVICES

Our new laboratory in Addis Ababa provides a variety of services including Diamond, Coloured Gemstone, Opal, Emerald, Sapphire and Ruby reports. All reports are available in a digital or print format and can be verified online to ensure their authenticity.

Find out more!

VISIT US

STUDY GEMMOLOGY IN ETHIOPIA



Now accepting registrations
for our 'Career Gemmologist'
Diploma Residency program
in Addis Ababa, Ethiopia

information@worldgemfoundation.com

TRY OUR FREE COURSE



Online
learning

- The identification of red, white and blue gemstones
- Available in English, French or Spanish

Enroll Today!

Sole Leone

Since 2004

Where Science Meets Art



Passionate about Gemstones & Education

Leone Langeslag (EG)

www.soleleone.nl

Studying Gemmology with the World Gem Foundation

There's an expression 'different strokes for different folks' and this is certainly true in the case of gemmology. We are fortunate to work in an extremely diverse industry; one that provides unlimited opportunities in a broad range of disciplines.

Some people want to become a professional gemmologist; to forge a career for themselves working with gemstones. At the World Gem Foundation, gemmology is not just a job, it's a profession. This is why we opted for the 'Career Gemmologist' designation. We not only want to raise the level of consciousness with consumers but also within our industry. An awareness that gemmology is a science that demands a high level of theoretical knowledge and practical experience.

At the same token, we also understand that not everyone wants to become a fully fledged gemmologist. Many choose to specialise in a particular area, such as diamonds or coloured gemstones. To recognise this, we introduced two new 'Diploma' programs (Diamond Professional and Coloured Gemstone Professional) in 2018.

But what about gemmologists who may have completed their studies five, ten, fifteen or twenty years ago? Since gemmology is constantly evolving, it is important to continually upgrade your knowledge. You simply cannot afford to become complacent. One minute you may be 'up to speed', the next completely 'out of sync'. Each year brings new treatments and enhancements, new lab-created gemstones and new techniques to identify them. It is not the certificate that hangs on your wall that defines who you are as a gemmologist but the knowledge you possess. Our courses can be taken collectively or independent of each other, allowing our students to customise their own personal development programs based on their own specific needs.

Finally, there are many people who share a passion for gemstones but don't necessarily want to enrol in a gemmological program, they simply want to augment their existing knowledge and upgrade their level of understanding.

Regardless of your motivation to expand your knowledge, the World Gem Foundation has a variety of courses and programs that can help you reach your goal.

CAREER GEMMOLOGIST PROGRAM

For students wishing to pursue a career in gemmology, our 'Career Gemmologist' program has been especially designed to give you the knowledge and experience

required to work as a professional gemmologist. The World Gem Foundation and our affiliated gem academies offer you two options to earn your Career Gemmologist Diploma with our Gemmology Seven/ Eleven programs.

GEMMOLOGY SEVEN

This option allows you to complete the entire theoretical requirements by enrolling in our Career Gemmology course (5 modules - 78 lessons) and completing the five practical workshops (Gem Identification #1, Gem Identification #2, Diamond Grading and Lab-created Diamonds, Coloured Gemstone Grading #1 and Lab-created and Treated Gems) and our 40 hour online Coloured Gemstone Grading course.

The theoretical component covers the chemical nature of gemstones, their physical and optical properties, basic crystallography, the absorption of light, the spectroscope, refraction and reflection, the refractometer, optical character and sign, dispersion, reflectivity meters, polarized light, the polariscope, pleochroism, the dichroscope, colour filters, specific gravity, luminescence, magnification and thermal conductivity.

From there we move into the most challenging and fluid areas of gemmology; imitation and composite gemstones, lab-created gemstones and the treatment and enhancement of gems.

In the lessons pertaining to lab-created gemstones you will not only learn about the various methods used to manufacture lab-created gemstones (including Verneuil Flame-Fusion, Czochralski Pulling Method, Flux Melt Method, the Hydrothermal Method, HPHT, CVD, Detonation, Ultrasonic Cavitation Skull Crucible, Zone Melt, Horizontally Oriented Crystallization, the Sublimation Method, and the Modified Stöber Method) but also the unique identifying features that allow us to separate them from their natural counterparts.

The use of treatments and enhancements is both demanding and depending on who you talk to, highly controversial. Here we look at not only the techniques used to treat and enhance gemstones (heat treatment, surface and sub-surface diffusion, lead glass fracture filling, flux assisted partial fissure healing, glass fracture filling, cobalt doped glass filled sapphires, clarity enhanced diamonds, HPHT, quench-crackling, surface modifications, coatings and foil backs, laser drilling and irradiation) but also how they can be detected. We also look at the advanced gem testing techniques that are often needed to identify many of these treatments.

The course then takes a slightly different direction, focusing on the identification of gemstones including the tests that are commonly used to identify them and an in-depth look at each of the ten gemstone groupings based on colour and transparency (colourless or white, red, pink, orange, yellow, blue, green, violet or purple, brown, black or grey). These lessons include the important varieties and species of gemstones that commonly occur within each colour grouping, how to distinguish gemstones that are commonly confused with each other (i.e., aquamarine and blue topaz, emerald and chrome green tourmaline, diamond and lab-created moissanite) or gemstones that have physical and optical properties that are similar (i.e., amethyst quartz and purple scapolite) to each other. This section also includes gemstones that either exhibit optical phenomena (i.e., asterism or chatoyancy) or are unusual by nature.

The next module looks specifically at diamonds, their physical and optical properties, geology, localities, principle mines, crystal system, chemical composition and classification, causes of colour (fancy coloured diamonds), absorption spectra, inclusions, fluorescence, diamond cutting and mining and a comprehensive examination of the 4 C's (colour, clarity, cut and carat weight) and how they are measured and assessed. The lesson on 'Cut' compares some of the most important and recognized 'Cut' grading systems used today including those pioneered by the Gemological Institute of America (GIA), the American Gem Society (AGS), Hoge Raad voor Diamant (HRD), the International Gemological Institute (IGI), the European Gemological Laboratory (EGL) and the Accredited Gem Appraisers (AGA).

The final twenty-nine lessons (29) are devoted to coloured gemstones and covers their physical properties, geology, localities, crystal system, chemical composition and causes of colour, varieties, absorption spectra, pleochroism, inclusions, fluorescence, pricing and care guidelines. Gemstones covered include corundum, beryl, chrysoberyl, spinel, zircon, topaz, tourmaline, peridot, quartz, garnet, tanzanite, lapis lazuli, turquoise, spodumene, feldspars, iolite, andalusite, diopside, apatite, and organic gems (pearls, coral, jet, ivory, and amber). You will also learn about the various colour grading systems currently used in gemmology (GIA, Gemewizard, ColourWise, GemDialogue and the World of Color), how to accurately describe colour based on hue, tone and saturation, the clarity classification of gemstones, how cut is assessed, opal, jadeite and pearl grading, and how to estimate the weight of 'mounted' stones.

The study of gemmology simply would not be complete without a comprehensive program of practical instruction. This involves five practical workshops (Gem Identification #1 & #2, Diamond Grading and Lab-

created Diamonds, Lab-created and Treated Gems and Coloured Gemstone Grading #1) totalling twenty-eight days of in-class instruction and our online / practical Coloured Gemstone Grading #2 course where you will work with the Gemewizard and ColourWise Colour Grading systems.

GEMMOLOGY ELEVEN

While the information is the same, the theoretical portion of this program is divided into five free-standing courses (Basic Gemmology, Advanced Gemmology, Gem Identification, Diamonds and Coloured Gemstones). This option allows you to take each course separately giving you greater flexibility in terms of time and how you can pay for the courses.

Like the 'Gemmology Seven' program, there are five practical workshops and one 40 hour online course.

DIAMOND PROFESSIONAL PROGRAM

Designed specifically for those engaged in the diamond trade, this program covers the same theoretical information covered in our 'Diamonds' course plus our eight-day Diamond Grading and Lab-created Workshop.

COLOURED GEMSTONE PROFESSIONAL PROGRAM

If your area of expertise is coloured gemstones, this program is ideally suited for you. The Coloured Gemstone Professional program involves the completion of four theoretical courses (Basic Gemmology, Advanced Gemmology, Gem Identification and Coloured Gemstones) plus our two five-day practical Gem Identification workshops, our five-day Coloured Gemstone Grading #1 workshop, our five-day Lab-created and Treated Gems workshop plus our online / practical Coloured Gemstone Grading #2 course.

RESIDENCY PROGRAMS

We are delighted to announce that our Career Gemmologist, Diamond Professional and Coloured Gemstone Professional Diploma Programs are available as a full-time residency program through the Gem Academy of Canada in Montreal, Canada.

Integrating the theoretical and practical components of these programs, students can earn their Career Gemmologist Diploma in six-months, their Diamond Professional in one month and their Coloured Gemstone Professional Diploma in five months.

COURSES IN OTHER LANGUAGES

All of our diploma and general interest courses are now available in English, Spanish & French. We are currently translating all the courses into Russian. These will be available in 2023.

Mining and exploration, gem cutting, jewellery manufacturing and goldsmithing, valuations, laboratory work, education and the wholesale/retail trade



— GEMMOLOGY OPENS DOORS



Your
passport
to explore
the world, offering
diverse and exciting
opportunities



The section on jade follows a similar format with lessons covering their physical and optical properties, their geology, localities, crystal system, chemical composition, absorption spectra and pleochroism, inclusions, fluorescence, mining, principal mines, evaluating the rough, jadeite cutting, jadeite nomenclature, grading jadeite, synthesis of jadeite, gem identification, common treatments and enhancements, cleaning and care and pricing.

ORGANIC GEMS

This course explores a very select group of gemstones (coral, jet, amber, ivory and pearls), formed through organic processes rather than through geological forces deep within the earth's surface. Lessons cover their physical and optical properties, geological formation, crystal systems, chemical composition, varieties and classification, causes of colour, common inclusions and internal characteristics, fluorescence, pearl grading criteria, methods of synthesis, gem identification, common treatments and enhancements, and cleaning and care instructions.

ONLINE TUTORING

While clearly the ideal way to learn a particular subject is in a classroom or with one-on-one tutoring, we appreciate that this is difficult when you enrol in a long distance study program. Fortunately, new distance learning technologies are changing. Now teachers can connect with their students virtually using a variety of virtual tutoring tools, such as Skype.

The chart outlines the number of online tutoring hours that are included in our courses. If you require additional tutoring, you can talk to your tutor to discuss availability and pricing.

ONCE A STUDENT, ALWAYS A STUDENT

We appreciate that the science of gemmology is constantly evolving. Every year new lab-created gemstones and treatments and enhancements are emerging in the market place along with new techniques and advanced technology to detect them. While your knowledge in certain areas may be relevant today, it may be obsolete tomorrow.

To meet this challenge, the World Gem Foundation has introduced our 'One a Student, Always a Student' policy, an innovative program that is unique to the World Gem Foundation and our affiliated gem academies.

Once you register for one of our courses or programs, we provide you with lifetime access to your student page so that every two years when we update our courses, you will receive the latest digital course notes free of charge.

FLEXIBLE STUDY SCHEDULES

Benjamin Franklin once said 'An investment in knowledge pays the best interest' and this is as true today as it was back then. But how can we achieve this when we all lead such busy lives?

At the World Gem Foundation, we appreciate that we all have responsibilities and commitments that can make studying a challenge.

To meet this challenge, we offer a flexible study schedule that allows you to register at any time and study at your own pace.

Enrol in one of our three diploma programs, take the theory and practical diploma courses separately and receive course credits or take our general interest courses. The choice is yours! Our goal is to help you devise a study schedule that works for you!

Course Name	Hours
Basic Gemmology - Theory	2
Advanced Gemmology - Theory	4
Gem Identification - Theory	2
Diamonds - Theory	2
Coloured Gemstones - Theory	5
Career Gemmology - Theory	14

Whether you are taking our online tests, writing our final theoretical examinations or taking a practical test, we provide you with the flexibility to make it possible. Our students are our major stakeholders and we believe it is our responsibility to offer them every opportunity to achieve their educational goals.

AVAILABLE IN PRINT

All our diploma theoretical courses are available in print. When you purchase the printed course notes, you will automatically receive online access. Since we regularly update all our courses, all course notes are printed on demand.

COURSE FEES

Fees charged by the individual gem academies are charged in the prevailing currency for that particular area (i.e., Euros in Europe, Pounds Sterling in Britain). Please note that shipping charges apply to any courses provided in print.

CAREER GEMMOLOGIST RESIDENCY PROGRAM CURRICULUM

For more information, please click [here](#)

Internationally Recognized Diplomas



Practical Workshops

Gemstone Identification #1 (5 Days)

This workshop covers the identification of red, pink, orange, yellow and green gemstones plus a section on crystallography.

Prerequisites: World Gem Foundation Gem Identification (Theory) or equivalent

Gemstone Identification #2 (5 Days)

This workshop covers the identification of blue, violet/purple, brown, black and phenomenal/unusual stones.

Prerequisites: World Gem Foundation Gem Identification #1 (Practical)

Coloured Gemstone Grading #1 (5 Days)

This workshop includes practical instruction on how to access the hue, tone and saturation of coloured gemstones and how to grade pearls, jadeite and opals. During this practical class three colour grading systems; GIA, GemDialogue and World of Color will be discussed.

Prerequisites: None

Coloured Gemstone Grading #2 (40 Hours Online)

This online coloured gemstone course consists of a comprehensive overview of the GemWizard and ColourWise Colour Grading Systems and includes practical exercises that are completed online, glass study samples and a lifetime subscription to ColourWise.

Prerequisites: None

Diamond Grading & Lab-created Diamonds (8 Days)

This workshop includes practical instruction on how to clarity and colour grade diamonds, techniques to determine table percentage, crown angle, girdle thickness and pavilion depth percentage, how to access polish and symmetry and the identification of lab-created and treated diamonds.

Prerequisites: None

Lab-created and Treated Gemstones (5 Days)

This workshop focuses on coloured gemstones produced synthetically or treated to improve their appearance.

Prerequisites: World Gem Foundation Advanced Gemmology (Theory) or equivalent

PROGRAM OR COURSE NAME	EUROS	POUNDS STERLING	USD
CAREER GEMMOLOGY SEVEN			
Career Gemmology (Theory)	1400	1250	1600
Gem Identification #1	500	450	550
Gem Identification #2	500	450	550
Coloured Gemstone Grading #1	500	450	550
Coloured Gemstone Grading #2	1000	900	1150
Diamond Grading/Lab-created Diamonds	1750	1575	2000
Lab-created & Treated Gems	500	450	550
Examinations Fees (Final Exam)	250	225	280
Total Cost	6400	5750	7230
CAREER GEMMOLOGY ELEVEN			
Basic Gemmology (Theory)	200	180	225
Advanced Gemmology (Theory)	400	360	450
Gem Identification (Theory)	225	200	250
Diamonds (Theory)	225	200	250
Coloured Gemstones (Theory)	500	450	550
Gem Identification #1	500	450	550
Gem Identification #2	500	450	550
Coloured Gemstone Grading #1	500	450	550
Coloured Gemstone Grading #2	1000	900	1150
Diamond Grading/Lab-created Diamonds	1750	1575	2000
Lab-created & Treated Gems	500	450	550
Examinations Fees (Final Exam)	250	225	280
Total Cost	6550	5890	7355
DIAMOND PROFESSIONAL			
Diamonds (Theory)	225	200	250
Diamond Grading/Lab-created Diamonds	1750	1575	2000
Examinations Fees (Final Exam)	250	225	280
Total Cost	2225	2000	2530
COLOURED GEMSTONE PROFESSIONAL			
Basic Gemmology (Theory)	200	180	225
Advanced Gemmology (Theory)	400	360	450
Gem Identification (Theory)	225	200	250
Coloured Gemstones (Theory)	500	450	550
Gem Identification #1	500	450	550
Gem Identification #2	500	450	550
Coloured Gemstone Grading #1	500	450	550
Coloured Gemstone Grading #2	1000	900	1150
Lab-created & Treated Gems	500	450	550
Examinations Fees (Final Exam)	250	225	280
Total Cost	4575	4115	5105

PROGRAM OR COURSE NAME	EUROS	POUNDS STERLING	USD
INDIVIDUAL THEORY			
Basic Gemmology	200	180	225
Advanced Gemmology	400	360	450
Gem Identification	225	200	250
Diamonds	225	200	250
Coloured Gemstones	500	450	550
INDIVIDUAL PRACTICAL			
Gem Identification #1	500	450	550
Gem Identification #2	500	450	550
Coloured Gemstone Grading #1	500	450	550
Coloured Gemstone Grading #2	1000	900	1150
Diamond Grading/Lab-created Diamonds	1750	1575	2000
Lab-created & Treated Gems	500	450	550
EXAMINATION FEES			
Theory / Practical Final Examinations Fees	250	225	280
GENERAL INTEREST			
Rubies, Sapphires & Emeralds	95	85	105
Opals & Jade	75	65	85
Organic Gems	50	45	55

ALL PRICES QUOTED FOR THEORICAL COURSES ARE FOR DIGITAL ACCESS



REMEMBER.....Studying should also be FUN!



Reach over 20,000
readers in 50
countries

ADVERTISE WITH US

Ads start for as little
as € 100 (1/6th Page)

Discounts for
multiple ads



Article Submissions

- We do not accept highly scientific articles.
- All articles should be a minimum of one page.
- All accompanying photographs must be high resolution and must be accompanied by written permission to use the images unless the author owns the rights.
- We reserve the right to refuse articles

E-mail all submissions to:

information@worldgemfoundation.com

SIZE OF AD	ONE ISSUE	TWO ISSUES	THREE ISSUES	FOUR ISSUES
BACK COVER	800	1450	2000	2400
FULL PAGE	600	1100	1500	1800
1/2 PAGE	300	550	750	900
1/3 PAGE	200	375	500	600
1/4 PAGE	150	275	375	450
1/5 PAGE	120	22	300	360
1/6 PAGE	100	185	250	300

We are pleased to accept advertisements ranging in size from 1/6 of a page to a full page with discounted rates dependent on how many issues you commit to.

For example, for a full page advertisement in one issue the cost is € 600 (Euros) however if you commit to a full page advertisement in four issues, the unit cost drops to € 450 (Euros) per issue or € 1800 (Euros) for all four advertisements instead of € 2400 (Euros). Prices plus VAT/GST.

For multiple advertisements, the advertiser has the right to change the ad copy.

To secure the discounted rates, all multiple ads must be prepaid.

Advertisements should be supplied as per sizes listed and as a high res PDF.

New Deadlines Dates for Submissions

December 2023 Issue: September 30th, 2023

March 2024 Issue: December 31st, 2023

Articles for upcoming issues

For the December 2023 and March 2024 issues, we are looking for general interest articles.

STUDY GEMMOLOGY IN THE UNITED KINGDOM



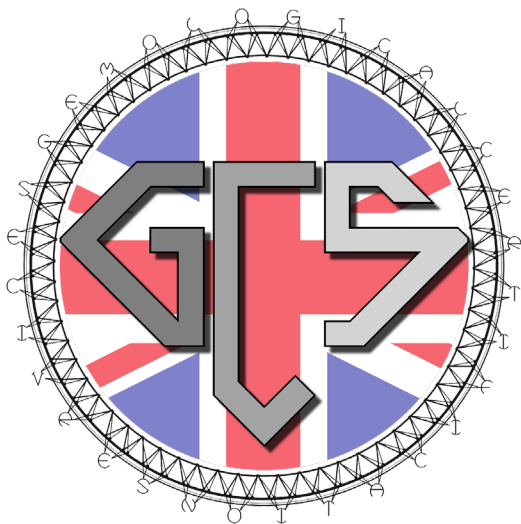
Be recognised as
an **internationally**
reputed **gemmologist**

To register, contact GCS Laboratory at:
contact@gcslab.co.uk



AUTHORIZED LICENSEE

DEFINE YOUR JOURNEY
- **CREATE YOUR DESTINATION**

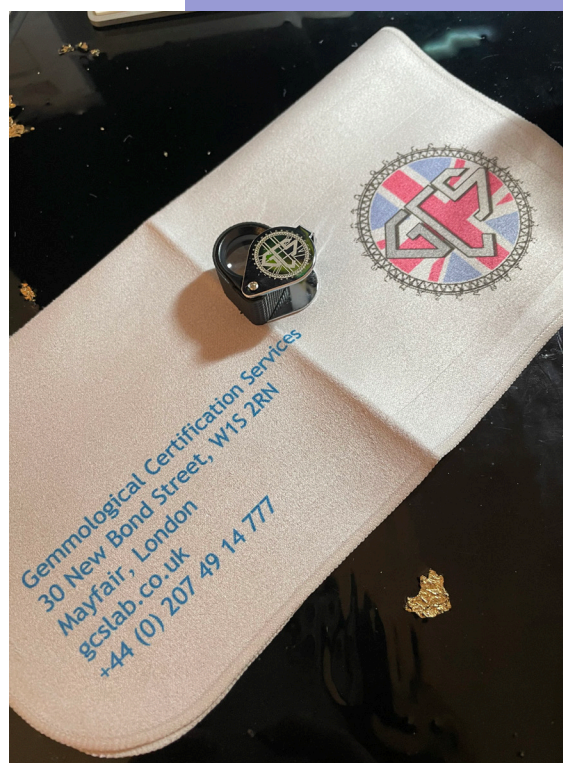


Gemmological Certification Services was established in the heart of London's Mayfair in 2014. We are the UK's leading gemmological laboratory for the origin determination of coloured gemstones; identification of synthetic material, including laboratory grown diamonds; differentiating natural and cultured pearls; and detecting treatment in all the major gemstones. Working in collaboration with Claude Bernard University in Lyon, France, we uphold a high academic standard, with a fully trained team of gemmologists and the most up-to-date technology. We are proud to provide gemmological certification services to the most prestigious jewellers and auction houses in the UK and worldwide.

Our parent company, the antique jewellery specialists, Gemroad had been established on the premises a decade earlier by Stephane Cohen-Scali, whose interest in gemstones stems back to his childhood, having grown up in the family jewellery business in Paris, France. As an interest in gemstones can only take one so far, Stephane went on to pursue his gemmological studies at the Institut National de Gemmologie and Claude Bernard University, obtaining a gemmological degree and diploma respectively. After founding Gemroad, Stephane, recognising a need for such a service, set up a gemmological laboratory in London.

The company is now managed by his daughter, Stephanie Seror, who has grown the team to three times its original size over the past year. With an experienced tutor on staff, we are now in a position to deliver gemmological education to the those with an interest in pursuing this fascinating and ever evolving subject.

Our pooled knowledge, coupled with our day-to-day operations as a laboratory, place us in a prime position to offer the most comprehensive level of gemmological education in the UK. We are looking forward to working with the World Gem Foundation.





NATURAL wonders

Pearls



South Sea Baroque Pearls
(Photo by Tino Hammid)

LOCALITIES

Pearls are found in a variety of places around the world including Japan, China, Australia, South Pacific (Tahiti), USA, Myanmar, Philippines, Indonesia, Cambodia, Vietnam, Thailand, New Zealand, and the Caribbean Sea.

BIOGENIC

In CIBJO's Blue Book on Pearls, section 5.20 (Biogenic Substances), states that a biogenic gem is one that consists of a substance produced by life processes (either constituents, or secretions) of plants or animals (i.e., nacre).

FORMATION OF PEARLS

Pearls are formed in the interior of a mollusc and can be formed both in saltwater oysters and freshwater mussels. The forming of a pearl is a reaction of a strange infringing material (autoimmune) that does not have direct contact with the shell.

There are three types of pearls distinguished in the trade: natural, cultured pearls, and imitation. In this article, we will focus on the first two.

NATURAL PEARL

Natural pearls are produced by the introduction of an irritant, usually in the form of a small parasite, which can often form a localized infection. The mollusc reacts by surrounding this area with a sac of cells from the mantle or pallium. This, in turn, secretes a substance in layers consisting of calcite, aragonite and a matrix of organic macromolecules, including conchiolin, which is a complex protein.

The secretion of this substance, however, does not stop when the irritant has been totally encapsulated but can continue for up to seven years. Similar to an onion, but on a much finer scale, these successive layers slowly

Grace Kelly once wrote 'The Pearl is the Queen of the gems and the gems of the Queens' and while we might associate pearls with women, throughout time, men have also enjoyed wearing them. Henry VIII wore clothes embroidered with pearls in the first half of the 15th century while in the 16th century, long strands of pearls were worn by the Emperor Babur during the Mughal Empire.

When it comes to gems, pearls are certainly unique in the world of gemstones since they are created by a living creature. They are also one of the oldest gems with the oldest pearl dated back to 7500 BCE.



American Freshwater Pearl Jewellery
(Photo by Tino Hammid)

Cultured Pearls

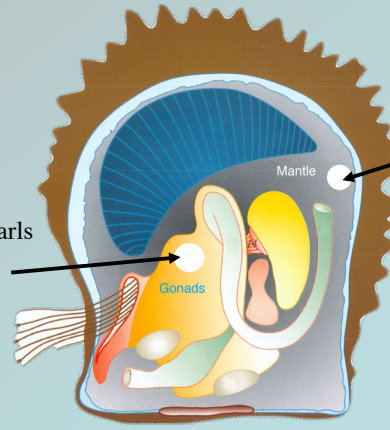
General rule

beaded cultured pearls are **gonad-grown**

e.g. Akoya
South Sea
Tahiti
Kasumiga,
Ming, Edison

beadless cultured pearls are **mantle-grown**

e.g. Biwa Japan
China freshwater
Mississippi



© H.A. Hanni, GemExpert

build up, and if the right conditions are present and the irritation occurred within the soft mantle tissue, a well-formed cyst pearl will be produced. However, if the irritation occurs next to the inner shell walls of the mollusc, the same process will occur but instead of producing a cyst pearl, a blister pearl will be formed.

The exact same substance is also secreted by the mollusc when it is young and produces the mother of pearl coating inside the shell.

Natural pearls can be found in both saltwater oysters and freshwater mussels.

CULTURED PEARLS

A cultured pearl is a pearl formed in a mollusc through the intervention of Man at 'Pearl Farms'. As early as the 13th century, the Chinese tried to make cultured pearls by introducing irritants between the shell and the soft mantle tissue of various molluscs. Often in the form of tiny Buddha's placed inside the mantle of the freshwater molluscs, these were subsequently covered by thin layers of pearl nacre (or more correctly, by mother of pearl).

Although Kokichi Mikimoto is widely credited for the development of cultivating cultured pearls, it was in fact Tatsuhei Mise who developed a technique for the development of cultured pearls.

Today the Nishikawa method is the most used method for saltwater cultivated pearls. It requires a host oyster, a sacrificed oyster for saibo (= a small piece of donor tissue), a nucleus and/or a bead. This process involves insertion of a small piece of 'saibo', along with a mother of pearl bead in the oyster. The bead is made from the shell of a Chinese freshwater mussel.

Once inserted the shell is closed and the mollusc is re-introduced into the water, suspended in cages. The grafted mantle tissue cells slowly develop a (cultured) pearl sac (in around 30 days) around the nucleus and then the secretion continues by forming regular layers of nacre and this leads to a cultured pearl. Today a large variety of nucleus materials and shapes are used to be coated with nacre together with the inserting of a piece of mantle tissue.

Cultivation can take up to three years and once the mollusc is removed from the water and the pearl is harvested, it will be cleaned, sorted, and graded.

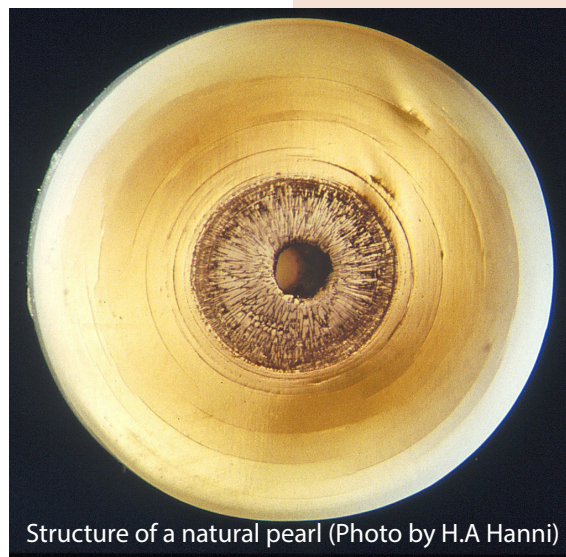
Generally, beaded cultured pearls will grow/ be grafted near the gonad of the oyster and only 1 pearl can be harvested at the time. Most cultured hosts deposit at least 0,15 mm of nacre per year. In warmer water the metabolism of the host shell will be faster, and this results in a quicker growth nacre.

Freshwater cultured pearls are cultivated in mussels in lakes, rivers, and ponds. The main difference between saltwater and freshwater cultured pearls is that the latter is non-nucleated (no bead). Freshwater mussels can produce as many as 50 cultured pearls near the mantle of the shell and it was this capability to produce large quantities of freshwater pearls that had a substantial impact economically on the pearl trade.

Best known are 'Biwa' pearls, referring to pearls cultivated in the last century in Lake Biwa, Japan's largest freshwater lake, situated 10 km north of Kyoto.

However, by the late 1990's, contamination of the lake had reduced production to 250 kilograms.

The Chinese freshwater pearl industry expanded in the 1960's due to a decline in the Japanese pearl industry. Today China is the major producer of freshwater pearls, with sizes ranging from 3mm up to 17mm (Guangdong and Jiangxi Provinces) and cultivation times ranging from 1-2 years for smaller pearls and up to 10 years for larger pearls. Once a pearl sac is formed, it can be used a



Structure of a natural pearl (Photo by H.A Hanni)

second time. Re-beading is performed when a first pearl shows a good quality.

VARIETIES OF PEARLS

Pearl: is formed in the shell mantle tissue without contact to the shell.

Blister: refers to pearls that are formed on the inner side of a shell rather than in a pearl sac. In nature, they are often the result of an intruder that drilled through the shell whereas in cultured blister pearls, they are formed by either cementing a mother of pearl hemispherical bead or a similar shaped soapstone pellet to the inside of the shell. In both cases, the mollusc reacts by secreting nacre. The resulting blister pearls (known as Mabé) are then cut from the shell. In the case of cultured mabé pearls, created using a soapstone nucleus, the nucleus can be removed so the inside of the shell can be 'tinted' to enhance the colour.

Melo: prized for their flame-like patterns, intense reddish-orange body colour and porcelain like lustre; Melo pearls are non-nacreous pearls consisting of calcite and aragonite produced by the Melo Melo gastropod. Localities include the Myanmar coastline as well as Indonesia, Cambodia, Vietnam, and Thailand where they are found at depths of up to 50 metres. While spherical pearls are most desirable, they are also found in various other shapes including irregular, baroque, and ovoid in sizes up to 32 millimeters. In addition to the preferred reddish-orange, Melo pearls are also found in colours ranging from intense orange to yellowish-orange, yellow, and off-white. Reports indicate that Melo pearls will fade if exposed to strong sunlight.

Keshi pearls: are small non-nucleated pearls, typically formed as by-product of pearl cultivation accidentally or through human intervention. The name is derived from the Japanese word meaning 'poppy'. Keshi pearls can be produced in a number of ways including (a) as a result of a predator that bores into the shell of the mollusc (b) accidental damage to the mantle tissue (c) cultivation mishaps that cause the mollusc to ultimately reject the bead (d) deliberate non-nucleated cultivation or (e) through the use of a mollusc for a second harvest. Typically, small in size and irregular in shape, Keshi pearls can grow to more than 10mm in diameter, but these are quite rare.



Melo Pearl (Photo by Tino Hammid)

CHEMICAL COMPOSITION

We know that pearls consist of 86% calcium carbonate (CaCO_3), 12% of conchiolin and 2 % of water. They are formed in the microcrystalline system (orthorhombic).

Freshwater pearls can be distinguished scientifically from saltwater cultured pearls by their higher manganese and barium concentrations.

Buttons are flat on one side when viewed in profile, while 'Drop' pearls are externally round/rounded in cross-section (i.e., down their length) and usually elongated with one end narrower than the other. Tokki is a Japanese term to describe small 'bumps' (or additional cultured pearls) attached to a larger beaded cultured pearl.

Colour

GIA use a combination of the pearl's dominant body colour, overtone, and orient.

Body Colour considers the hue, tone, and saturation while overtone is the noticeable translucent colour that appears to overlies the body colour. Orient is the mixture of colours shimmering just below the pearl's surface.

Lustre

This refers to the light that is reflected from or near the pearl's surface and is evaluated by the intensity and the sharpness of the reflection.

Excellent - reflections appear bright and sharp.

Very Good - reflections appear bright and near sharp.

Good - reflections are bright but not sharp.

Fair - reflections are weak and blurred.

Poor - reflections are dim and diffused.

Surface

This refers to blemishes or irregularities that are confined to the pearl's surface and consider the size, number, nature, location, visibility, and type of the surface characteristics.

Clean - blemish free or containing minute surface characteristics that are difficult to see.

Lightly Spotted - only minor surface irregularities visible.

Moderately Spotted - noticeable surface characteristics.

Heavily Spotted - obvious surface irregularities that might affect durability.

Nacre Thickness

Nacre thickness is typically not noted on a report unless the nacre is considered too thin and / or damaged, thereby affecting the durability of the pearl.

Pearl Producing Mollusc	Bivalves	Natural Colours (CIBJO)	Size Diameter	Location
Akoya	<i>Pinctada fucata martensii</i>	Pink, green, pink, silver-pink, cream pink, white, green and cream to gold.	2-10 mm max, most used 6 to 7 mm.	Japan originally, now also China and Vietnam
South Sea, Silver and Gold Lipped	<i>Pinctada Maxima</i>	Silver, silver, pink, pink, grey, cream, yellow to golden, white	8-16 normally Up to 20 mm	Australia, Indonesia, Philippines, Burma
Tahiti Black Lipped	<i>Pinctada Margeritifera</i>	Black, grey, green, brown, blue, and peacock	8-16 mm	Tahiti, Fiji
Sea of Cortez	<i>Pteria Sterna</i> and <i>Pinctada Mazatlanica</i>	Rainbow colours due to rainbow lip	8-12 mm	Eastern Pacific to Peru
Mexican Black Lipped/ La Paz	<i>Pinctada Mazatlanica</i>	grey, black, green, violet, and golden	7-9 mm	Mexico, Panama, Costa Rica, and Peru.
Freshwater Cultured	<i>Hyriopsis cumingii</i> and <i>Hyriopsis schlegelii</i> and their hybrids	White, orange, and purple	2-13 mm non beaded	China, Japan
Ming or Edison	Hybrid of <i>Hyriopsis schlegelii</i> and <i>Hyriopsis Cumingii</i> .	Pastel colours Gonad beaded	15-20 mm	China
Non-Nacreous: Abalone Gastropod	<i>Haliotis Iris (paua)</i>	Range of colours blue green	9- 22 mm	New Zealand
Queen Conch	<i>Strombus Gigas</i>	Pink, rose and cream	3- 8 mm	Atlantic Coast, Caribbean (Bahamas)
Melo Melo		Orange	7- 11 mm rare up to 30 mm	Indian and Pacific Oceans
Giant Clam	<i>Tridacna</i>	Off white	3- 140 mm!	Indo Pacific region

GRADING

CIBJO and GIA developed a 7-scale grading system, and all these factors should be examined by a trained observer to give a qualitative grading report. These factors include:

Size

The international norm for recording the weight of a natural pearl is the 'pearl grain' (One pearl grain equals 0.25 carats). But today, pearls are measured (diameter) in millimeters to two decimal points.

Shape

The shapes of pearls are described as: round, semi-round, oval, drop, button, tokki, and baroque.

Matching

This refers to the uniformity of appearance in strands and multiple-pearl pieces.

Excellent - uniform appearance and drilled on-centre.

Very Good - very minor variations in uniformity.

Good - minor variations in uniformity.

Fair - noticeable variations in uniformity.

Poor - very noticeable variations in uniformity.

Not Applicable - for single pearls and certain intentionally matched items.

PEARL IDENTIFICATION

Pearl identification is totally different compared to other gemstones in general. As most of the pearls have the same surface and there is no transparency other approaches are necessary. The well-known but totally unreliable test is when the pearls are rubbed against the teeth to access its grittiness. This way of testing is not only very unhygienic but also risks damaging the pearl and the dental enamel.

A simple test to distinguish if you have a pearl or an imitation, is by examining the drilled hole. If the pearl is an imitation with coating, the surface of the bead will look completely different due to the peeling around the drilled hole in comparison to a natural or cultured pearl. It is more than advisable to have a collection of pearls and imitations to compare the characteristics of both natural, cultivated or imitation pearls.

Due to the rarity of natural pearls, one can generally eliminate them from the list of possibilities, especially when the pearls are large, well formed, or part of a well-matched strand, unless you are working with antique jewelry.

One way to distinguish natural pearls is using UV long wave light as natural pearls will have a variable fluorescence often in yellowish to greenish or even light brown.

In reality, the only 'true' method to determine the origin of a pearl (natural or cultured) is by using advanced technology including direct X-radiology, X-ray luminescence cathodoluminescence, UV-Vis spectroscopy, or X-ray diffraction. Unfortunately, these methods are only available at professional gemmological laboratories.

TREATMENTS

After harvesting, pearls are commonly treated to enhance surface conditions and their colour. Treatments

such as drilling, polishing, buffing, peeling, and cleaning do not need to be disclosed, however treatments such as, bleaching, coating, dyeing, filling, heating, irradiation, oiling, waxing, and working must be disclosed.

Bleaching is used to remove yellow, brownish, or greyish tints or to remove darker areas of conchiolin that might show through the nacre. Dyeing is used to enhance or change the colour. Polymer coating is used to improve lustre and even irradiation or dyeing with silver nitrate can be executed to imitate black pearls. Working removes blemishes or reshapes pearls in order to give them a rounder shape.

CLEANING AND CARE

Due to the delicate nature of pearls, they should be handled with care. Heat, excessive perspiration, cosmetics, perfumes, hairsprays, and household chemicals should be avoided.

When pearls need to be stored for a longer period of time, they should be wrapped in moisture absorbing materials such as wool or tissue paper. It is also advisable not to store them together with other jewelry as they might scratch.

When removing pearls, especially strands, it is best to wipe them with a soft cloth.

CONCLUSION

Pearls are truly a wonder of nature and since ancient times, they have been enjoyed for their beauty. Logically, the production of beautiful pearls relies on healthy oysters, and this can only be achieved if we take action to combat climate change and pollution. I really hope the pearl farmers will find a way to cope with all these problems and find innovative ways to keep producing high quality pearls in an ecologically and sustainable manner with local community development. Let's hope the best for the future as I do agree with Jackie Kennedy that 'pearls are always appropriate!'

SOURCES:

Handbook of Gemmology, CIBJO Blue Book of Pearls, SSEF, Professor H. Hänni - Natural and Cultured Pearls: a basic concept and its variations, and GIA.

ABOUT THE AUTHOR

Leone Langeslag is a graduate of the Federation for European Education in Gemmology (FEEG) (2006), an independent gemmological consultant, owner of SoleLeone, and CEO of the Dutch Gem Academy.



GEMSTONE detective

Meet Kim Rix

Who is Kim Rix? Tell us about your background?

I was adopted at 3 months old into a middle-class British family, with three siblings. I received a good education including extracurricular activities like gymnastics, piano, violin and singing lessons. I was surrounded by two types of people; very successful in business and/or spent considerable time exploring the world. I blame my appetite for travel on them.

I married in my mid-thirties. Because we have no offspring, Steven and I lead independent lives. Steven has the steady job whilst I have my unconventional lifestyle with my photography business and my gemmological travel books. We both have very different hobbies and passions, but we have come together for some of the most amazing once-in-a-lifetime holidays. We enjoy an exceptional life together.

What attracted you to gemmology?

I have had a lifelong passion for gemstones. My grandparents were frequent world travellers, and I would often ask them to bring me back a gemstone. Later in life, I would always look for jewellery souvenirs on holiday. In 2014, however, I went to Egypt and bought a stunning 8 carat, natural Burmese ruby. It was flawless and I thought I had hit the jackpot. Back in London, I discovered it was glass. I wasn't aware that even the ancient Egyptians were master craftsmen, with superior skills and abilities which later evolved into creating imitation gemstones. I had foolishly believed what the salesperson had told me. After that experience, I put my photography business on hold and decided to study gemmology.

What was the genesis of the Gemstone Detective?

After the studies, I was at a crossroads. I was only a few years away from being fifty. I wanted to do something remarkable with my life, something that would help people. The question I asked myself was: 'what knowledge or skills do I have to share with the world?'. Having qualified as a gemmologist, writing a book series about gemstones aimed at tourists ticked all the boxes, merging my three loves – photography, gemstones, and travel.

I subtitled them 'The Essential Guide for Tourists'. In essence they aim to educate and protect the consumer, to help potential buyers avoid being fooled like I was in Egypt. They give the reader the basic knowledge and questions to ask when buying gemstones or jewellery in a tourist destination.

What has been your favourite travel destination as the Gemstone Detective?

Until now, Mogok in Myanmar has been my favourite. Every day I wake up to see a gemstone art picture of Mogok, Rubyland, hanging on my wall. I fell in love with the place and researching the Myanmar book gave me an authentic gemstone-travel experience and the opportunity to see the real way of life, away from tourism. I recently heard that Mandalay and Yangon are now safe for travellers, but Mogok is still closed. I'd love to go back someday but recently, Tanzania also captured my heart for the same reasons: the hospitality of the people, the culture, and its many gemstones.

What is the most memorable moment you have experienced travelling?

Photographing gorillas in Rwanda. The "bucket list" holiday was a 40th birthday present from my husband, because I love wildlife photography. We went with Andy Rouse, a multiple award-winner in the annual Wildlife Photographer of the Year competitions. He took us to see the Suza group, which was Dian Fossey's original research group (as seen in the 1989 movie *Gorillas in the Mist*).

There were two moments. The first happened when Andy went ahead to check out what the gorillas were doing and told us to wait: "stand at the side of the path and under no circumstances take any photos". So, we're waiting and all of a sudden, literally just feet away, a mother gorilla strolls right past us, with a very young baby on her back. Mesmerised, jaws dropped and all we could do (hands twitching) was watch. That was my first ever encounter with a wild gorilla.

The Gemstone Detective in Tanzania





Kim in a Ruby-Zoisite Mine

Secondly, I will also never forget being charged by Kwitonda, the big silverback. When I tried to take a step back, my heels caught on the undergrowth, and I fell backwards onto a pile of nettles. The sheer fright of the gorilla lurching towards me (together with my backside being stung) nearly made my heart stop! Everyone stood and watched but no one took the money shot – call themselves photographers?

What is the least memorable?

Being an experience-type of person, whatever it was, it was so unremarkable I can't remember it.

What is the most common mistake tourists make when buying gems?

Using myself as a prime example, I am sure one of the common mistakes tourists make is believing everything that they are told. I learned such a huge lesson from that mistake in Egypt, which is why, throughout my book series, I encourage readers to ask questions. I even include a country-specific top ten questions to ask in each book.

Tell us about your recent trip to Tanzania?

In a nutshell, it was an extraordinary experience and very inspiring. I've wanted to go all my life for personal reasons: a part of my own family background and heritage lies in Tanzania. As a gemmologist, I wanted to know more about Tanzanite and its mining process.

The first two weeks were a holiday with my husband: a week in Zanzibar, followed by a wildlife and cultural safari. We visited Tarangire, Ngorongoro and Serengeti National Parks, as well as a genuine Masai village. In Lake Eyasi, we went hunting with the Hadzabe tribe of hunter-gatherers. But the real allure of going to Tanzania was a gemstone tour, which took me far off the beaten track, to experience a completely different side of Tanzania that very few tourists get to see. It was incredible and exhilarating at the same time.

I also took an unexpected short trip to Kenya, to do some professional photography for a woman-led business called Jambo Tree Kenya. They are planting seedlings to fight climate change and offset carbon emissions. It's a very inspirational project, so I was excited to be asked to help – even with an eleven-hour bus journey there and back after a day's photography, to capture some images they can use for marketing.

I also spent considerable time in Arusha and Dar es Salaam, wearing my Gemstone Detective t-shirt and making connections with people who work in the gem trade.

At the top of my to do list was to visit the tanzanite mine in Merelani. I knew it wasn't on the gemstone tour itinerary, so I decided to ask around. The owner of my hostel in Arusha told me that his father owns a mine plot in Merelani. "We'll go tomorrow!" he exclaimed.

We arrived at 10am and it should have been straightforward – I already had a business visa, so just needed a permit. When we got to the mine, the main office was closed for a funeral. We were advised to go to the Immigration office a few miles away and come back later. After a bit of friendly persuasion, Immigration gave me back five copies of a letter which I handed to the mine officer who, after a bit more friendly persuasion, processed the paperwork. Finally, at 2pm, I received a receipt but not an official permit ... but I was let in any way! We jumped on the back of motorcycles, for a very uncomfortable 3km "African massage" ride down dirt tracks to d-block.

The area had several mining plots of all sizes: some with working mines, some dormant (probably due to a new law requiring owners to build walls around their mines, to prevent flooding). As far as I could see, they were all underground mines: one of them was said to stretch for 5kms.

We were escorted to a mine where they had used dynamite just two hours before, so we had to wait another hour for the dust to settle. It was strenuous and tricky getting down into the mine and, once at the bottom, it was hot, muddy, and cramped. Perspiration, mixed with dust and mosquito repellent, was stinging my eyes. I counted eleven miners working as a team, hammering the walls, bagging up the material and attaching sacks to the pulley which took them out of the mine. I watched in wonderment.

In July, starting from Dar es Salaam, I was one of 12 participants on a gemstone tour, ranging from age 16 to 70, from all walks of life. We were gemmologists, geologists, jewellery makers and novice gem enthusiasts. Hosted by Swiss jeweller, Hubert Heldner, we followed a 17-day itinerary, driving more than two thousand kilometers to visit gem mines in Umba, Longido, Babati, Morogoro and finally back to Dar es Salaam, where we completed the necessary official paperwork to have our finds legally exported home.

Starting with Umba (famous for garnet and sapphire), we also visited mining areas for ruby-zoisite, green garnet, sunstone, iolite, and rutile quartz. We also checked out geological museums, a gem lab, prehistoric cave paintings, gem markets, jewellery shops, Masai villages and much more. It was pretty intensive.



Freshly mined Garnet

In Umba, we each had two miners to do our digging for us. Whilst I realise that probably sounds lazy, the income enabled the miners to feed and support their families. Hoping it would bring me good karma, I paid for extra diggers, doubling my chances of finding that elusive transparent Umba sapphire. We mined twice a day, each time being assigned a different set of miners. Some of the miners like Judith were from a local Masai tribe.

Their stamina was phenomenal, digging in thirty-degree sunshine; I just waited until the stones were ready to be sorted. Examining the pile of several thousand stones, it took a while before I could confidently recognise a sapphire. Garnets were easier to spot, usually of the Rhodolite and Malaya varieties. After five days and with the help of the miners, I eventually came away with fifty to sixty garnets and an extraordinary number of different size sapphires, none of which were transparent or of usable quality. Disappointing, but it really showed just how difficult and rare it is to find a good quality gemstone. The sheer effort that goes into mining unquestionably justifies the price.

Still in Umba, we visited a green garnet (tsavorite) mine. This was one of those 3ft-high, narrow cave mines that you had to go down on your hands and feet. It was a dark tunnel, dusty with no ventilation. The few hardcore amongst us made it to the end, where there was barely enough room, and I could feel claustrophobia setting in but I just about managed to hold out to see the seam of green garnet and scrape a specimen.

Our next underground experience was a ruby-zoisite mine in Longido. The miners led the way down, who made it look so easy. It was steep, so holding with a death-grip, I descended the rope nervously, trying not to slip.

Much to my relief, at 80 meters down, we jumped into a cart which took us to the bottom at around 210 meters. From there, we were escorted around the tunnels, which extended for about 500 meters. It was reasonably well lit, and surprisingly cool and airy. Fortunately, we were given another ride in the cart to go back up, but the physical exertion of getting down left me aching for three days.

During the gemstone tour, we visited a few gemstone markets that provided opportunities to buy gemstones: amethyst, chrysoprase, yellow calcite, black tourmaline, rutile quartz, green moonstone, green kyanite, danburite, ruby, iolite, spinel, sapphire, tsavorite and so many more, all mined in Tanzania. Did you know that yellow danburite can have a cats-eye effect? Like Tanzanite, it's found only in Tanzania.

The main gemstones used in jewellery that a tourist will have the opportunity to buy in the shops are likely to be tanzanite, spinel, tsavorite and various colours and types of garnets.

The good news is that lack of knowledge and technology means there's no known market for manmade gemstones in Tanzania. The cost of exporting gemstones for any kind of treatment is prohibitive and, likewise, it would simply cost too much to produce any kind of lookalike, synthetic or otherwise. Any artificial gemstone would have to have to come from outside and somehow find its way in. At the gemstone market in Umba, we saw a few sapphires with blue traces where someone had tried to enhance the colour, and few glass imitation gemstones, but we saw nothing more advanced than that.

Where do you see the future of gemmology ten years from now?

The world is changing rapidly and could look very different in even a decade from now. Technology is advancing at a rate of knots; space tourism travel has recently made its debut, driverless cars are just around the corner, not to mention the effects already being felt by climate change. It's difficult to get excited. Frankly, ten years from now is scary to think about.

For gemmology, I dread to think what the synthetic vs natural gemstone market will look like by 2033. Technology in some parts of the world is already so far advanced, it's virtually impossible even for the most experienced gemmologists or most sophisticated laboratories to tell them apart. I hope advances in technology will help us to distinguish them and not make identification even more difficult.

If we were sitting here a year from now celebrating what a great year it's been for Kim Rix professionally, what would you say was the reason?

I have a desire to help people, a determination to keep learning and curiosity. It's important to be curious and keep asking questions.

Tanzanian Trip

Sincere thanks to Masai miner Judith Jakob in Umba (front cover) and the Masai in Longido who kindly agreed to be photographed: Nembuli Mollel, Malia Philipo, Teresita Lesyakiki, Esta Marite, Anna Kurduni, Sara Oltimbau, Anna Lekspani, Eliza Josephati. Special thanks also to the gem tour team: Hubert, Noreen, Setiel, Issa, Jamal and Gilbert. Lastly, heartfelt thanks to Umma, Fidea, Nam, Azizi, Vincent, Deus, Alex and the Hadzabe tribe.....friends for life!



A MINE IN D-BLOCK





A MINE IN D-BLOCK





A MINE IN D-BLOCK





**A MINE IN D-BLOCK
MINERS IN UMBA**





MINERS IN UMBA MEETING THE MASAI





Kim with some of the local children



Tsavorite Garnet



**TSAVORITE GARNET
RUBY-ZOISITE**





Mine in Longido



Mine in Longido



Heading to D-Block

Gemmology Today



Gemstone Books for Travel

If you're a hobbyist, enthusiastic gem collector or new to the gem trade, you'll need to be equipped with the right gemstone books. Gemstone Detective is the holy grail you're looking for.

Authored by expert gemmologist, Kim Rix, each book is designed to give you the knowledge and confidence to buy.

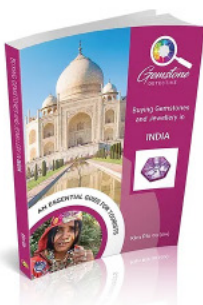
It's easy to get confused between gemstones. Buyer beware... salt and sugar look the same. That's why you NEED this book.

In a nutshell, we've done the legwork for you. You've got to be there to get the most value out of these books. Use this book to avoid the gem-scams and tricks played on tourists! Learn to recognise gemstones and ask the crucial questions when making your purchase.

Also a niche travel guide, we've included gem & mineral museums, tourist attractions, jewellery shops and our trusted contacts.



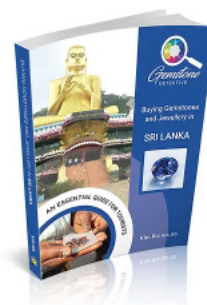
Buying Gemstones & Jewellery Worldwide
£14.99



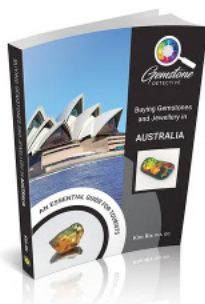
Buying Gemstones & Jewellery in India
£14.99



Buying Gemstones & Jewellery in Thailand
£12.99



Buying Gemstones & Jewellery in Sri Lanka
£12.99



Buying Gemstones & Jewellery in Australia
£14.99



Buying Gemstones & Jewellery in the USA
£14.99



Buying Gemstones & Jewellery in Great Britain
£14.99



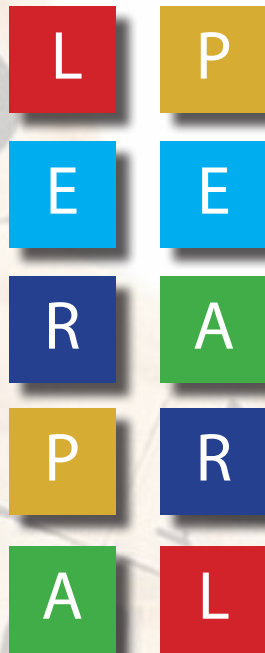
Buying Gemstones & Jewellery in Myanmar
£14.99

**CLICK HERE TO VISIT
THE GEMSTONE DETECTIVE WEBSITE**

GEMMOLOGY TODAY

QUIZ #28

WORD SCRAMBLE



All you have to do is unscramble the words to find the hidden gemstone name (e.g. zqrut = quartz).

All participants who answer the questions correctly (100%) the FIRST TIME will be entered into a draw to win a lifetime subscription to ColourWise, a digital colour grading system developed by the World Gem Foundation (Value: \$ 350 USD). Grade coloured gemstones with confidence.

ENTRY DEADLINE: October 15th, 2023

GOOD LUCK!



THE WORLD IS
YOUR OYSTER

DISCOVER
GEMMOLOGY
WITH US!

Practical classes are available in:

Antwerp (Belgium), Amsterdam (Holland),
Cochabamba (Bolivia), Colombo (Sri Lanka),
Montreal (Canada), Paris (France), Palma
de Mallorca (Spain) and Addis Ababa
(Ethiopia).

What are you waiting for?



More Info

Become a Licensee



More Info



GAME changers

The Artisans

When we talk about cutting and, especially the work of a lapidary, we commonly associate it with symmetry. Balance and harmony are key components in the cutting of gemstones and are normally linked to symmetry. While there are scenarios where a gemstone may fall within the preferred length to width ratio, this does not necessarily mean it is symmetrical.

Cut grading always factors in the 'Shape Appeal' of a gemstone but what about gemstones that do not conform to this logic?

In this article, I want to talk about 'unstandardized' cutting, where individualism, uniqueness, and art play an important role, a role that is radically changing our perception of gem cutting and taking it to a whole new level.

One of the pioneers of 'fantasy cutting' is German stonecutter Bernd Munsteiner who has tried to restore the lost art of hand-cut craftsmanship. Known as 'Fantasy Cuts' or 'Fantasieschliffe', many companies have copied his ideas using laser technology to lower the labour costs and satisfy the demand for these stones in lower price points.

Today, along with other family members, Tom and Jutta, Bernd continues to push the boundaries of stone cutting to its limits with an endlessly array of imaginative shapes and forms.

Another pioneer in this area, is renowned award-winning gemstone carver Michael Dyber. Like many artisans, Dyber sees gem cutting as more than the simple metamorphosis of a piece of gemmy rough into a faceted stone. To him it is an art form where skill, time, technique, creativity, and ingenuity far outweigh the cost of the rough.

His rise to the higher echelons of gem cutting has been as unique as his one-of-a-kind creations. Preferring to use hand-fashioned tools, he shuns the mechanical dops used by others opting for a more 'hands on' approach using a simple horizontal lap instead of a state-of-the-art faceting machine. This allows him to turn the gemstone freely, curve it and produce what he calls a 'spontaneous creation'.

Michael is known for his patented techniques including 'Dyber Optic Dishes' that consist of concave depressions on the pavilion of the stone, 'Luminares' consisting of minute high polished channels with a finished diameter of 1mm and his latest creation 'Photon Phacets' that are optically correct, freeform facets that are recessed below the surface of the gemstone and allow him to place one facet inside another as well as place multiple facets into a curved surface. Like Bernd Munsteiner, Michael's ground-breaking and innovative concepts continue to confound and inspire cutters around the world.

Dalan Hargrave's work is a fine example of where art meets science. His stones are indeed works of art. You can imagine yourself in 'his' art gallery, moving from room to room where you will meet fairytale plots, abstractionism, futurism, floral themes, and ornamental art. To reach his goal Dalan uses a wide range of techniques, including faceting, engraving, and assembly techniques. The unique professionalism and skillfulness of his work makes us forget that we are looking at a gemstone. Suddenly, we are immersed in his world, a world of endless stories that stretches our imagination, allowing us to travel to other galaxies!

When we talk about gem cutting, our mind immediately jumps to small gemstones that commonly adorn our fingers, hands, necks, and ears, but what about sculptures made from gemstones?

Anatoly Sysoev is a man who sculpts gem rough into art objects. His works can reach more than 2000 carats, often using rock crystal and smoky quartz, since they are frequently found in big sizes. Anatoly has crossed the line from gemstone to artform, creating gem sculptures of irregular forms, symmetry, patterns, and curves that make them glow in their own unique way.

John Dyer's goal is to craft each piece of gem rough into a finished gem that reaches its maximum potential for beauty and market appeal. Working towards this goal he uses a wide variety of cutting styles and techniques, each adapted to the individual piece of rough that he is working on at the time. This challenge is the part of gem cutting that he most enjoys, and his enthusiasm and care is visible in the gems he cuts.

John often uses concave faceting, a technique that is quite different from traditional faceting, giving his stones a velvety fluidity that captures your attention and draws you into the very soul of the stone creating an emotional response that can range from happiness, sadness, or even a sense of romance based on their colour and theme.

Glenn Lehrer is another internationally recognized gemstone carver who creates fluid gemstone carvings and precisely faceted stones that are featured in custom fine jewelry and exquisite gemstone sculptures around the world.

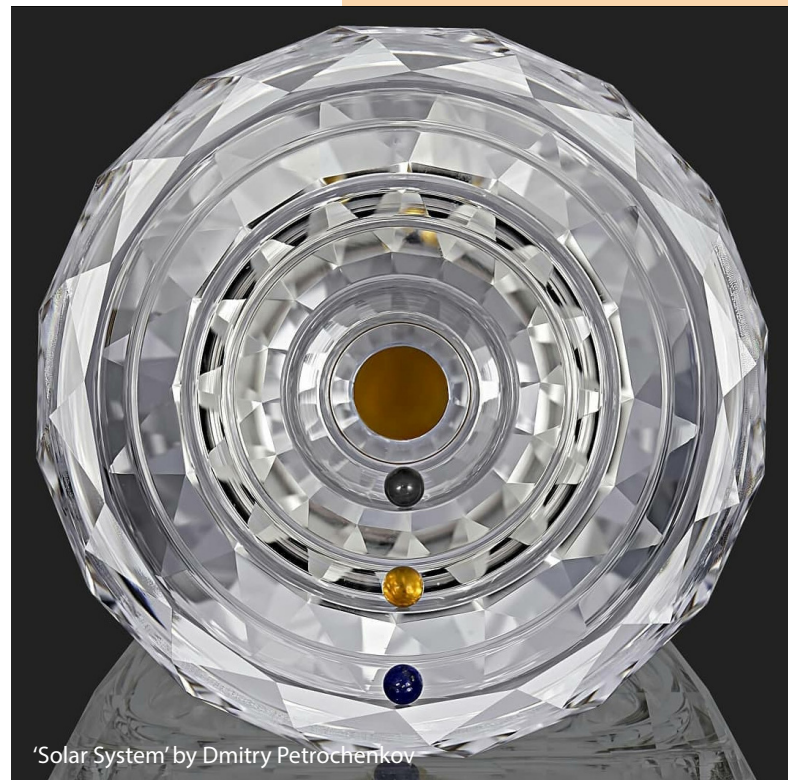
'Bahia' is a spectacular 450-pound (204 kilos) quartz crystal with golden rutile needles that stands 5 feet tall (1.5 meters). Comprised of three pieces cut from a single 800-pound quartz crystal, it hangs like a jewel pendant, suspended 30 feet from the ceiling by two thin steel cables. Known as 'The World's Largest Pendant', it is on permanent display in the lobby of the Gemological Institute of American campus in Carlsbad, CA. Bahia was created in collaboration with Lawrence Stoller, and has been on exhibition at the Carnegie Museum in Pittsburgh, PA. and the Los Angeles Museum of Natural History.

Perhaps Glenn Lehrer's greatest talent is in being able to transform a solid stone into a piece of art that miraculously transcends its own physical properties.

Through his strong knowledge of the physical characteristics of gemstones and lapidary techniques, Dmitry Petrochenkov is able to cut the uncuttable (including faceted pearls, barite and cassiterite), to gather the 'ungatherable', and create original works that the world has never seen before. It is all about fantastic mindfulness and workaholism, attention to detail, and an excellent knowledge of the cutting craft. Dmitry often works with different gemstones in various combinations, where one small gemstone can sometimes colorize the host stone. He plays with inclusions and their reflections to create gemstones that catch your eye. Moreover, he succeeded in creating a faceted gemstone with moving elements in it! It is



'Crystal World' Quartz weighing 473.60 carats and measuring 56.50mm x 52.01mm x 41.15mm. Design and cut: Anatoly Sysoev



'Solar System' by Dmitry Petrochenkov

called 'Solar System' and is made from rock crystal and smoky quartz that imitates the cosmos with three semi-precious 'planets' orbiting the sun. It is an extraordinary and outstanding piece of work that is unique in the field of gem cutting.

Fredh Johnes also uses the 'assembly' technique, combining gems to create interesting works that will attract your attention and create unique jewelry pieces.

It is impossible not to mention Viktor Tuzlukov when we talk about unstandardized cutting! His works combine an extremely high degree of lapidary skill with his fascination of philosophy.

Viktor is also an award-winning cutter who has forged his own mark in this fascinating field by creating unique facet patterns incorporating polished and matt facets to form symbols that reflect profound philosophical concepts. By his creations Viktor tries to show all the beauty and uniqueness of the world we are living in and to grow the best sides of humans, to make us understand that we all have our own complicated and unique way that is intertwined into the one highest harmony, that rules our world.

Some of his works are now included in the World Guinness Records, such as the largest faceted spodumene (3051 carats), and the most faceted scapolite (3600 facets). The most popular Viktor's projects are called 'Philosophical Stone', 'Sacred Symbols' and 'World Heritage' and are periodically exhibited in various parts of the world. Please, check them out to have an exclusive opportunity to see his works in person.

Another fascinating example of cutters creating super-sized faceted gemstones can be found in the family of professional gem cutters: brothers Nikolay and Sergey Novoselov, their mother Natalia, and father Vladimir. Vladimir succeeded in building the innovative faceting machine that makes it possible to cut the gemstones in such large sizes! The biggest gemstone that has been faceted weighs 5820 carats (Quartz from the Astafyevskoye deposit, in Magnigorsk)

Using this custom machine, Sergey, in addition to faceting more common-size gemstones, now specializes in faceting gemstones with weights varying from 1000 carats to 4700 carats!

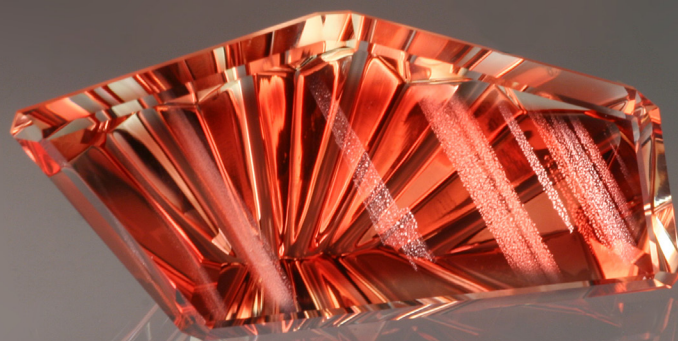


'Wheel of Fortune' by Viktor Tuzlukov from the 'Sacred Symbols' collection
Amethyst Quartz, weighing 104 carats (Photo by Dmitry Stolyarevich)

Finally, what do you think of gemstones that can be cut as a liquid? Yes, you have heard me right! The outstanding works of Julia Maria Kunnap use smoky quartz and obsidian. What is interesting is that Julia does not own a faceting machine and all her 'mind-blowing works' have been made by hand, without standard lapidary equipment.



Ametrine Butterfly by Dalan Hargrave
weighing 47.33 carats



Oregon Sunstone Dreamscape™ (9.48 carats) by John Dyer
(Photo by Lydia Dyer)

CONCLUSION

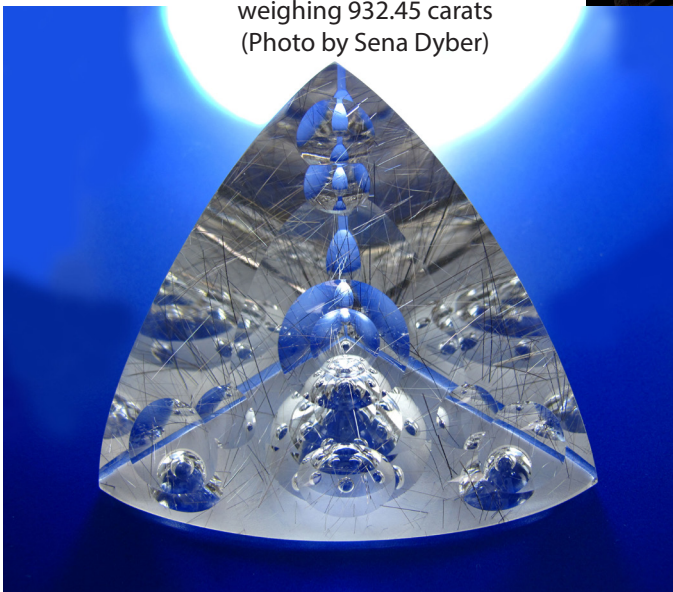
These are just a few examples of artisans who are breaking new ground, stepping outside the box, and taking gem cutting to exciting new heights.

You can hopefully see now that gem cutting is not just about symmetry, adhering to certain angles and proportions to maximize the brilliance, or focusing on overall yield or intensifying the colour. It is about so much more!

To these talented cutters, gem cutting is not just the mechanical transformation of gem rough to finished stone. It is about creativity, imagination, pushing the boundaries, and creating unique art forms that are awe-inspiring.

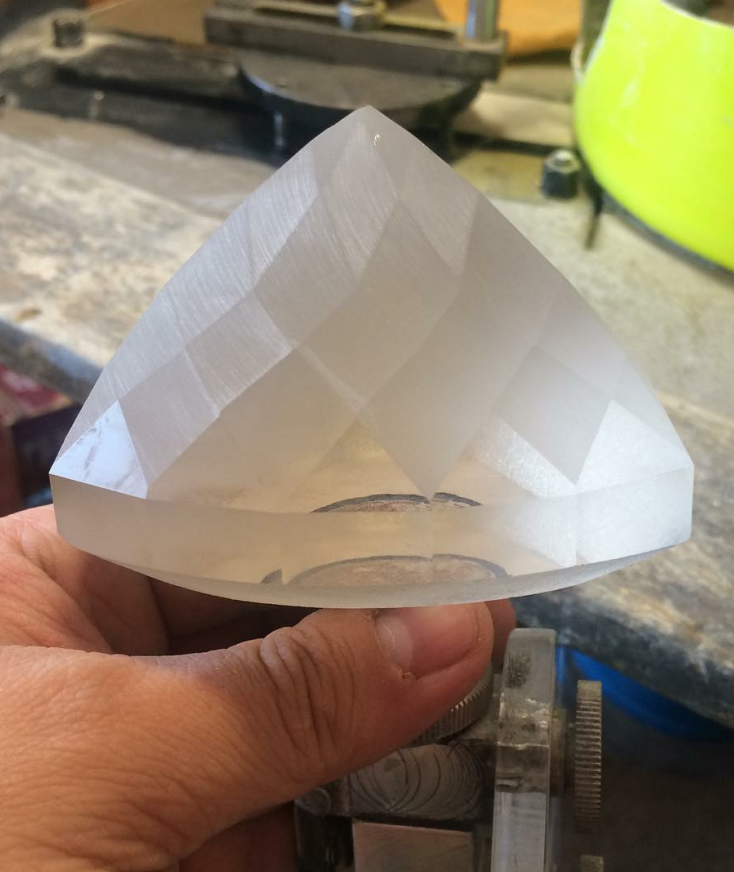
They are not just gem cutters, they are game changers, artisans who through the gemstone medium create works of art that are thought-provoking, invite dialogue, evoke a full range of emotions, and in some cases deliver a far deeper and meaningful message.

Brazilian Rutilated Quartz Sculpture
by Michael Dyber
weighing 932.45 carats
(Photo by Sena Dyber)



Julia Maria Kunnap



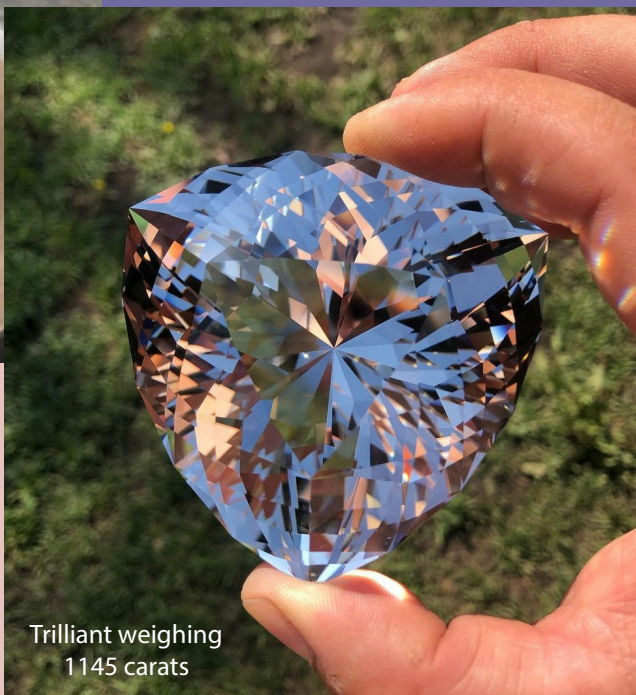


ABOUT THE AUTHOR

Nina Zolotukhina is an Expert Gemmologist through the MSU who is now based in Bulgaria. She is an avid mineral and gemstone collector, a photographer of minerals and inclusions (photomicrography) and Director of Corporate & Career Development for the WGF in Eastern Europe (Eastern Europe and Russia Gem Academy).



Gem cutting by the Novoselov family



Trilliand weighing
1145 carats

STUDY GEMMOLOGY IN EASTERN EUROPE & RUSSIA

WORLD
GEM
FOUNDATION

Be recognised as
an **internationally**
reputed **gemmologist**

To register, contact Nina Zolotukhina at
ninagold@worldgemfoundation.com

DEFINE YOUR JOURNEY
- **CREATE YOUR DESTINATION**



WGF team

Professionals at Work

Geoffrey Dominy (World Gem Foundation) is an author, independent gemmologist and former jewellery appraiser who appeared on the Canadian Antiques Roadshow for four seasons. He received his F.G.A through the Gemmological Association of Great Britain (Gem-A) in 1987 passing the diploma examinations with distinction.

Throughout the 1990's, Geoff developed and taught the 'Gemmology' program at Red River Community College and The University of Manitoba in Winnipeg, Canada, worked for the Canadian Institute of Gemmology, was President and Founder of the Jewellery Appraisers Association of Canada and was a contributing author for the 5th & 6th Editions of Robert Webster's 'Gems' which even today is considered one of the most authoritative textbooks in Gemmology.

In 2013, he released the first digital gemmological textbook entitled 'The Handbook of Gemmology' in collaboration with world famous gem photographer Tino Hammid. Now in its fourth edition, the handbook has been sold or downloaded in fifty-three countries, is used by fourteen schools, colleges, universities and gemmological organizations as their recommended textbook and now features photographic contributions by other award winning photographers including Jeff Scovil.

In 2018, Geoff released a 5th Anniversary Printed Edition (Two Volumes) and on December 14th, 2019, released his first book in Spanish 'Gemología Para Todos' (the first 14 chapters of the Handbook of Gemmology).

He currently lives in Addis Ababa, Ethiopia and in addition to lecturing and promoting his books, is the founder of the World Gem Foundation and creator of ColourWise.

Leone Langeslag (Dutch Gem Academy) is a graduate of the Federation for European Education in Gemmology (FEEG) (2006), an independent gemmological consultant and is actively involved with the Gemma Association in Holland offering lectures and workshops. Her desire to provide accessible gemmological training in the Netherlands has led to the formation of the Dutch Gem Academy.

Leone is a frequent visitor to international symposiums, exhibitions and trade shows where she continues her own gemmological education and passion for collecting gemstones and minerals.

Beth West (British Gem Academy) is the principal tutor at GCS, a gemmologist, educator and writer with over fifteen years' experience in the jewellery industry in varying senior roles. As a Fellow and Diamond Fellow of the Gemmological Association of Great Britain and a member of the Federation of European Education in Gemmology, she has a wealth of passion for her subject, and is driven by a desire to share her knowledge with others. Outside of her immediate professional responsibilities as the laboratory director, she has worked as a diploma level tutor for Gem-A for over five years, and also as a consultant for De Beers Institute of Diamonds, designing and writing educational content. She is also involved in number of other projects, with a particular focus on the importance of gemmological education along the supply chain, which drives her work as a committed volunteer for the NGO, Diamonds for Peace.

Gérard Raphaël Quintin (South American Gem Academy) was born in Paris France where he studied Art and Design and graduated from Ecole Boulle. His taste for the diamond world may have been inherited from an uncle who worked in the diamond business.

In 1978 he took the gemology colored stone and diamond course with GIA while he was mining diamonds in the Sewa River in Sierra Leone and where he started the first diamond cutting center in West Africa.

In Abidjan Côte d'Ivoire in 1992 Gérard founded the diamond cutting formation center with a gemological laboratory 'Hardy's', followed by the installation of the colored stone and diamond cutting facilities in the jewelry school EIBMA.

Continuing his tour in the world of gemstones, Gérard went to Madagascar as an expert for a French Government project to develop the organization and skill of the gems sector.

Professor of Gemology in the Jean Guehenno Jewelry School in Saint-Amand-Montrond France, he then moved to Bolivia to fund and manage the 'Instituto Gemologico Boliviano' where students learn gemology and the art of gem cutting.

Since 1997 Gérard has been a member of the Organisation Internationale des Experts based in Geneva, Switzerland.

Marie-Hélène Corbin (Gem Academy of Canada & Gem Academy of Belgium) is an FGA gemmologist and accredited Senior Gemmologist through the AGA.

Following a busy career in real estate, she wanted to change her professional path and became interested in gemmology. This discovery of gemstones turned into a passion. Marie-Hélène studied at the EGM and successfully passed her Gemmology Diploma.

Guided by the desire to pass on her love for gems, she became the new Director of EGM in 2016, with a strong desire to modernize the school. As a teacher, she instills in her students the desire to learn more about the world of gemstones.

This passion for gems does not stop there, and Marie-Hélène created Quebec's first independent gem identification laboratory, Lelièvre Laboratoire de Gemmologie (LLG) in 2018. In order to offer the most complete service to her clients, she created the Gems and Jewelry Appraisal Center in 2019, also in Montreal.

Jack Ghazalian (American Gem Academy) has thirty-eight years of experience in the jewelry industry. He is a graduate gemologist through the Gemological Institute of America (1992), was an instructor for GIA (1993) and was officially Certified-by-the-State of California Education Code 94311(a) to teach Gemology & Jewelry Manufacturing-Arts (1993).

In October 2015, he was honored by the International Distinguished Scholars – Academic Honor Society as an 'International Distinguished Scholar' and in 2017 was granted membership in Kappa Delta Pi. He is currently the owner of Isometric Gemological Appraisal Services in Southern California: IsometricGems.com, speaks five languages and is passionate about education.

Dr. Laurent Massi (French-Swiss Gem Academy) completed his PhD studies on 'Atomic-scale Defects in Brown and Hydrogen-rich Diamonds' at the Department of Physics at Nantes University in France under the direction of Professor Emmanuel Fritsch. During his studies he also taught gemology in Paris at the French National Gemological Institute. Dr. Massi subsequently taught gemology and gave presentations at conferences in numerous countries all around the world.

With more than 20 years of experience in the Gems & Jewelry industry, Dr. Massi was the Director of the Asian Institute of Gemological Sciences (AIGS) Gem Laboratory and Gem School based in Bangkok - Thailand. He then completed his Graduate Gemologist (GG) studies at the Gemological Institute of America (GIA) headquarters in Carlsbad, USA and then became the Director of the new GIA Thailand Campus located in Bangkok - Thailand.

Back to France, Dr. Massi has been the head of the international gem academy AGAT (for 'Academy of Applied & Technical Gemology') located on the French Riviera, in Nice - France, as well as the co-founder of the French-Swiss Gem Academy (from the World Gem Foundation).

In addition to a variety of scientific and educational publications on different precious stones such as diamonds, rubies, sapphires and on rarer gemstones such as clinohumite, color-change bastnäsite and hibonite, one of the rarest gems on Earth, Dr. Massi traveled around the world in many mining areas and gem markets to collect samples and valuable information that will later be used in his lectures, teachings, fine art photomicrographs (as the ones displayed on this page) and NFTs.

Kyalo Kiilu (East African Gem Academy) is a fellow of the Gemmological Association of Great Britain (Gem-A) and an Alumnus of Birmingham City University where he obtained his BSc with honours in Gemmology and Jewellery Studies in 2017.

His passion for gemstones can be traced back forty years to his late grandmother's village in rural Kenya and the prospecting trench dug by the first British gemstone explorers in the early part of the 20th Century.

While pursuing his pharmaceutical studies, his interest in gemstones never diminished. Unfortunately in 2003 there were no colleges in Kenya offering gemmological courses so he decided to relocate to England and enrolled in Gem-A's Diamond Diploma program in 2004; the start of his gemmological journey.

Kyalo is a licenced gemstone prospector in Kenya and in 2015 made a discovery of a very unique sapphire, resembling another Kenyan sapphire marketed as 'Goldsheen Sapphire' that he will hopefully share with the gemmological community very soon.

He comes to the World Gem Foundation and specifically the East African Gem Academy with a strong desire and ambition to share his knowledge of gemstones with his fellow East Africans, particularly those involved in the production of gemstones, gemstone lovers and aspiring gemmologists, to provide support and encouragement that was so lacking in the industry when he was growing up in Kenya.

Salomon Lutumba (South Central African Gem Academy) is an alumnus of Birmingham City University where he graduated with a Bachelor in Science with honours in Gemmology and Jewellery studies in 2016. He also holds a Diamond Diploma and Gemmology certificate from Gem-A. He is originally from the Democratic Republic of Congo.

In 2002 he relocated to England where, ten years later, he found the opportunity to fulfil his dream of studying gemmology at the Birmingham City University. In 2012, he started his High National Diploma in Gemmology combined with Gem-A's Diamond and Gemmology program which led to a degree program, introduced for the first time in 2015, at the BCU.

Today, by embracing the World Gem Foundation's concept and philosophy of gemmological education, and through the Gem Academy of DR Congo, he would like to share his passion and knowledge of gems with his fellow Congolese; particularly jewellers, aspiring gemmologist and gemstone lovers.

His personal goal is to promote the science of gemmology in his country, by providing information and support to empower people in the jewellery business and those trading in stones.

Barickeh Charles Kholifa Koroma (West African Gem Academy) is a freelance gemmologist, diamond grader/valuer, a member of the Gemmological Association of Great Britain and a member of the Scottish Gemmological Association. He was born in Liberia to Sierra Leonean parents and raised in the mineral rich country of Sierra Leone where he survived a devastating brutal civil war which lasted for almost 12 years.

He relocated to the United Kingdom in 2004 and received help on how to cope with Post Traumatic Stress Disorder (PTSD), which now proves pivotal in his approach to life.

He attended the coveted School of Jewellery, Birmingham City University (BCU) where he studied a diploma in diamonds (Gem-A) and a BSc (Hons) in Gemmology and Jewellery Studies. He graduated with a first-class degree in 2018 and was awarded the prestigious Scottish Gemmological Association Prize for Gemmology. He then moved back to Sierra Leone to pursue his dreams. His greatest achievement so far is working as a student mentor during his time at the university, he was able to give advice and guidance to some students that were struggling to cope with the demands of higher education and being away from home.

Like Kyalo, he comes to the World Gem Foundation and specifically the West African Gem Academy with a strong desire and ambition to share his knowledge of

gemstones with his fellow West Africans, particularly those involved in the production of gemstones, gemstone lovers and aspiring gemmologists, to provide support and encouragement that was so lacking in the industry when he was growing up in Sierra Leone.

Nina Zolotukhina (Eastern Europe & Russia) studied gemmology at Moscow State University, is an independent gemmologist, now based in Bulgaria, founder of Gemlab Europe Project, researcher, gem expert and author of reviews and articles about gemstones, research methods and gemmological equipment. She is an avid mineral and gemstone collector and photographer of minerals and inclusions (photomicrography).

Haimanot Sisay (Ethiopia) is a graduate of the World Gem Foundation and an opal cutter based in Addis Ababa. She is the Associate Editor of Gemmology Today and an instructor / tutor for the World Gem Foundation.

Wilma van der Giessen (Belgium) received her first diamond education from Mr. S. Asscher in 1980 and in 1983 graduated at the German DGG in Idar Oberstein as a diamond professional. At the age of 18, she was introduced to the diamond world in Antwerp where she learned all about rough and polished diamonds. Two years later, in 1985, she received her FGA diploma and in 1991 graduated as a GG at GIA's headquarters in Santa Monica, USA. Traveling is one of her great passions and her teaching space is a true paradise for gemmology students because they have access to a great collection of both natural and synthetic gemstones. Wilma is an avid photographer of gemstone inclusions and nature.

Gamini Zoysa (Sri Lanka) is the Managing Director of Mincraft Company, a member of the Congress Committee and Communications Committee of the International Colored Gemstone Association (ICA), as well as serving as the organization's Ambassador to Sri Lanka, Executive Committee Member of the Sri Lanka Gem & Jewellery Association, Former President and current Executive Committee Member of the Gemmologists Association of Sri Lanka (GASL), Board member for the International Gemmological Conference (IGC), he holds a Master's Degree in Geology from the University of Moscow and Doctorate in Mineral Exploration from Delft University, Netherlands and is an FGA (Gem-A) and G.G. (GIA) gemological graduate.

Deborah Mazza (Italy) is half Italian and half British, and started her journey through the world of gemstones in Germany in 1984, where she studied at the Deutsche Gemmologische Gesellschaft attaining her gemmology and diamond diploma; she subsequently gained her FGA in 1986.

Deborah then went to work for the trade in Idar-Oberstein, buying and selling wholesale gems and

MEET OUR TEAM OF PROFESSIONALS



Geoffrey M. Dominy
World Gem Foundation
Spanish Gem Academy



Leone Langeslag
Dutch
Gem Academy



Beth West
British
Gem Academy



Gérard Raphaël Quintin
South American
Gem Academy



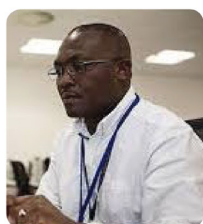
Marie-Hélène Corbin
Gem Academy of Canada
Gem Academy of Belgium



Jack Ghazalian
American
Gem Academy



Dr. Laurent Massi
French Swiss
Gem Academy



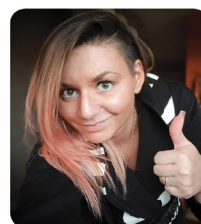
Kyalo Kiilu
East African
Gem Academy



Salomon Lutumba
South Central African
Gem Academy



Barickeh Charles Kholifa Koroma
West African
Gem Academy



Nina Zolotukhina
Eastern Europe
& Russia



Haimanot Sisay
World Gem Foundation



Lucille Daver
Gem Academy of Canada
Gem Academy of Belgium



Dorian Fitchko
Gem Academy of Canada
Gem Academy of Belgium



Alisson Lemaire
Gem Academy of Canada
Gem Academy of Belgium



Wilma van der Giessen
Gem Academy of Belgium



Gamini Zoysa
Sri Lanka



Deborah Mazza
Italy

diamonds, working as a gemmologist and teaching gemmology at the DGemG, this lead on to carrying out jewellery valuations for an insurance company in Germany. She later got a Bachelor in Business in Germany, and returned to the UK in 2010, where she became a tutor for the Gem-A's online courses. Deborah, keen to add to her knowledge, passed the NAJ/IRV's CAT jewellery valuation diploma, and received her Master's in the History of Art from Goldsmiths University. Deborah has her own valuation business and works part-time for an online auction house. She contributed several written pieces for Yavorsky's new book, Terra Connoisseur: Gemstones.

WGF FACT FILE

Date Founded: 2015

Country of Incorporation: Canada

Corporate Structure: Not-for-Profit

Board of Directors: Yes

Executive Council: Yes (5 Members)

Head Office: Palma, Mallorca, Spain

Number of countries where our students live: 85

FB Followers: 17,702

Instagram Followers: 1,236

LinkedIn Followers: 1,227

Total Value of Scholarships Awarded: € 231,003



SCHOLARSHIPS

Tino Hammid Memorial Gemmological Scholarship



In every industry there are iconic individuals, giants who stand head and shoulders above the rest. In the field of jewellery and gemstone photography, there is little debate that Tino Hammid was a visionary, a rare talent who possessed the unique ability to capture the true beauty of gemstones. For almost forty years his photography adorned the pages of every important publication around the world, showcasing his unrivalled ability to inject realism into his work.

Tino started his career as a staff gem photographer at the Gemological Institute of America (GIA) in Santa Monica, California (1980 to 1982). In 1983 he started his freelance career in gem and jewellery photography and began a 25-year association with David Federman providing photographs for Modern Jeweler's monthly Gem Profile column. During this period they jointly won two Jesse H. Neal awards from the Association of Business Publishers. In 1987 he acquired Christie's Auction house as a client and photographed more than a hundred of their jewellery sales catalogues. In 2012, Tino joined forces with gemmologist Geoffrey M. Dominy and provided the exquisite photographs for The Handbook of Gemmology, the first digitized gemmological textbook released in 2013.

Sadly, Tino passed away in 2015 after a two-year battle with cancer, however through the Handbook of Gemmology and now the World Gem Foundation courses, his legacy and monumental contribution to our industry will live on for future generations to appreciate and admire.

In 2023, the World Gem Foundation will award five scholarships allowing deserving students to take the World Gem Foundation theoretical 'Career Gemmology' course.

The deadline for submitting your application is December 31st, 2023. All applications will be judged by Tino's wife Petra and his oldest daughter Evelyn with the mandate to select those five candidates who, in their opinion, best epitomize the spirit of Tino.

W.E. Hunn Memorial Gemmological Scholarship

Each recipient of the Tino Hammid Memorial Gemmological Scholarship will also automatically receive the W.E. Hunn Memorial Gemmological Scholarship that will provide funding equivalent to 50% of the cost of the practical workshops and final examinations.

To download the application form, please click on the image

APPLY NOW!
SCHOLARSHIP
APPLICATION



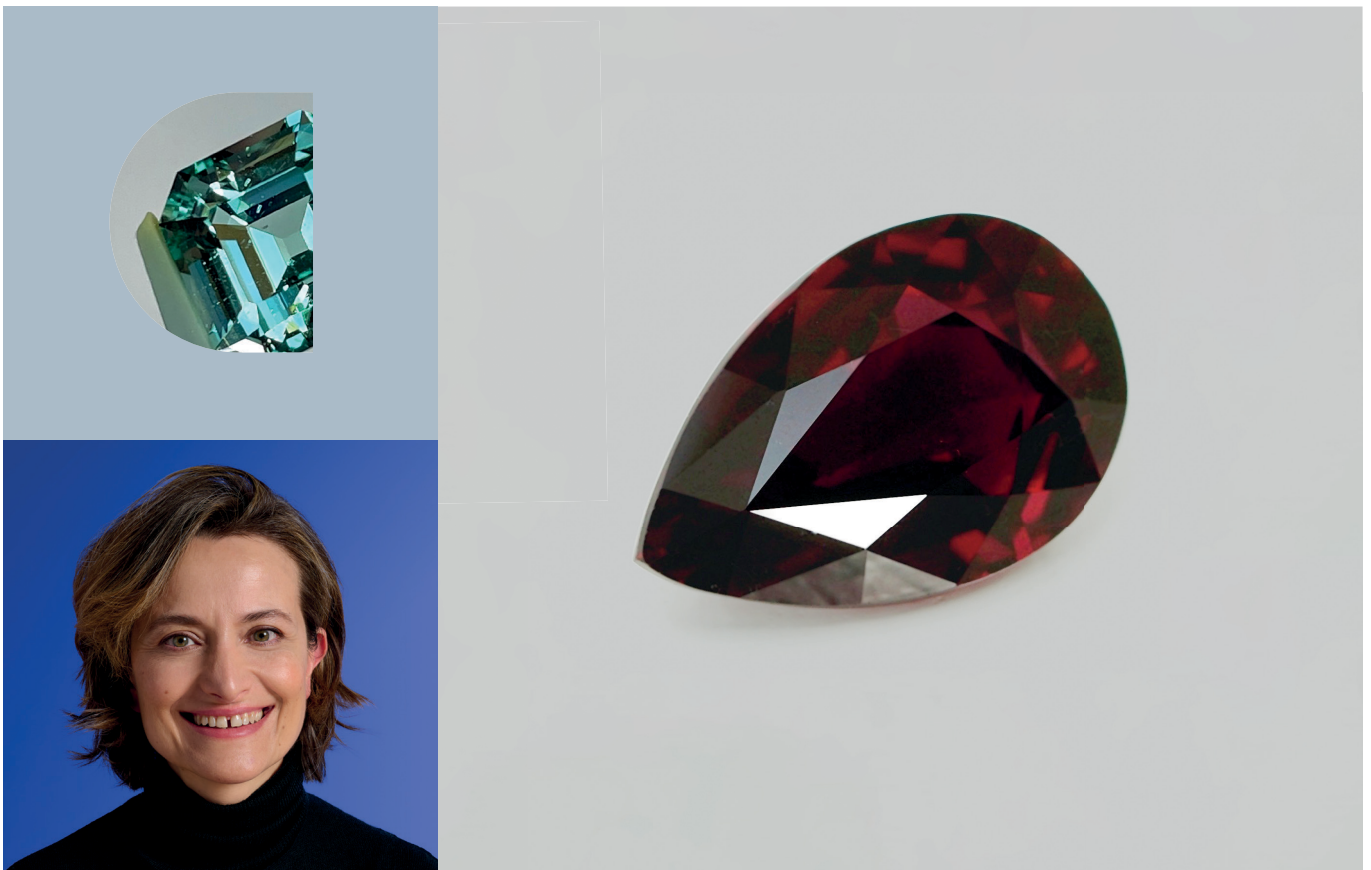
WGF directory

Who we are and how to find us

Academy Name	Website Portal	E-mail Addresses
World Gem Foundation	www.worldgemfoundation.com	information@worldgemfoundation.com
American	www.worldgemfoundation.com/aga	aga@worldgemfoundation.com
Belgian	www.worldgemfoundation.com/gab	infogembelgium@egmtl.com wilma@worldgemfoundation.com
British	www.worldgemfoundation.com/bga	contact@gcslab.co.uk
Canadian	www.worldgemfoundation.com/gac	info@igem.ca
Caribbean	www.worldgemfoundation.com/cbga	cbga@worldgemfoundation.com
Central American	www.worldgemfoundation.com/caga	caga@worldgemfoundation.com
Dutch	www.worldgemfoundation.com/dga	dga@worldgemfoundation.com
Eastern Europe / Russia	www.worldgemfoundation.com/eega	ninagold@worldgemfoundation.com
French-Swiss	www.worldgemfoundation.com/fsga	fsga@agat-gemology.com
East African	www.worldgemfoundation.com/eaga	eaga@worldgemfoundation.com
Indian	www.worldgemfoundation.com/iga	iga@worldgemfoundation.com
Scandinavian	www.worldgemfoundation.com/scga	scga@worldgemfoundation.com
South American	www.worldgemfoundation.com/saga	saga@worldgemfoundation.com
South Central African	www.worldgemfoundation.com/scaga	scaga@worldgemfoundation.com
Spanish	www.worldgemfoundation.com/sga	sga@worldgemfoundation.com
Sri Lanka	www.worldgemfoundation.com/slga	gaminiz@worldgemfoundation.com
West African	www.worldgemfoundation.com/waga	waga@worldgemfoundation.com

Bid on exceptional gemstones, **selected by** **Catawiki experts**

Every day, our in-house experts carefully select a wide range of gemstones from around the world for every collector.



Purificacion Aquino Garcia
Expert Gemstones

Buy and sell on catawiki.com

