

Gemmology Today

Issue Two / 2024
Quarterly Publication

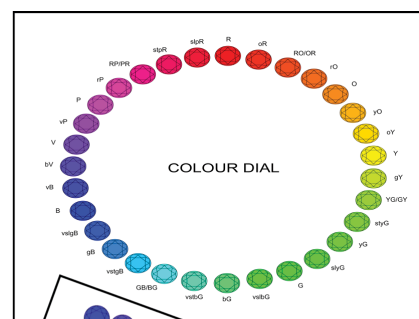
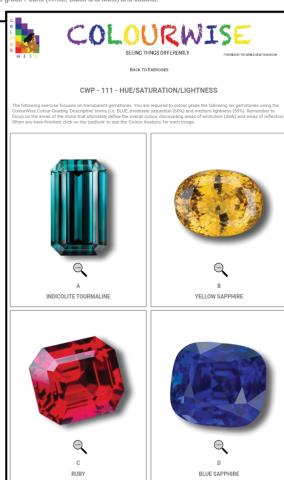


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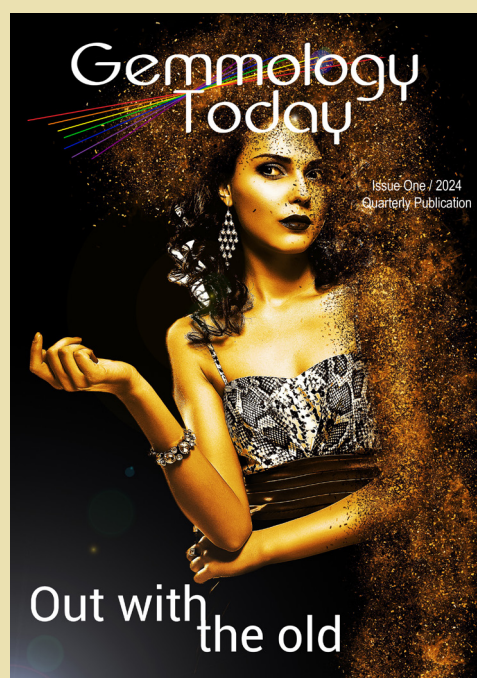
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Cover by Arjuna Irsutti. Inclusions in amethyst from Morogoro, Tanzania. The amethyst weighs 3.47 carats and is courtesy of Gil Yuda.



[Click here to read the Issue One 2024](#)



Geoff Dominy - Founder / Editor

Recent events in the gem industry serve as a constant reminder that nothing can be taken for granted.

The announcement by Anglo-American that De Beers is on the chopping block is a prime example.

While I know many believe that De Beers are a wonderful organization, I personally do not share that belief, in fact, I usually start out each Project Africa presentation with the phrase 'Since 1888 and the formation of De Beers, there has been a systematic exploitation of Africa's gem resources'.

In the June 2022, we published an article by South African History Online (SAHO) about Cecil John Rhodes. We also included information about the 'Rhodes Must Fall' movement that was started in 2015, with a protest movement at the University of Cape Town. It quickly spread to other university campuses in South Africa.

While some described him as a man of vision, an innovative entrepreneur who laid the groundwork for the mining industry and left a sizable fortune in

Britain and South Africa for the public good, many have painted a very different picture, describing him as a racist who was associated with genocide, slavery, murder, conquest, land appropriation, and concentration camps.

I have always thought of De Beers as being rather arrogant. Their business model may be admired by many but the very idea of creating a system where the 'buyer' should be grateful for the 'opportunity' to buy from the seller is proposterous. In reality, they controlled a market from the bottom to the top and made people pay for the 'privilege' of buying their output. Heaven help any sightholder who questioned De Beers. Stepping out of line risked stepping out of the business and when you hold that amount of control over an individual, you can basically do whatever you want.

If demand was low, they held back goods, if demand was high, they released goods. They used their financial muscle to create markets and to make sure that no-one else dared compete with them.

In the process, they made billions of dollars.

So, I have to admit that I am not losing any sleep over the recent developments. De Beers are now being forced to 'market' themselves to potential buyers but

if Anglo-American do not see the value in holding onto De Beers, who else will? De Beers are now talking about using kimberlite to counteract CO₂. Perhaps they feel that a 'softer, more friendly image' is needed to attract a would-be suitor but with the natural diamond industry under threat and the cost of bringing diamonds out of the ground being so high, who will see De Beers as a viable option?

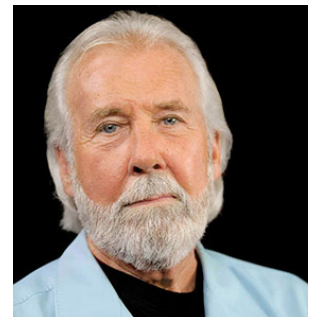
I do believe that the next few years will be very interesting with the De Beers situation and the raging debate over lab-created diamonds. It is fascinating to watch Martin Rapaport, self-proclaimed mouthpiece of the natural diamond industry facing off against Tom Chatham.



Editor
at Work



Martin Rapaport



Tom Chatham

If the natural diamond industry did not see the 'Lab-created Diamond' freight train coming then someone was clearly asleep at the wheel. Interestingly, the ruby, sapphire and emerald industries all managed to combat lab-created stones without slinging mud but Martin is a different kind of beast. His assertion that natural diamonds hold their value while lab-created diamonds do not is again proposterous. Try selling a natural diamond on the secondary market and see what you get. You will be offered pennies on the dollar. I did contract work for a guy who saw no problem in offering 10 cents on the dollar to clients who had purchased diamonds from him and then found the need to liquidate them. He always defended his actions by saying 'this is business' and he was not wrong.

As an investment, it depends how far down the food chain you buy them but if you are buying natural diamonds at retail and need to sell them, good luck!

Tom, on the other hand, has approached this maelstrom with dignity. Of course consumers should be given the right to choose. As long as they are given the correct information, it is up to them what they buy. In the world of computers, some see the value in owning a Mac, others do not. That is a consumers right.

In our recent diamond grading class here in Addis, 50% of the diamonds were lab-created, yet none of the students were aware of this fact. They graded them using the same techniques used for grading natural diamonds.

Many jewellers have never bothered to 'think outside of the box' choosing to go down the same path as their competitors, putting all their faith in diamonds. The smart ones branched off into different coloured gemstones, creating niche markets that gave them back control. It is hard to sell a diamond if everyone is selling them. Yes, you can talk about customer service but at the end of the day, it always comes down to price. If, on the other hand, you are selling a stunning pink spinel, chances are you will have little competition in your local marketplace. I am not prescribing to 'price gouging' but if you are offering something unique, why not make a decent profit. Diamonds, other than certain fancy diamonds, are not rare. I used to amaze clients when they came into my office looking for a particular diamond by generating a listing from RapNet (yes, unfortunately I am guilty of aiding and abetting Mr Rapaport) that showed hundreds of options. They were stunned because they had been convinced by our friends at De Beers that diamonds are rare.

Let's see how all this plays out. To be honest, I am happy that I work in the field of education because if what I believe is coming down the pipeline materializes, it will change the face of the jewellery industry forever.



Haimanot Sisay - Associate Editor

Associate Editor at Work

On a more positive note, the first twelve Project Africa Career Gemmology students graduated after an intensive 11 month program here in Addis.

I am immensely proud of what Haimanot and I have achieved. The odds were stacked against us but one way or another, we always found a way to overcome each obstacle that was placed in front of us. Clearly there are people here who do not want us to succeed. Like the natural diamond producers, they feel threatened by what we are doing. Better to keep producers ignorant.

Our students saw the opportunity that was presented to them and took advantage of it. They are such a dedicated group of students and it was a delight to work with them week in, week out. The classroom became a place not only of higher learning but also of joy and I am happy that we were able to see them all over the finishing line.

As I write this editorial, Haimanot is still fighting with government civil servants trying to get visa approval for our European instructors to come to Ethiopia to teach gem faceting. One would think that a company that is paying instructors and bringing equipment into a country so that we can train people for free (the Project Africa Gem Faceting Apprenticeship Program), would

be greeted with open arms but that is not the case. If it were not for the support of the current Minister of Mines (the Honourable Habtamu Tegegn), the mountain we must climb would be even higher. Fortunately, he sees the bigger picture.

This program will be a game changer. It will not only provide skills that up to now have not been available in Ethiopia but will also create jobs and lay the foundations for a new lapidary sector. It is a shame that many do not understand the importance of what we are trying to do.

WHAT'S IN THIS ISSUE?

I am thrilled to include the work of Arjuna Isrutti. We first interviewed Arjuna in our December 2018 issue. Since that time, we have followed his work and admired the extraordinary 'leap' he has made in perfecting his photographic skills. His photos add light to what is often a very dark world.

We continue with our four-part series called 'Investing in Africa'. This time we look at Mozambique, a country rich in gem resources but fraught with problems.

Having taught Michael Cowing's Objective Diamond Clarity Grading technique in our recent diamond grading class, we wanted to build on a previous article that Michael had written (May 2017 issue) on this amazing clarity grading technique. It not only works but requires very little training to bring novice clarity graders up to the level of experienced diamond clarity graders.

Leone Langeslag has been delving into the potential sale of De Beers and the restructuring of Anglo-

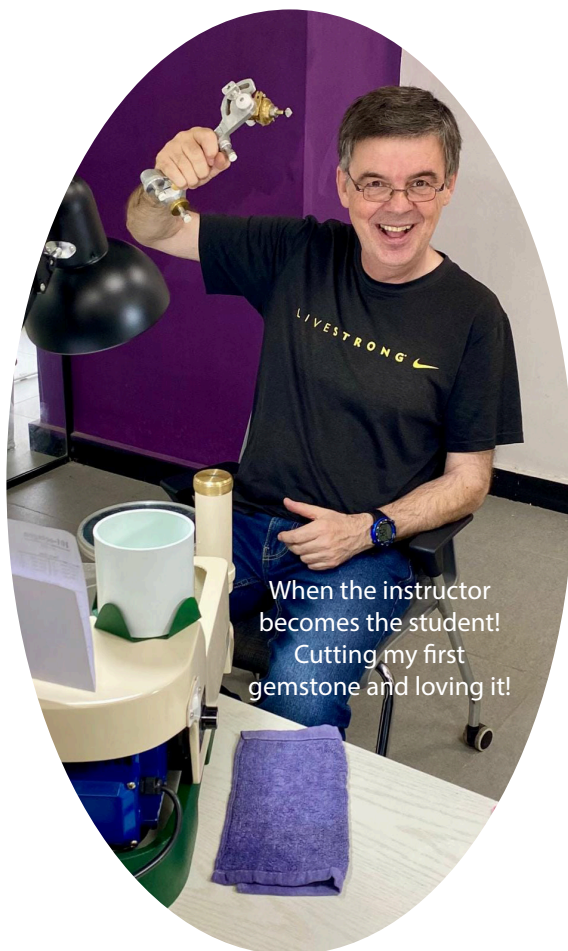
American while Nina Gold looks at two earthly gems (moonstone and sunstone) that have unearthly connections.

Finally, we wanted to showcase three important events here in Addis. The official unveiling of Project Africa, the graduation ceremony for our Career Gemmolgist Diploma students, and the first ever gem faceting apprenticeship program offered in Ethiopia.

No apologies for 'tooting' our own trumpet. We have worked very hard to make this a reality and we fully intend to 'bask' in the sunlight.

On a final note, numerous people have contacted us about Project Africa and how they can get involved. If you are in the gem industry and you make money from gems that originate from Africa, why not put something back? Funding is the major obstacle for students here in Africa. The World Gem Foundation has now funded \$ 359,000 USD in scholarships and it would be nice if others helped. Words are cheap, we need action!

I hope you have a wonderful summer and we will see you all at the end of September. Who knows what will have happened by then. Things are very fluid at the moment and you just never know what is lurking around the corner!



When the instructor becomes the student! Cutting my first gemstone and loving it!

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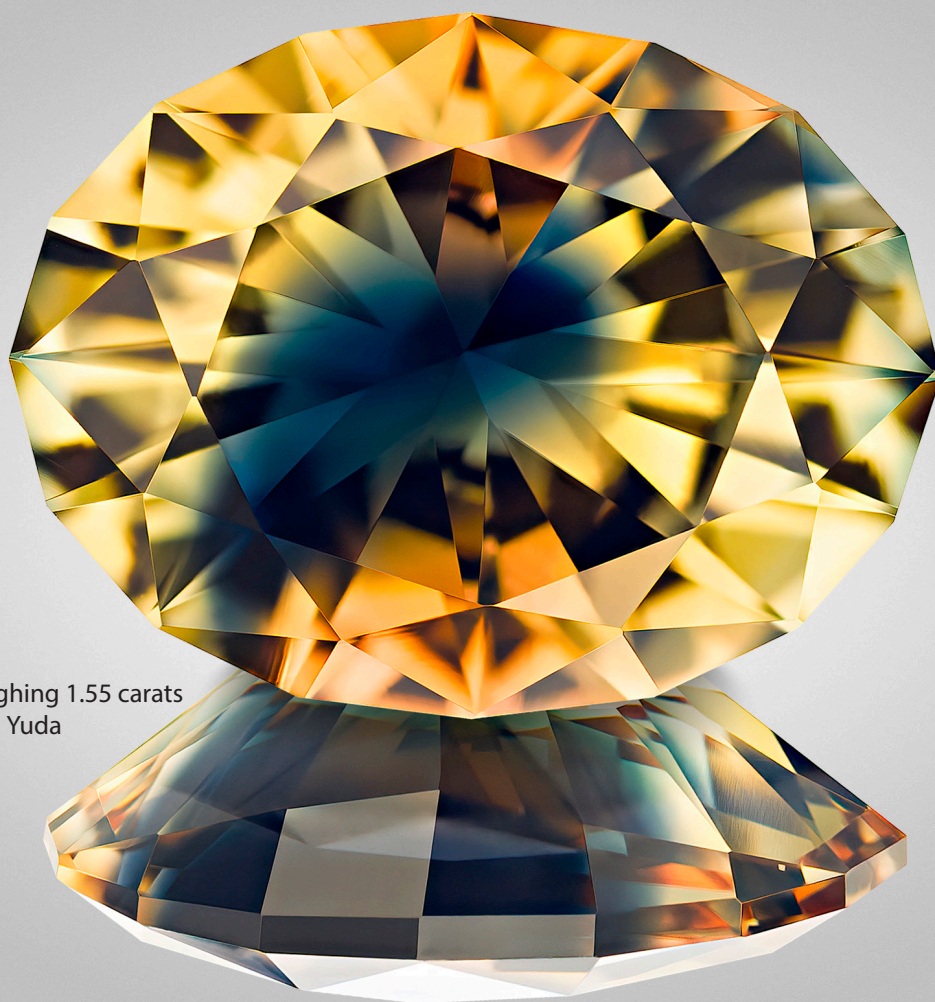
Passionate about Gemstones & Education

Leone Langeslag (EG)

www.soleleone.nl



Kornerupine from the Uмба Valley, Tanzania,
weighing 1.35 carats
Courtesy of Gil Yuda



Sapphire from Kenya, weighing 1.55 carats
Courtesy of Gil Yuda



Pink Spinel from Tajikistan,
weighing 1.01 carats
Courtesy of Gil Yuda



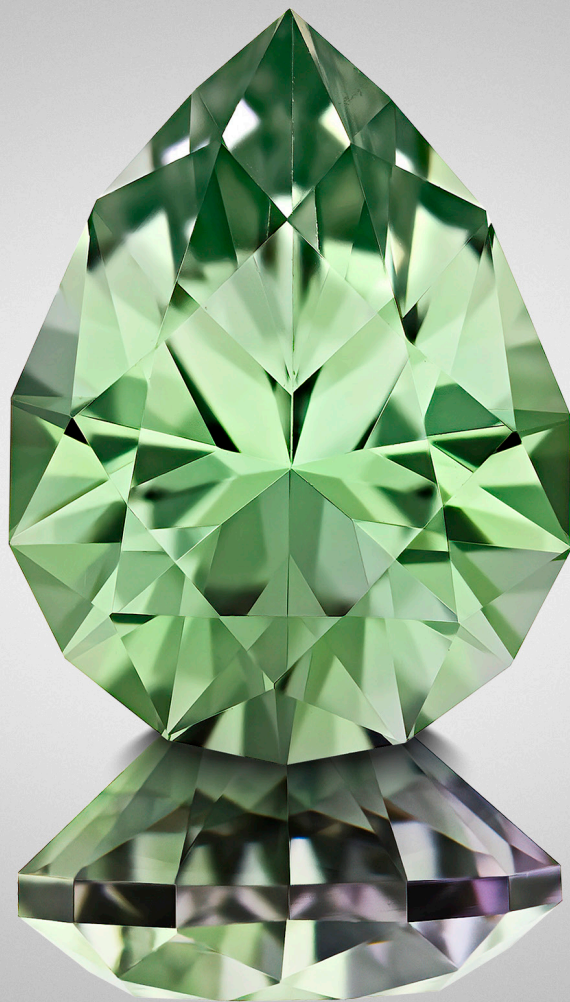
Spinel from Myanmar, weighing 2.85 carats
Courtesy of Gil Yuda



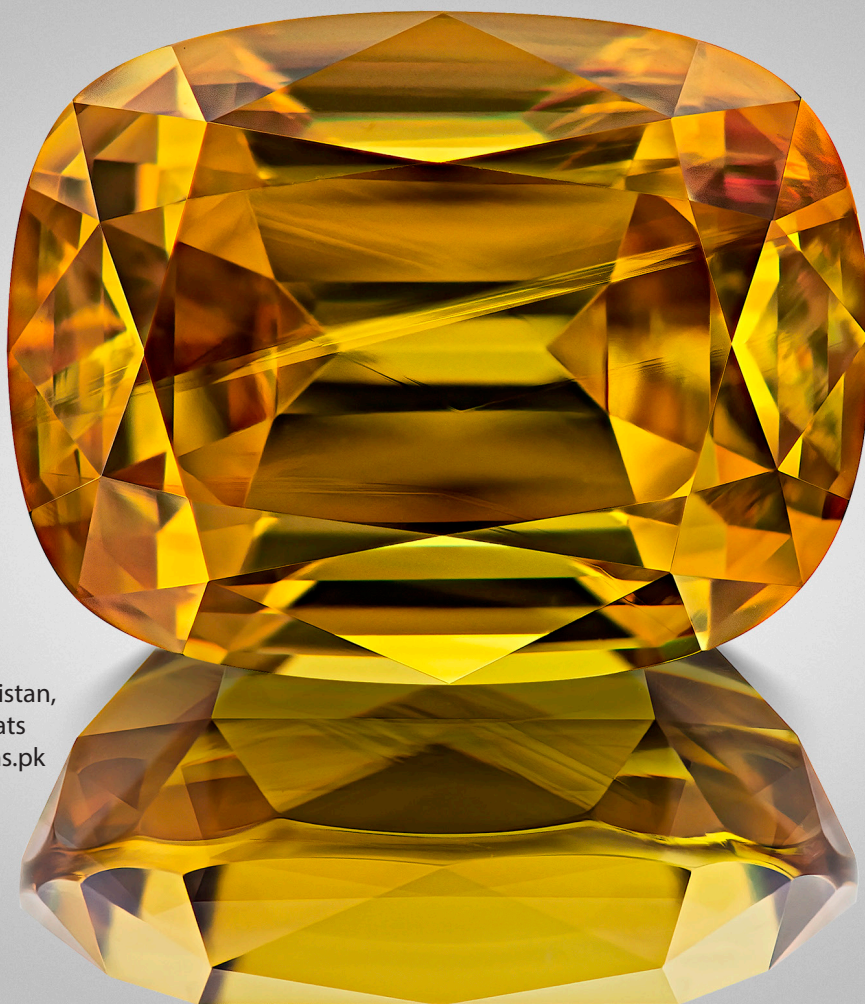
Tanzanite from Tanzania,
weighing 0.99 carats
Courtesy of Gil Yuda



Green Tourmaline from D.R. Congo,
weighing 4.74 carats,
Courtesy of Gil Yuda



Green Tanzanite from Tunduru, Tanzania,
weighing 1.31 carats
Courtesy of Gil Yuda



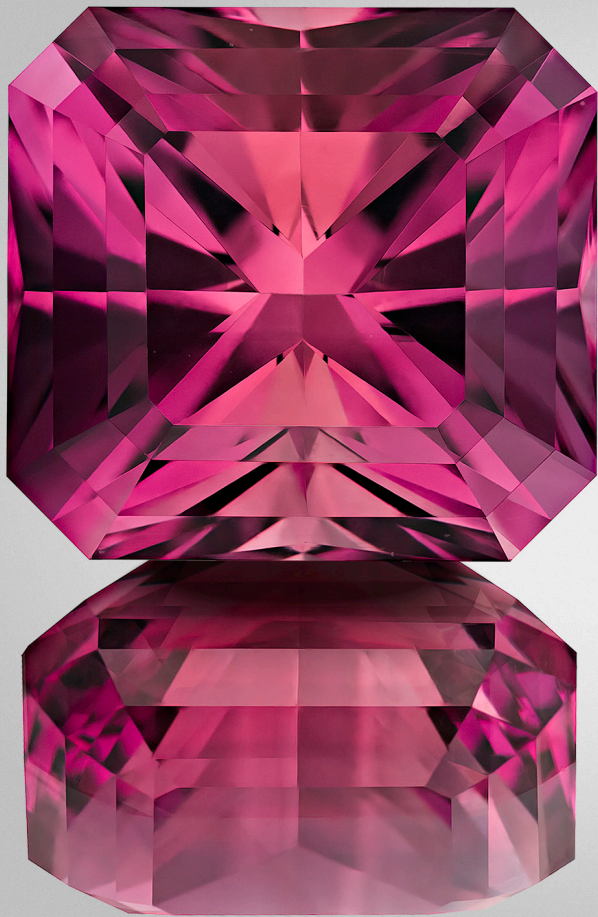
Sphene from Afghanistan,
weighing 5.28 carats
Courtesy of Topgems.pk



Tourmaline from D.R. Congo,
weighing 1.30 carats
Courtesy of Gil Yuda



Tourmaline from D.R. Congo,
weighing 2.90 carats
Courtesy of Gil Yuda



Colour Change Tourmaline from Russia,
weighing 2.12carats
Courtesy of Gil Yuda



Colour Change Zircon from Myanmar,
weighing 8.84 carats
Courtesy of Gil Yuda





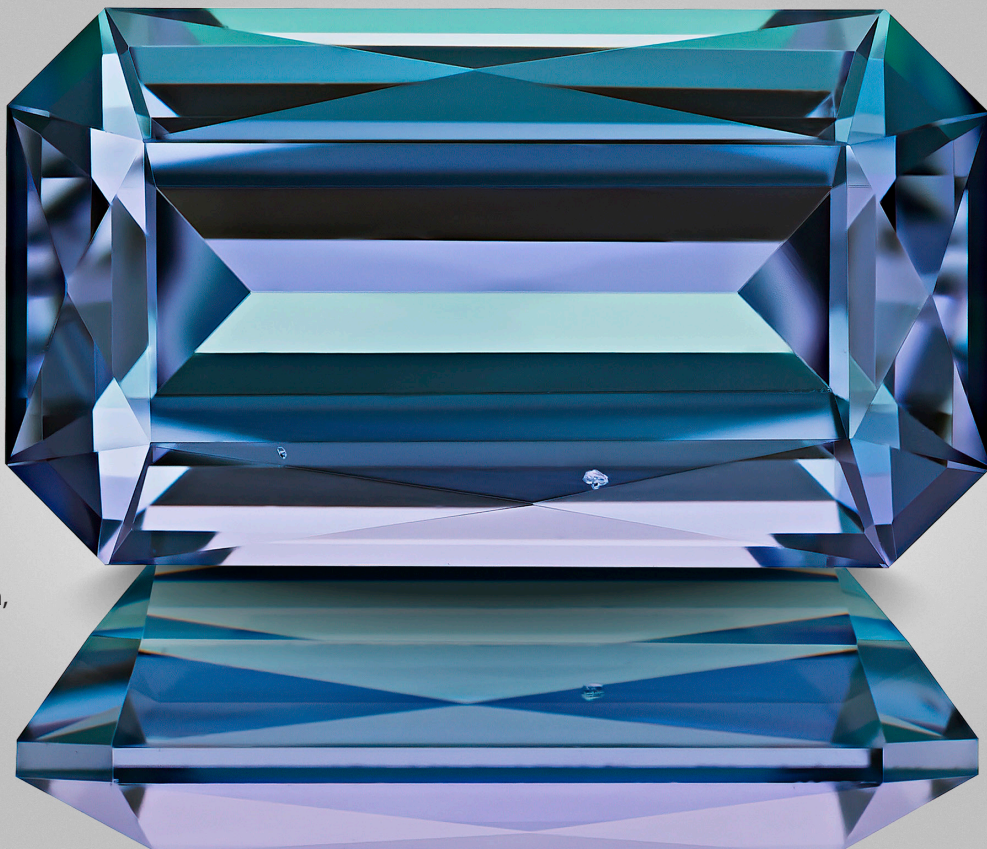
Tanzanite from Tanzania,
weighing 2.23 carats
Courtesy of Gil Yuda



Tanzanite from Tanzania,
weighing 1.73 carats
Courtesy of Gil Yuda



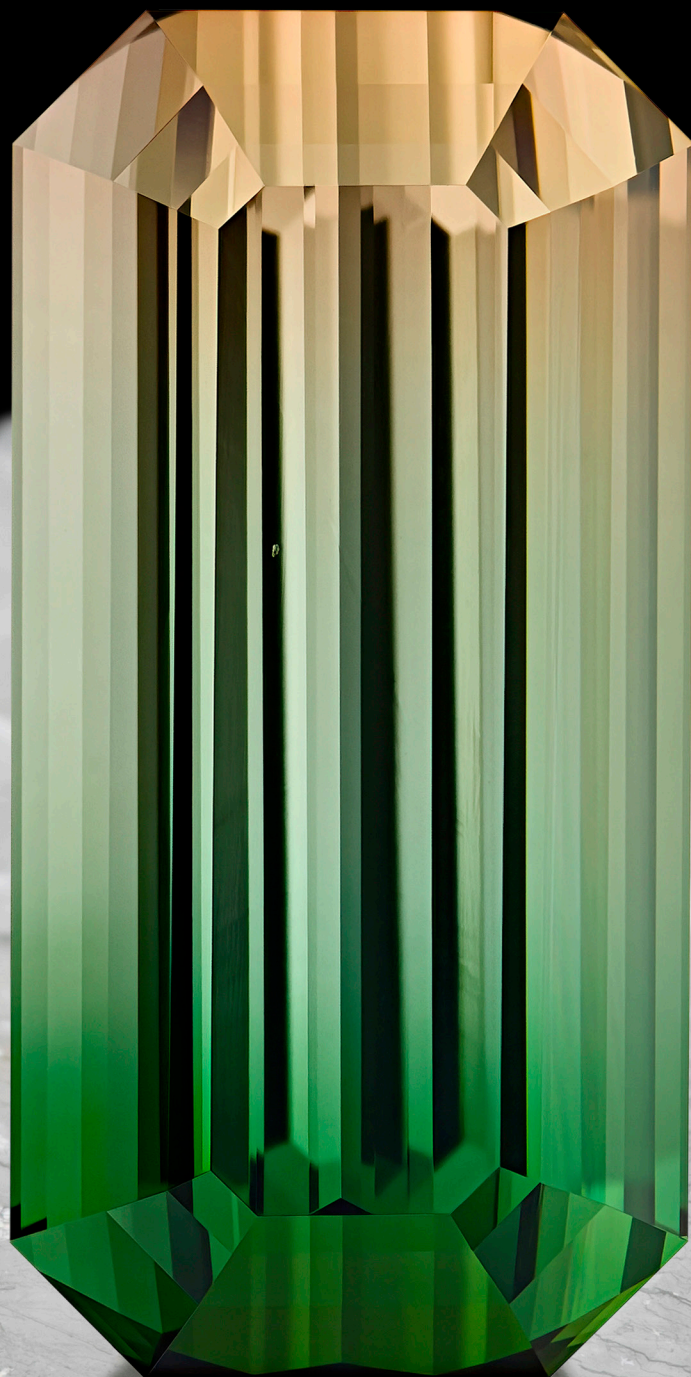
Pink Spinel from Tajikistan,
weighing 1.11 carats
Courtesy of Gil Yuda



Tanzanite from Tanzania,
weighing 1.52 carats
Courtesy of Gil Yuda

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Tourmaline from Mozambique,
weighing 23.58 carats
Courtesy of Gem Dragon Auctions



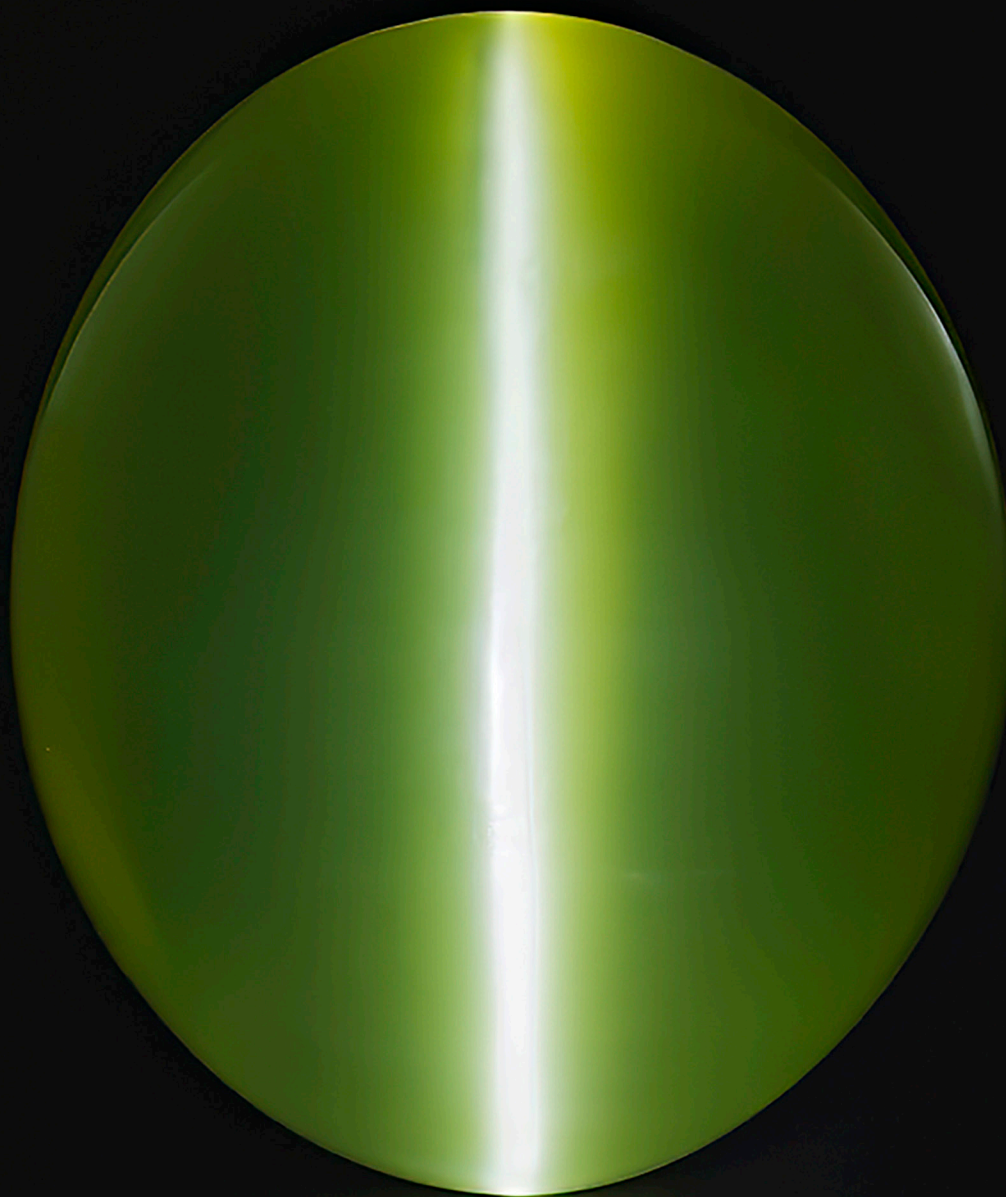
Tourmaline from D.R. Congo,
weighing 7.33 carats
Courtesy of Gil Yuda



Pink Spinel from Myanmar,
weighing 3.01 carats
Courtesy of Gil Yuda

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Cat's Eye Nephrite Jade from Siberia (Russia),
weighing 5.88 carats
Courtesy of Jeffery Bergman,
Eighth Dimension Gems



Tanzanite from Tanzania,
weighing 1.59 carats
Courtesy of Gil Yuda



Tanzanite from Tanzania,
weighing 1.44 carats
Courtesy of Gil Yuda



Pink Spinel from Myanmar,
weighing 2.30 carats
Courtesy of Rosenkrantz



Pink Spinel from Myanmar,
weighing 3.89 carats
Courtesy of Rosenkrantz



Lab-created Spinel, weighing 31.55 carats
Courtesy of Alex & Den Goncharoff



Set of Zircons from Myanmar
Courtesy of Bryan Lichenstein,
3090 Gems LLC



Pink Spinel, weighing 2.54 carats,
Courtesy of Asia Lounges



Red Tourmaline from D.R. Congo,
weighing 11.29 carats
Courtesy of Topgems.pk



Colour Change Zircon from Myanmar,
weighing 4.61 carats
Courtesy of Gil Yuda



ABOUT ARJUNA

He was born in a city near the Italian jewellery capital: Vicenza and was mostly raised in his mother's jewellery shop. By the age of 20, he had followed his father in the gem trade in Bangkok. He took his first steps in the trade in 2008 and completed his G.G. from I.G.I. Antwerp in 2011.

EDITORS NOTE:

We first interviewed Arjuna in our December 2018 issue. Since that time, we have followed his work and admired the extraordinary 'leap' he has made in perfecting his photographic skills.

We are thrilled to exhibit his work in this issue.



GT QUIZ #30

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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.

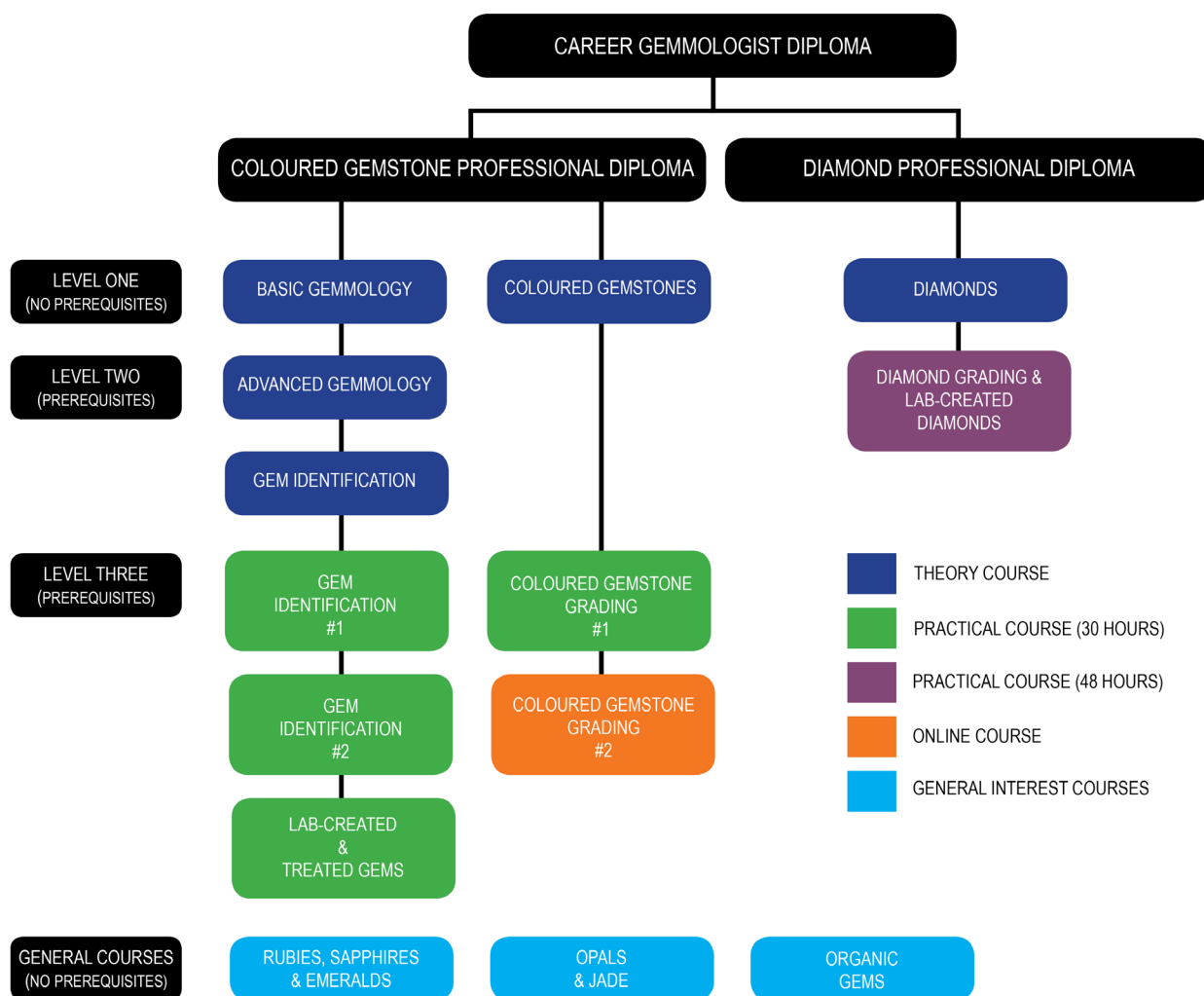
RESIDENCY PROGRAMS

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 Portuguese. These will be available in 2025.



GENERAL INTEREST COURSES

For those interested in gemstones but not wishing to take our 'Diploma' programs, all of our theory courses can be taken independently without prerequisites. In addition to the five theoretical courses (Basic Gemmology, Advanced Gemmology, Gem Identification, Diamonds and Coloured Gemstones) that make up our Career Gemmologist, Diamond Professional and Coloured Gemstone Professional 'Diploma' programs, we also offer three 'General Interest' courses (Rubies, Sapphires and Emeralds, Opals and Jade and Organic Gems). Students taking any of the three 'General Interest' courses will receive a credit equal to the cost of the course if they upgrade to our Coloured Gemstones course.

RUBIES, SAPPHIRES & EMERALDS

This course focuses on three coloured gemstones (rubies, sapphires and emeralds) that individually and collectively are considered the cornerstones of the coloured gemstone trade.

Lessons include a complete overview of their physical and optical properties, principal sources, mining, how they can be identified from gemstones that can be deceptively similar in appearance and their lab-created counterparts, common treatments and enhancements, pricing guidelines, what constitutes the best quality and how to properly care for them.

OPALS AND JADE

This course looks at two of the most fascinating and complex gemstones in the world of gemmology. The lessons on opal cover their physical and optical properties, their geology, localities, crystal system, chemical composition and classification, varieties, cause of colour, absorption spectra and pleochroism, inclusions, fluorescence, principal mines, opal mining in Australia, opal grading, synthesis of opal, gem identification, common treatments and enhancements, opal doublets and triplets, cleaning and care and pricing.

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.

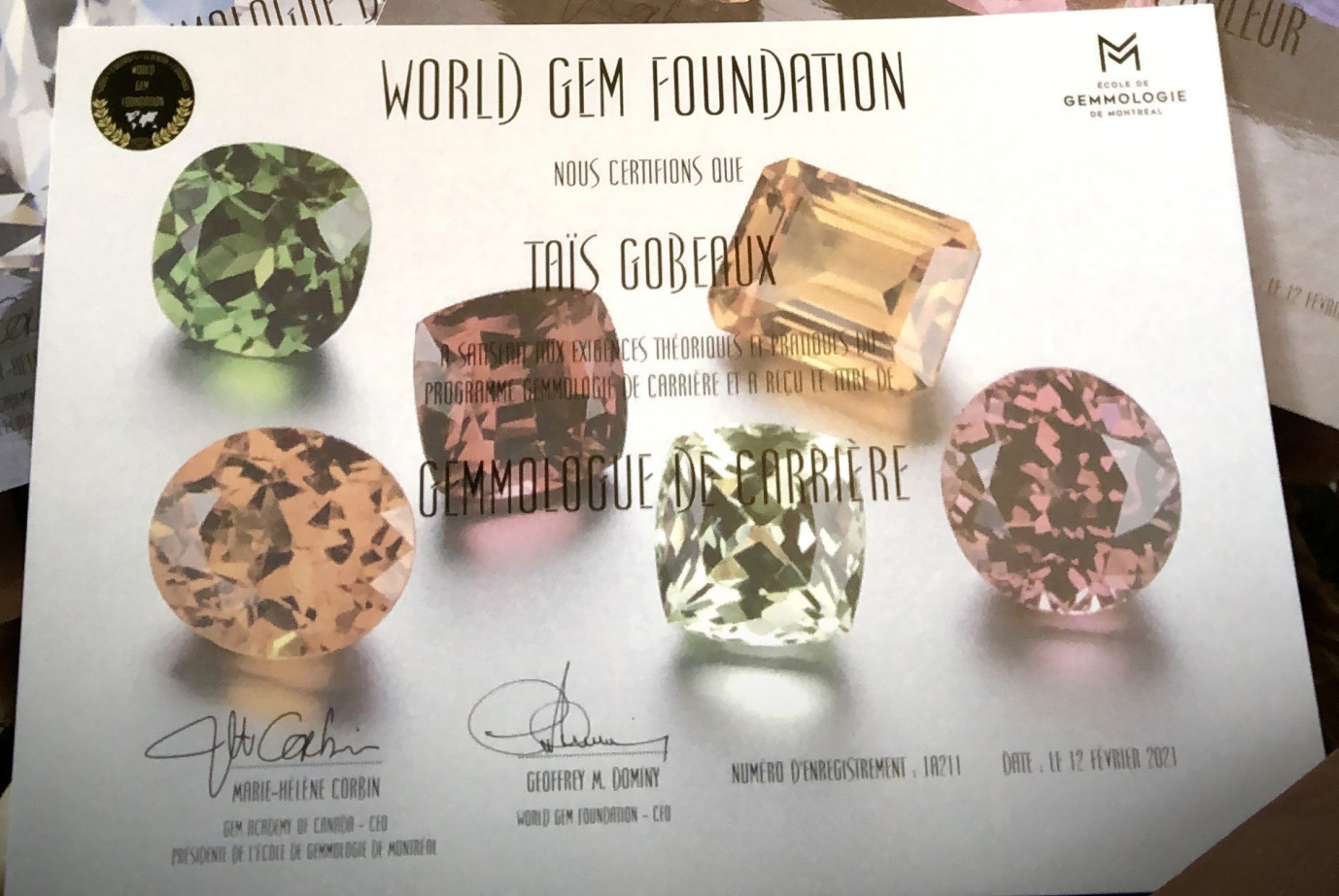
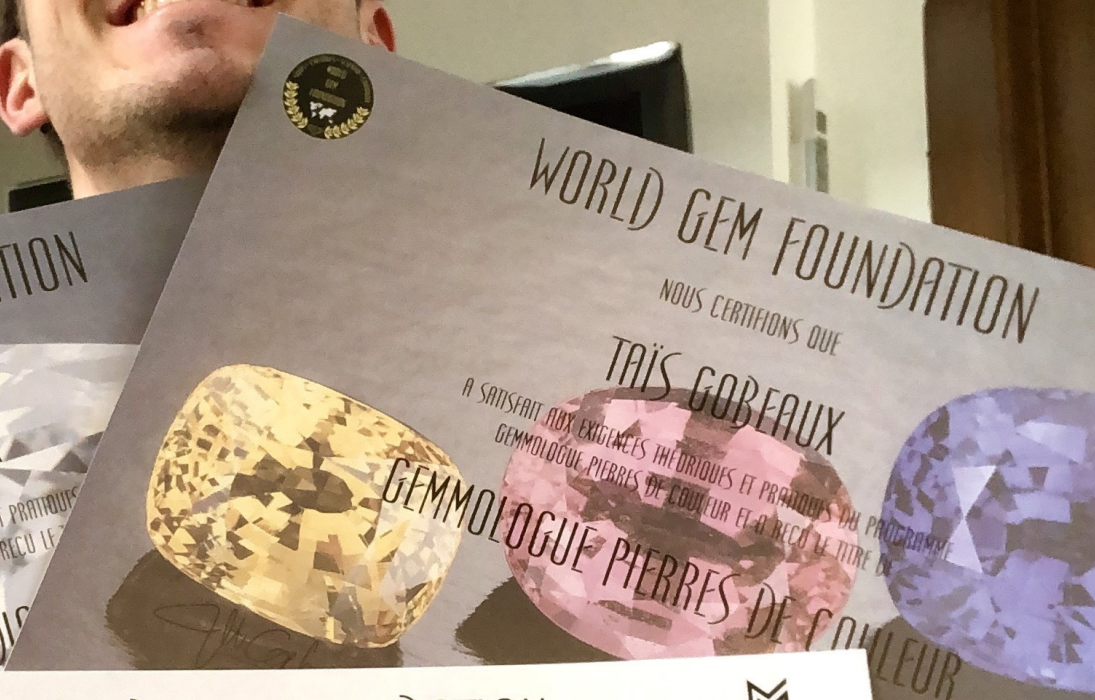
COURSE FEES

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.

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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

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Article Submissions

- We do not accept highly scientific articles.
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- Articles must be a minimum of one page. Lengthy articles will be considered for publication but may be published in instalments depending on their subject matter.
- Please ensure that all articles are formatted in accordance with recent issues (two-column layout with text wrapped imagery).
- Font: Myriad Pro Regular
- Font Size: 10
- Tables: All tables must be formatted in Word or Excel.
- Images: High-resolution digital files (TIF or JPG format), at 300 dpi and sized to at least 10 x 15cm.
- All images must be accompanied by written permission from the original source unless the author owns the rights.
- Unless authorized by Gemmology Today Editorial Board, there is a limit of twenty photographs per article.
- If English is not your first language, manuscripts should be checked by an expert translator before they are submitted to us for consideration.
- Upon receipt, the article will be reviewed by our editorial staff. Upon completion, authors will receive a proof of their article for final approval.
- The decisions of the editors are final.
- We reserve the right to refuse articles.

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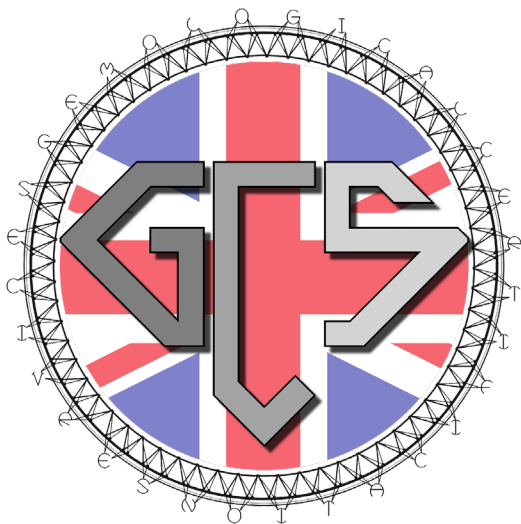
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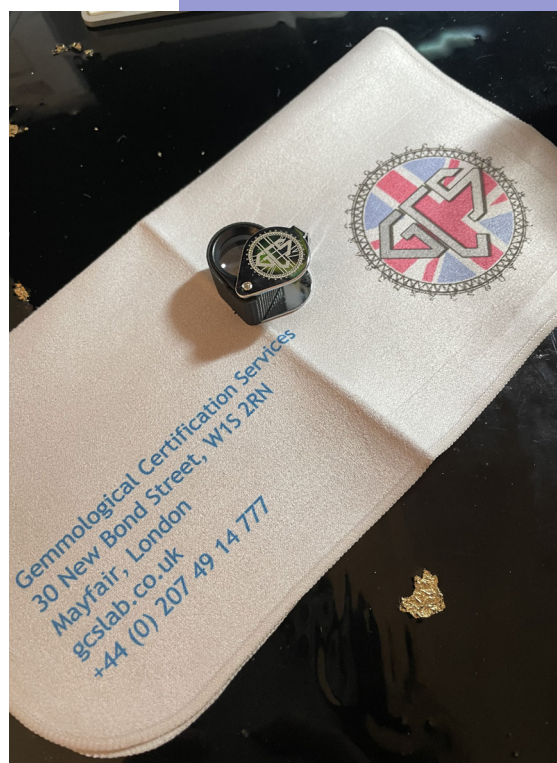


Gemmological Certification Services was established in the heart of London's Mayfair in 2014. We are the UK's leading gemmological laboratory for the origin determination of coloured gemstones; identification of synthetic material, including laboratory grown diamonds; differentiating natural and cultured 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.





GIMME gimme

Investing in Africa (Part Two)

We continue looking at some of the key gem producing countries throughout Africa, examining their strategies aimed at attracting investors, their policies and overall governance. In this issue, we look at Mozambique, an important player in the world of rubies. Can Mozambique finally emerge from its fractured past or is it destined to remain one of the poorest nations on the planet?

Mozambique ranks 183rd out of 193 countries with only Sierra Leone, Burkina Faso, Yemen, Burundi, Mali, Chad, Niger, Central African Republic, South Sudan, and Somalia, ranking lower.

HISTORY

The Bantu people settled in Mozambique around 2,000 years ago, setting up the great Mwenemutapa Empire in the centre and south of the country. By around 900 AD trading links had been forged with India, Persia, China and, above all, with the Arab world. Gold was the major

lure for these merchants, and it was this precious mineral that first attracted the Portuguese to Mozambique, Vasco da Gama landing there in 1498 on his way to India.

The Portuguese set up their first trading post at Sofala in 1505, exporting gold and challenging the Arab domination. By the late 17th century ivory had replaced gold as the main export while, some 50 years later, slaves became the major commodity in the history of Mozambique.

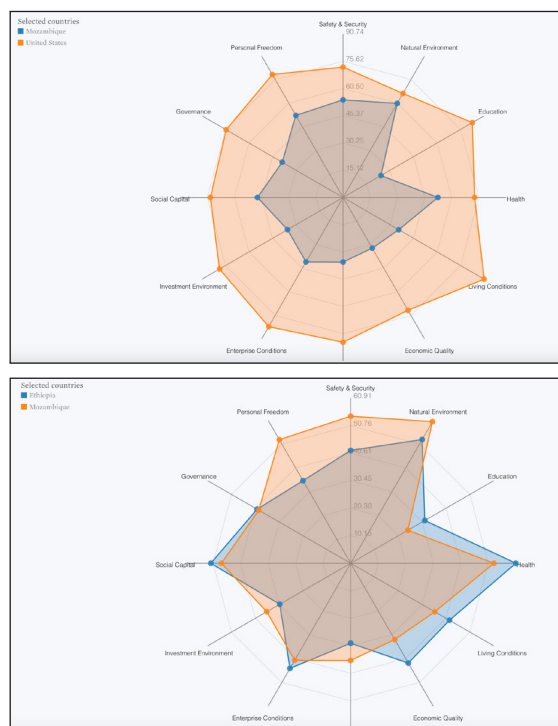
By the 1880s the Portuguese controlled trade and collected tribute in coastal enclaves from Ibo in the north to Lourenço Marques in the south, but their ability to control events outside those areas was quite limited; that situation, however, was

about to change. Increasingly, as neighbours of the Gaza state were raided periodically for refusing to pay tribute, they began to ally themselves with the Portuguese, which the Portuguese both encouraged and exploited. In the 1890s a coalition of Portuguese troops and African armies marched against the state.

In the last issue, we discussed five strategies that are necessary to attract foreign investment to a country; namely, a stable and predictable business environment, incentives and tax breaks, the development of a skilled workforce, investment in infrastructure, and strong international relationships. Based on this criteria, how does Mozambique measure up?

The Republic of Mozambique is a country located in southeast Africa and is bordered by the Indian Ocean to the east, Tanzania to the north, Malawi and Zambia to the northwest, Zimbabwe to the west, and Eswatini and South Africa to the southwest. Maputo, located in the far south near the border of Eswatini and South Africa, is the capital and largest city.

Mozambique ranks 150th on the overall Prosperity Index rankings, 12 places lower than in 2011. Performance wise, Mozambique ranks highest in natural environment and personal freedom but is weakest in education. The biggest improvement compared to a decade ago has come in health care. On the Human Development Index,



Reference: Legatum Prosperity Index 2023

When the Gaza leadership was finally defeated in 1897, southern Mozambique passed into Portuguese control. Two decades later the Portuguese, who had mounted dozens of military campaigns by that time, directly controlled the Barue of central Mozambique, the African Portuguese of the Zambezi and Maganja da Costa prazos, the Yao of Mataka, the northern Makua chiefdoms, and the northern coastal sheikhdoms of Angoche.

The formation of 'freedom organizations' in the 1960's and the ongoing repression and exploitation provoked a backlash which led to an armed struggle and eventual independence on June 25th, 1975. This was followed by a civil war that lasted sixteen years (1977 to 1992). Like many regional African conflicts during the late twentieth century, the impetus for the Mozambican Civil War included local dynamics exacerbated greatly by the polarizing effects of Cold War politics. The war was fought between Mozambique's ruling Marxist Mozambique Liberation Front (FRELIMO), the anti-communist insurgent forces of the Mozambican National Resistance (RENAMO), and a number of smaller factions such as the PRM, UNAMO, COREMO, UNIPOMO, and FUMO.

RENAMO opposed FRELIMO's attempts to establish a socialist one-party state and was heavily backed by the anti-communist governments of Rhodesia and South Africa who supported them in order to undermine FRELIMO's support for militant nationalist organisations in their own countries. Over one million Mozambicans were killed in the fighting or starved due to interruptions to food supply; an additional five million were displaced across the region. The Mozambican Civil War destroyed much of Mozambique's critical infrastructure in rural areas, including hospitals, rail lines, roads, and schools. FRELIMO's security forces and RENAMO insurgents were accused of committing numerous human rights abuses, including the use of child soldiers, and indiscriminately salting a significant percentage of the countryside with land mines. Three neighbouring states—Zimbabwe, Tanzania, and Malawi—eventually deployed troops into Mozambique to defend their own vested economic interests against RENAMO attacks.

The Mozambican Civil War ended in 1992, following the collapse of support from the Soviet Union and South Africa for FRELIMO and RENAMO, respectively. Direct peace talks began around 1990 with the mediation of the Mozambican Church Council and the Italian government; these culminated in the Rome General Peace Accords which formally ended hostilities. As a result of the Rome General

Peace Accords, RENAMO units were demobilised or integrated into the Mozambican armed forces and the United Nations Operation in Mozambique (ONUMOZ) was formed to aid in post-war reconstruction. Tensions between RENAMO and FRELIMO flared again between 2013 and 2018, prompting the former to resume its insurgency and contradicting the often-repeated narrative of a successful reconciliation. This smaller second conflict ended with a peace treaty in 2019.

Since 2017, Cabo Delgado, Mozambique's northernmost province, has been the scene of another deadly insurrection, mainly fought between militant Islamists and jihadists attempting to establish an Islamic state in the region, and Mozambican security forces. While foreigners have joined in the name of jihad, most of the Mozambican rank and file militants are motivated by their perceived socio-economic exclusion amid major mineral and hydrocarbon discoveries in the region. Sadly, civilians have been the main targets of terrorist attacks by Islamist militants resulting in an estimated 4,350 deaths and over one million internally displaced persons (IDPs).

A STABLE AND PREDICTABLE BUSINESS ENVIRONMENT

While there are many factors that contribute to a stable and predictable business environment, conflict always acts as a major deterrent to investors. With one of the most significant ruby deposits in the world located in Cabo Delgado (Gemfields Montepuez ruby mine), one wonders what the short and long-term implications will be to the supply of these important gems.

INCENTIVES AND TAX BREAKS

The Government of the Republic of Mozambique (GRM) announced a slate of economic reforms in August 2022, including fiscal reforms and investment incentives. As



FRELIMO Fighters
Creator: Suresh Karadia/ S.Times
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part of the economic reform package, the government simplified procedures in logistic corridors, implemented a new e-visa system to facilitate entry into the country for tourists and business, and announced its intention to exempt 29 countries from entry-visa requirements.

These reforms were announced under the Pacote de Medidas de Aceleração Económica (PAE), which includes tax incentives for new private initiatives and/or the expansion of current investments.

These incentives consist of acceleration of the amortizations of paid-in capital to half the period established in Mozambique's current tax code for certain investments in facilities and equipment, provided they create at least 20 new jobs.

The GRM reformulated its Code of Fiscal Benefits in 2009 (Law no. 4/2009 and Decree no. 56/2009). These benefits aim to encourage development in Mozambique by reducing the amount of tax to be paid by certain companies or entities in the public interest. The law contains specific incentives for entities that intend to invest in certain geographical areas within Mozambique that have natural resource potential but lack infrastructure and have low levels of economic activity. Additional modest incentives are available for professional training and the construction and rehabilitation of public infrastructure, including but not limited to roads, railways, water supply, schools, and hospitals.

While the government is working to improve fiscal policies at the national level, many argue that the inconsistent and unpredictable application of combined local and national taxes remains burdensome.

Investors face numerous requirements for permits, approvals, and clearances, which often take substantial time and effort to obtain. The complex and multi-stop bureaucratic system creates opportunities for rent-seeking, the manipulation of public policy or economic conditions as a strategy for increasing profits. Labour, health, safety, and environmental regulations may go unenforced or be selectively enforced. In some cases, according to private sector contacts, civil servants have reportedly threatened to enforce antiquated regulations that remain on the books in order to obtain favours or bribes.



Montepuez Ruby Courtesy of Gemfields

The GRM requires businesses in certain sectors to apply for an Environmental License, via the

Environmental Impact Evaluation Process, regulated under the Environmental Impact Assessment Regulation (no. 54/2015). The Ministry of Land and Environment and its subordinate institutions and directorates issue licenses following the Environmental Impact Evaluation Process, which entails creation of an Environmental and Social Management Plan (ESMP).

Draft bills are made available for public comment through business associations or in public meetings. The GRM publishes changes to laws and regulations in the National Gazette, which is available electronically. There have been complaints of short comment periods and that comments are not properly reflected in the National Gazette.

Overall fiscal transparency in Mozambique has improved in the wake of the 'hidden debts' scandal, which became public in 2016. The GRM reports on public debts, including state-owned enterprise (SOE) debt, in the national budget. However, publicly available budget documents still do not provide a complete picture of the GRM's revenue streams, particularly regarding SOE earnings, which generally do not have publicly available, audited financial statements. The GRM also maintains off-budget accounts not subject to adequate audit or oversight. For published portions of the budget that were relatively complete, the information provided was generally reliable. The IMF's ongoing program with Mozambique includes reform measures designed to improve the GRM's public financial management.

LAWS AND REGULATIONS ON FOREIGN DIRECT INVESTMENT

The GRM is actively working to revise the legal framework governing investments. Currently, the 2009



Former president Armando Guebo Ndambi, a defendant in the case of Bangkok Post

Code of Fiscal Benefits (no. 4/2009) and 2009 Decree (no. 56/2009) form the legal basis for foreign direct investment in Mozambique. Operating within these regulations, the Agency for Promotion of Investments and Exports (APIEX) analyzes the fiscal and customs incentives available for a particular investment. Investors must establish foreign business representation and acquire a commercial representation license. During project development, investors must document their community consultation efforts related to the project. If the investment requires the use of land, the investor must present, among other documents, a topographic plan, or an outline of the site where the project will be developed.

If the investment involves an area under 1,000 hectares and the investment is under approximately \$25 million, the governor of the province where it will be located can approve the investment. While APIEX has the authority to approve any project up to \$40 million, the MEF must approve national or foreign investments between \$40 million and \$225 million. If the investment occupies an area of 10,000 hectares, or an area greater than 100,000 hectares for a forestry concession, or it amounts to more than \$225 million, the Council of Ministers must approve it. APIEX provides additional information regarding Mozambique's investment requirements.

EXPROPRIATION AND COMPENSATION

While expropriation as a result of nationalization remains a problem throughout Africa, there have been no significant cases since the adoption of the 1990 Constitution. Mozambican law holds that 'when deemed absolutely necessary for weighty reasons of national interest or public health and order, the nationalization or expropriation of goods and rights shall result in the owner being entitled to just and equitable compensation.'

MONEY AND BANKING SYSTEM

According to a December 2022 Mozambican Bank Association (MBA) survey, there are 20 commercial banks operating in Mozambique. The top three banks – Banco Comercial e de Investimentos (BCI), Banco Internacional de Moçambique SA (BIM), and Standard Bank – account for 67.6 percent of total banking assets.

An estimated 30 percent of Mozambicans had access to a bank account in 2021 which is well below the country's target of 60 percent. Most banking locations are concentrated in provincial capitals, and rural districts often have no banks at all.



buza, seated, greets his corruption trial. Courtesy

In an effort to curtail inflation, the Central Bank increased its monetary policy interest rate in September 2022 to 17.25 from 15.25 percent to reduce inflation. Foreign investors' export activities in food, fuel, and health markets generally have access to credit in foreign currency. All other sectors have access to credit only in the local currency.

FOREIGN EXCHANGE

Mozambique revised its foreign exchange control rules in 2017 (Law no. 49/2017). This law requires Mozambican residents to deposit export earnings into an export earnings account in foreign currency, which can only be used for specific purposes. The law requires foreign exchange operations to be processed electronically in real time by commercial banks.

Applications for capital operations are processed by commercial banks and forwarded to the Central Bank. Foreign direct investments (FDI) of up to \$250,000 no longer require prior authorization from the Central Bank, and only need to be registered with the commercial bank handling the transactions. Shareholder and intercompany loans made by foreign entities for up to \$5 million do not require authorization from the Central Bank, provided the loans are interest-free or lower than the base lending rate for the relevant currency, the repayment period is at least three years, and no other fees or charges apply.

A special foreign exchange regime for the oil, gas, and mining sectors allows for greater flexibility in foreign exchange and financing operations for relevant companies. The law (no. 14/2017), which went into force in January 2018, stipulates profits from petroleum rights are taxed at an autonomous tax rate of 32 percent. The law also guarantees tax stabilization for up to 10 years, starting from the beginning of commercial production with an investment amount of \$100 million. The MEF can also approve the use of U.S. dollars if the company has invested at least \$500 million and more than 90 percent of its transactions are in U.S. dollars. The law also eliminated the 50 percent rate reduction on the production tax for products used locally.

Mozambique revised its Foreign Exchange law in 2022 (Law n.º28/2022), in an effort to facilitate international transactions by reducing bureaucracy in foreign exchange operations and adjusting to technological changes.

REMITTANCE POLICIES

The Central Bank's 2021 Notice (Aviso) 6/GBM/2020 requires at least 30 percent of export proceeds to be converted into local currency. However, per a Central Bank Circular issued in February 2021, this conversion rule does not apply for rent paid in a foreign currency by a non-resident to a Mozambican landlord.

CORRUPTION

According to private sector contacts, while corruption remains a major concern in Mozambique, the GRM has undertaken some steps to address the problem. Working with the IMF, it published the July 2019 Diagnostic Report on Transparency, Governance and Corruption, which identifies 29 anti-corruption reform measures. The March 2022 IMF agreement was intended to use these measures as benchmarks for subsequent reforms. In 2022, Mozambique enacted legal reforms designed to fight corruption with revision of its anti-money laundering and countering financing of terrorism (AML/CFT) law (11/2022). Other recent anti-corruption measures include revisions to the Penal Code (24/2019), Criminal Procedure Code (25/2019), Asset Recovery Law (13/2020), and the establishment in 2015 of provincial offices to combat corruption. However, in 2022 the Financial Action Task Force put Mozambique on its 'grey list' because of an inadequate AML/CFT framework.



Courtesy of AllAfrica

The Mozambican judicial system conducted a trial for 19 defendants in the 'hidden debts' case, hearing from more than 70 witnesses. On December 7, 2022, the Maputo City Court convicted 11 of the 19 defendants for crimes including criminal association, blackmail, embezzlement, falsification of documents, money laundering, and illegally carrying a firearm. The court has seized some assets of the accused to partially compensate the nation for losses caused by the \$2 billion in acquired state-backed loans. Mozambican civil society and journalists remain vocal advocates in calling the government to account on what they claim to be corruption-related issues and have been instrumental in pressing for accountability on the hidden debts.

LABOUR POLICIES AND PRACTICES

According to the International Labor Organization (ILO), an estimated six million Mozambicans, or 80 percent of the economically active population in Mozambique, work in the informal sector. Mozambique's Ministry of

Labor generally had not effectively enforced minimum wage, hour of work, and occupational safety and health standards in the informal economy; labour law is only enforced in the formal sector.

There is an acute shortage of skilled labour in Mozambique. As a result, firms often hire foreign employees who have the required skills. The GRM limits the number of expatriates a business can employ in relation to the number of Mozambican citizens it employs. The GRM passed labour regulations in 2016 strengthening the requirement for employers to devise skills transfer programs to train Mozambican nationals to eventually replace the foreign workers.

The constitution and law provide that workers, with limited exceptions, may form and join independent trade unions, conduct legal strikes, and bargain collectively, although unions must be approved by the government. The GRM takes 45 days to register employers' or workers' organizations, a delay the ILO has deemed excessive. Approximately three percent of the labour force is affiliated with trade unions. An employee fired with cause does not have a right to severance, while employees terminated without cause do. Unemployment insurance does not exist and there is not a social safety net program for workers laid off for economic reasons. The law does not allow workers to strike until a complex mediation and arbitration process has been conducted, which typically takes two to three weeks. The law also provides for voluntary arbitration for 'essential services' personnel monitoring the weather and fuel supply, postal service workers, export-processing-zone workers, and those loading and unloading animals and perishable foodstuffs.

With support from international donors, the GRM is reviewing its Labour Law to align with international conventions related to forced labour, health and safety issues in mining, and the worst forms of child labour. The proposed revisions would extend the maternity leave period from 60 to 90 days; address sexual harassment; incorporate special conditions in the fisheries sector; provide for telework and intermittent work; address suspension of contracts in cases of force majeure or for technological, structural or market reasons; address private employment agencies; and provide for recruitment of retired persons.

INFRASTRUCTURE

In terms of geography, Mozambique enjoys a privileged and strategic location as the natural exit to most of its landlocked neighbours, in particular Zimbabwe, Zambia, and Malawi. The central transport infrastructure extends from the Port of Beira to Zimbabwe, and marginally to Malawi and Zambia. The southern transport network links the Port of Maputo to the north-eastern part of

South Africa, Swaziland, and Zimbabwe. These two 'transport clusters' are multimodal, mostly functional, and already attracting interest among private investors. Moreover, Mozambique is well endowed with hydropower potential; it is already a net exporter of electricity and can expect to play a critical role in the power trade of the region through the development of its hydropower potential in the near future.

Transport infrastructure is developed transversally, west-east, connecting mining and agricultural clusters inside Mozambique and in neighbouring countries to exit ports. The connectivity among population concentrations, as well as the quality of roads, along these transport corridors is relatively good. The railway system is functional and has been attracting private interest in recent years. The road network has seen a revamp in investment and rehabilitation, and a second-generation road fund has been set in place.

In terms of non-transport infrastructure, the provision of power supply is reliable, and the national utility has a good—and improving—performance record. Access to improved water supply, reduction in the use of surface water, and reduction of open defecation has put Mozambique close to reaching the Millennium Development Goals (MDGs) in water and sanitation.

But Mozambique still faces critical infrastructure challenges with perhaps the greatest being in the transport sector. While some of the transport corridors are mostly functional in providing regional connectivity and connecting mining and key production centres to ports, Mozambique's connectivity among urban and economic clusters is quite limited, lacking linkages that connect parallel corridors to each other. With the



exception of the recently finalized north-south National Road N1, the country has no (or has very limited) connection among the several west-east corridors and developing full connectivity would require sustained and enormous investments over decades, with the likely participation of the private sector and non-traditional financiers. Additionally, rural population accessibility to domestic (and eventually international) markets is an enormous challenge, and lags behind what is observed in the region. Finally, maintaining the rapidly expanding road and rail network is an enormous hurdle to overcome, institutionally and financially, as the size of the network seems to overshadow the capacity of the country to provide funds for its maintenance. Heavy rains and tropical storms also cause frequent degradation of roads, bridges, and other essential infrastructural components.

INTERNATIONAL TIES - CHINESE INVESTMENT IN MOZAMBIQUE

Over the last five years, China has become Mozambique's third largest bilateral partner and has invested approximately one billion dollars in infrastructure and other projects throughout the country.

According to Silvino Moreno, the Minister for Industry and Trade, attracting Chinese investment is a path Mozambique must follow not only for the government or the state, but also for private companies that are the engine for the country's development.

'We need proper roads in this country, tarred roads, and bridges in various parts of the country. Infrastructure is our biggest challenge, as well as the agriculture sector. We need to attract large operators in the area of industry, especially in the steel industry, metal transformation, and other large projects,' he said.



With trade between Mozambique and China in 2022 reaching roughly 4.6 billion US dollars (a 16% percent increase over 2021), it is clear that Mozambique sees China as their economic saviour but again, this begs the question 'at what cost?'

CONCLUSION

A lack of governance and corruption in some ministerial organizations are significant hurdles to overcome in the pursuit of trust. Listening to the voice of every citizen is key to correcting this longstanding mistrust. Government officials need to be present in every district and village to engage with citizens. The simple act of listening to citizens fosters trust and gives local leaders a voice. Doing so is a proven effective way to garner support in a nation with high illiteracy and lack of access to communication tools. Citizens across the country depend on tribal leaders and elders to share information, that is where the government needs to engage at the local level. Following up on the concerns of these respected local leaders by putting in the effort to improve quality of life can combat the drivers of conflict and instability.

Building on trust established through such engagement, the government could drive real change through transparency and equality. Freedom of expression has experienced setbacks in recent years, especially journalism and news media. These setbacks hinder the transparency required to inform the local population on national investments and agreements made with international partners. All citizens deserve to clearly understand long-term plans for national and regional development. This will further give citizens a renewed hope that they have a say in their future and will share in the rewards of such investments and agreements.

While Mozambique overcame a decades-long civil war and was on a path to capitalize on the nation's economic potential, since 2014 the country has experienced a steady decline in stability and a rise in violence due to a wide variety of issues. Two primary factors are the lack of governance and the insurgency in the nation's northern territory, Cabo Delgado.

The current insurgency has drawn the attention of international governments, investors and dozens of non-profits, religious, and aid-based NGOs. Many in the Mozambican government see the insurgency as solely driven by outside instigators, but strong local evidence suggests the root of the issue is disaffected locals, especially youth, disenfranchised by local provincial and national government officials. This feeling of having no hope of a prosperous future under the current system makes them easy targets for recruitment by insurgents and extremist groups. Recent numbers estimate the insurgents at less than 1,000, down from the peak of

2,500 fighters, operating in the Cabo Delgado region, many of whom are known community members. Sadly, indoctrinated, disaffected youth who are recruited practice their violence on their own families and communities.

While most of the population in the north is Muslim, compared to the majority Christian south, the conflict is not religious but rather an ideological gap that has been exploited by the Islamic State (IS) idea of statehood through violence. Ahlu Sunna wa Jama (ASWJ), or al Shabaab, as it is more commonly known in Mozambique, first emerged as an armed group in October 2017 and the U.S. government subsequently labelled them ISIS-Mozambique. This ideology can be linked to many causes, two examples: lack of government support and the transnational organized crime that flows through the region, primarily in coastal communities and influenced by foreign fighters. Recruitment has not been a concern for the insurgents due to the large, alienated youth population with no prospects or outlets.

Global investment in Mozambique, where the United States is the largest bilateral aid donor, has focused on stabilizing the Cabo Delgado conflict. Stemming the current conflict would allow aid to reach the population and bolster international investment but would not result in long-term stability. True change will occur from within, a population that is empowered, has prospects, and a voice in governance is critical for stability.

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Mozambique's Infrastructure: A Continental Perspective

Carolina Dominguez-Torres and Cecilia Briceño-Garmendia

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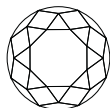


PROJECT AFRICA is delighted to offer the first gem faceting apprenticeship program here in Ethiopia. This intensive program consists of 900 hours of practical instruction and on-the-job training and is divided into three levels:



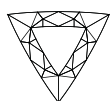
LEVEL ONE (50 hours)

Students will learn everything they need to know about faceting gemstones from basic cutting and polishing techniques to operating a faceting machine.



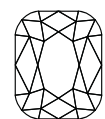
LEVEL TWO (100 hours)

Students will attend classes five times a week for four weeks to gain additional practical experience faceting gems. They will also learn how to calibrate a handpiece, dop and preform their stones and use a transfer jig.



LEVEL THREE (750 hours)

Students will receive on-the-job training (5 hours a day, five days a week) working in the WGF Project Africa Ethiopia lapidary where they will have the opportunity to perfect their skills while receiving a nominal salary.

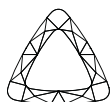


UPON COMPLETION



Those students who complete and pass the entire program and exhibit the ability to professionally facet gemstones will be offered a permanent position in the lapidary.

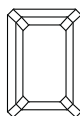
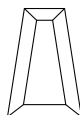
ELIGIBILITY REQUIREMENTS



Applicants must be:



- 18 years or older
- Legal resident of Ethiopia
- Competency in fundamental mathematics
- Detail-oriented
- Ability to problem solve
- Hand-eye coordination & finger dexterity
- No visual impairment

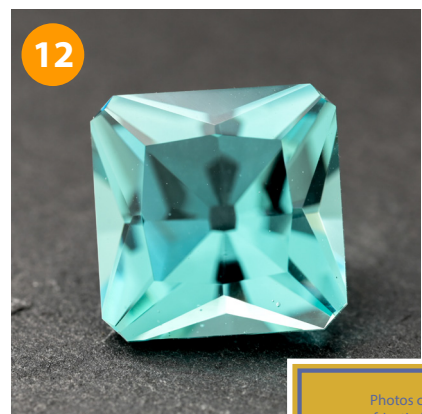
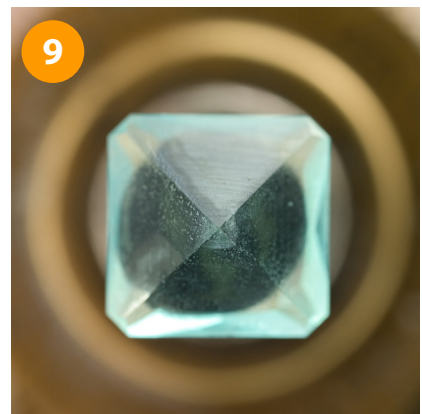
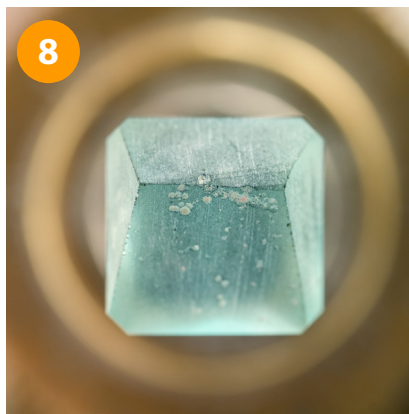
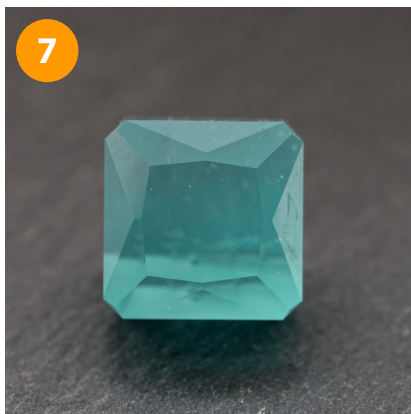
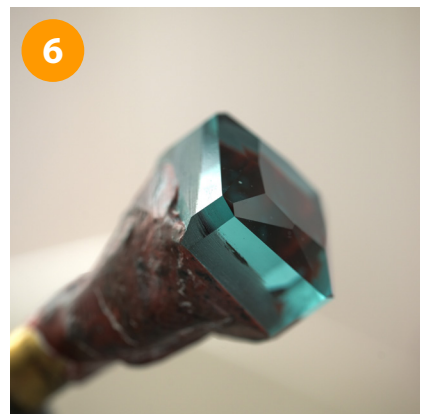
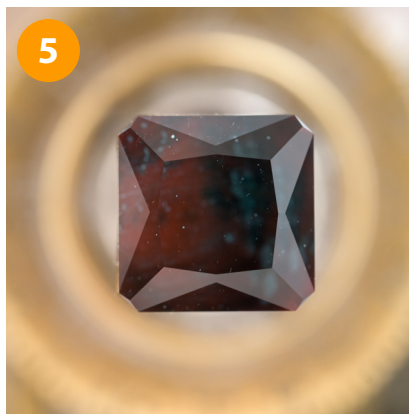
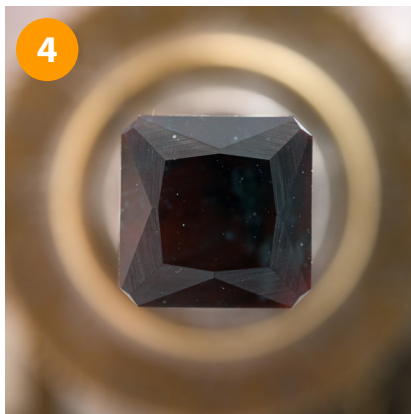
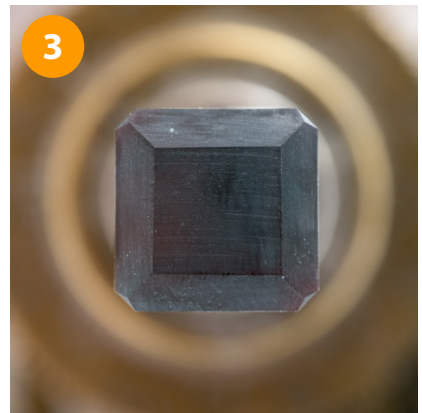
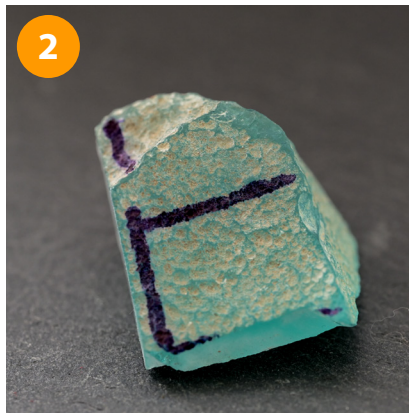


Applicants must sign a five year employment contract with WGF Project Africa Lapidary Services.

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STUDY GEMMOLOGY IN ETHIOPIA



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EDUCATION IN THE KEY GEM PRODUCING AREAS

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MOON rock

Underground behind the clouds

This is the story of two 'extra-terrestrial' gemstones that are found here on Earth. You can find them everywhere from local markets to small and big sized jewellery stores, at trade shows and at international exhibitions. Price wise, they can range from as little as \$ 5 to \$ 2,000 or more. But what are they, why are we so intrigued by them and why do they vary so much in price?

So, let's start with the fact that there are several 'Moon' stones in the world, as well as several types of 'Sun' stones, but we will talk about these later.

MOONSTONE

Officially, all over the world, adularia is considered a moonstone, which is a potassium variety of feldspar with the chemical composition $K[AlSi_3O_8]$. It can be either sanidine, orthoclase or microcline. The name comes from a deposit in the Adula Alps near Saint Gotthard (Switzerland).

Adularia (moonstone) is also found in Burma, India, Australia, Brazil, but the most famous deposits are in Sri Lanka.

Scientifically speaking, the bluish glow of a moonstone is due to an optical effect called 'adularescence'.

This phenomenon is caused by the scattering of visible light between randomly distributed structures that are shorter than the visible wavelengths of the atoms that make up its composition. We can observe the same phenomenon in the sky - it is blue for the same reason. The price for this type of the moonstone depends on its transparency and the intensity of the adularescence with stones selling for anywhere from \$ 20 to \$ 300.

Recently 'Rainbow' moonstones have started to appear on the market. In addition to blue, they also exhibit rainbow colors. This optical effect is similar to labradorescence seen in labradorite where layers of

material within the stone create a grid that refracts and diffuses white light as it enters the stone into the spectral colors. This type of moonstone is more expensive depending on its transparency and rainbow colors with prices ranging from \$ 1,000 to \$ 1,500 per stone.

Sometimes moonstone can be found exhibiting chatoyancy (Cat's Eye Effect) that produces a thin whitish band that crosses over a well oriented stone (cut en cabochon) when it is tilted from side to side. Cat's eye moonstone is also widely imitated using glass and can be found in a variety of colors ranging from white, yellow, orange, blue,

green, or grey. Fibre optic cables have also been cut to produce chatoyant imitation gemstones.

While there are many stones that exhibit chatoyancy (rose quartz, tourmaline, and beryl to name a few), the most prized is chrysoberyl with its 'milk and honey' effect. This effect should not be confused with the optical effects seen in certain varieties of quartz such as Tiger's Eye, Bull's Eye (not to be confused with the unique interference colors seen in quartz under crossed polars) and Hawk's Eye. These effects are caused by oxidized decomposed crocidolite and hydrous iron oxide goethite (Tiger's Eye), goethite through heating (Bull's Eye) and partially silicified fibrous blue-grey crocidolite asbestos (Hawk's Eye). Unlike the band of light that floats across the surface of a well-cut cabochon, these penetrate the whole stone and appear as a 'wave' of light.

Belomorite is a non-transparent whitish or yellowish variety of plagioclase (peristerite) moonstone with a chemical composition of $(Na,Ca)(Si,Al)_4O_8$. It originates from the granitic pegmatites of Northern Karelia in the White Sea area of Russia. Like labradorite and adularia, it comes not only with a bluish sheen but also in multi-colors, and while it is not an approved mineral species

THE MOONSTONE

Break off the last piece
The saddest of planets
Give me a moonstone
Give me moonlight
Find me a moonstone
Talisman of my love
Underground behind the clouds
In the sky at any distance...

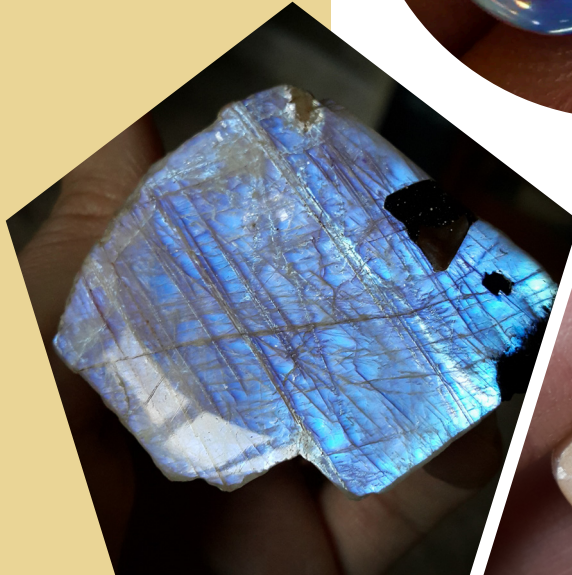
(Eduard Khil)



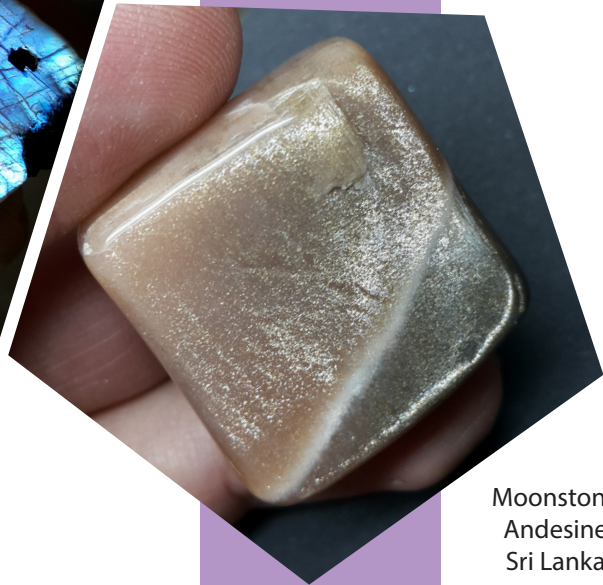
Adularia Moonstone



Adularia Rainbow Moonstone



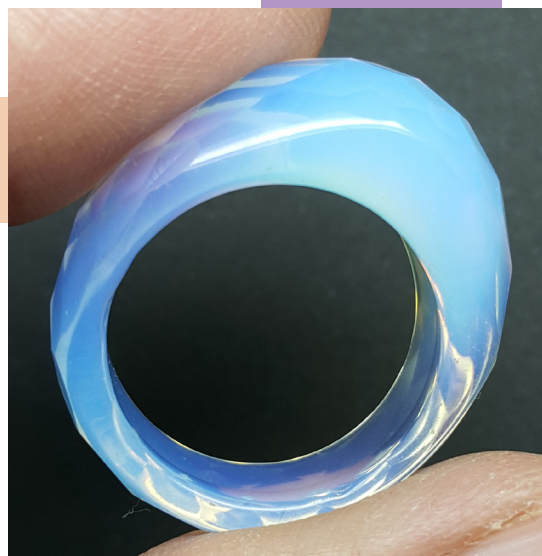
Belomorite Albite Moonstone
Russia



Moonstone
Andesine
Sri Lanka



Glass Cat's Eye Moonstone
Imitation



Glass Moonstone
Imitation

(Mindat.org), it in no way diminishes its beauty and uniqueness.

The trade name 'Moonstone' is also mistakenly used to describe a fibrous variety of gypsum called selenite ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) due to the peculiarity of its structure that consists of multiple parallel tubes, which give the stone its characteristic white sheen. To increase this optical effect, selenite is often cut into spheres. Usually it has white-colored body, but sometimes it can be light brown, which gives it a shiny, goldish appearance. Stones will generally cost between \$ 20 and \$ 50.

Opalite is a trade name for man-made opalescent glass that can imitate both opal and moonstone. Structurally it is different to moonstone but when it is placed against a dark background, it appears to have a bluish color, while against a light background, it appears milky white with an orange or pink glow. As with all glass imitations, identification is usually possible by the presence of gas bubbles.

MIRACLES CAN HAPPEN!

And now a small miracle! A pinch of hematite flakes will transform moonstone into a 'Sun' stone!

In Russia, in the Cherry Mountains, stones can be found that are a mixture of 'Moon' and 'Sun' stone! These stones exhibit three optical effects in one! A blue adularescence, a whitish schiller effect and also rainbow iridescence caused by light reflecting from the small hematite platelets scattered throughout the stone like confetti.

How is this possible?

In reality it is very easy! The secret is that moonstones (both *adularia* and *belomorite*), *labradorite* and sunstones (including Oregon sunstones, Australian lattice sunstones and andesine and oligoclase sunstones), are all members of one isomorphic series with orthoclase (K) – albite (Na) – anorthite (Ca) feldspats involved.

SUNSTONE

Prized by gemstone connoisseurs, sunstones from Oregon (USA) are sometimes referred to as 'red labradorite' due to its chemical similarity to labradorite and owes its 'sunny' brilliance to small copper flake-like inclusions. The presence of copper in these andesine

stones not only gives them an orange glow (schiller) but can also change the color from orange to green if it is oxidized. Like moonstones, chatoyancy can be found in sunstones but these are quite rare. Prices vary from \$ 400 to \$ 2,000 or more per stone.

Australian 'Lattice' sunstone (orthoclase group) is characterized by its elongated rainbow inclusions of hematite and black triangles of magnetite that form a unique pattern. Prices are similar to those for Oregon sunstones.

Sunstones from India and Tanzania often have smaller hematite inclusions that make them appear more orangery red.

Another effect that can be caused by the presence of copper is 'aventurescence'. One of the earliest examples of aventurescence can be found in aventurine glass, created accidentally by an Italian glass blower from Murano Island, in the early XVII century, when thin

flakes of copper were added to the glass. Aventurescence can also be found in natural gemstones and is defined as 'colourful reflections produced by small plate or leaf-like inclusions' such as hematite or goethite (aventurine feldspar), or fuchsite or hematite (aventurine quartz).

Due to the presence of elongated iridescent hematite inclusions, scapolite is often confused with sunstone however the former costs considerably less even though they are very hard to find. This is the power of nomenclature! In my opinion, if we can call stones that contain copper inclusions 'sunstones', why can we not also call stones that produce a similar effect with hematite by the same name such as 'Scapolite Sunstone'?



Selenite Gypsum Rough

STARGAZING

Staying with the theme of 'unearthly' gems, it seems fitting that both moonstones and sunstones can also exhibit asterism, a 'star' effect seen in stones that have been cut with a curved surface such as cabochons and spheres when illuminated with a strong intense light source from above.

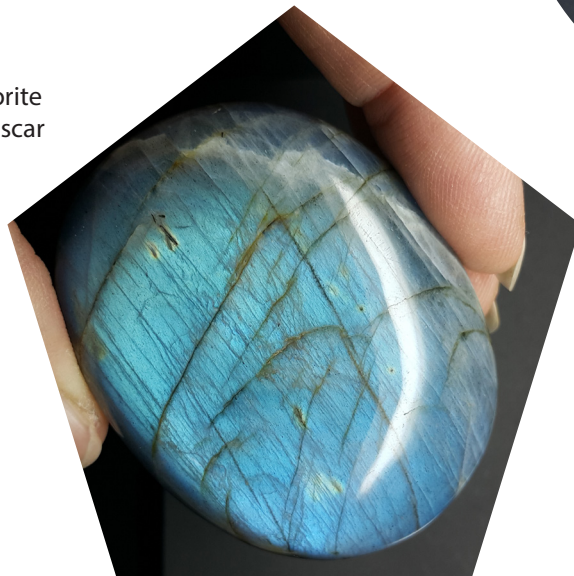
But how do these beautiful stars appear in the gemstones? It is caused by the presence of microscopic needle-like inclusions within the crystal structure of the mineral. These inclusions can be composed of various

minerals, such as rutile or hematite, and are oriented in specific directions within the crystal that were crystalized from the solid solutions in the crystal lattice voids.

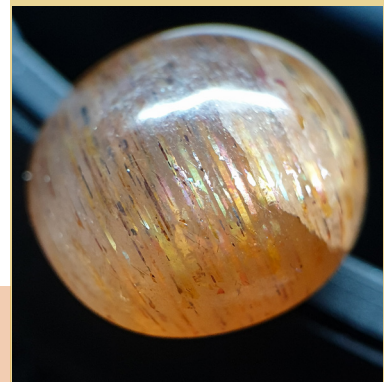
Most of you may be familiar with rubies and sapphires that display 6 or 12-rayed stars and can range in price from between \$ 6,500 (Blue Star Sapphire) and \$ 11,700 (Star Ruby) per carat for an extra fine quality stones weighing between 10 and 20 carats (GemGuide). Less familiar are black star sapphires that display golden



Labradorite (Spectrolite)
Madagascar



Labradorite
Madagascar



Scapolite
with Hematite



Oregon Sunstone



Star Black Diopside



Aventurine
Glass



Sunstone Oligoclase
India



Lattice Sunstone
Australia

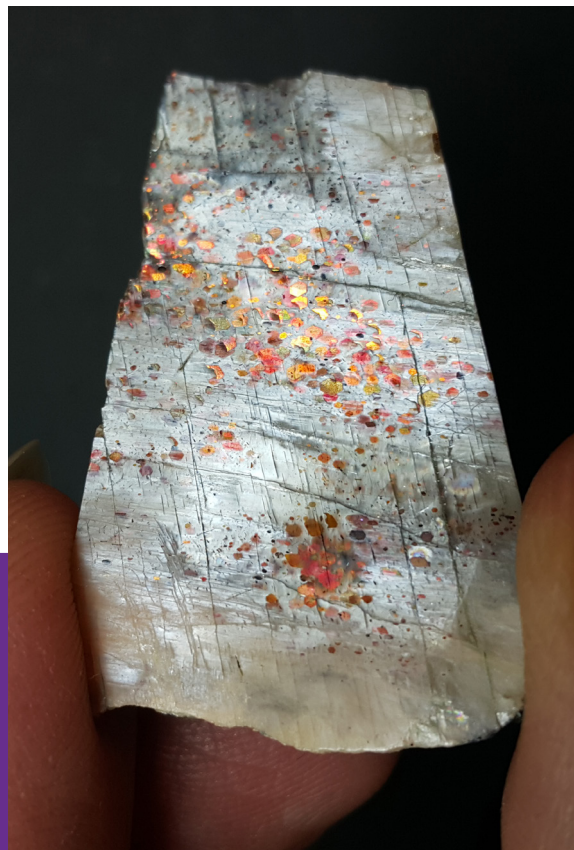
asterism and garnets and diopsides that display 4-rayed asterism. Other gemstones that can exhibit asterism include tourmaline, topaz, rose quartz, emerald, aquamarine, amazonite, spinel, bronzite, calcite, kyanite, apatite, kunzite, rhodochrosite, peridot, scheelite, garnet as well as 8-rayed zircons!

I hope I have managed to shed a ray of light on moonstones and sunstones, two gemstones that are related chemically but appear differently.

One mysterious moonstone offers so much diversity from adularescence, labradorescence, iridescence, chatoyancy and, even asterism! Next time you are looking for an eye-catching gemstone, look up to the sky or beyond!

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).



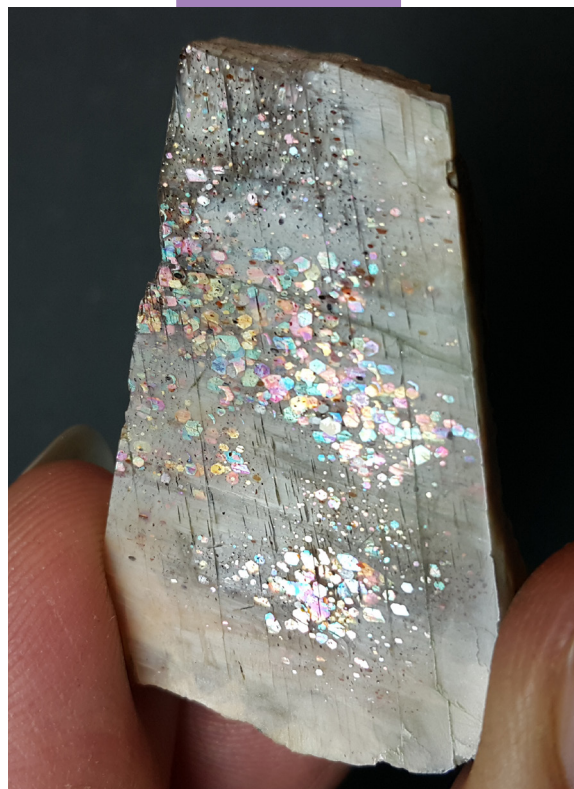
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Mixture of Sunstone and Moonstone
(Top & Bottom)

All images by Nina Zolotukhina except the
Rainbow Moonstone (courtesy of ETSY)

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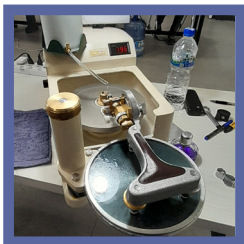
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LEARNING curve

Can you cut it?

We are all familiar with the phrase 'Walk a Mile in My Shoes'. This popular expression is believed to have originated from a poem by Mary T. Lathrap in 1895 although originally it was 'Walk a Mile in His Moccasins'.

Having been in the gem industry for forty-four (44) years, I have often wondered why I never experienced gem cutting first hand. Our courses go into great detail about gem cutting but until you actually sit down with a faceting machine in front of you and grind your first facets, you never really appreciate the skill that is required, the challenges you face and the need to 'think on your feet' in order to find the right results.

On June 11th, 2024, ten students (including Haimanot Sisay, our Project Africa Director of Operations and myself) sat down for the first time under the tutelage of two experienced European cutters to learn the art of precision gem cutting.

I have to admit that I was nervous. It is one thing to be an instructor, teaching a subject that you love but now I was a student, trying to learn a new skill and that I found quite daunting. To be honest, I am not good with my hands and that worried me. While both instructors emphasized that cutting gemstones is a not a race, the proof really is in the pudding and when your work is being compared to the work of nine other students who all came into the program at basically the same level, you do not want to fail.

I, like all the other students, was amazed that after a short theoretical presentation by Egor Gavrilenko, we were already dopping rough and cutting our first stones.

The first stone design was an octagon with 8-fold symmetry, 41 facets and 6 tiers using quartz rough that our instructors had specially prepared for the course.

Egor made the point, during his opening presentation, of differentiating between commercial and precision cutting, with the former requiring years of experience, while the latter required a few days to at least understand the basic principles and produce a finished stone.

Incredibly, by the beginning of Day 3, stones were already being finished and to everyone's amazement, the quality was of a very high standard.

It is hard to describe the feeling you get when you transform a non-descript piece of rough into a beautiful gemstone. The pride you feel is quite extraordinary and while I love gemmology, especially gem identification and the grading of gemstones, gem cutting gives you instant gratification. The fruits of your labour are right there in front of you. It may not be perfect but to be honest, the quality produced even after a few days far exceeds most of the gemstones I have viewed over the last four decades.



Befikadu showing off his first cut gemstone with Egor Gavrilenko

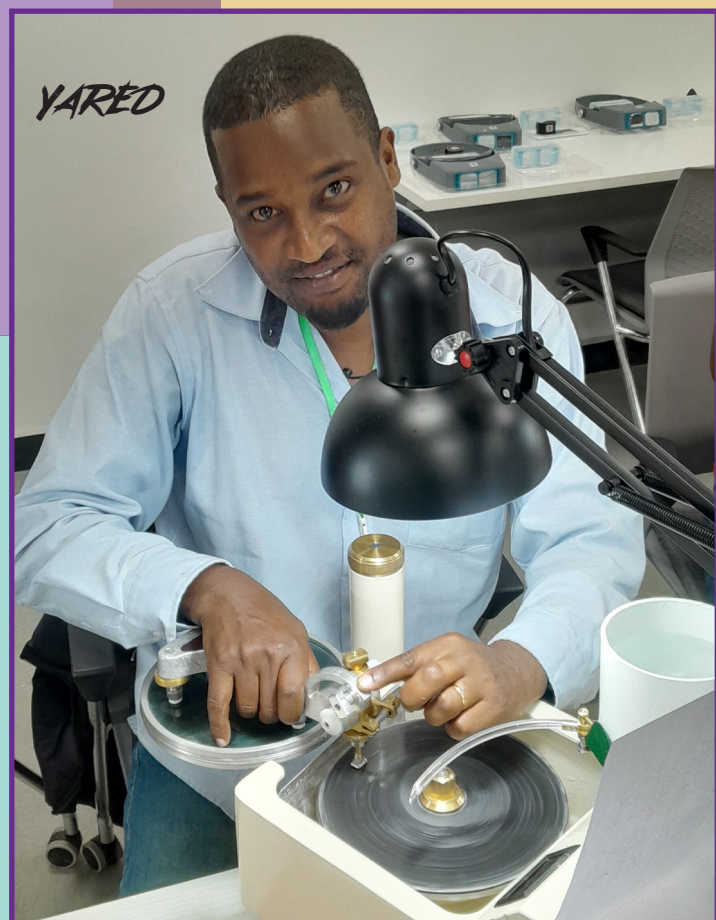
Will any of us become the next Victor Tuzlukov, probably not but who knows. The talent in the class is already evident.

The second stone design was a square-emerald with 4-fold symmetry, 37 facets and 10 tiers again using quartz rough. Students were given the option of cutting a square stone or adapting the shape to the more familiar rectangular outline.

1ST GEM FACETING PROGRAM IN ADDIS ABABA, ETHIOPIA



*NEW SKILLS
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While on the surface, an emerald cut might appear to be less complicated than other shapes, in reality, it is a challenging design because all the facets need to be parallel and the 'meet points' have to be very exact. For those who chose to cut a rectangular stone, achieving a high polish on a larger facet, especially the table, is not easy.

Finally, students cut two versions of a round brilliant, one with an unpolished girdle and one with a faceted girdle. I have never really appreciated the skill it takes to cut a truly exceptional round brilliant. I do now!

PROJECT AFRICA IN ACTION!



LEVEL ONE DESIGNS

101-octagon

June 2024

Facet Data

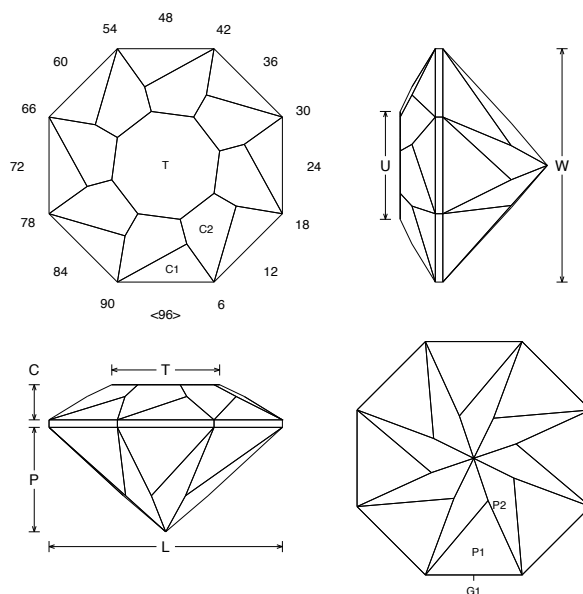
Pavilion facets	16	Pavilion tiers	2
Girdle facets	8	Girdle tiers	1
Crown facets	16+1	Crown tiers	2+1
Total facets	41	Total tiers	6

Size Data

L/W	1.000	P/W	0.448
T/W	0.462	C/W	0.150
U/W	0.462	H/W	0.630
V/W ³	0.223	P/C	2.975

Design Data

Angles for R.I.	1.54
Symmetry	8-fold, radial
Index gear	96



Pavilion

P1	42.60	96-12-24-36-48-60-72-84
G1	90.00	96-12-24-36-48-60-72-84
P2	41.13	11-23-35-47-59-71-83-95

Crown

C1	31.50	96-12-24-36-48-60-72-84
C2	26.50	10-22-34-46-58-70-82-94
T	0.00	Table

102-square-emerald

March 2023

Facet Data

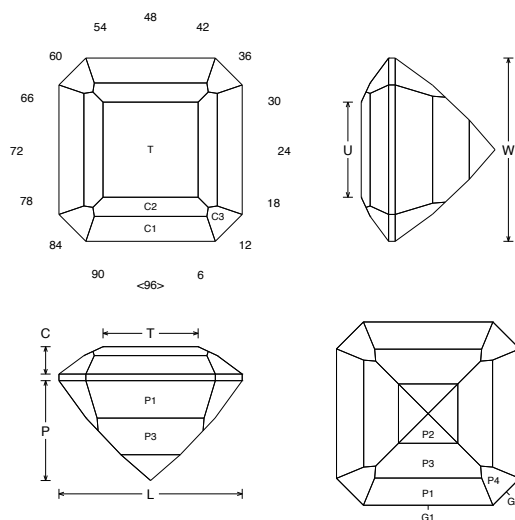
Pavilion facets	16	Pavilion tiers	4
Girdle facets	8	Girdle tiers	2
Crown facets	12+1	Crown tiers	3+1
Total facets	37	Total tiers	10

Size Data

L/W	1.000	P/W	0.545
T/W	0.519	C/W	0.149
U/W	0.519	H/W	0.730
V/W ³	0.332	P/C	3.648

Design Data

Angles for R.I.	1.54
Symmetry	4-fold, mirror
Index gear	96



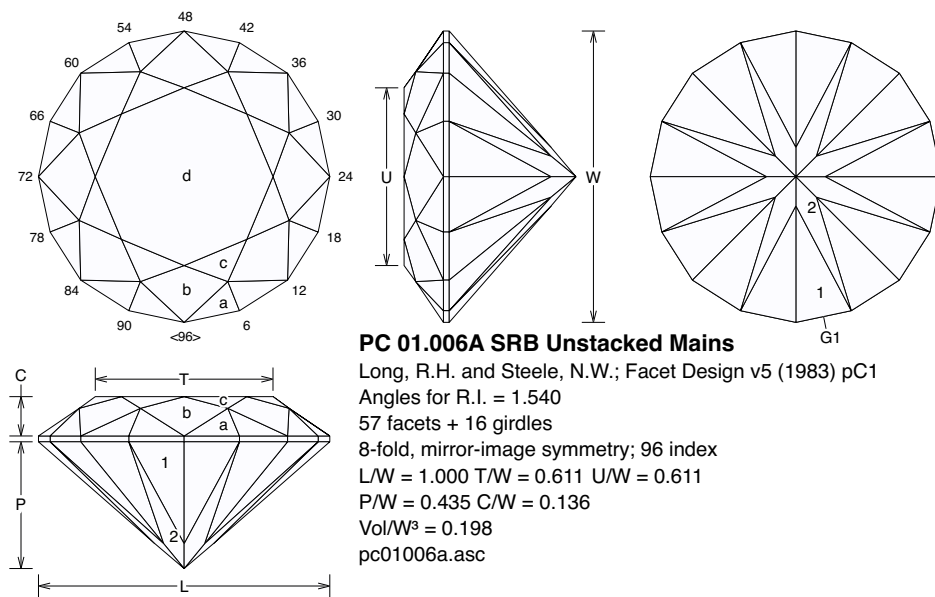
Pavilion

P1	54.00	96-24-48-72
P2	41.00	96-24-48-72
P3	46.50	96-24-48-72
G1	90.00	96-24-48-72
G2	90.00	12-36-60-84
P4	54.00	12-36-60-84

Crown

C1	36.50	96-24-48-72
C2	25.00	96-24-48-72
C3	38.00	12-36-60-84
T	0.00	Table

LEVEL ONE DESIGNS



Pavilion

G1	90.00°	03-09-15-21-27-33-39-45-51-57-63-69-75-81-87-93
1	42.10°	03-09-15-21-27-33-39-45-51-57-63-69-75-81-87-93
2	41.00°	06-18-30-42-54-66-78-90

Crown

a	42.30°	03-09-15-21-27-33-39-45-51-57-63-69-75-81-87-93
b	35.00°	96-12-24-36-48-60-72-84
c	19.80°	06-18-30-42-54-66-78-90
d	0.00°	Table



Egor and his students with the fruits of their endeavours!



PROJECT **africa**

Meet Egor Gavrilenko

Who is Egor Gavrilenko?

I was born in Saint Peterburg (Russia) and I have a PhD in Geology. Since 1998, I have lived in Madrid, Spain working for almost 30 years as a gemologist. For the last four years, I converted my gem-cutting hobby into my main activity.

During these years, I had the opportunity to work with gemstones from many different angles – field and scientific when I was studying the deposits of emeralds in the Urals for my PhD thesis and later as a teacher of gemology at the Spanish Gemological Institute (IGE), where I was Chief of Education from 2007 to 2015. From 2015-2020, I was the Director of the Gem Testing Laboratory at IGE, the main gem lab in Spain. During that time, I analyzed and certified thousands of gems every month. However, I always felt a passion for gem faceting, the magic transformation of an irregular stone into a beautiful gem, so I took a gem faceting course in 2007, started to cut my first gemstones, and finally in 2020 decided to make it my main job. And I still enjoy it very much every day!

Artist or Gem Cutter; Gemstone or Art?

Gem cutting can be a boring routine manufacturing process if you cut the same standard shapes using the same primitive techniques that have been used for centuries. This is the way massive gem production is done in traditional gem cutting centers. Usually they cut for weight, to retain as much carats as possible from the rough, no matter the symmetry and the brilliance of the gem.

However, it also can be a mixture of artistic creativity, design skills, R&D for appropriate technology, and improvisation during the cutting process – all this to create unique gems, true objects of art, to make

the stone as beautiful as it can be and even convey some ideas through the shape or facet pattern of the gemstone.

You decide where you want to be between these two extremes.

What is the most challenging gemstone you have ever cut?

Recently a friend asked me to create a gem with a faceting design based on the Penrose tiling principle. That was quite challenging - first to create the design with that complex pattern and then to cut a stone according to this design.

I used three different faceting design programs – Gem Cut Studio for general planning, then GemCad to adjust the facets better to the pattern, using fractional indexes, and finally the Edge Frosting tool to calculate the position for the edges between the facets, to highlight them on the finished gem.

Then it took two full days of faceting, adjusting the shape and size of the facets to make them all of a same size,

as the original pattern requires. To highlight the pattern, I made the edges between the polished facets matted, and between matted facets - polished. Matted edges are trendy and widely used nowadays, but I've never seen polished edges on other stones yet, kind of an innovation.

Matting and polishing the edges between facets requires the maximum concentration, if you make any mistake or overcut, you have to go several steps back and correct the entire pattern again. But the result was really worth it, it turned out to be a very nice and original gem!



What is the most enjoyable gemstone you have ever cut?

Many of them, it's difficult to choose one. The process of gem cutting is very enjoyable itself, kind of meditative process to bring order and beauty to a noble and valuable natural material.

And there is definitely one very enjoyable moment in gem cutting – it is when you finish the stone and unglue it from the dop and see it for the first time in its beauty! While you are cutting, the light is not reflected in the pavilion in the correct way, you can't see the brilliance and the color of the stone properly, and that's why the moment to release the finished stone for the first time is so exciting!

Art and economics don't always work hand in hand. There is often a fine line between the two. How do you approach it?

My economics comes from the art. I can't compete with massively produced low quality faceting done in Asia, where each stone can literally be cut in minutes and the main objective is to get as much yield as possible.

So, I create a totally different type of product – precision and fantasy cut one-of-a-kind gems. The difference for a customer is very clear, even without special education, just looking at the stones. I don't cut for weight, I cut for beauty. And the time spent with each gem is not minutes but hours or even days. Fortunately, there are more and more customers who prefer to pay a higher price and use these kinds of gems for their jewelry.

What was the defining moment when you decided to cut gemstones?

It is difficult to choose the exact moment. My love for gems has a long story. My first contact with lapidary arts dates from 1987, when I took my first courses of gemstone cutting and polishing at the Club of Young Geologists in Saint Petersburg, mostly for cabochons and carving of ornamental stones. Later, as a gemologist, I was always curious to learn more about faceting, so I tried it for the first time in the mid 1990s, using a very primitive faceting machine.

The real boost for my faceting activity was the course I took in 2007 at the Spanish Gemological Institute. After that I immediately bought my first serious faceting equipment and started to cut stones any free moment I could find.

Finally, I decided that gemstone faceting is the activity I like the most, and in March 2020 I started a new period in my life as a freelance gemologist and gemstone cutter.



Natural artistic ability or a learned skill?

You definitely need both parts. It is good if you have an artistic talent, so you'll be able to create new attractive cuts, but to make them in stone you need to be a handy person and practice a lot to get to the perfection.

What advice can you give to somebody who wants to start cutting gemstones? Where would they begin?

Try it, it's not that difficult! You can take some lessons in a lapidary club to understand this activity better, and then buy your first faceting machine and practice to improve. This

activity can be a great hobby and you will end up with many beautiful gems for your friends and family! The international faceting community is very collaborative, people will help you with any issues you can find. Also, for the beginners, there is a great book by Tom Herbst, 'Amateur Gemstone Faceting', it explains very well step-by-step how to start and improve in this activity.

There is another important thing if you decide to do it professionally. I would recommend everyone to study gemology, to the deepest level possible. Mechanical and optical properties of gems, imitations, synthetics, treatments, origins, quality grading, certification... We work with expensive materials and the lack of good gemological knowledge can be a great liability for your professional growth.

You recently visited Ethiopia as part of the World Gem Foundation's Project Africa Gem Faceting program. What can you tell us about your overall experience?

That was a wonderful experience! I must say it also was quite a challenge too, as we needed to prepare everything to set up a new lapidary workshop with ten faceting machines. A lot of preparation work, the stress to buy and import all the materials on time, to set it up and make it functional. That would not have been possible without the great job done by the local organizers – Geoff Dominy and Haimanot Sisay.

Fortunately, all went well, and we recently finished the first two-week course with ten students. Each of them were able to finish several faceted gems, with different shapes and precision faceting quality. This preparation can be sufficient to start cutting gems by their own and keep improving with practice.

All the students were very eager to study, they were happy to be at the beginning of the faceting industry in Ethiopia, a country with a great potential for colored gemstones production. For me personally it was a great opportunity to know this country and its wonderful people, and also to contribute to its development.

If we were sitting down one year from now, what would you say constituted a good year professionally for Egor Gavrilenko?

I don't have many ambitious goals; I feel like I'm on a right way and I enjoy the trip. I would like to cut many beautiful new gems, to keep innovating in the faceting techniques that I'm using, to promote my work even better, and to keep finding new friends in the industry and new customers from all over the world who appreciate my work.

This Summer I'm also planning to dedicate some time to teach faceting to my sons, they are 12 and 13 now and they already know how to make cabochons, let's see if they are ready for faceting too!



Egor Gavrilenko

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Specializing in precision and
fantasy cut one-of-a-kind gems

Find out more....





LIFE changing

Inaugural Project Africa Career Gemmologist Graduation



On June 27th, 2024, the Project Africa initiative graduated the first twelve Career Gemmologists here in Ethiopia.

The ceremony was held at the FDRE (Federal Democratic Republic of Ethiopia) Ministry of Mines and was attended by many dignitaries including H.E. Eng. Habtamu Tegegne, Minister for Ministry of Mines - Ethiopia who awarded the graduates their three diplomas (Career Gemmologist, Coloured Gemstone Professional and Diamond professional).

The following is the 'Keynote Speech' by Geoffrey Dominy, Founder & CEO of the World Gem Foundation and co-instructor of the recent Project Africa Career Gemmologist Diploma program here in Addis Abeba, Ethiopia.

Distinguished guests, friends and families and graduating students. Welcome.

I am often asked what is gemmology?

Gemmology is an earth science that deals with a select group of minerals and rocks that possess certain attributes, namely beauty, rarity, durability, tradition, demand, and portability.

The role of a gemmologist is to study their formation, extraction and processing, to use specialized equipment to collect valuable data that when analyzed will allow them to determine their identity, whether they are natural or man-made, treated or enhanced, and to grade them so that ultimately we can establish their value. In short, we follow gemstones from their birth to the end users.

On July 8th, 2023, fourteen people (twelve students and two instructors) embarked on a gemmological journey with the intended destination being the World Gem Foundation's Career Gemmologist designation.

Initially, the program started at AASTU (Addis Abeba Science and Technology University) but it quickly became apparent that this was not an ideal venue due to its location. We decided to move the classes to a shared workspace in Laphto Mall until we could find an ideal location. Fortune allowed us to cross paths with Birhanu Zergaw of Nuna Ethiopia. He immediately understood what we were trying to do and to this day remains one of our most ardent supporters. Without him, this program would have struggled.

Obstacles continued to present themselves but each and every time, we overcame them. Fortunately, at no time did Haimanot and I both feel like throwing in the towel. When I was down, she was up and when she felt discouraged, I was feeling optimistic.

The classroom at Nuna became not only a room of higher learning but also a very positive environment. Our students gave us strength. They realised the opportunity that was being offered to them and grasped it with both hands.

For eleven months we have worked together. We have watched them acquire new skills and gain confidence. Like a flower, they have blossomed before our eyes, and it makes me feel immensely proud of what they have achieved and what Haimanot and I have done.

I believe we will all be remembered for the things we do, not just the things we say we will do, and I know that our hard work, dedication, and immense sacrifices will not go unnoticed. We could have given up but quitting is not in our DNA. There is no gain without pain and while this has

at times been a painful journey, we are all here today to celebrate the final destination. The day we congratulate the first generation of Ethiopian Career Gemmologists, who will now transition from being our students to our fellow colleagues.

You are all to be congratulated for finishing this program. It is the most expansive gemmological program in the world, and you have passed with flying colours.

I am proud of you. You deserve today for your dedication and hard work.

June 27th, 2024



H.E. Eng. Habtamu Tegegne, Minister of Mines - Ethiopia



An amazing diamond motif Kaba presented by our students



Haimanot Sisay
Project Africa
Director of Operations



Lemma



Dawit



Peniel



Abel



Henock



Dawit, Nigist & Befikadu



Graduates & VIP's

Project Africa's Class of 2024

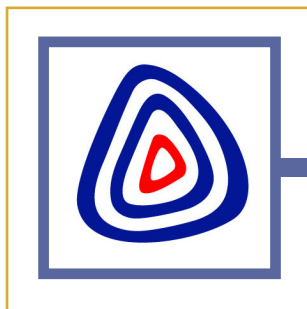


Kumlachew



H.E. Eng. Habtamu Tegegne
& Deputy Minister Million





CHOPPING block

Anglo American & De Beers

Dutch gemmologist Leone Langeslag looks at the decision by Anglo American to sell De Beers and divest itself of the diamond sector. How times change!

As part of their corporate overhaul, Anglo plans to sell De Beers, and their South African platinum and steel-making coal businesses.

As reported by Rapaport, Anglo American is prioritizing copper over diamonds and this of course now raises questions regarding the future of De Beers, a company linked to Anglo-American for nearly 100 years.

Anglo American (further called AA) is a mining company with its headquarters in London, United Kingdom. The company AA was founded in 1917 in Johannesburg, South Africa and is one of the largest mining companies with a portfolio that includes copper, iron ore, manganese, platinum, and diamonds with iron ore and copper generating the most revenue in 2023.

In the middle of May this year the company announced and presented a bold plan to increase shareholder value and deliver stronger returns. Following a 2023 asset review of De Beers, they plan to implement major structural changes, by simplifying their portfolio so they can focus on operational excellence, and future growth.

CEO, Duncan Wanblad, announced these significant changes to streamline the company, focusing on its top assets in copper, iron ore, and fertilizers. This move aims to fend off unwanted bids from BHP (Broken Hill Proprietary Company Limited), which tried to force Anglo to sell its platinum and iron ore subsidiaries in Johannesburg before making a deal.



WHO ARE DE BEERS?

De Beers was founded in South Africa in 1888 by Cecil Rhodes. Initially the company rented water pumps to miners during the 'diamond rush' after 'The Star of South Africa' was found at Hopetown. Also known as the Dudley Diamond, the 47.69 carat white diamond was found by a Griqua shepherd in 1869 on the banks of the Orange River.

To ensure market dominance, De Beers formed a 'diamond cartel' that controlled at one time 90% of the world's production. By controlling supply and influencing demand through strategic advertising, De Beers was able to use their considerable power to ensure that any 'rebel' producers were quickly brought back into the

cartel. Their overall marketing strategy was to convince consumers that diamonds were rare, and it worked. However, by the end of the 1990's, De Beers' iron grip on the diamond sector had started to weaken with market share dropping to less than 60%. In 2000, De Beers announced a shift in strategic initiative focused on independent marketing of the De Beers brand, a general admission that they no longer had control of the market.

The furore caused by 'Blood Diamonds' being used to finance wars and human right abuses in Africa, had a negative impact on De Beers and the diamond industry in general and led to the creation of the Kimberly Process. Whether the significant role De Beers played in the development and implementation of the Kimberly

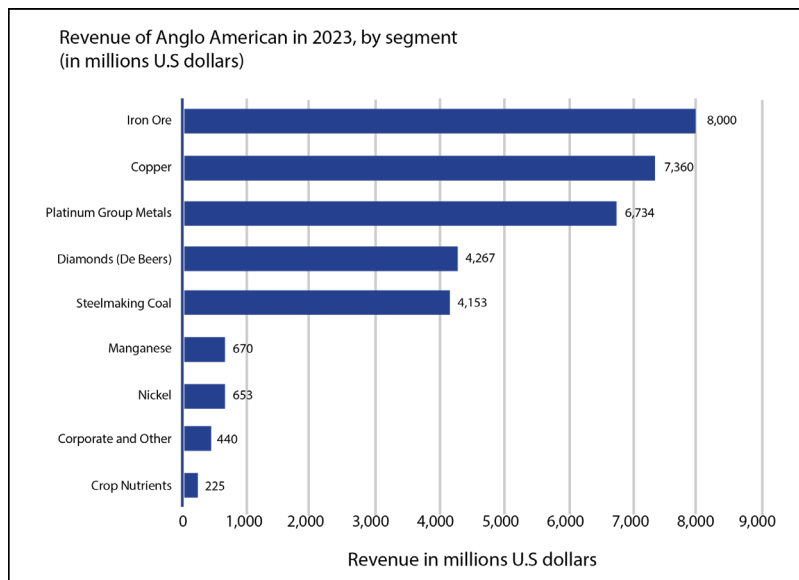
Process Certification Scheme (2003) was simply to protect their business interests or was a genuine attempt to prevent conflict diamonds entering the mainstream market is open to debate.

By 2011, Anglo American had acquired the shares owned by the Oppenheimer family, thereby increasing their share to 85% with the remaining 15% being owned by the Government of the Republic of Botswana. In addition to Botswana, the De Beers portfolio included mining interests in Namibia, South Africa, and Canada.

The De Beers Group of Companies is involved in many parts of the diamond value chain, from mining to sales, and is made up of a series of joint ventures and wholly owned operations.

The joint ventures are:

- Debswana
- DTCB
- Namdeb
- NDTC
- Debmarmine Namibia
- De Beers Diamond Jewellers



The wholly owned operations are in southern Africa and Canada and include:

De Beers Jewellers

A luxury retail arm of the group that sells high-end jewellery through worldwide boutique stores.

De Beers Forevermark

A high-end brand of De Beers that

offers a unique inscription on their diamonds to ensure that they are natural and hand-selected, with a promise that they are beautiful, rare, and responsibly sourced.

Global Sight holder Sales

Approximately 90% of the De Beers Group's rough diamonds, by value, are sold via term contracts to customers known as 'Sight holders', at events called Sights. These sight holders are among the world's leading diamantaires and are active in all the major diamond centres.

De Beers Global Auctions

Roughly 10 % of the De Beers Group rough diamond production by value are sold through auctions to 950 'Registered' buyers.



Element Six

A global leader in the design, development and production of synthetic diamond and tungsten carbide super materials. Currently it employs over 1,900 people with primary manufacturing sites located in the UK, Ireland, Germany, South Africa, and the US.

De Beers Institute of Diamonds

Responsible for the grading of diamonds, origin testing, and education.

De Beers Group Ignite

Involved in the development of testing equipment for research to increase consumer confidence.

Tracr

Providing tamper-proof source assurance that enables 'Sightholder' rough diamond customers to provide an immutable record of a diamond's provenance.

GemFair

A company where artisanal miners can become part of a special programme to support them with legal requirements, technical solutions, and training to improve mining and business standards.

The De Beers Institute of Diamonds

Providing educational opportunities to students, including those with special learning requirements.

Lighbox Jewelry

Launched in 2018, Lightbox is involved in the selling of synthetic diamond fashion jewellery.

Overall, worldwide, De Beers employs approximately 20,000 employees with more than 17,000 in Africa, 1,260 in Canada and around 320 in Group Exploration.

BUT WHAT LIES IN THE FUTURE FOR DE BEERS?

According to National Jeweller, De Beers' CEO, Al Cook, has expressed confidence in the company's future, stating it will continue to lead the diamond industry for the next century. He highlighted that Anglo American's announcement opens up new opportunities under different ownership but assured that De Beers will still deliver value to all its stakeholders, including partners in Botswana, South Africa, Namibia, Canada, and Angola.

Over the past 15 years, De Beers has focused on sustainability and set Environmental Social and Governance (ESG) goals, including certifying diamonds with QR codes for tracing their history. These goals are designed to ensure that its business practices contribute positively to society and the environment while maintaining strong governance standards.

Project Carbon Vault

De Beers aims to become carbon neutral, ideally carbon negative, by leveraging the kimberlite rock that encases

diamonds. This unassuming rock has the ability to trap and store carbon emissions for millions of years, far longer than trees.

Collaborating with three Canadian universities, De Beers discovered kimberlite's carbon-capturing abilities around five years ago and has been testing it at mines in Canada and South Africa for the past two years. The company has invested millions to enhance and scale this process, calling the initiative Project Carbon Vault.

Stephen Lussier, executive vice-president at De Beers, explained that kimberlite, a type of ultramafic rock, can absorb high concentrations of CO₂ naturally. Unlike plants, kimberlite doesn't need planting and doesn't die, remaining in place, long after the extraction of the diamonds.

To increase CO₂ absorption, De Beers is experimenting with crushing and spreading kimberlite to expose more surface area to CO₂. They are also testing treatments with chemicals or natural materials like algae to speed up the absorption process.

With Project Carbon Vault, De Beers is showing how traditional industries can innovate to address environmental challenges and transition toward more sustainable practices.

CHANGES TO LIGHTBOX

At the recent Las Vegas show in June 2024, De Beers announced that it will suspend production of

their lab-grown diamond jewellery and that it will hand over Lightbox to Element Six with the goal of becoming a 'world-class (industrial) CVD production hub'.

Cook also announced that the company will now only manufacture lab-grown diamonds (LGDs) for industrial uses while focusing on natural diamonds in its jewellery line.

Most probably, the recent developments in the lab-grown diamond sector, has forced De Beers to change their strategy and embrace new opportunities for LGDs in advanced technology and industrial applications.

Interestingly, according to Cook, while the future for natural diamonds looks promising, the decrease in the global supply (no new mines have been found in the past decade) and strong consumer demand for lab-grown diamonds, makes one wonder if these 'bold' assertions are merely designed to convince would-be suitors that De Beers is still a viable entity.



CEO
Al Cook

Clearly De Beers is feeling the heat and as they move away from lab-grown diamonds, they will need to boost their marketing efforts for natural diamond jewellery and expand their retail presence. If media reports are true, De Beers may also explore polishing its own diamonds, a sector traditionally handled by family-owned businesses in India and Belgium.

CONCLUSION

While in recent years, De Beers has faced significant criticism and controversy, the De Beers brand still has a significant value. However, while it may be true that diamonds are forever, will the same be true of the company that coined that iconic slogan? Only time will tell. These are interesting times indeed!

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Oscar-winner Lupita Nyong'o stars in the new De Beers 'Where It Begins' campaign.



MORE or less

Objective Diamond Clarity Grading

Based on
GemGuide

Clarity	% of Value D Colour	% of Value H Colour	Clarity	% of Value D Colour	% of Value H Colour
IF	100%	100%	SI-1	39.55%	63.21%
VVS-1	77.73%	95.28%	SI-2	32.73%	52.83%
VVS-2	64.54%	89.62%	SI-3	27.27%	45.28%
VS-1	56.82%	83.96%	I-1	23.18%	37.74%
VS-2	50.00%	79.24%	I-2	11.82%	20.75%

In terms of value, a one-carat, round brilliant cut diamond with a D colour moving from Internally Flawless to VVS-1 will experience a loss in value of \$ 4,200 USD (wholesale based on GemGuide).

What does this mean in real terms?

According to GIA, an 'Internally Flawless' diamond will show no inclusions and only insignificant blemishes under 10X, while a VVS-1 diamond will contain minute inclusions that are extremely difficult even for a skilled grader to locate under 10X.

As an instructor, I find clarity grading the most challenging to teach because of the subjectivity. The fact that clarity has such an impact on the overall price makes it even more challenging. If you are too critical, you will undervalue the diamond. If you are too liberal, you will add too much value.

The GIA Clarity Grading system has become the model for laboratories throughout the world. It is based on eleven clarity grades (FL, IF, VVS-1, VVS-2, VS-1, VS-2, SI-1, SI-2, I-1, I-2, I-3). It does not include the often-controversial SI-3 clarity grade, described as 'diamonds that contain inclusions, which are visible to the naked eye, similar to I-1 graded diamonds, but are, in the opinion of the grader, less noticeable'.

An issue with this clarity system is its subjective nature. It is subjective in that the clarity grades are defined in

terms that are subject to varying human interpretation. This is opposed to objective where definitions are in terms not subject to interpretation. An objective aspect of clarity is a measure in millimeters of the size of inclusions.

When Michael Cowing first approached me with his Objective Diamond Clarity Grading concept, I was intrigued. I am a huge supporter of removing subjectivity. It creates unnecessary 'grey' areas that are often exploited.

Michael's system is a form of Artificial Intelligence, (AI is the capability of computer algorithms to imitate intelligent human behavior. Merriam-Webster's Dictionary)

This AI System is comprised of largely objective metrics that imitate the techniques of expert graders, whose proficiency was obtained from extensive experience and practice. To arrive at a clarity grade, the ODCG System evaluates the combined clarity factors in the way that GIA's experienced graders do. The many GIA graded diamond examples throughout the book demonstrate the accuracy and consistency of this system in emulating GIA's expert graders.

Within a few hours, using ODCG a novice clarity grader can achieve consistent results that are comparable to those of a professional clarity grader with years of experience.



Figure 1: One carat diamond whose clarity is a challenging 'call' due to several reflections of a single dark crystal. What do you think? Contact Michael to learn the GIA's call, which ODCG AI gets right.

WELCOME TO ODCG

Learn to clarity grade, emulating the results obtained by lab graders with years of experience, even with tough calls like the diamond in Figure 1, with its several reflections of the single dark crystal located at 10 o'clock deep in the 'heart of the diamond'.

GRADE-MAKERS

Using Michael's AI system, the clarity grade of most diamonds can correctly be found by judging the single largest inclusion or a small number of similar major inclusions. Such predominant features are referred to as the 'grade-makers'. This is because additional smaller inclusions usually do not materially affect the grade. The four main clarity factors (size, number, contrast, and position), evaluated together for the grade-maker inclusion(s), most often determine a diamond's clarity grade.

Size is the main feature among the four clarity factors. Size determines the visibility of a given inclusion, along with the degree of contrast (relief) between the inclusion and the surrounding diamond. The larger the inclusion and the greater its contrast, the more it stands out and the lower the grade.

Number comes into consideration when the largest 'grade-maker' inclusions are more numerous than one. Three or four similar grade-maker inclusions are likely to lower the clarity one grade more than would a single similar feature. Instances with a number of similar 'grade-maker' size inclusions can most often be accurately treated as an equivalent single inclusion having the same total area.

Lastly, consideration is given to the position of the grade-maker inclusions within the diamond. Viewed face-up, inclusions under or just outside the table in what is called the 'heart of the diamond', are most noticeable and are graded most severely. Inclusions touching or near the girdle are least noticeable and are often graded higher than if inside the table.

In very small diamonds where the inclusion size is a significant percentage of the diamond's dimensions a particular size inclusion may be graded more severely. In large diamonds, eye visible inclusions that would be graded I-2 in a one-carat diamond may receive an I-1 grade. This is because the inclusions occupy and interfere with brilliance over a smaller percentage of the large diamond's crown.

In general, the system is found to make the correct grading call independent of diamond size over roughly the range of round diamond diameters from a third of a carat (4.5mm) to a six-carat (11.8mm) stone. Grading calls for inclusions from VVS-1 to VS-2, which are typically less than a fifth of a mm, are most often made independent of diamond size down to a quarter carat, 4mm round, and often smaller.

CONVERSION OF INCLUSION SIZE/AREA TO A LINEAR PERCEPTUAL SCALE CONTRAST

The key to the ODCG system is the conversion to a linear perceptual scale of the measurements (length and width) of the 'grade-maker' inclusions into a numerical score of the grade and perceptual position within the grade.

To simplify the process, Michael also produced charts at the back of his book that allow the user to quickly assign the clarity grades. After finding the starting clarity grade from the inclusion area score, consideration is given to adjustments to this initial 'call' due to the other factors of contrast (relief), and position.

Of all clarity factors, inclusion size/area is most important. Inclusion size is measured as the sum total area of the grade-makers. The initial clarity grade from inclusion size is adjusted for contrast and position to complete the grade determination.



Figure 2: This 1.11 ct diamond (6.66–6.63 x 4.11 mm) contains four SI-1 size inclusions that have different dimensions, but the same area and contrast, and thus, similar visibility. Each has an area determined to be approximately .035mm²

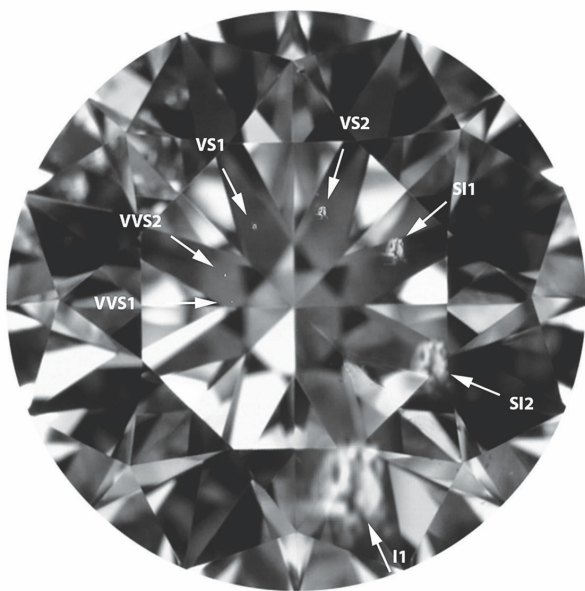


Figure 3: Illustrating the relative increase in inclusion size, doubling from grade to grade, is this spiral of seven inclusions that have been digitally inserted in a 1.11 ct diamond (6.66 x 6.63 x 4.11 mm) shown at 13.3X. The inserted inclusions are sized to clarity grades that range from VVS-1 to I-1.

At the heart of this system is the fundamental discovery of two key aspects of the way professionals perceive and grade inclusion size/visibility.

First, the property of inclusion size/visibility is directly related to inclusion area. If inclusion grade-makers have the same total area, and only differ in their length and width, they have similar visibility, and most often receive the same grade. In Figure 2, there are four SI-1 size inclusions in a 1.11 carat diamond. They have different dimensions but nearly identical area and contrast, and therefore similar visibility. Individually, each inclusion would be graded identically as SI-1, because each has the same area (roughly .035mm²) and the same contrast (relief).

Second, the increase in inclusion size from one grade to the next is not constant, but essentially follows a doubling of the inclusion's dimensions. That rough dimension doubling, which is a quadrupling in area, is remarkably consistent from grade to grade across the clarity scale. (Perceptual adjustment in grades SI-2 and below for large stones and small melee completes this consistency from VVS-1 all the way to I-3.) Figure 3 provides an example illustrating this doubling of inclusion size with a spiral of clarities from VVS-1 to I-1.

This ratio of 2:1 in inclusion size between grades came about, not by design, but by a natural evolution and later expansion by GIA of the clarity grading terms and their definitions used in the diamond trade beginning before GIA's founding. This proportional relationship between grades was named the Clarity 'Golden Ratio' by Gary Roskin, author of 'Photo Masters for Diamond Grading', because of its resemblance to the Golden Ratio in art, nature, and mathematics.

Based upon these two discoveries, the ODCG AI system transforms inclusion size, which is exponentially increasing by 4 times in area per grade, to a linear perceptual scale, where each increase in grade size is plus one throughout the scale. This logarithmic transformation is graphed in Figure 4.

The two perceptually linear graphs serve to convert the grade-maker inclusion's length and width, to the area score and initial clarity grade.

1. Using the blue graph, look up the mm inclusion length and then width measurements to find their corresponding scores.
2. Add those two scores to obtain the total area score.
3. Look up that score using the red graph to find the corresponding clarity grade, and where perceptually within that grade the grade-maker inclusion falls.

Knowing where the inclusion falls perceptually is especially important in the lower grades. The large

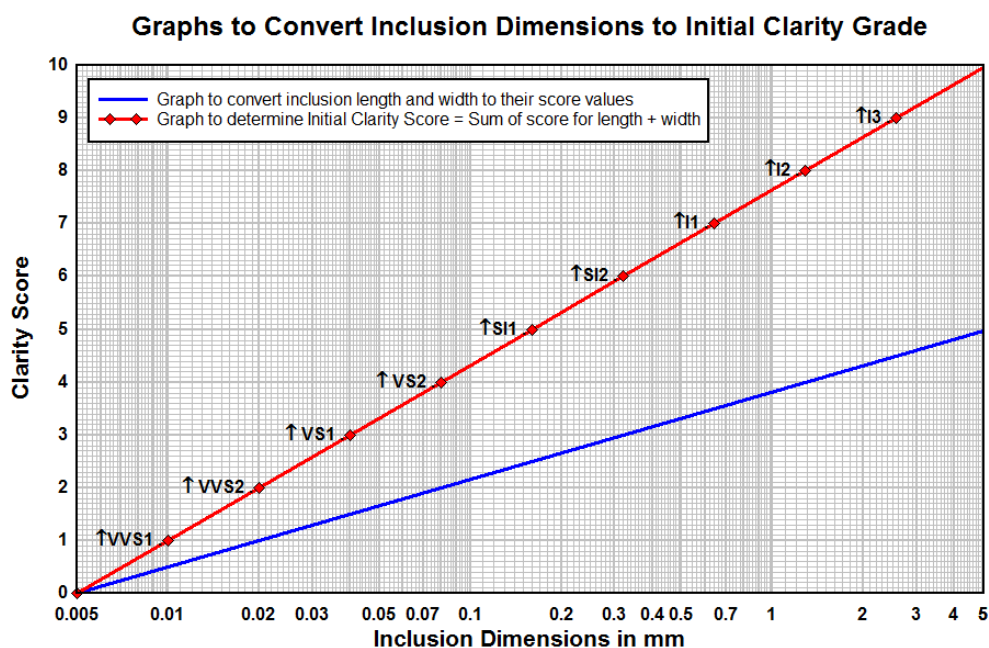


Figure 4: The two graphs serve to convert the grade-maker inclusion's length and width, to the area score and initial clarity grade.

range of inclusion size/area within each grade is 4 times in area from the upper to the lower boundaries. Adjustments to this initial clarity grade for contrast and position will more likely change the grade of inclusions near either the upper or lower boundary.

A unique advantage of this perceptual scale is there is no need for creating a grade like SI-3. SI-3 is perceptually between middle SI-2 which is 6.5 (SI-2 border at 6 plus a half grade), and mid I-1 (7.5), which is 7. Like the intent of an SI-3 grade, seven is perceptually in the middle between SI-2 and I-1.

CONTRAST

As taught by GIA, inclusion contrast, which is referred to as 'color and relief', can affect inclusion visibility as much as size. ... Relief is the contrast between the inclusion and the surrounding field of the stone; the greater the relief, the more it will affect the clarity grade.' (GIA, 1994)

To adjust the score for variations in contrast or relief, the system uses a 1 to 5 scale designation of contrast along with corresponding adjustments to the clarity grade.

The adjustment amount (positive or negative) is added to the area score. A one grade lower adjustment is an addition of +1, while a two-grade score improvement is -2.

Five levels of contrast have proven adequate for a large majority of inclusion types and grading circumstances with very low contrast inclusions lowering/improving

the initial score by 1 or 2 grades, while very high contrast inclusions can lower the score as much as 1 grade. No adjustment is needed for the most common inclusions that are of 'medium contrast' such as a crystal or white feather.

Adjustments for inclusions near the middle of a grade may not change the initial grade up or down. However, the score of inclusion sizes nearer the borders may cross a boundary, changing the initial grade.

Instances with a number of similar 'grade-maker' size inclusions are found to be accurately treated as an equivalent single inclusion having the same total area. This results in a one grade lower adjustment (+1) when there are about four similar grade-maker size inclusions (four times the area of one of them.) However, lower, closer-to-borderline inclusion sizes are likely to cross into the next lower grade with as little as two grade-maker size inclusions, since two of them increase the score by about a half grade (.5). This underscores the importance of knowing where, within a grade, on this perceptual scale an inclusion falls.

REFLECTORS

Features deep enough in the heart of the diamond often reflect in multiple positions. See example in Figure 1. Such inclusions are called reflectors. GIA instructs that 'reflectors lower the clarity grade more than similar, non-reflecting inclusions.' Where there are many reflections 'the effect on the grade is considerable.' Early GIA

instruction was to lower an inclusion that had a lot of reflections by one, but no more than one grade. Despite their sometimes-obvious appearance, GIA grading practice treats reflections less severely than would be the case if they were actual inclusions. Reflections are often transitory in nature appearing and disappearing as the diamond is slightly tilted in face-up viewing. When focusing on an inclusion, reflections in the same plane of focus are more noticeable than those out of focus, and thus less noticeable. Consequently the 'in focus' reflections have the greatest effect on the call. Reflections that come into focus below and outside the diamond have no impact on the grading.

POSITION

Adjustments for position are made to the area score that mirror the practice of GIA expert graders. No adjustment is needed for the easiest to locate inclusions within the table or just outside it. Inclusions located just inside or below the girdle will result in a lower/better score, and in some cases, a higher clarity grade. Large inclusions SI-2 and greater are unlikely to be adjusted for position because of their obvious nature anywhere in the diamond from girdle to table.

FINAL GRADING CALL MADE FACE-UP IN OVER-HEAD LIGHTING

It is important to note that just as in GIA grading, the final call is made by observation of the overall inclusion visibility in the face-up position under overhead (not dark-field) illumination.

CLARITY ADJUSTMENT FOR VIEW FROM SIDE OR PAVILION DIRECTION

It is also important to point out that these inclusion measurements and judgments are made from the face up two-dimensional perspective. If a grade-maker inclusion extends more deeply than its face up measurement, such that measuring it from the side or pavilion direction is more than a grade worse, consideration must be given to lowering the face-up grade. In most instances that adjustment is in between the two grade measurements and not more than a grade lower than the face-up call.

EXAMPLE APPLICATION OF OBJECTIVE CLARITY GRADING

In many cases the initial score and grade, based upon inclusion area, becomes the final call. This is the case with typical white crystal or feather inclusions inside or near the table, which require no score adjustment. An example of this case is the single grade-maker crystal in the 1.20ct round brilliant, Figure 5. The inclusion is of medium contrast located under the table at 9 o'clock.

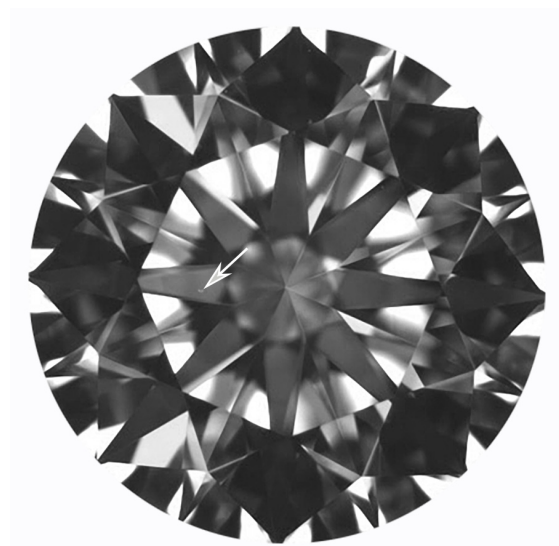


Figure 5: 1.20ct H colour, VS-1 (6.83mm x 6.85mm x 4.17mm) with a .09mm x .042mm crystal inclusion in the table at 9 o'clock

The grading steps are:

1. Obtain inclusion length and width in mm = .09mm x .042mm.
2. Convert length and width from mm to the corresponding score using the blue curve on the graph or the conversion chart = 2.1 + 1.55.
3. Sum the length and width scores to obtain the initial grade score = 3.65.
4. Add adjustments for contrast and position, which in this case are 0, since the inclusion has medium contrast, and its position is in the table.
5. This leaves the total adjusted grade = 3.65, which, from the red curve on the graph, gives the diamond a 'solid', middle VS-1.

FROM THE EDITOR

During our recent diamond grading classes in Addis Abeba, Ethiopia, we were amazed at how accurate our students were using Objective Diamond Clarity Grading. Within an hour, the students were confidently assigning clarity grades that matched the GIA grading reports on our diamond study stones. Admittedly, some clarity 'calls' are obvious and do not require using ODCG AI, but there are always problematic diamonds that leave even the most experienced diamond graders scratching their heads. I am firmly convinced that Objective Diamond Clarity Grading will become one of the most significant advances in diamond grading since Richard T. Liddicoat Jr's contributions. Explore ODCG in Michael's book. It will be the best \$ 20 USD investment you have ever made. Trust me, it works.

With over 250 images, **Objective Diamond Clarity Grading**
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Michael D. Cowing

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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.

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 gemmological 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.

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.

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.

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.

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.

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).

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 diamonds, working as a gemmologist and teaching gemmology at the DGemG, this led 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*.

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.

Wilma van der Giessen (Belgium) received her first diamond education from Mr. S. Asscher in 1980 and in 1983 graduated at the German DGemG 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.

WGF FACT FILE

Date Founded: 2015
 Country of Incorporation: Canada
 Corporate Structure: Not-for-Profit
 Board of Directors: Yes
 Executive Council: Yes (5 Members)
 Registered Head Office: Vancouver, Canada
 Number of countries where our students live: 85
 FB Followers: 17,702
 Instagram Followers: 1,409
 LinkedIn Followers: 1,905
 Scholarships Awarded to date: \$ 359,000 USD

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World Gem Foundation
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Gem Academy of Belgium

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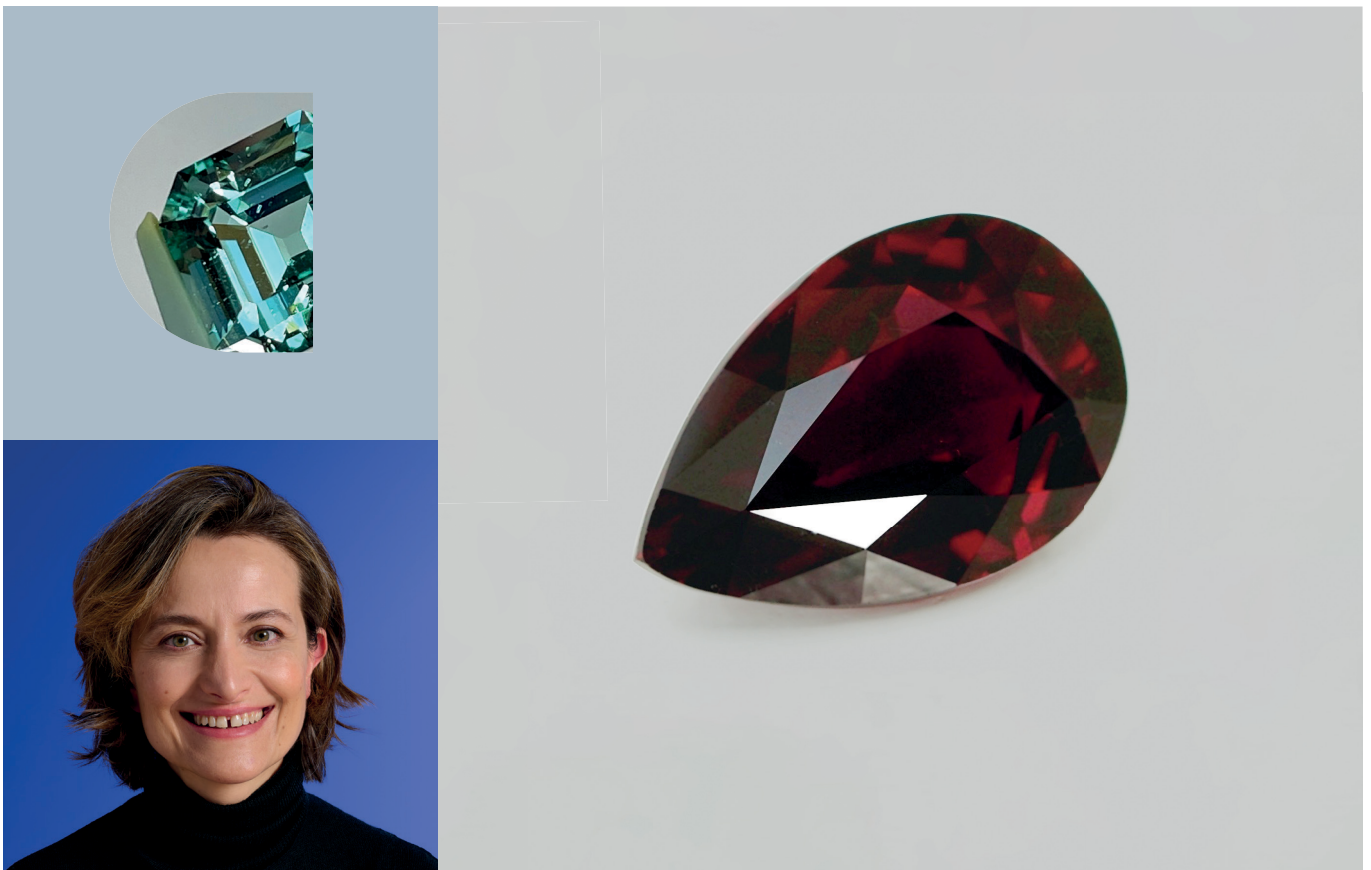
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