

Gemmology Today

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Quarterly Publication

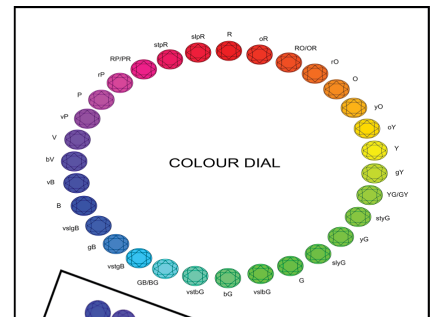
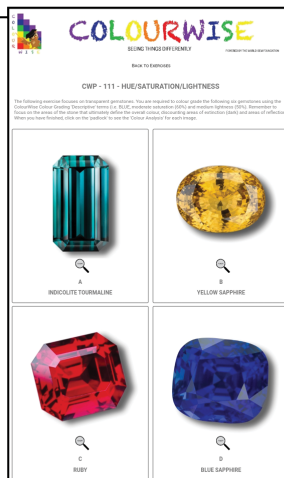


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FEATURE INTERVIEW – MEET GEOFF DOMINY 8
– author of the Handbook of Gemmology, creator of ColourWise, Founder & CEO of the World Gem Foundation and the chief architect of Project Africa.

FEI CUI – ROCK OF AGES – Revered in Chinese culture, new research now reveals that like Lapis Lazuli, Fei Cui is a rock, composed of jadeite, omphacite and kosmochlor. Rock of Ages looks at the complex world of Fei Cui. 16

WORLD GEM FOUNDATION DIPLOMA PROGRAMS, COURSES AND PRACTICAL WORKSHOPS 28

OPAL CHALLENGE – GRADING THE UNGRADABLE – For a gemstone so loved and known, we still do not have a recognized system for grading opal. Why not? 42

FATAL FLAWS – CLARITY GRADING COLOURED GEMSTONES – Different systems, different approaches and different results. 50

EL FUEGO - THE BEST CASSITERITE DIAMONDS ARE IN BOLIVIA – Bolivian gemmologist Ggo. Vladimir Gery Alanes Garcia explores cassiterite in this dual language article. A rare treat for our Spanish readers! 56

FOCUS ON LASZLO KUPI – We are delighted to feature the photographic delights of Laszlo Kupa, a Hungarian geologist and photographer. 62

MEET THE WGF TEAM – a group of professional, dedicated, and passionate educators. 76

WORLD GEM FOUNDATION ACADEMY LISTING – how to reach us. 79

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Geoff Dominy - Founder / Editor

Whenever I sit down and do my editorial, I not only look back on what has transpired over the last three months but also wonder what the next three months will bring.

I have to be honest that when I wrote my last editorial, I would never have imagined what was about to happen.

Sadly in Africa, history keeps repeating itself and while I was naive enough to think I could make a difference, in the end, I fell victim just like all the other foreigners who have had assets, land and companies unlawfully seized by regimes or individuals who simply could not see the bigger picture. Admittedly many go to exploit the wealth of Africa. Since 1888 and the formation of De Beers, there is no question that there has been a systematic exploitation of Africa's mineral resources but not everyone goes there with bad intentions. I went to Ethiopia to share my knowledge, to help the FDRE Ministry of Mines to develop the sector and while many may say it was a success, in truth it was a stunning failure.

If you are having to use your own personal funds to move a project forward, how can it be viewed as a success? Many will point to the fact that I was instrumental in training twelve Ethiopian gemmologists

but to be honest, I would have lost less and avoided untold pain and suffering if I had just paid their education and had them study directly through the World Gem Foundation. I could have done what I have done for others, including the former student who seized (stole) all the equipment I had either brought into Ethiopia or purchased while there. Like other scholarship students, they could have done their theoretical studies online and then completed the practical requirements in 28 days.

Instead I spent two years of my life swimming against the current, trying to get others to embrace the concept. Organizations like the African Union and especially the FDRE Ministry of Mines. The FDRE Minister of Mines could have picked up the phone at any time and found the funding. He could have been the shining light not only in his own government but throughout Africa. Demonstrating what could be done if you work hand in hand with the private sector. All the pieces of the jig-saw puzzle were there, he just had to put them together.

As for the African Union, well just like the European Union, they are bogged down in red tape. Ready and waiting with excuse after excuse as to why they cannot move forward. In the September 2023 issue, we talked to Mkhululi Nkosilamandla Ncube, the programmes officer at the African Minerals Development Centre (AMDC), a specialized agency of the African Union about the African Mining Vision. We asked him 'how the African Mining Vision (AMV) could improve the value chain and maximize diversification of economies within the gem sector'. His response was 'The push for skills development through partnerships in public-private partnerships together with the alignment of the ASM subsector tenets of the AMV with the African Union Commodities strategy, which highlights the need for Africa to take full advantage of the African producer power factor through a monolithic approach to the endowment of similar minerals mined across the African continent'. Sounds wonderful but did he or anyone else in the AU help? Of course not. Even when the unlawful seizure occurred by Haimanot Sisay, they did nothing. What is even more disheartening is that the African Mining Vision was adopted by the Heads of State at the February 2009 African Union summit following the October 2008 meeting of African Ministers responsible for Mineral Resources Development. It was supposed to be Africa's own response to tackling the paradox of great mineral wealth existing side by side with pervasive poverty. Fifteen years later and it is still just a 'concept'. Like the FDRE Minister of Mines, the African Union could have shown what was possible. They didn't and now that opportunity is lost forever. Would I go back to Ethiopia or Africa? No. I used to think that Africa's problems were caused by foreign exploitation. Now I know that is not true. Yes foreigners (especially the Chinese) have taken advantage of a lack of knowledge

Editor
at Work

and general ignorance but who is to blame for this lack of knowledge and ignorance?

If you choose to educate yourself and others do not, are you entitled to use that knowledge to your advantage? Of course. However, if the playing field is not even, morally and ethically, is it right to take advantage of the situation?

It is a known fact that in Africa most people engaged in the gem sector cannot get access to gemmological training. This is largely due to the fact that people simply do not have the financial resources. Organizations like G.I.A and Gem-A are not interested in going into this market and providing free education. Like any business, they need to not only cover their costs but make a profit. However, the various governments in key gem producing areas could secure funding to provide such education but choose not to. Why?

In the deal that was signed between the World Gem Foundation and the Mining Industry Development Institute and the Geoscience Laboratory, we offered to train a minimum of fourteen government employees for free and give them 15% of any funding they were able to secure for us. In exchange, we asked for the use of gemmological equipment that had been donated through the Canadian Government and a classroom in the ministry.

Shortly after that agreement was signed, Dr. Legesse and Dr. Dejene started to try and change the terms of the agreement. Why? It's a good question but one thing you have to remember in Africa is that 'achievements' do not put food on the table. Were they creating obstacles so that we would pay them to remove them? It is another good question.

The five and a half year deal suddenly became a five month deal. They even told us that we would have to pay a \$ 20 USD fine per day per piece of equipment if it was not returned on time. At one point, we were asked to renovate the 6th floor of the Ministry of Mines!

In the end, there are no winners. Haimanot Sisay, who stole the equipment will be austerized from the gemmological community. She cannot run the school because I have the study stones and control access to the courses. She cannot run the laboratory because I created the website, the report documents and prepared all the reports. She can continue to train future gem cutters for the planned lapidary using the ten Sterling faceting machines but it will be some time before this venture is revenue producing and who is going to trust an individual who steals equipment from a school? I would have thought a school was scared, especially one that underwrote most of the tuition costs but it would seem in this situation, nothing is scared. I am a firm believer that nothing is gained from bad

actions and intentions. At some point, 'Karma' will play its part, I am certain of that.

WHAT'S IN THIS ISSUE?

It has taken 30 issues and a painful experience to finally get me to agree to an interview. I am using this opportunity to not only revisit some of my successes but also to shed light on what really happened in Ethiopia.

Fei Cui (Jadeite) and Opal are two of the trickiest stones to grade. I thought it would be a good idea to tackle them both in the same issue.

In the last issue we featured Michael Cowing's Objective Diamond Clarity Grading. While the subject of clarity grading coloured gemstones has been covered in previous issues, I thought it would be interesting to revisit this subject and see how each grading system handles the complexity of clarity gemstones that come from many different growth environments.

As a treat for our Spanish readers, there is an article in English and Spanish by Ggo. Vladimir Gery Alanes Garcia, where he looks at Bolivian cassiterite.

The planned third part of 'Investing in Africa' has been postponed. To be honest, I cannot write about investing in Africa at the moment. The wounds are too deep and the memories too fresh to advocate foreign investment in the continent.

Finally, we are delighted to feature the photographic delights of Laszlo Kupi, a Hungarian geologist and photographer. You may already be familiar with his images through his Facebook page (Fine Mineral Photography).

I am not a betting man so I will not predict what the next three months will bring. I am happy to be back in Spain and will focus all my energies on the World Gem Foundation, the 5th edition of the Handbook of Gemmology and having a little fun.

Perhaps by the next issue, we will have a new associate editor. The last one did not work out quite the way I had hoped!

Stay safe, look after yourselves and I will see you just before the New Year.

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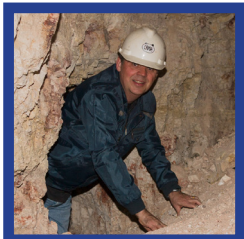
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FEATURE interview

Meet Geoff Dominy

This is the 31st issue of *Gemmology Today*. Why did it take so long to interview the founder?

I always felt there were more interesting people to interview and from a personal perspective, I prefer to be more private.

Who is Geoff Dominy?

I am an author, independent gemmologist, a former jewellery appraiser who appeared on the Canadian Antiques Roadshow for four seasons, and founder of the World Gem Foundation.

I started my gemmological studies in 1985 through the Gemmological Association and Gem Testing Laboratory of Great Britain (now Gem-A) and graduated in 1987, passing the diploma examinations with distinction. Throughout the 1990's, I 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'.

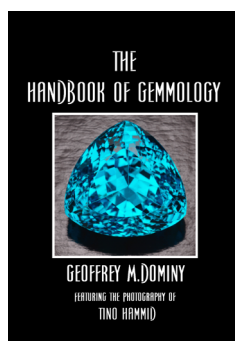
In 2013, I published the first edition of the Handbook of Gemmology in a digital format. In 2015, I started the World Gem Foundation. In 2016, I published the first issue of *Gemmology Today*. In 2019, I brought out a Spanish version of the Handbook of Gemmology

(the first fourteen chapters) and in 2021, I created ColourWise, a hybrid coloured gemstone grading system.

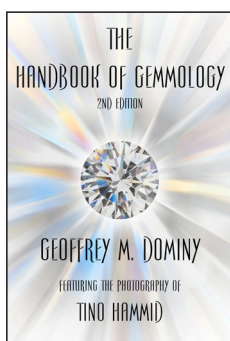
Tell us about the Handbook of Gemmology

My involvement with the 5th and 6th editions of Webster's 'Gems' taught me many things about book publishing. Gemmologically, my heroes were Basil Anderson, Peter Read and Robert Webster so when Peter Read approached me to be a contributing author for the 5th Edition of 'Gems', I was thrilled. However, I have to say that while the new edition included new material, the reluctance of the publishers to spend money (especially on photographs) bothered me. This book was considered the 'Bible' of gemmology and I felt the publishers needed to respect the importance of this publication and the legacy of Robert Webster. When I was approached by Michael O'Donoghue (another person I highly respected) to contribute to the 6th Edition, it again became obvious that the publishers were only focusing on the bottom line and I think the final product suffered because of their 'economic' decisions.

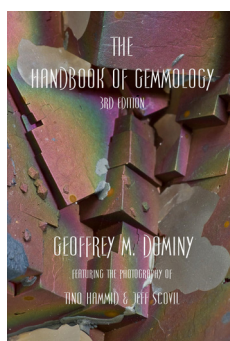
Gemmology is a visual science and it always amazed me that most gemmological books had limited photographs. In a world of vibrant colours, many of them were in black and white. I was also concerned about the unwillingness of book publishers to bring



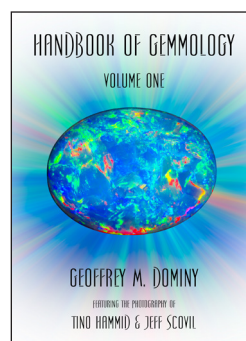
1st Edition
654 Pages



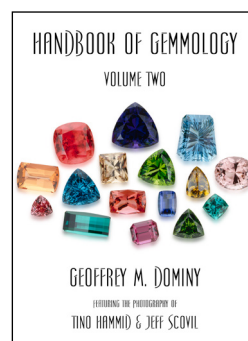
2nd Edition
860 Pages



3rd Edition
1056 Pages



4th Edition
738 / 618 Pages



out new editions. While certain areas of gemmology are quite static, other areas are very fluid and it is not long before a book becomes irrelevant.

I wanted to produce a gemmological book that addressed both concerns. One that was full of incredible photography and would be updated on a regular basis.

Printing books is problematic because in order to lower the unit cost, you need to print more copies but until those copies are sold, it is impossible to bring out a new edition.

I decided to explore the digital world of publishing. To me, it was the future of publishing. With a digital book, you could offer it for a fraction of the cost of a printed version, deliver it electronically and more importantly, since there was no 'inventory', it could be updated on a regular basis.

I started work in 2011 and originally used Peter Read's 'Gemmology' book as a 'model'. I thought it would be around 250 pages. I was wrong! The first issue consisted of 654 pages! I partnered with Tino Hammid, a man who was a pioneer in terms of gemstone photography and in 2013, we released the first edition. The response was amazing. It was truly the 'cadillac' of gemmology books, packed full of incredible photographs and written in a language that was easy to understand. I have always maintained that you cannot take the science out of gemmology but because most people in the trade are not scientifically minded, you have to find ways to deliver the information in an understandable format.

Over the next three years, I brought out new editions, each bigger and better than the previous edition. By the fourth edition, the book had grown to 1,342 pages.

To commemorate the 5th anniversary, I produced a printed version that weighed 7 kilos! It sold out almost immediately and I still have vivid memories of packing them and carrying them down to the post office. I understand why people love printed books but compared to selling a digital copy, the logistics of handling a printed version, made it quite challenging.

Due to time restraints and the launch of the World Gem Foundation, I stopped working on the book, something I came to regret.

I decided in the summer of 2024, to bring out the 5th edition. Much had changed over the seven years and I felt it was important to update the information. To make the digital version more manageable (especially when viewed online), I decided to create three volumes. By changing the font and the font size, I was able to add lots of new information while working with fewer pages. The new edition consists of 1,236 pages.

As I answer these questions, I am looking at printing proposals from various printers in Spain because I would love to offer the book in both formats. Hopefully, a new printed version will be available in late 2024 or early 2025!

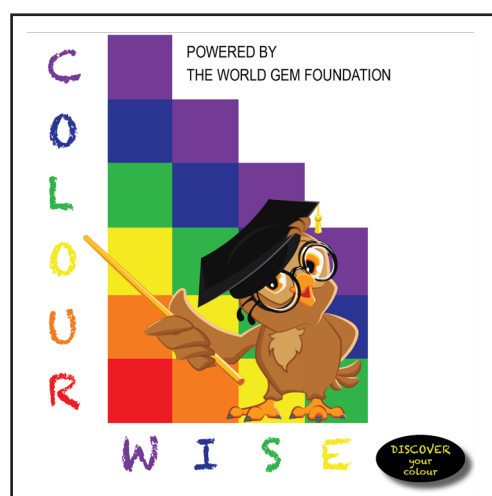
Tell us about ColourWise

When I founded the World Gem Foundation, I decided to use Gemewizard as the basis for our Coloured Gemstone Grading II class.

When Dr. Laurent Massi and Ludovic Durand opened the French-Swiss Gem Academy in Nice, France, they wanted to translate the Gemewizard course into French. I thought the translations had been completed, however when it came time to offer the course in Montreal, to my horror, I found out that the work had not been finished. Since the proverbial buck stopped with me, I had to accept that I had seriously dropped the ball and I needed to find a solution.

To be honest, I was never truly happy relying on a 3rd party and this experience showed me the pitfalls of being reliant on others. I knew we had to create our own course. One thing led to another and I decided to not only create our own course but also our very own coloured gemstone grading system. As with the Handbook of Gemmology, I felt there were deficiencies with the other grading systems and I was sure I could create a new system that took the best features from the existing systems. I also knew that it needed to be a digital system.

I am very proud of ColourWise. It has proven to be popular in our classes and of all the systems we teach (GemDialogue, The World of Colour and GIA GemSet) it is the most consistent. There are still many things I would like to do to improve and expand the system but the most important thing is that the key components are in place.



I know it is a sensitive topic but tell us about Project Africa?

To be honest, it is not sensitive at all. It is a great tragedy that this initiative has been destroyed by the actions of a very misguided individual. From the beginning, I have been open and honest with everyone, including my former students. Documents, especially bank documents, do not lie. They are all verifiable by the very financial institutions who handled the transactions.

So what went wrong?

A combination of things. Firstly, on April 18th, 2024, my mother who just turned 97 had a second major stroke. This resulted in hospitalization for seven days, the need for 24-hour in-home nursing and the realization that at some point, I would need to get her back to Spain. Secondly, money. The company owed me a lot of money, I was not being paid to teach, Addis Ababa was one of the most expensive cities I have lived in and while the medical costs were less than in Europe or North America, they were still considerable. Haimanot Sisay, although she now insists otherwise, knew that I had taken money to repay some of the debt and to help cover my expenses. As partners, I was entitled to 50% of the revenue generated and was responsible for 50% of the expenses. Since I had loaned the company a huge sum of money and taught 800 hours for free, why would I not be entitled to monies that I had earned and was owed? You cannot live on thin air!

You say you were partners, how was that structured?

In 2023, I made Haimanot Sisay a 50% partner in the World Gem Foundation. There was no cost involved, I simply transferred 50% of the shares into her name. This gave her entitlement to 50% of the profits but also the obligation to cover 50% of the operating costs. Since she became a partner, she has not contributed one penny to these operating costs.

When we set up Project Africa in Ethiopia, we created a company called WGF Project Africa Ethiopia but because under the new investment laws it is very difficult for foreigners to invest in Ethiopia and be a part of an Ethiopian company, we decided to set up the company in her name but created an internal resolution that made the company in Ethiopia, a wholly owned subsidiary of the World Gem Foundation. This meant that we were equal partners, however, now she denies the existence of this resolution (even though she signed it), preferring to call me 'her employee'. Of course there are no payroll records, income tax and social benefit remittances or a salary so this claim is baseless.

But why make her a partner in the World Gem Foundation? It sounds like a very generous gesture

You have to understand that a school is not like other businesses. Typically when an owner retires or dies, the company closes. A school cannot cease to exist. It has to live on. If it closes, what happens to all the students, their hard work and dedication and their credentials? I needed to plan for succession and at the time, she seemed the ideal candidate. Obviously based on her actions, I was wrong!



I understand there were problems with your work and residency visas

In order to get a residency visa and to work in Ethiopia, I had to have a work contract. To satisfy the legal requirements of the Ministry of Skills and Labor, we created a 'dummy' contract on my computer.

After everything fell apart and she 'suspended' me from the very classroom I had personally funded, she cancelled my work permit. This created a 'domino' effect since our

residency visas were tied to the work permit. I had never bothered to pick up the visas but when I knew I would be leaving Ethiopia, I knew I needed to have them to clear immigration. When I went to the immigration office, my mother's visa was there but mine was not. Initially they said it was misfiled but the next day, they referred us to a supervisor who informed me that in order to get my visa back, Haimanot Sisay would need to reinstate it.

Ethiopia is a country mired in red tape. No-one wants to make a decision and take responsibility for their actions. To be honest, I don't blame them because on average, a federal employee makes just over \$ 100 USD a month!

We headed downstairs and to my amazement, the woman who had directed us upstairs motioned us into her office and gave me my visa.

Five days later we were at the airport. I was concerned that the supervisor upstairs would cancel my visa. I had been in constant contact with the Canadian and British Embassies. One lady from the British Embassy actually gave me her personal cell number and told me to call her any time, day or night. We passed through immigration without a problem and boarded the flight to Madrid via Rome. I told the flight crew what had happened in Ethiopia. Haimanot Sisay used to work for Ethiopian Airlines and they were shocked by what had transpired.

I was so happy when we landed in Madrid. I am very thankful that I have residency in Spain.

Tell me more about the equipment you funded?

When I moved to Ethiopia, I took the study stones (coloured gemstones and diamonds) and enough equipment to equip three workstations from the Spanish Gem Academy (a license that I owned) with me. Ironically, this was the very same equipment she used when she studied under me in Mallorca.

In order to avoid paying duties and taxes when I brought the equipment back into Spain, it had to clear Spanish customs first and then Ethiopian customs when it arrived.

When we cancelled the deal with the Ministry of Mines, I purchased enough equipment for three more workstations and we divided the class of twelve into two. While this meant twice the workload, it also meant we could function with only six fully-equipped workstations. The additional equipment was purchased through Kassoy in New York and Krüss in Germany.

The shipment from Kassoy was actually brought into Ethiopia illegally by an Ethiopian Airlines employee. This is a common practice by Ethiopian Airlines flight crew (including pilots) who charge to smuggle goods into the country. Since Ethiopian Airlines is owned by the Ethiopian Government, it is ironic that their employees are ripping off the government. The shipment from Krüss was shipped via DHL to WGF Project Africa Ethiopia at my home address.

Who paid for the equipment?

I paid for everything from my own personal funds. At no time did the World Gem Foundation fund the purchase of this equipment. Funds came from my personal bank accounts in Canada (Royal Bank of Canada) and Spain (CaixaBank). Kassoy and Krüss have both provided proof to my lawyers that I paid for these items even though they were shipped to different people.

Of course, now Ms. Sisay is claiming that she paid for everything. It is ridiculous because the bank and customs documents prove otherwise. To import items into Ethiopia, you have to prove how they were purchased because of strict currency regulations. I can do that, she can't.

What about the gem faceting program?

The initial shipment of ten faceting machines from Sterling in Sri Lanka was paid from my personal bank account in Spain from funds that I had loaned to kick-start the program. Sterling have provided a letter outlining the three payments that were made through Wise.com from my bank account in Spain.

What about duties and taxes?

Customs in Ethiopia are an absolute nightmare. No-one knows what they are doing and it is not uncommon to hear horror stories regarding duties and taxes charged far in excess of the actual value of the goods.

The previous year, we had explored ways of bringing the gemmological equipment into Ethiopia duty free. At that time, after cancelling the agreement with the Ministry of Mines, we were talking to Addis Ababa Science and Technology University (AASTU) and they had suggested they could help with the caveat that if the equipment came into the university, it could not leave. We both agreed that there was no way I was going to buy this equipment and then essentially donate it to the university.

When it came time to import the ten faceting machines, I insisted that I would not bring them into Ethiopia if we had to pay duties and taxes. They were coming into Ethiopia to provide training and future employment and I was bound and determined that we would not be penalized by Ethiopian Customs.

After making some enquiries, she informed me that if she brought them in under her export license, we could avoid paying duty, however, she neglected to inform me that if she did, in the eyes of the FDRE Government, they would be the property of WGF Project Africa Ethiopia. Mind you, since we had signed the resolution making this company a wholly owned subsidiary of the World Gem Foundation it would not have been an issue but now since she denies the existence of this document linking the two companies together, it changes everything. She now claims they belong to her.

How could you find yourself locked out of your own classroom?

I think of all the things that have happened, this action angers me the most. She claimed in a letter dated August 16th, 2024 (nine days after I was locked out) that I had embezzled funds and stolen company equipment. She also claimed that I was her employee. What employee buys all the equipment, teaches for free and loans the company 6 million Birr?

It is interesting to note that in two emails sent to colleagues urging them to nominate me for the Antonio Bonnano award, she wrote:

'Beyond his publications, Geoffrey's passion translates into action. He established the World Gem Foundation, fully funding a Gemmology facility in Africa. This initiative has already successfully trained and is about to graduate its first class of Ethiopian Gemmologists, empowering 12 individuals with the skills needed to thrive in the global market.'

His commitment extends beyond financial resources. Geoffrey generously shares his 40+ years of experience, personally mentoring students. His dedication inspires all around him, including myself.

Now, according to sources in Ethiopia, she is claiming she fully funded the program and took out a personal loan to fund the faceting machines!

Sadly, from everything that has happened, she chooses to only take the things that justify her actions while ignoring all the facts that prove otherwise.

No-one offered to mediate?

On many occasions, I was urged to mediate with her. I did present a three-step dispute resolution proposal that addressed the gemmological and lapidary equipment, the settling of all financial issues and the future of Project Africa but she rejected it three times.

I see from posts on LinkedIn and Facebook that her supporters are now claiming you are a racist.

She has made a number of tactical errors and this is perhaps her biggest. If you look at the graphic of scholarship recipients, you will see that of the 46 that have officially been awarded scholarships through the World Gem Foundation, 38 are non-white. Secondly, I moved to Africa to teach Africans. Why would I do that if I were racist? My business partner (although she now denies it) was non-white. It just goes to show how misguided she is and how devoid she is of any proper advice and counsel.

I also saw claims where her supporters claim you are uneducated.

When my parents divorced and my mother moved my brother and I to Canada, she had not worked for 22 years. Her main responsibility was being a housewife, which in itself was a gruelling job. I started working at 15 when I was still going to school because both my brother and I had to help my mother with everyday expenses. Unfortunately, I was unable to afford to go to university or college although later I studied through the Gemmological Association and Gem Testing Laboratory of Great Britain (now Gem-A), receiving my FGA in 1987 and passing their examinations with distinction. It was my inability to further my own education after graduating from high school that was the catalyst for starting the two scholarships. I also wanted to honour Tino Hammid after he passed away and my maternal grandmother, Winifred Evelyn Hunn. In all likelihood, none of these students would have received their education if I had gone to university. To date, we have funded 230,000 euros of scholarships!

As for being uneducated, I think my CV answers that question. I wrote the Handbook of Gemmology, developed all the World Gem Foundation courses, have lectured all over the world, taught gemmology and developed ColourWise. It is however interesting that in a country where only 4% passed the national examinations last year, my educational credentials would be questioned.

You will also see from the scholarship recipients that Ms. Sisay (top left hand corner) received two scholarships, the Tino Hammid Memorial Gemmological scholarship to cover the theoretical components of the Career Gemmologist Diploma program (€ 1400) and the W.E. Hunn Memorial Gemmological that provided funding to cover half of the practical components and the examination fees (€ 2500).

What's next?

While it will be a slow process in Ethiopia, I have launched legal action against her in Ethiopia and also in Canada since the notarized WGF Partnership agreement states that *'The Partnership will be governed under the laws of the Province of British Columbia'*.

Recent changes in the judicial system in British Columbia has raised the limit to \$ 35,000 Canadian for the Small Claims Court. This has freed up the Supreme Court of British Columbia to handle the bigger cases. Since the equipment stolen exceeds \$ 50,000 Canadian, it will automatically go to the Supreme Court. I intend to push for criminal charges in both countries.

Looking into the future, what does it hold?

Firstly, I am so happy to be back in Spain. I spent almost two years in Ethiopia and found it to be a unforgiving country. There are so many restrictions. You have to be careful what you say and who you say it to. Buying anything is a struggle and now with the devaluation of the Ethiopian Birr, prices are going to go up. In reality because of the huge disparity between the official and black market rates, they should stay the same but human beings, being human beings, will always find a way to justify their actions, regardless of whether they are justifiable or not.

My first priority is looking after my mother. She now has vascular dementia and needs constant care.

My second priority is to focus on running the World Gem Foundation, marketing the 5th Edition of the Handbook of Gemmology, funding the printed version, and to devote more time to ColourWise.

Finally, to recover either the equipment or the monies owed to me by Ms. Sisay and pay off those who supported this initiative.



World Gem Foundation Scholarship Recipients



Haimanot Sisay
(Ethiopia)



Joel Dyer
(Finland)



Sandra Eriksson
(Sweden)



Lemma Beyene
(Ethiopia)



Muhammad Zeeshane
(Pakistan)



Brandon Williams
(U.S.A)



Veronica Mosweu
(Botswana)



Muhammad Asif
(Pakistan)



Asif Rasheed
(Pakistan)



Shakeel Ahmad
(Pakistan)



Khawaja Muhammad Abbas
(Pakistan)



Teklebrhan Teklehaymanot
(Ethiopia)



Tendai Masvire
(Zimbabwe)



Nelson Tellez Cortez
(Bolivia)



Mohamed Mubassir
(Sri Lanka)



Indra Perkasa
(Indonesia)



Clever Sithole
(Zimbabwe)



Alexey Tuev
(Russia)



Juan Pablo Vasquez Heredia
(Bolivia)



Vladimir Gery Alanes Garcia
(Bolivia)



Lisa Clark
(U.S.A)



Guarino Edilberto Condorilaime
(Bolivia)



Abdel Issa
(Central African Republic)



Edmont Pasipamire
(South Africa)



Moffat Gudo
(Zimbabwe)



Mogogi Tirelo
(Botswana)



Rasul Rajabov
(Czech Republic)



Gisselle Jiménez
Colombia



Abuu Peter
(Tanzania)



Anna Kurguzova
(Russia)



Hassan Ibrahim
(Uganda)



Stuart Pool
(United Kingdom)



Rajaa Awn
(Saudi Arabia)



Dibora Melaku
(Ethiopia)



Indika Bandara
(Sri Lanka)



Abel Alemayehu
(Ethiopia)



Befikadu Abera
(Ethiopia)



Dawit Tadege
(Ethiopia)



Henock Zewudie
(Ethiopia)



Kumlachew Tesfaye
(Ethiopia)



Leul Ayele
(Ethiopia)



Mebratu Tadesse
(Ethiopia)



Mikias Sebsibe
(Ethiopia)



Nigist Shiferaw
(Ethiopia)



Peniel Abebe
(Ethiopia)



Tamrat Mekonnen
(Ethiopia)

46 Recipients from 19 Countries

And what about Africa?

I just turned 65 and I can honestly say that my days of trying to make the world a gemmologically better place are over. The world is what it is, for whatever reason and I just have to accept it.

I still believe that we need to be active in Africa because I think it would be wrong to penalize a whole continent because of the actions of one person but it will have to be done in such a way that we never again leave ourselves vulnerable as we did in Ethiopia.

However, unless we partner with trusted organizations who can provide the necessary funding to buy the gemmological equipment and study stones, African students will need to complete the practical requirements of our diploma programs outside of Africa. I know this will make it more challenging for African students in terms of costs and the difficulty in getting travel documentation but that is the reality of life. I simply will not risk taking equipment or stones into Africa.

As for subsidizing education, if people want to take what I believe is the most comprehensive gemmological program in the world, they will have to pay for it. The World Gem Foundation may be a not-for-profit Canadian corporation but we are not a charity. As the saying goes, *'charity begins at home'* and in my case, it will *'stay at home'*!

And the cover of this issue? Coincidence?

(Laughing) I don't believe that anything in life is a 'coincidence'. I do believe in karma and I also know that nothing good will ever come from ill-intentioned actions. Like a bus, you may have to wait a while but eventually, it will come around the corner! I have already purchased her ticket!





Find out more about the 5th Edition 'Digital' Handbook of Gemmology

To see a video preview of each volume, click on the video icons

Volume One covers the science of gemmology, including the chemical nature of gemstones, their physical and optical properties, basic crystallography, the absorption of light, the spectroscope, polarized light, the polariscope, pleochroism, the dichroscope, colour filters, specific gravity, luminescence, magnification, thermal conductivity, imitation, assembled and lab-created gemstones, and gemstone treatments and enhancements.

416 Pages



Volume One Preview Video

Volume Two covers the identification of gemstones based on their colour and transparency, advanced gem testing techniques, and the grading of coloured gemstones, opals, jadeite, pearls and diamonds.

430 Pages



Volume Two Preview Video

Volume Three covers the mining of gemstones, coloured gemstone and diamond cutting and a comprehensive look at diamonds, corundum, beryl, chrysoberyl, spinel, zircon, topaz, tourmaline, peridot, quartz, garnet, tanzanite, lapis lazuli, turquoise, opal, jade, and pearls.

390 Pages



Volume Three Preview Video

Featuring the photography of internationally renowned gemstone/mineral photographers Tino Hammid & Jeff Scovil, Conny Forsberg, John Dyer, David Dyer, Lydia Dyer, Priscilla Dyer, Ozzie Campos, Dmitry Stolyarevich, Arjuna Irsutti and Sergey Pryanechnikov.



FEI cui

Rock of Ages

Gemmologically, lapis lazuli has always held a 'unique' position in the 'gemstone kingdom'. Unlike other gems, it is actually classified as a rock, an aggregate of several different minerals including lazurite, sodalite, nososan, haüyne, hornblende, mica, enstatite, calcite, diopside, augite, and iron pyrite.

Recent studies have shown that contrary to popular belief, the gemstone known throughout the non-Chinese world as 'jadeite' jade is also a rock composed of three major mineral components – jadeite, omphacite and kosmochlor. Since it is mineralogically incorrect to use a mineral species name to describe a rock, many have asked the all important question 'what should we call this new-found rock?'.

Many have stated that since it is revered in China and is of immense cultural significance, the term 'fei cui' pronounced 'fay choy' should be used. In fact laboratories such as Lotus Gemology have already started using this term (as of July 1st, 2023) recognizing that since the Chinese are by far the largest consumers of this material, it is appropriate to reinstate the Chinese name, a word that has existed for over a thousand years.

Etymologically, 'fei cui' means red (fei – 翡) and green (cui – 翠), from the plumage of the kingfisher bird in acknowledgement that the base material of fei cui (a pyroxene rock) is found in many different colours.

IDENTIFICATION

In the past, it was relatively simple to separate jadeite (a pyroxene jade rock) from nephrite (an amphibole jade rock). Marked differences in their specific gravities (3.30 to 3.38 for jadeite compared to 2.90 to 3.03 for nephrite) and their refractive indices (1.652 to 1.688 for jadeite compared to 1.600 to 1.627 for nephrite) allowed even the use of basic gemmological equipment to

make the distinction. Of course, the ability to conduct these two tests often relied on (a) the item being unset and of a manageable size and (b) having a good polish and the person performing the tests to have a very good mastery of the 'Distant Vision' or 'Spot Method' for determining refractive index.

Additionally, the overall appearance of green nephrite jade, with its characteristic spinach green body colour accompanied by numerous black flecks of magnetite and graphite made it easily identifiable.

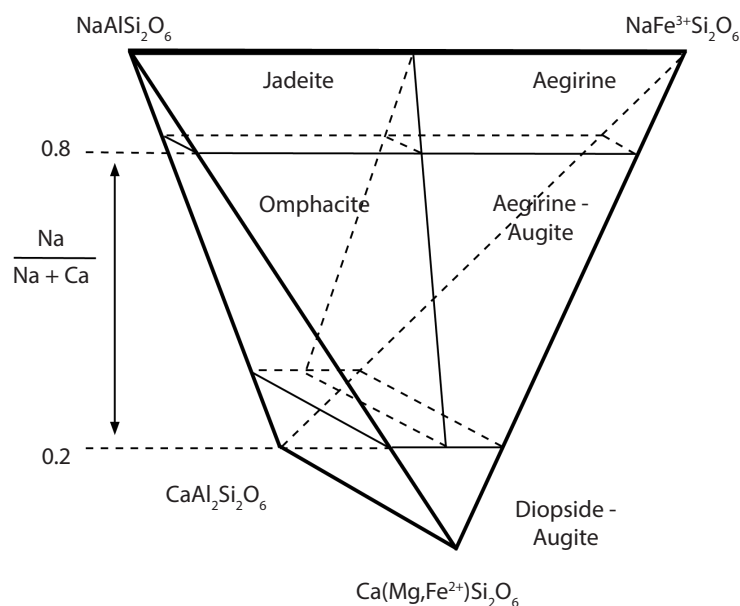
Since nephrite owes its colour to iron, it will react to an N52 magnet and in more richly coloured specimens containing small traces of chromium, a faint narrow band is sometimes visible at 689nm although it is never as distinct as the 691nm line found in jadeite jade. There are also additional lines that may be seen at 509nm, 498nm and 460nm; however, there is no absorption band at 437nm in the violet.

The discovery that many gems labelled as 'jadeite' also contain varying amounts of other clinopyroxenes (such as omphacite and kosmochlor) has complicated the situation considerably.

As with all rocks, jade is made up of an aggregate of many tiny crystals/grains; frequently these crystals/grains are made up of different minerals. This makes the accurate determination of the exact end-member percentages of a rock extremely difficult and impractical. It begs the question 'To what end should we as gemmologists attempt to do this?'

As we can see from chart below, while there are slight differences between jadeite jade, omphacite jade and kosmochlor jade in terms of their refractive indices and specific gravities, due to their complex chemical DNA, these often overlap requiring more sophisticated testing

Gemstone	R.I. Range	D.R.	Dispersion	Optical Sign	S.G. Range	Hardness
Kosmochlor Jade	1.680 - 1.750	.015	–	B–	3.35 - 3.50	5 ½ – 6
Omphacite Jade	1.660 - 1.680	.023	–	B+	3.30 - 3.45	7
Jadeite Jade	1.652 – 1.688	.020	–	B+	3.30 – 3.38	6 ½ – 7



Pyroxene Classification by Chemical Composition

Source: LMHC Standardised Gemmological Report Wording

procedures.

According to a document produced by the Gemmological Association of Hong Kong Limited entitled 'Standard Methods of Testing Fei Cui for Hong Kong', the three mineral components can be identified using their infrared spectrum fingerprints. In this document, they state '*All molecules have a unique vibrational spectrum in the infrared, which may be called its 'fingerprint'. The vibrational peaks which are used to identify the molecular structure of a material are located below ~1600 cm⁻¹. Recording a FTIR spectrum of the members of Fei Cui in the range from 400-1600 cm⁻¹ is a direct method for identification.*'

Fei Cui, Jadeite Jade

The presence of peaks between 400 cm⁻¹ and 1200 cm⁻¹ at approximately 1168, 1082, 1050, 961, 850, 744, 665, 587, 530, 474 and 432 cm⁻¹ indicate the molecular vibrations of the structure of jadeite jade.

Fei Cui, Omphacite Jade

The presence of peaks between 400 cm⁻¹ and 1200 cm⁻¹ at approximately 1102, 1064, 957, 887, 710, 648, 563, 521, 442 and 411 cm⁻¹ indicate the molecular vibrations of the structure of omphacite.

Fei Cui, Kosmochlor Jade

The presence of peaks between 400 cm⁻¹ and 1200 cm⁻¹ at approximately 1153, 1063, 1035, 926, 855, 737,

651, 579, 512 and 419 cm⁻¹ indicate the molecular vibrations of the structure of kosmochlor jade.

While this technology may be within the realm of established laboratories, what about everyday gemmologists using everyday gemmological equipment?

Sadly, most gemmologists do not even own a diamond screener. They deal with diamonds on a daily basis, yet they risk misidentifying lab-created diamonds because they do not see the value in making such an investment. Expecting them to equip themselves with Fourier-transform Infrared Spectroscopy (FTIR) to obtain a specular reflectance spectrum is clearly beyond any realistic expectations. Of course, it all depends on the market and your clients. Obviously if you are set up in Hong Kong, the likelihood of seeing jade on a daily basis is much higher than a similar operation set up in Seattle, Washington. Any investment has to be repaid over time. The more you use a piece of testing equipment, the more reasonable it becomes to invest in it.

GUIDELINES FOR GRADING FEI CUI

Guidelines set out by members of the Laboratory Manual Harmonisation Committee (LMHC) have standardised the nomenclature that can be used to describe nephrite jade, jadeite jade, omphacite jade and kosmochlor jade.

The Gemmological Association of Hong Kong (GAHK) have also issued guidelines for the identification & classification of Fei Cui jade (see next page).

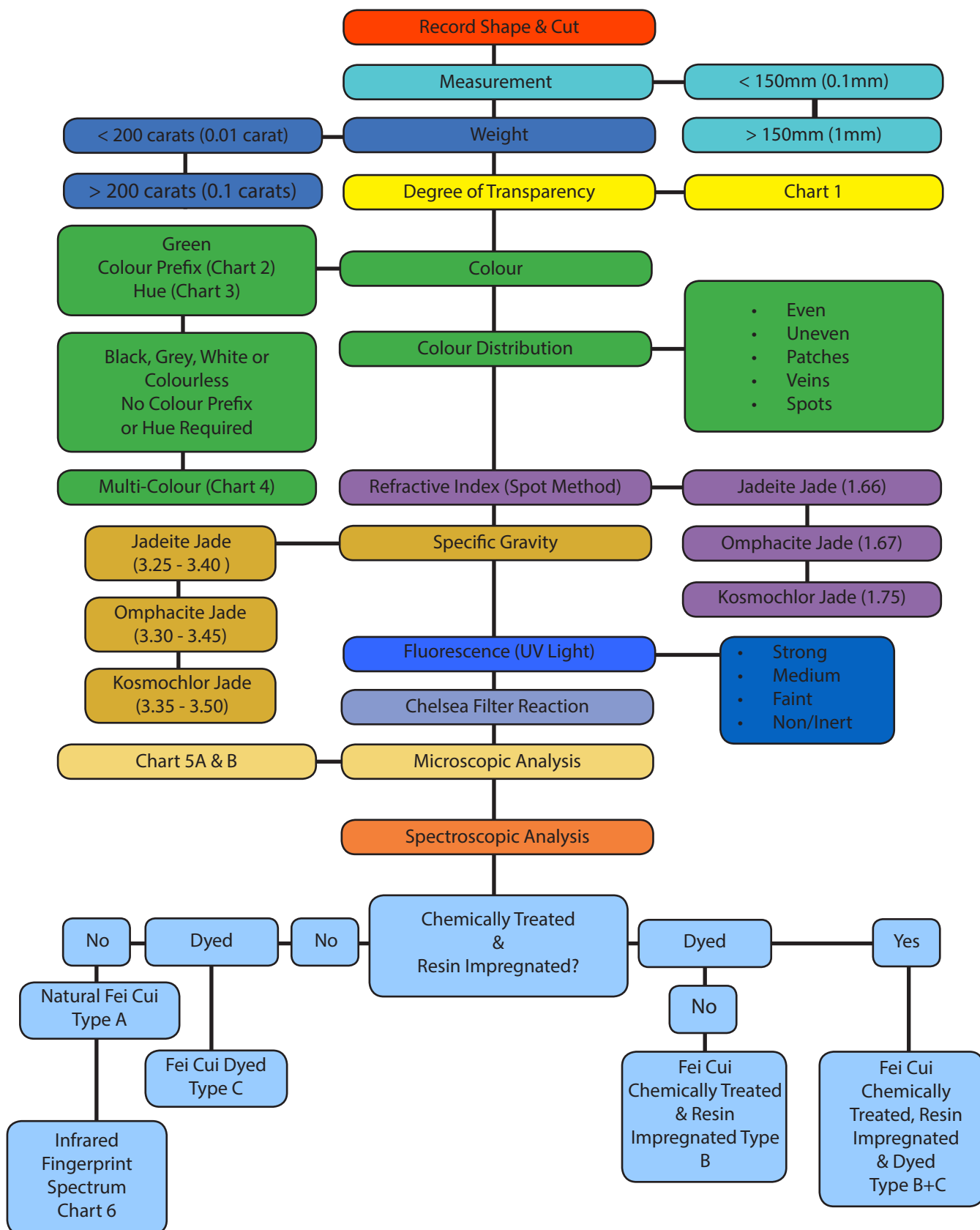


CHART 1

Degree of Transparency	Observation
Transparent	Capable of transmitting light with little or no blur-out
Translucent	Capable of transmitting and diffusing light, but an object viewed through the test 'Fei Cui' jade cannot be distinguished
Opaque	Incapable of transmitting light

CHART 2

Colour Prefix	Saturation	Tone
Pale	Low	Light
Light	Moderate	Light
N/A	Moderate	Medium
Bright	Strong	Light to Medium
Intense	Strong	Medium to Dark
Deep	Moderate	Dark
Dark	Low	Dark

CHART 3

Hues
Yellowish Green
Green
Bluish Green

CHART 4

Multi-Colour Criteria	Description
Where green (or black, grey, white or colourless) is the dominant colour , the description of the item shall be recorded as	Green (or black, grey, white or colourless) with 'other colour'
Where green (or black, grey, white or colourless) is not the dominant colour , the description of the item shall be recorded as	Green (or black, grey, white or colourless) in 'other colour'
Where there is no green (or black, grey, white or colourless) colour in any portion, the description of the item shall be recorded as	Dominant colour with 'other colour'

CHART 5A

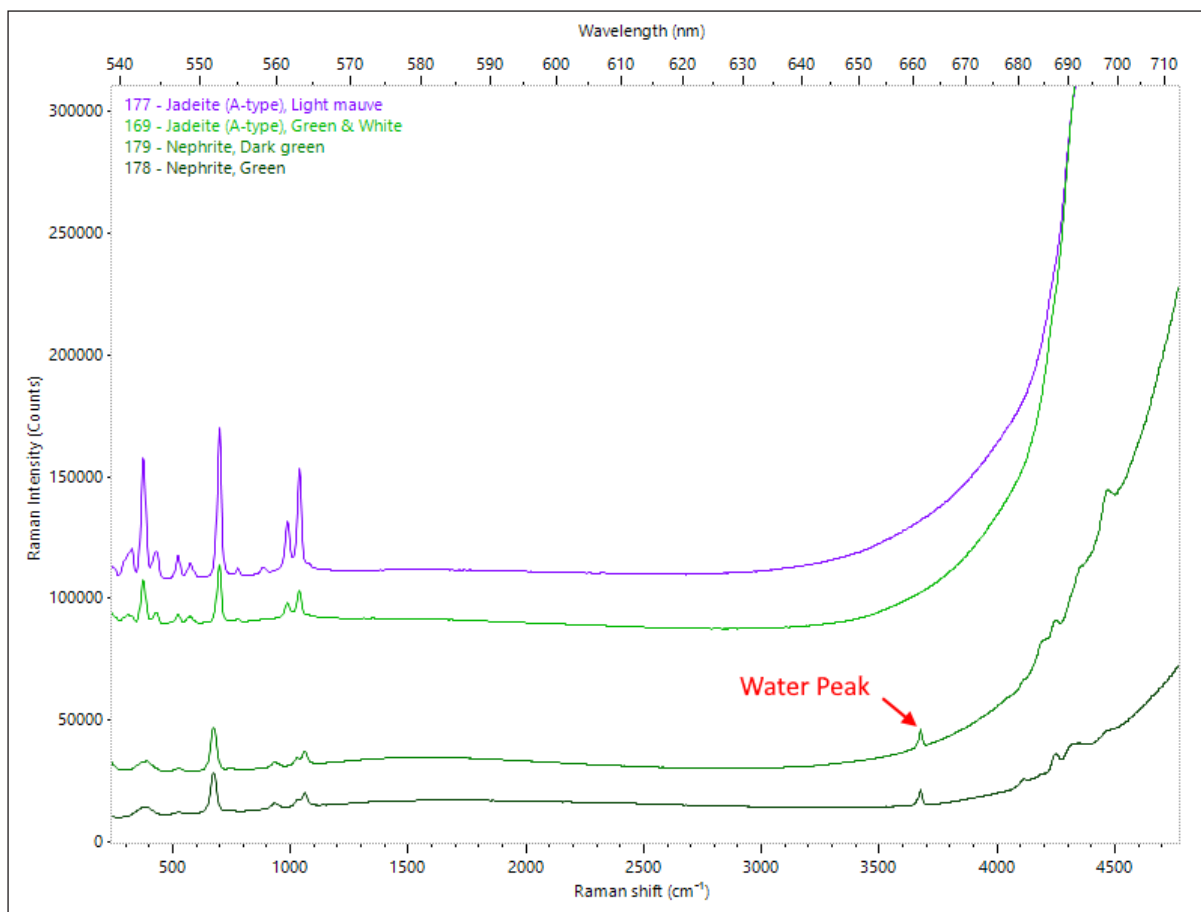
Type	Texture	Description
Very Fine Grain	Interlocking Microgranular & Microfibrinous	Difficult to see grains under loupe/ microscope (10x magnification)
Fine Grain	Interlocking Granular & Fibrous	Difficult to see grains with the naked eye; can be seen with 10x magnification
Medium Grain	Interlocking Granular & Fibrous	Visible with the naked eye (on majority part of the item)
Coarse Grain	Interlocking Granular	Very obvious grains visible with the naked eye

CHART 5B

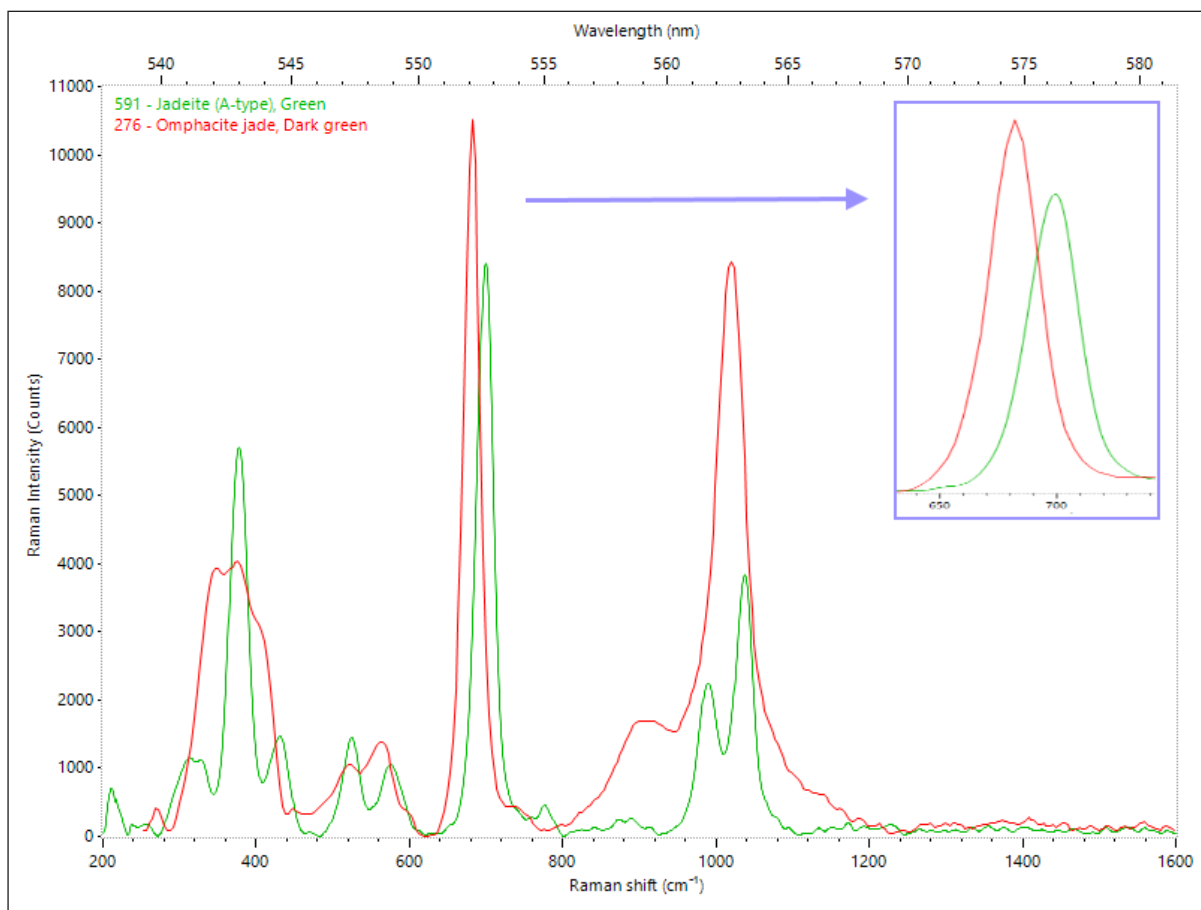
Surface			
Iron Staining	Pit	Orange Peel Effect	Groove
Glistening	Coarse Grain	Micro Crack	Interlocking Granular

CHART 6

Variety	Fourier-transform Infrared Spectroscopy Peaks
Jadeite Jade	Peaks at approximately 1168, 1082, 1050, 961, 850, 744, 665, 587, 530, 474 and 432 cm ⁻¹
Omphacite Jade	Peaks at approximately 1102, 1064, 957, 887, 710, 648, 563, 521, 442 and 411 cm ⁻¹
Kosmochlor Jade	Peaks at approximately 1153, 1063, 1035, 926, 855, 737, 651, 579, 512 and 419 cm ⁻¹



Jadeite (Green/White & Lavender) & Nephrite (Green & Dark Green) (Courtesy of MAGILABS)



Jadeite (A Type) & Omphacite Jade (Dark Green) (Courtesy of MAGILABS)

COMMON TREATMENTS & ENHANCEMENTS

Of particular concern in the industry is the profusion of B, C and B + C jade that has been either chemically treated and resin impregnated to enhance its transparency (B jade), dyed to enhance its colour (C jade) or both (B + C jade). Sold in a variety of colours from various shades of green to mauve/lilac, yellow, and black, these stones have been introduced to combat the increasing difficulty in obtaining gem grade 'Fei Cui' jade from Myanmar (Burma) and the substantial price increases that have been imposed over the last 50 years. It is extremely important that this treated jade is detected and disclosed.

B jade refers to lower grade jade that has been soaked in strong acids, such as hydrochloric or nitric acid, to leach out discoloured iron compounds, and then impregnated with a colourless polymer. This enhancement can be identified by noticing the colourless polymer in any surface reaching fissures. Some stones will also exhibit a superficial bluish white to yellowish green fluorescence under long wave UV light.

C jade refers to dyed jade that has not been bleached. One can expect to see under magnification concentrations of colour in the cracks and fissures, sometimes an orange-red appearance under a Chelsea filter, and broad absorption bands at 630nm and 670nm, which are different from the three vague lines at 630nm, 660nm and 690nm seen in natural green jadeite coloured by chromium.

B + C jade will show characteristics of both B and C jade. Alan Hodgkinson (and the late Dr. Bill Hanneman) both suggest that stained and natural violet jadeite should first be checked under both long wave and short-wave UV light with the former, usually fluorescing orange. However, in some cases, the stained jadeite will remain inert under UV light; these stones should then be checked under their jadeite filter to confirm whether the colour is natural. In addition, they recommend using incandescent light, such as tungsten, halogen or a penlight (not LED), instead of fluorescent, triphosphor or LED illumination when using their filter.

Nephrite breaks down at 840 degrees Celsius but has been known to be heat treated. In some cases, it is also bleached, and polymer coated to imitate 'Hetian white' nephrite or dyed to simulate more expensive nephrite.

IDENTIFYING LAB-CREATED JADEITE

Lab-created jadeite is harder than natural 'Fei Cui' jade and tends to have a more saturated and mottled colour however there are no appreciable differences in the refractive index, the absorption spectra, fluorescence or specific gravity compared to natural jadeite. Under the Hanneman-Hodgkinson-stained green jadeite filter, lab-created green jadeite will exhibit a pinkish-

orange reaction while natural green 'Fei Cui' jade will appear green. Due to the high value of 'Fei Cui' jade, all suspected stones should however be referred to a recognized laboratory especially when dealing with samples of particularly fine quality.

GRADING

Without question the grading and evaluation of 'Fei Cui' jade is highly complex and like opal grading requires years of experience handling stones of different colours and grades.

While the value factors vary from source to source there are seven variables that must be considered, namely:

- Colour
- Clarity
- Cracks
- Cut
- Texture
- Transparency
- Volume

Colour

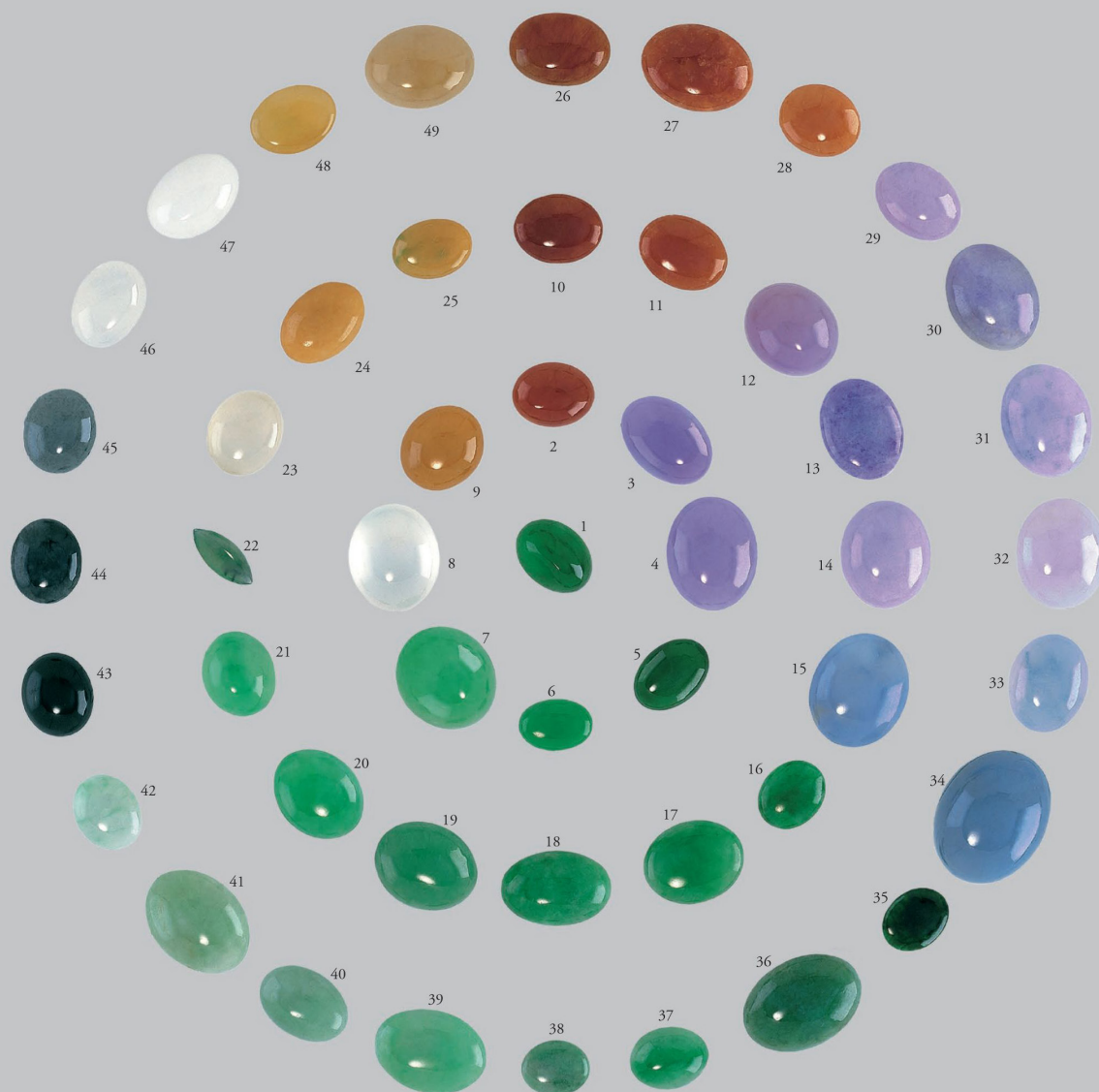
Similar to other coloured gemstones, the colour of 'Fei Cui' jade is described by three factors hue, tone and saturation (sometimes described as hue, intensity and brightness), and by a fourth factor: colour distribution. The finest green 'Fei Cui' jade will have an intense, bright pure green hue that is evenly distributed. Saturation is particularly important when grading green and lavender 'Fei Cui' jade.

In terms of value, slight yellowish or bluish secondary hues can reduce the price by up to 30% with strong yellowish or bluish secondary hues decreasing the price anywhere from between 35% and 60%. No brownish or greyish modifiers should be present.

The colour should be completely even to the unaided eye, without spotting or veins. Slightly uneven or uneven colour distribution will lower the value by up to 90%. In lower qualities, fine root or vein-like colour patterns that contrast with the body colour of the stone are considered more desirable than dull veins or roots. Mottling, dark irregular specks, or blotches that detract from the overall appearance of the stone will also reduce the value.

Mason-Kay produced a chart (see the next page) that shows the various colours of fei cui. This chart and the colours it represents was reproduced by ColourWise so that users could accurately describe the colours by hue, saturation and lightness.

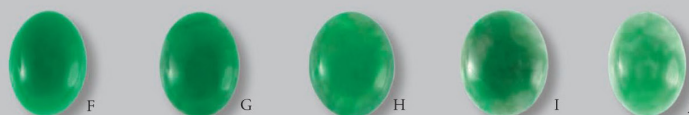
COLORS OF JADE



Translucence



Texture



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Jadeite Colour Chart - Courtesy of Mason-Kay Fine Jade Jewelry

Mason Kay

The following colour samples are based on the Mason-Kay 'Colors of Jade' Chart and includes their reference numbers (1 to 49) as well as the approximate ColourWise Colour Grades. Please note that these colour grades are based on the digital version of this chart.



Jadeite Chart - Courtesy of ColourWise

Clarity

Inclusions will have a greater impact on high quality 'Fei Cui' jade compared to commercial grade. Similar to diamond grading, we are more concerned with the colour, degree of relief, shape, size and location of the inclusions. Typically inclusions are black, dark green, brown, or white but can also include inter-grown minerals. Significant inclusions will depreciate the stone by up to 40%.

Cracks

Cracks can have a tremendous affect on both the durability and value of a piece of 'Fei Cui' jade. These are best observed using both transmitted and reflected light under magnification since many of these cracks will become almost invisible once the stone has been waxed. To a skilled grader, older cracks can be verified by the presence of secondary minerals found inside the cracks. Generally speaking, newly formed cracks will be more detrimental to the overall value with visible cracks affecting the value by more than 50%.

Cut

Typically stones are cut in non-calibrated sizes with the emphasis placed on the colour, however, stones should be well-balanced, with acceptable length to width ratios and dome height. Stones that are too thin are less desirable. Polish is also of prime importance giving the stone depth and lustre. In his article *Burmese Jadeite: The Inscrutable Gem*, Richard Hughes suggests that "One method of judging the quality of polish is to examine the reflection of a beam of light on the surface of a piece of jadeite. A stone with fine polish will produce a sharp, undistorted reflection, with no 'orange-peel' or 'dimpling' visible".

Texture

Stones that are clean to the naked eye and do not exhibit clouds, spots, veins or blotches command the higher prices. Stones are sometimes classified into three categories, fine or old mine, which is the most desirable, medium or relatively old mine and coarse or new mine. Texture should be evaluated by using both the unaided eye and 10X magnification.

Transparency

A number of factors affect the transparency of 'Fei Cui' jade including the size of the grains, the intensity of the colour, the thickness of the piece and the presence of inclusions. For larger pieces, such as bangles, necklaces and pendants, transparency is more important than

colour, whereas in smaller pieces, such as earrings, rings and brooches, colour is more important. Opaque jade (Fei Cui) or stones with cloudy patches are the least desirable. As with the nacre thickness and the degree of lustre in pearls, high transparency will only be achieved if the piece has a very fine texture. Overall, transparency can affect the value by more than 10-fold.

Volume

One also needs to consider the size of the rough since this will have a decided effect on the size of the finished piece. Regardless of quality, a one-kilogram piece of 'Fei Cui' jade rough will only produce up to three bangles while it can produce infinitely more cabochons. Therefore, if we are comparing two pieces of similar quality, volume will play an important part in the overall evaluation.

Carvings

When assessing carvings, one should consider the overall design, symmetry of form, contours, details, thickness, and dimensionality. Typically, a carving will reduce the value of a high quality piece while increasing the value of a lesser quality piece. Generally speaking, carvings that are less than 3mm in thickness, show visible cracks and fissures, either internally or surface reaching, will be valued less than carvings which have good colour consistency, make good use of the material and exhibit a high degree of craftsmanship.

Bangles

When valuing bangles, translucent, evenly coloured one piece bangles, cut from a solid piece of jade (Fei Cui) rough material are valued higher than carved bangles made from more than one piece, exhibiting fissures or cracks that are either internal or surface reaching.

PRICING

Unfortunately, due to pricing fluctuations and the overall difficulty in researching prices, GemGuide, published by Gemworld International, no longer publishes 'Fei Cui' jade prices. For appraisers, this makes the valuation of 'Fei Cui' jade tricky and forces them to rely on wholesalers and manufacturers of 'Fei Cui' jade to substantiate prices. While in some cases this is possible, the pricing of high-quality stones is often hampered by the fact that it is difficult to find comparable stones of like kind and quality.



Green Fei Cui Necklace



Mutli-Coloured Fei Cui



Triple Strand Green Fei Cui Necklace

Studying Gemmology with the World Gem Foundation

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

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

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

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

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

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

CAREER GEMMOLOGIST PROGRAM

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

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

GEMMOLOGY SEVEN

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

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

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

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

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

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

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

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

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

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

GEMMOLOGY ELEVEN

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

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

DIAMOND PROFESSIONAL PROGRAM

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

COLOURED GEMSTONE PROFESSIONAL PROGRAM

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

RESIDENCY PROGRAMS

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

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

COURSES IN OTHER LANGUAGES

All of our diploma and general interest courses are now available in English, Spanish & French. We are currently translating all the courses into Portuguese. These will be available in 2025.

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

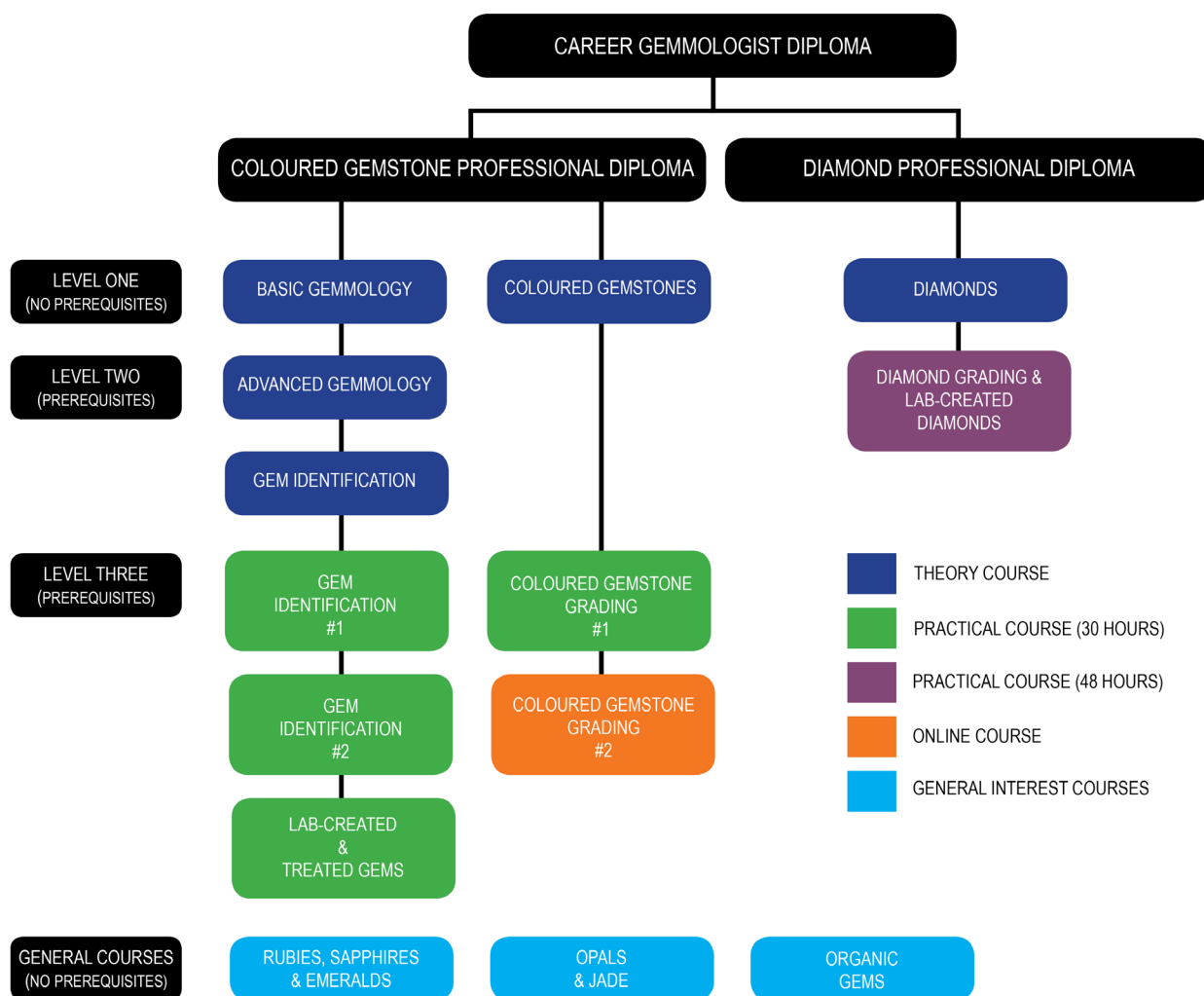


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GENERAL INTEREST COURSES

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.

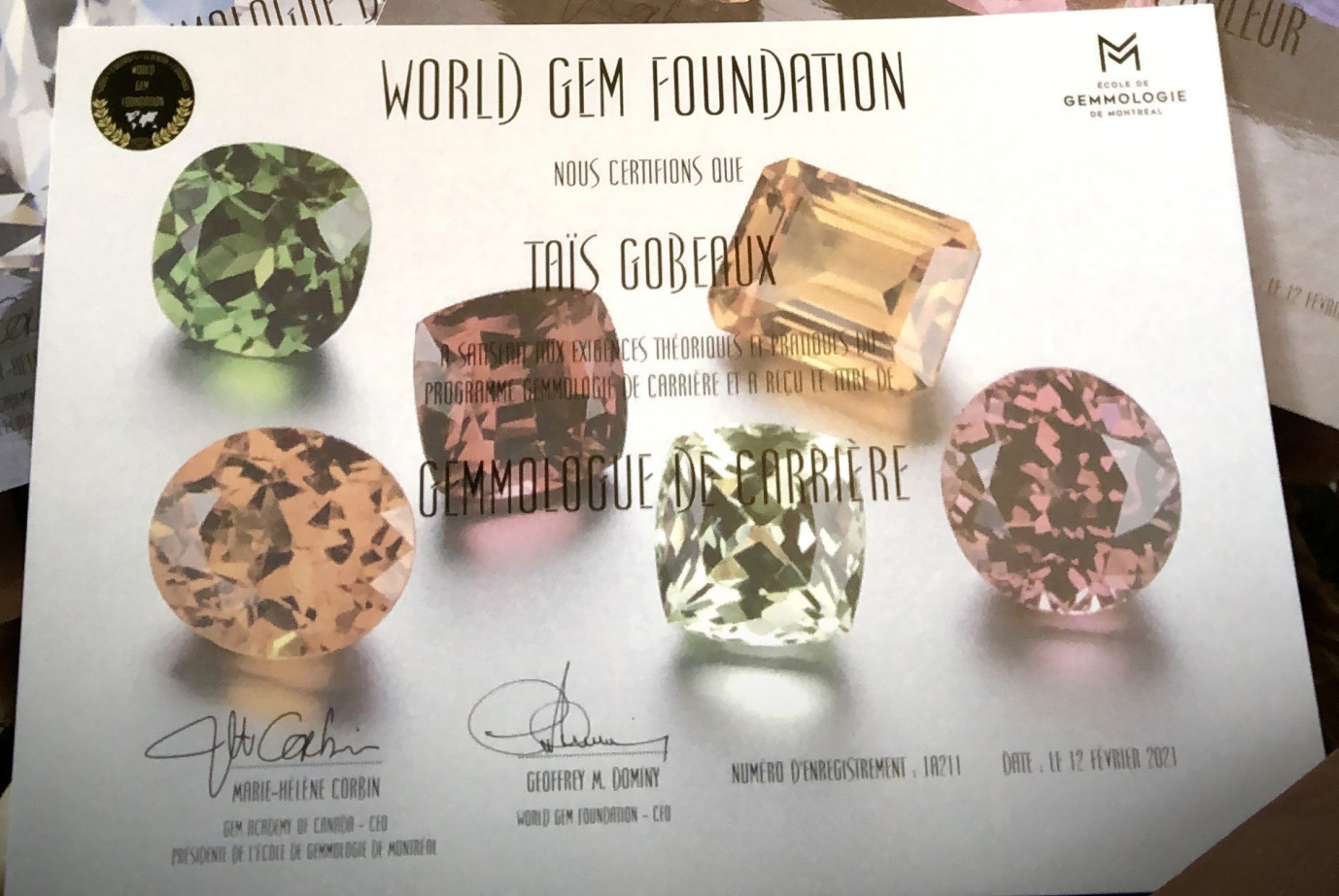
COURSE FEES

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.

CAREER GEMMOLOGIST RESIDENCY PROGRAM CURRICULUM

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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

ALL PRICES QUOTED FOR THEORICAL COURSES ARE FOR DIGITAL ACCESS



Article Submissions

- We do not accept highly scientific articles.
- Articles should be submitted as a Word document.
- 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.
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Issue Two 2025: March 31st, 2025



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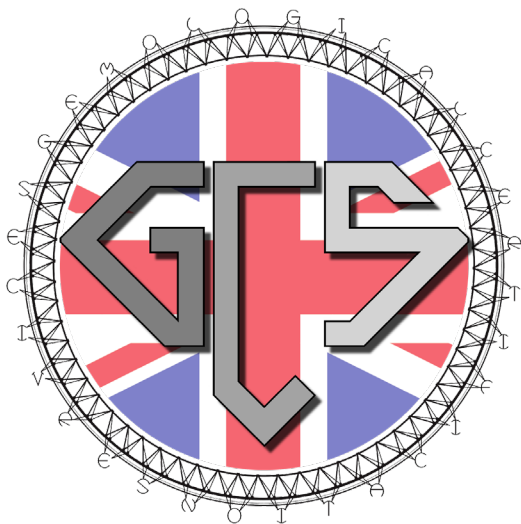
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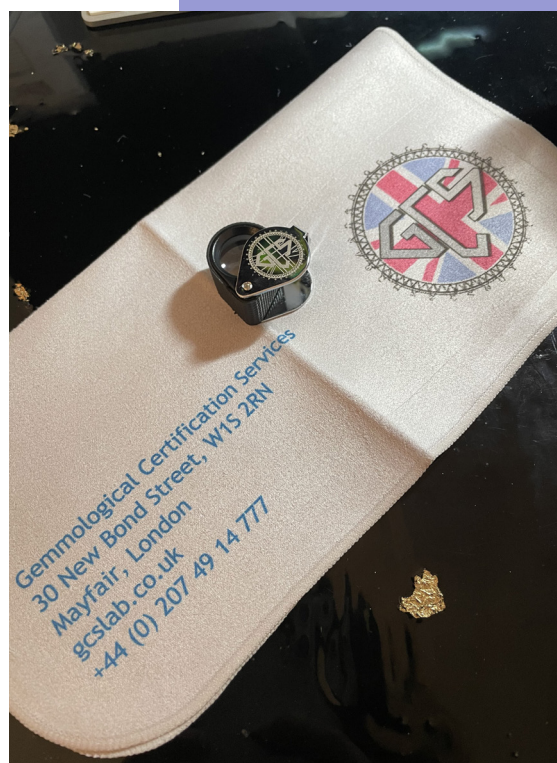


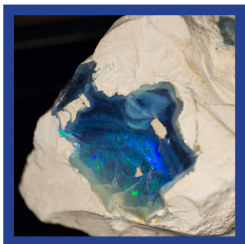
Gemmological Certification Services was established in the heart of London's Mayfair in 2014. We are the UK's leading gemmological laboratory for the origin determination of coloured gemstones; identification of synthetic material, including laboratory grown diamonds; differentiating natural and cultured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





OPAL challenge

Grading the ungradable

While the identification of opal, compared to Fei Cui is relatively straightforward (even considering the presence of lab-created opal in the market), the same can not be said for opal grading.

It is curious that a gemstone that is so entrenched in the gem industry would still not have a recognized grading system. Many have tried, most notably Paul Downing, and yet we are still faced with a gemstone that is not only tricky to grade but also, like Fei Cui, almost impossible to price.

In this article, we will look at two systems, one developed by Gemworld International and the other by Paul Downing. Having taught both systems, I can say that they at least help in understanding the complexities of opal and more importantly reinforce which characteristics have a more profound effect on value and which do not.

GEMWORLD INTERNATIONAL

From a grading perspective, this system is very easy to use and is based on five factors:

- Brightness
- Colour
- Fire Pattern
- Colour Layer
- Directionality

Each factor is scored from 1 to 10. To assign a final grade for the opal, the base score must first be calculated by adding the individual scores together and then dividing by five to arrive at the average score.

Adjustments are then made based on certain characteristics to arrive at a 'Final Score'. This score is then used to determine the quality of the opal using GemGuide (Commercial, Good, Fine and Extra Fine) based on the opal type, and the carat weight.

Brightness

Brightness is evaluated based on six categories:

Brilliant - 9 to 10

Very Bright - 7 to 8

Bright - 5 to 6

Moderate - 3 to 4

Dull - 2

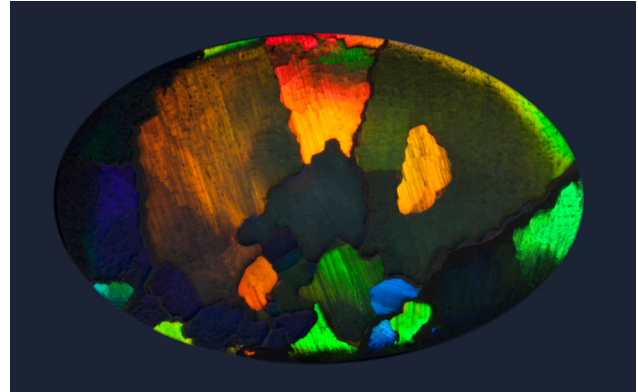
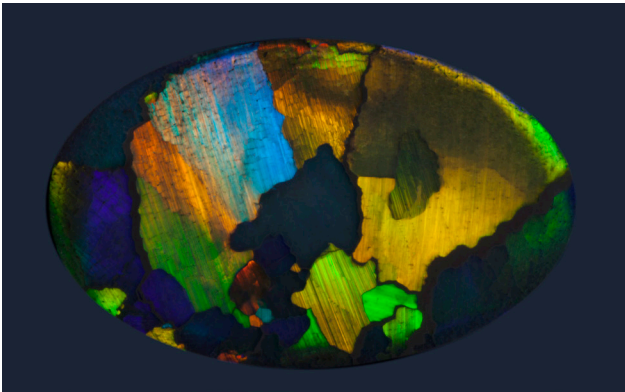
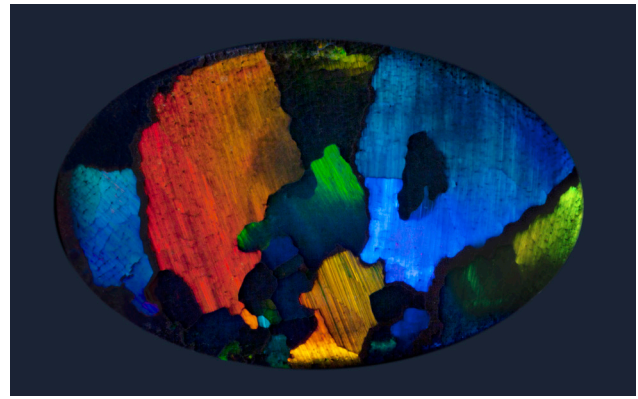
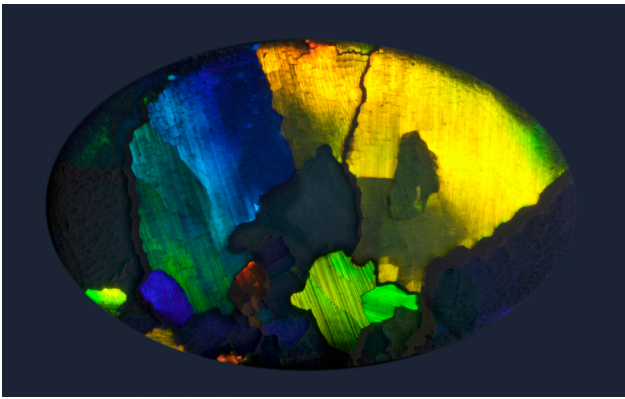
Very Dull - 1

While it is easy to determine the extremes of these six categories, settling on a mid-range score (moderate to bright or bright to very bright) requires considerable experience working with opals. As with any grading of gemstones, the more experience and practice you can gain, the more consistent and accurate your grading will be. Having pre-graded samples can really help to ensure consistency.

Colour

Red-Blue multi-colour (representing both extremes of the spectrum) and Red multi-colour are considered the most desirable (9 to 10), followed by multi-colour, Orange-Red, Red only or Orange Green (7 to 8), then Green-Orange or Green Blue (5 to 6) and finally Blue-Green, Green only or Blue only (1 to 4).

The biggest challenge here is assessing which colours are the most dominant, and define the overall colour of the opal. As we can see from the images on the next page by Robert Smith, the position of the stone in relation to the light can produce many different variations. Grading should be done against a dark background and with a daylight equivalent lamp.



Black Opal from Lightning Ridge (Photographed with Different Lighting Positions)
(All Photos by R. Smith)

Fire Pattern

The Gemworld International system consists of four categories, namely:

Harlequin or Flagstone (9 – 10)

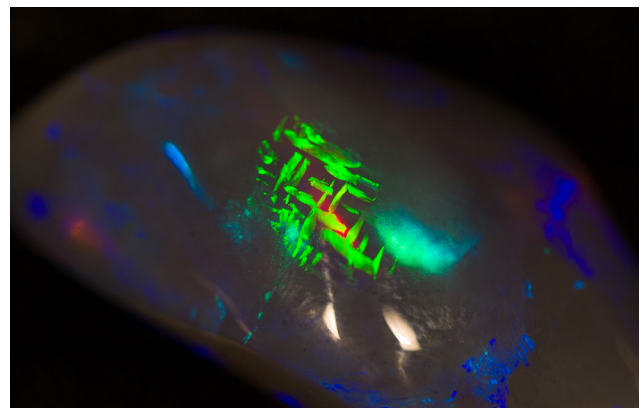
Rolling Flash or Broad Flash (7 – 8)

Floral or Pinfire (5 – 6)

Poorly Defined (1 – 4)

This particular grading characteristic is very difficult for students and even seasoned professionals to assess because of the infinite array of fire patterns available. While harlequin, flagstone, broad flash and pinfire are quite distinctive, the floral category is not. The 'Chinese Writing' fire pattern to the right would be categorized as a 'Rare Pattern' but how would you establish the value?

In the image at the bottom right, what fire patterns would you use to describe the different opals? Could you fit them into these four broad categories?



Chinese Writing Pattern (Top)
Assorted Black Opals (Bottom)
(Courtesy of Down to Earth Opals - Photo by Tino Hammid)

Colour Layer

Colour layer is far easier to determine since it is the ratio of play of colour to potch and is classified as:

80% to 100% play of colour to potch (9 – 10)

60% to 80% play of colour to potch (7 – 8)

40% to 60% play of colour to potch (5 – 6)

Directionality

The importance of directionality depends on what type of jewellery the opal will be set in. For a ring stone, directionality is very important, whereas for a pendant stone, it is not as critical. Like colour layer, directionality is classified into four categories and is based on a 360 degree rotation:

No extinction of play of colour (9 - 10)

Slightly directional (7 - 8)

Somewhat directional (5 - 6)

Highly directional (1 - 4)

Calculating the Base Score

After the five factors are graded and the scores are assigned, the total is divided by 5 to arrive at the base score.

Adjustments

After we have calculated the base score, it is time to make some final adjustments. Certain characteristics will add value, such as a good dome, an N-1 or N-2 body tone, while others will reduce the value, such as a pear shape, an elongated oval or a free-form. Flat, thin or dangerously thin stones, sand-type inclusions or webbing will also have a negative impact on the value.

Final Score and Value

Once the final score has been calculated, it is time to go to GemGuide, find the correct opal type, the correct weight category and then, the price per carat.

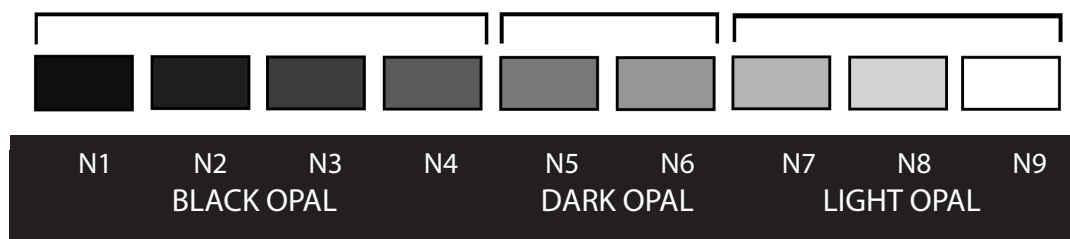
Value Factor	Observation	Score
Carat Weight	1.50 carats	
Opal Type	Semi-Crystal	
Brightness	Bright	5
Colour	Orange-Red	7
Pattern	Pinfire	6
Colour Layer	60 to 80%	7
Directionality	Slightly Directional	7
Total Base Score		32
Average Score (Base Score divided by 5)		6.4
Adjustments		
	Pear Shape	-1.0
	Good Dome	+1.0
Final Score		6.4
Price per Carat (as per GemGuide)		\$ 75
Total Value		\$ 112.50

The example above was taken from the 5th edition of the Handbook of Gemmology.

Conclusion

As an instructor and gemmologist, I think the biggest flaw with this system is that each of the five value factors are considered to be of equal importance. Surely, brightness, colour and fire pattern are more important than colour layer.

Ultimately, these systems not only provide a means of grading opals but also a rationale as to how the grade and value was established. This is important especially in cases where a valuer is called to testify. We may disagree with his logic but if a method has been used, it becomes a difference of opinion.



Classification of Opal by Body Tone

OPAL GRADING (PAUL DOWNING)

While the system described by Paul Downing in his 'Opal - Identification and Value' is over 30 years old, it is still relevant in the marketplace and is therefore included here for the sake of completeness. In Paul's system, the value is based on four main factors: opal type, base colour, brightness, and carat weight. Adjustments are then made to the 'Base Price' so that the opals can be priced using GemGuide.

In this system, opal 'brightness' is considered to be the most important factor and is assessed using low light, indirect sunlight, and a grading lamp. Paul recommends using a 100-watt frosted bulb. The lamp should be positioned so that the bottom of the lamp shade is 50cms from the surface where the opal is being graded. It is critical that this assessment is done correctly since this will have a significant effect on the value if a wrong judgement is made.

The 'Price Range' refers to the pricing charts published by GemGuide, while the 'Base Price' is the average between the highest price and the lowest price and the 'Price Spread' is the difference between the highest and lowest price.

Adjustments now need to be made. These include fire colour, fire pattern, the shape of the dome, the overall cut, shape, inclusions, whether it is crazed or cracked, the consistency of the brightness and fire pattern, the directionality, and the size.

Once these have been noted, they are added up and inserted under 'Total Adjustments'.

To determine the 'Base Price Adjustment', you must multiply the 'Price Spread' by the 'Total Adjustment'.

Adjustments:

Characteristics & Description	All Other Stones	Black, Semi-Black, Black Crystal	Adjustment
Fire Colour:			
Blue only	-.50	-.50	
Green only	-.10	-.20	
Blue-Green	-.05	-.10	
Green-Blue	.00	-.10	
Green-Orange	.00	+ .10	
Orange-Green	+ .05	+ .15	
Red only	+ .25	+ .25	
Orange-Red	+ .10	+ .30	
Multi-Colour	+ .10	+ .30	
Red Multi-Colour	+ .20	+ .40	
Red-Blue Multi-Colour	+ .25	+ .50	
Fire Pattern:			
Pinfire	-.05	-.05	
Flashfire	.00	.00	
Broad Flashfire	.00	.00	
Rolling Flashfire	+ .10	+ .10	
Harlequin	+ .20	+ .20	
Rare Patterns / Picture Stones	.00 to + .20	.00 to + .20	
Dome:			
Low dome	-.10	-.10	
Medium dome	.00	.00	
High dome	+ .10	+ .20	
Cut:			
Floor out or Finish	-.10 to -.50	-.10 to -.50	
Excessively flat out	-.10 to -.50	-.10 to -.50	
Shape:			
Standard Oval	+ .15	.00	
Other Standard Shapes	.00	-.20	
Free size Oval	.00	.00	
Freeform Shapes	-.20	-.30	
Carvings	+ .10 to -.30	+ .10 to -.30	
Inclusions:			
Badly included	-.20 to -.50	-.20 to -.50	
Slightly included	-.15	-.15	
Not included	.00	.00	

2

Characteristics & Description	All Other Stones	Black, Semi-Black, Black Crystal	Adjustment
Cracked (Crazed):			
Cracked (Crazed)	No value as Jewellery	No value as Jewellery	
Consistency of Brightness & Pattern:			
Major dull spot	-.20	-.20	
Minor dull spot	-.10	-.10	
Undesirable pattern mix	-.20	-.20	
Disrupting variation in the base colour or density	-.20	-.20	
Consistent	.00	.00	
Directionality:			
Highly directional	-.30	-.30	
Very directional	-.20	-.20	
Somewhat directional	-.05	-.05	
Slightly directional	.00	.00	
Not directional	+ .10	+ .10	
Size:			
50 carat to .99 carat	-.20	-.30	
.20 carat to .49 carat	-.30	-.50	
15 carats to 20 carats	-.15	-.15	
20 carats to 30 carats	-.20	-.20	
30 carats to 40 carats	-.25	-.25	
Above 40 carats	-.30	-.30	

Total Adjustments: _____ (Line 4)

Determine Base Price Adjustment:

Calculate the 'Base Price Adjustment' by multiplying the 'Spread Price' (Line 3) by the 'Total Adjustments' (Line 4):

$$\text{Line 3} \times \text{Line 4} = \text{_____ (Line 5)}$$

Determine Adjusted Base Price:

Calculate the 'Adjusted Base Price' by adding or subtracting the 'Base Price' (Line 2) and the 'Base Price Adjustment' (Line 5):

$$\text{Line 2} + \text{Line 5} = \text{_____ (Line 6)}$$

3

Determine Total Estimated Price:

Calculate the 'Total Estimate Price' by multiplying the 'Adjusted Base Price' (Line 6) by the weight of the opal in carats (not needed when dealing with Boulder Opals since they are sold by the piece):

$$\text{Line 6} \times \text{Weight} = \text{_____ (Line 7)}$$

Final Review and Adjustment:

Adjust the price and give reasons below if you feel the 'Total Estimated Price' is inappropriate.

4

Opal Grading Worksheet

Opal Type:

Solid	Boulder	Matrix	Treated	Assembled
Lab-created	Simulant			

Base Colour:

Black	Semi-Black	Black Crystal	Crystal	Semi-Crystal
White or Grey	Orange	Other Colour	Boulder Black	Boulder Brown
Boulder White				

Brightness:

1	Faint	Shows play of colour only under direct sunlight and even then the fire is faint.	Less than commercial
2	Dull	Shows some colour under low light but even under indirect sunlight or the grading lamp the fire is dull.	Commercial
3	Bright	Shows fair colour under low light and very nice fire under indirect sunlight or the grading lamp.	Good
4	Very Bright	Shows good colour under low light and sharp crisp colour under indirect sunlight or the grading lamp.	Fine
5	Brilliant	Shows exceptionally bright crisp colour under indirect sunlight or the grading lamp and often shows even brighter in subdued light.	Extra Fine

Carat Weight:

Actual Weight: _____ Estimated Weight: _____

Price Range (GemGuide):

Price Range: _____ to _____ (Line 1)

Determine the Base Price and Spread:

A. Base Price - Calculate the midpoint of the Price Range (Line 1)

Base Price: _____ (Line 2)

B. Price Spread - Subtract the 'Low Price' in the Price Range (Line 1) from the 'High Price'.

Spread Price: _____ (Line 3)

1

This will then be added to the 'Base Price' to arrive at the 'Adjusted Base Price'.

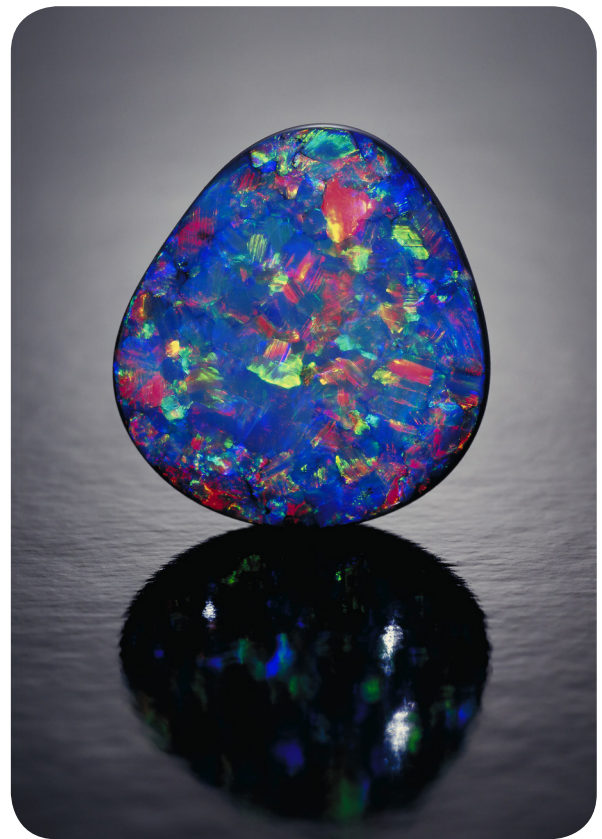
To calculate the value of the opal, the 'Adjusted Base Price' must be multiplied by the weight of the opal.

Finally, as with all gemstone evaluations comes a moment of reflection and this is where experience counts. There is simply no substitute for experience. Does the price seem right based on your knowledge of the market? If it does not, now is the time to make any final adjustments.

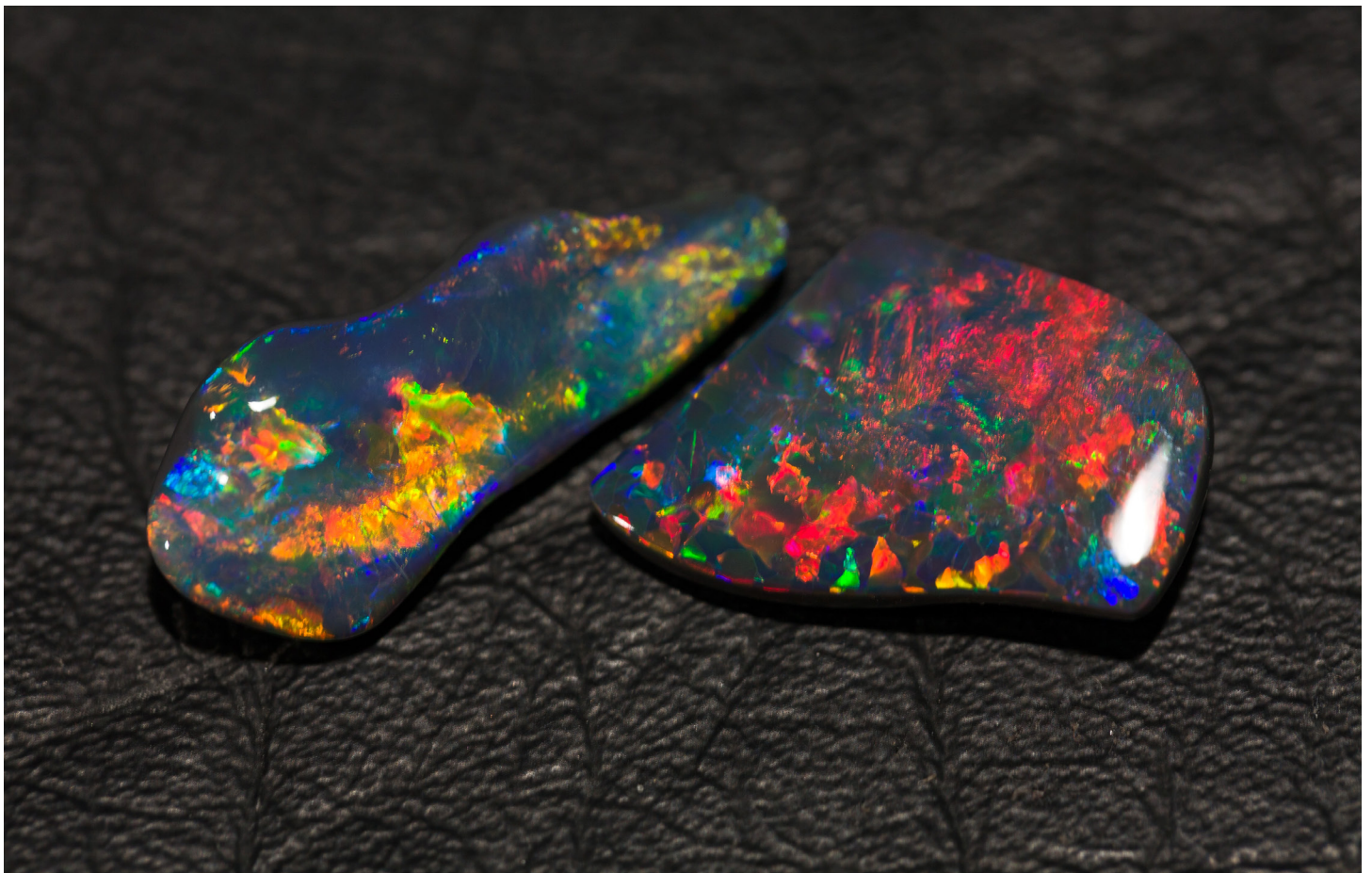
Conclusion

I have to admit that the first time I used this system, I found it very time consuming but as with anything, the more I used it, the simpler it became. Do I think that opal brightness should be the most important grading factor? Probably not, but when I looked at the final prices for the selection of opals I graded using Paul's technique, I had to agree that the values were fair.

By breaking down the grading components, it makes it easier to maintain grading consistency and this should be the goal of every grader. The ability to replicate grades repeatedly.



Stunning Black Opal (Photo by Tino Hammid)



Black Opals from Lightning Ridge (Courtesy of Vicki Bokros & Down to Earth Opals) (Photo by Tino Hammid)



Black Opals from Lightning Ridge (Courtesy of Vicki Bokros & Down to Earth Opals) (Photo by Tino Hammid)



Black Opals from Lightning Ridge (Courtesy of Vicki Bokros & Down to Earth Opals) (Photo by Tino Hammid)



SCHOLARSHIPS

Tino Hammid Memorial Gemmological Scholarship



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

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

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

In 2024, the World Gem Foundation will award five scholarships allowing deserving students to take the World Gem Foundation theoretical 'Career Gemmology' course.

The deadline for submitting your application is December 31st, 2024. All applications will be judged by Tino's wife Petra and his oldest daughter Evelyn with the mandate to select those five candidates who, in their opinion, best epitomize the spirit of Tino.

W.E. Hunn Memorial Gemmological Scholarship

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

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FATAL flaws

Clarity grading coloured gemstones

In the last issue we revisited Objective Diamond Clarity Grading, a system pioneered by Michael Cowing and taught in the practical diamond grading classes at the World Gem Foundation.

In this article, we look at the clarity grading of coloured gemstones, how it differs from the grading of diamonds and why the 'fatal' flaw in the system is the system itself!

GRADING SYSTEMS

One unique feature of the World Gem Foundation is that we teach four different coloured gemstone grading systems in our theoretical and practical classes. The rationale is quite simple. If a system is used in the market, we believe that our students should know how to use it. We do not promote any system over the other. We simply let them grade the same set of study stones using all four systems. It is up to them to decide which system, in their opinion, is best for them.

It is perhaps the one class I enjoy the most because it creates credible data that can be used to analyze many different areas of coloured gemstone grading. The most important being grading consistency. In the colour grading segment, students are grouped in pairs and asked to grade 50 glass colour samples. The next day, they are given 15 of the same samples back and asked to regrade them. This allows us to see how consistent

they are in terms of hue, saturation and lightness (tone). The results are always very interesting. Typically groups that include women fair better since it is a known fact that women have a higher degree of colour perception.

The second part of the exercise involves grading fifteen actual gemstones for colour, clarity and cut.

A challenging part of this exercise is clarity grading. While it is fair to assume that since all diamonds form in similar growth environments, those that form with fewer inclusions should be valued higher than those that form with a higher degree of inclusions, the same is not true of coloured gemstones. Some are products of slow cooling, others are products of rapid cooling. Some will form with very few inclusions (aquamarine) while others (emerald) are rarely found without a significant number of inclusions.

To level the playing field, the Gemological Institute of America (GIA) introduced the classification of coloured gemstones into three categories:

Type 1: Includes gems that form with relatively few inclusions and have no eye-visible inclusions.

Type 2: Includes gems that typically form with some minor inclusions that may be eye-visible.

Type 3: Includes gems that form with many inclusions that are usually eye-visible.

Gemstone	Type	Gemstone	Type	Gemstone	Type
Aquamarine	1	Tanzanite (Zoisite)	1	All Sapphires	2
Green/Pink Beryl	1	Alexandrite	2	All Spinel	2
Yellow/Green Chrysoberyl	1	Andalusite	2	Bi-Colour/Blue Tourmaline	2
Kunzite	1	Golden Beryl	2	Golden Tourmaline	2
All Topaz	1	All Garnets	2	Pink Tourmaline	2
Blue-Green Tourmaline	1	Iolite	2	Brown Zircon	2
Chrome/Green Tourmaline	1	Ruby	2	Emerald	3
Ametrine/Citrine Quartz	1	Peridot	2	Red Tourmaline	3
Zircon (All Colours)	1	Amethyst Quartz	2		



Examples of Type 1 (Aquamarine), Type 2 (Blue Sapphire) and Type 3 (Emerald) Gemstones

While this acknowledges that not all coloured gemstones are created equally, it does pose problems in terms of how they are graded.

GIA / GEMEWIZARD

As we can see from the chart below, the GIA / Gemewizard clarity grading system divides gemstone by clarity type into five different clarity classifications; namely severely included, heavily included, moderately included, slightly included and eye clean.

What is not readily apparent is that the same 'visual appearance' of an inclusion will create three different grades based on the clarity type. For example, a gemstone that has 'inclusions that may be visible to the

unaided eye and are moderate to severe under 10X' will receive a clarity grade ranging from 'severely included' to 'moderately included'.

What does this mean from a grader's perspective?

Well, it forces the grader to reprogram their brain each time they clarity grade a coloured gemstone and while this may sound easy, it is not. Imagine seeing the very same inclusion but assigning three different grades dependent on whether it is a Type 1, Type 2 or Type 3 gemstone? Since consistency is the aim of every grader, having to reprogram your brain each time you grade a gemstone is never going to produce consistent results.

Type	GIA Severely Included	GIA Heavily Included	GIA Moderately Included	GIA Slightly Included	GIA Eye Clean
1	Inclusions may be visible to the unaided eye and are moderate to severe under 10X	Stone may have minor inclusions visible to the unaided eye with moderate 10X inclusions.	Stone appears clean to the unaided eye but may have minor inclusions under 10X	Stone appears clean to the unaided eye but may have minute inclusions under 10X	Stone appears clean to the unaided eye and has no inclusions under 10X
2	Prominent inclusions that have a negative effect on appearance, durability or both.	Inclusions may be visible to the unaided eye and are moderate to severe at 10X	Stone may have minor inclusions visible to the unaided eye with moderate 10X inclusions.	Stone appears clean to the unaided eye but may have moderate inclusions at 10X	Stone appears clean to the unaided eye with possible minor inclusions at 10X
3	Prominent inclusions that have a severe effect on appearance, durability or both.	Prominent inclusions that have a negative effect on appearance, durability or both.	Inclusions may be visible to the unaided eye and are moderate to severe at 10X	Stone may have minor inclusions visible to the unaided eye with moderate 10X inclusions.	Stone appears clean to the unaided eye but may have moderate inclusions at 10X

GEMDIALOGUE

GemDialogue™ require all stones to be clarity graded twice in a face-up position, firstly with the unaided eye and secondly under 10X magnification (CHART A). This makes allowances for darker stones, where the inclusions may be obscured by the colour mask, and lighter stones, where even slight inclusions may be noticeable.

GemDialogue™ also make allowances for stones that are normally, seldom or rarely eye clean in their final grading.

In the case of an 'Eye Clean' stone (CHART B) that is typically found free of inclusion (i.e., aquamarine type 1), a 'Flawless' clarity grade would add +2 to the colour score, while the same stone graded as 'I-1' would result in a 1.5 deduction.

If, on the other hand, the stone is a ruby (type 2), a 'Flawless' grading under 10X would add 2.5 to the overall score while an 'I-1' would reduce the score by 1.

The difference between GemDialogue and GIA / Gemewizard is that the actual grading criteria does not change based on the clarity type. The only time clarity type is factored in is when you adjust the score (CHART B).

So, if a gemstone is graded 'Flawless' under 10X, it does not matter if it is an aquamarine (type 1), a ruby (type 2) or an emerald (type 3). Users of GemDialogue grade the stones the way they see it without the need to reprogram their brain each time they grade a gemstone of a different clarity type.

CHART A	
Clarity Grade	Unaided Eye Description
EC	Eye Clean. No inclusions are visible to the eye.
DE	Inclusions are visible but are difficult to see with the eye.
DE-SE	If the more easily seen inclusions are not in the centre of the stone.
SE-DE	Prominent inclusions are in the centre of the stone or take up a larger area of the stone.
SE	Seen Easily. Prominent inclusions, readily seen by the eye.
Under 10X Magnification	
Flawless	No inclusions visible under 10X. Only used for unmounted stones.
VVS-1	Minute inclusions present, seen with extreme difficulty, not in the centre.
VVS-2	Same as VVS-1 but the inclusions are in the centre of the stone.
VS-1	Inclusions seen with difficulty, but are not in the centre of the stone.
VS-2	Same as VS-1 but inclusions are also seen in the centre of the stone.
SI-1	Inclusions seen easily but are not in the centre of the stone.
SI-2	Same as SI-1 but inclusions are also in the centre of the stone.
I-1	Prominent inclusions seen with difficulty with the eye but not in the centre of the stone.
I-2	Same as I-1 but inclusions may also be seen in the centre with the eye.
I-3	Prominent inclusions seen easily with the eye.
I-4	Extremely included but with cleavages that may reach the top centre of the stone.

CHART B											
EYE GRADE	LOUPE GRADE										
	FL	VVS1	VVS2	VS1	VS2	SI1	SI2	I1	I2	I3	I4
EC (A)	+2	+1.5	+1	+0.5	0	-0.5	-1	-1.5	-2	XX	XX
EC (B)	+2.5	+2	+1.5	+1	+0.5	0	-0.5	-1	-1.5	XX	XX
EC (C)	+3	+2.5	+2	+1.5	+1	+0.5	0	-0.5	-1	XX	XX

WORLD OF COLOR

In their pricing guide, Gemworld International (GemGuide), who market 'World of Color', recognize both the Gemological Institute of America (GIA) and the American Gemological Laboratories (AGL) clarity grading system.

The latter uses three components to determine the clarity grade of a coloured gemstone, namely 'inclusions', 'texture', and 'zoning', and the impact they have on the overall score.

Inclusions

Description	Code	Deduction
Free of Inclusions	FI	No Deduction
Lightly Included	LI	-0.5
Moderately Included	MI	-1.0
Heavily Included	HI	-1.5
Excessively Included	EI	-2.0

Texture

Description	Deduction
Transparent/Faint	No Deduction
Moderate	-0.5
Strong	-1.0
Prominent	-1.5

Zoning

Description	Code	Deduction
None/Slight	Z1	No Deduction
Somewhat Visible	Z2	-0.5
Prominent	Z3	-1.0

No allowances are made for clarity type. Texture refers to the effect inclusions have on the overall transparency of the gemstone while colour zoning is graded in three directions, through the table, through the girdle and at an intermediate angle (45°).

The use of the word 'texture' is somewhat confusing because our perception of texture is 'the feel' of something, not how transparent it is. Grading a gemstone for colour zoning in any direction other than through the table does a disservice to the cutter and would seem to be unfair.

COLOURWISE

As a hybrid colour grading system, ColourWise incorporates what they believe to be the best features from the existing colour grading systems while still making it compatible with the other systems and GemGuide.

Unlike GIA, ColourWise does not factor in the clarity type but does make adjustments when determining the price so as to create a 'level playing field'. This allows the grader to grade a stone based on what he/she sees regardless of the clarity type.

As we can see from the chart below, ColourWise rewards Type 2 and Type 3 stones that fall into the 'Internally Flawless' or 'Slightly Included' clarity categories (in bold). This is because an 'Internally Flawless' sapphire (Type 2) or emerald (Type 3) would be more desirable than one that is 'Moderately Included' if all other factors (colour and cut) are equal.

With ColourWise, transparency refers to the effect inclusions have on the overall transparency of the gemstone and colour zoning is only graded in a face-up position.

Inclusions

Description	Type 1	Type 2	Type 3
Internally Flawless	-	+ 0.5	+ 1.0
Slightly Included	- 0.5	-	+ 0.5
Moderately Included	- 1.0	- 0.5	-
Heavily Included - 1	- 1.5	- 1.0	- 0.5
Heavily Included - 2	- 2.0	- 1.5	- 1.0
Heavily Included - 3	- 2.5	- 2.0	- 1.5

Transparency

Transparent	-	-	-
Semi-Transparent	- 0.5	- 0.5	- 0.5
Translucent	- 1.0	- 1.0	- 1.0
Semi-Translucent	- 1.5	- 1.5	- 1.5

Colour Zoning

None/Slight	-	-	-
Somewhat Visible	- 0.5	- 0.5	- 0.5
Prominent	- 1.0	- 1.0	- 1.0

CONCLUSIONS

There are far more variables that can affect the clarity grading of a coloured gemstone compared to a colourless diamond such as depth of colour, position, and cut?

A darker stone will tend to 'hide' inclusions more than a lighter stone.

While an inclusion positioned around the girdle might be less obvious, it could affect the durability especially when it comes time to set the stone. In this case, it should have a negative effect on the value while an inclusion centrally located might not. Over the years, I have seen many inclusions that would make my heart

race if I were a setter. The cutter may have purposely positioned the inclusion so that it is less visible but by doing so, may have created a durability problem.

At the same token, unlike the majority of diamonds, coloured gemstones are notorious for being poorly cut. An inclusion positioned at the centre of a windowed stone (see below) will be more obvious than an identical inclusion in a well cut stone.

Clearly, there is no easy solution. Michael Cowing teaches us that the surface area of an inclusion, its contrast and position can be used to establish the clarity grade of a diamond. Wouldn't it be nice if the same were true for coloured gemstones!

Inclusion in a windowed tanzanite



Same inclusion in a well cut tanzanite

GT QUIZ #31

Gem Localities



How is your knowledge of geography? This time we look at famous gem localities. Travel around the world without leaving home!

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STATEMENT FROM THE WORLD GEM FOUNDATION EXECUTIVE COUNCIL

On August 28th, 2024, the World Gem Foundation Executive Council revoked the gemmological credentials of Haimanot Sisay Tebeje for gross misconduct, imposing a lifetime ban with no right of appeal. In correspondence sent to Ms. Sisay, the Executive Council noted that reinstatement would only occur at the discretion of the Executive Council.

On August 7th, 2024, Ms. Sisay unlawfully seized gemmological and lapidary equipment that had been purchased by Founder and CEO Geoffrey Dominy to be used in the Project Africa Initiative. Ms. Sisay claims ownership even though the equipment was purchased from Mr. Dominy's personal bank accounts in Canada and Spain.

On August 14th, 2024, Ms. Sisay was asked to provide verifiable proof that the ownership of the equipment had been transferred to her. She declined to provide such evidence citing that in her opinion, the Executive Council did not have the authority over her (please refer to the World Gem Foundation Executive Council Charter by [clicking here](#)).

EQUIPMENT SEIZED

The total value of the equipment unlawfully seized by Ms. Sisay is \$ 35,195.44 USD. Mr Dominy is currently pursuing legal action against Ms. Sisay both in Ethiopia where the seizure occurred and in British Columbia, Canada where the World Gem Foundation is registered.

As a consequence of Ms. Sisay's actions, the World Gem Foundation is ceasing all operations in Ethiopia and is currently doing a risk assessment to determine the future of Project Africa in other regions of Africa.



EL fuego

The best cassiterite diamonds are in Bolivia

Editors Note:

A special treat for our Spanish readers. We are delighted to include this article by Ggo. Vladimir Gery Alanes Garcia on cassiterite in both English and Spanish. The article has been laid out so that the two versions can be viewed side by side.

Bolivia's historical production of yesteryear has been silver, thanks to its deposits in Cerro Rico or the Porco mines in the department of Potosí. Besides silver, Bolivia has become the world's leading producer of tin, a mineral whose most common state is tin (IV) oxide, SnO_2 . Cassiterite is the form of this mineral that had its peak with the legend of Simón I. Patiño, tin magnate.

Simón I. Patiño was a mestizo boy of short stature and with a certain deformity in his body who was born on June 1, 1860 in Santibáñez, a town mostly of Quechua origin, in the Andean zone of the Department of Cochabamba, Bolivia. In the indigenous communities of Andean areas, it was traditional to kill children who presented malformations, since they implied an overload for the families that were always harassed by misery. Weeks before his birth, Simon's parents had converted to Christianity, which imposed respect for the lives of those unfortunate children, and this situation saved the little boy's life. Unfortunately, nobody cared about him to give him an education. Illiterate, he got a job as a laborer in a warehouse in his hometown, where he showed talent and, above all, a truly inexhaustible capacity for work. When he settled in the job they married him to a young woman from Oruro.

One day, in the absence of his boss, Don Simón gave a gold prospector some goods for 195 pesos on credit. When his boss found out what had happened, he exploded with anger and gave him a week's time to

La producción histórica de antaño de Bolivia ha sido la plata, gracias a sus yacimientos del Cerro Rico o las minas de Porco en el departamento de Potosí. A parte de la plata, Bolivia ha llegado a ser el principal productor mundial de estaño, un mineral cuyo estado más común se encuentra como óxido de estaño (IV), SnO_2 . La casiterita es la forma de este mineral que tuvo su auge con la leyenda de Simón I. Patiño, magnate del estaño.

Simón I. Patiño fue un niño mestizo de corta estatura y con cierta deformidad en su cuerpo que nació el

1 de junio de 1860 en Santibáñez, localidad mayoritariamente de origen quechua, de la zona andina del Departamento de Cochabamba, Bolivia. En las comunidades indígenas de zonas andinas era tradicional matar a los niños que presentaban malformaciones, pues implicaban una sobrecarga para las familias que siempre estaban acosadas por la miseria. Semanas antes de su nacimiento, los padres de Simón se habían convertido al cristianismo, que imponía respeto por la vida de aquellos niños infortunados, y esta situación, salvó la vida del pequeño. Desgraciadamente, nadie se preocupó de él para darle educación. Analfabeto, consiguió trabajo como peón de un almacén en su ciudad natal, donde

demonstró talento y, sobre todo, una capacidad de trabajo verdaderamente inagotable. Cuando se asentó en el empleo lo casaron con una joven oriunda de Oruro.

Cierto día, en ausencia de su patrón, don Simón concedió a un buscador de oro unas mercaderías por 195 pesos al fiado. Cuando su patrón se enteró de lo sucedido, estalló de ira y le dio un plazo de una semana para que cobrase la deuda. Entonces, don Simón y su esposa se marcharon hacia los Andes en busca del deudor, que sólo poseía la concesión para buscar oro, que nada valía. Nada para nadie, salvo para su esposa, que le aconsejó que aceptase.



collect the debt. Then, Don Simon and his wife left for the Andes in search of the debtor, who only had the concession to look for gold, which was worth nothing. Nothing to anyone but his wife, who advised him to accept.

When his boss found out about it, he had a fit of rage again, told him to keep the famous concession and fired him without paying him a single penny. Faced with this unfortunate incident, Don Simón resorted to his few savings, his wife sold her jewelry and with it, they bought mules, food, tools and hired some indigenous people to work as miners. They returned to the foothills of the Andes mountain range in search of gold, but they did not find it.

They kept digging, until they stumbled upon an ore that they thought was silver. It was not silver. It was tin, a low-quality tin, but it provided them with their first income, which they used to pay off debts, buy more mules, tools, food, and hire new contingents of indigenous people and acquire more land concessions. Then, as a result of perseverance, they found a vein of tin of excellent grade, with more than 60%. They continued to buy land, some of it in practically inaccessible places, more than four thousand meters high, where water and food had to be carried on the back of a mule. Don Simón was becoming the main producer of tin in Bolivia and Bolivia, in turn, the first producer of tin in the world. Tin was a basic input in rapidly expanding industries, such as the automotive and food preservation industries, due to the alloy solder components and the use of tinplate, respectively. Banking and finance agents from London and New York flocked to Don Simón.

At 60 years of age, his personal wealth easily reached 500 million vigorous 1920 dollars, he became one of the richest men in the world, the richest in South America and the virtual owner of Bolivia, with a fortune comparable to that of the world tycoons by Rockefeller and Zaharoff. He came to dominate the globalized economy, since he bought foundries in Liverpool to process Bolivian tin in Europe; he bought the best tin

Su patrón al enterarse de aquello, le dio nuevamente un ataque de ira, le dijo que se quedara con la famosa concesión y lo despidió sin pagarle un solo centavo. Ante éste desafortunado incidente, don Simón recurrió a sus pocos ahorros, su esposa vendió sus joyas y con ello, compraron mulas, alimentos, herramientas y contrataron a algunos indígenas para que trabajasen como mineros. Ellos regresaron a las faldas de la cordillera de los Andes en busca de oro, pero no lo encontraron.

Siguieron excavando, hasta tropezarse con un mineral que creyeron plata. No era plata. Era estaño, un estaño de baja calidad, pero que les proporcionó los primeros ingresos, que utilizaron para cancelar deudas, comprar más mulas, herramientas, alimentos, y contratar nuevos contingentes de indígenas y adquirir más concesiones de tierras. Luego, fruto de la perseverancia, hallaron una veta de estaño de excelente tenor, con más del 60 %. Continuaron comprando tierras, algunas de ellas en lugares prácticamente inaccesibles, a más de cuatro mil metros de altura, donde había que llevar el agua y la comida a lomo de mula. Don Simón, se estaba transformando en el principal productor de estaño de Bolivia y Bolivia a su vez, en el primer productor de estaño del mundo. El estaño era un insumo básico de las industrias en gran expansión, como la automotriz y la de conserva de alimentos debido a los componentes de soldaduras en aleación y la utilización de la hojalata respectivamente. Los agentes de la banca y de finanzas de Londres y Nueva York acudían a Don Simón.

A sus 60 años de edad, su riqueza personal alcanzaba con soltura los 500 millones de vigorosos dólares de 1920, se convirtió en uno de los hombres más ricos del mundo, el más rico de América del Sur y dueño virtual de Bolivia, con una fortuna comparable a la de los magnates mundiales por Rockefeller y Zaharoff. Él llegó a dominar la economía globalizada, ya que, compró fundiciones en Liverpool para procesar en Europa el estaño boliviano; compró las mejores minas de estaño de Malasia e Indonesia, aniquilando prácticamente a la competencia. Asimismo, compró fundiciones en



Raw Cassiterite twin from Viloco - Bolivia
(Courtesy of IGB)



Lustrous dark brown Cassiterite crystal approximately
3.0 cm long (Courtesy of IGB)

mines in Malaysia and Indonesia, virtually annihilating the competition. Likewise, he bought foundries in New York, to process in the United States the Bolivian tin that the thriving US automobile industry needed; he bought banks in the "city", in Paris and on Wall Street to finance his unstoppable expansion, and he invested in shipping companies that transported his tin to all the markets of the world. Now yes, Bolivia was too small for him. Although he went to settle in Europe, but he deeply loved Bolivia. When he died on April 20, 1947, in Buenos Aires, Argentina, he owned the largest tin reserves in the world.

Not surprisingly, as the world's main ore for tin mining, cassiterite has been called "tin stone" and "tin spar". Some varieties also have names associated with tin. The "dough tin," a white variety from Cornwall, England, has a texture like unbaked bread dough. The "toad's eye can" looks like a dough can, but has either botryoidal (sphere or grape-like) or reniform (kidney-like) crystal structures. "Stream tin" comes in round shapes worn by water.

Cassiterite is a primary constituent of igneous rocks and pegmatites, although it is much more frequently found in hydrothermal veins; in pegmatites, cassiterite is associated with wolframite, scheelite and mispíquel. Also, they appear in fluvial sediments in the form of cassiterite nodules, where these, by their own weight, settle in the riverbeds due to mechanical effects (placer-type deposits). Most of the world's tin comes from the alluvial deposits of Thailand, Indonesia and Malaysia.

The largest recorded deposit of cassiterite is in Yunnan, China; however, the best samples that have been found and are exploited are in Huanuni, Bolivia. These are veins, source of the very rare and unique yellow gem quality. While the mineral cassiterite is found in many other places around the world, Bolivia produces most of the gem-quality material. Also, in the Araca mine in the province of Loayza, in the department of La Paz, yellow, gray, colorless and light yellowish brown to reddish brown stones are produced. In addition, in other mines in western Bolivia, cassiterite is extracted in brownish-black, reddish-brown, brown, orange, yellow, gray, white and colorless seams, obtaining magnificent samples. Thus, the best veins of primary cassiterite are found in the tin mines of Bolivia, where it is found in crystallized hydrothermal veins. They are also concentrated in high temperature quartz veins and pegmatites associated with granitic inclusions. These veins also commonly contain tourmaline, topaz, fluorite, apatite, wolframite, molybdenite and arsenopyrite.

Cassiterite is a mineral that belongs to the group of oxides, it is a tin oxide, with the chemical formula SnO_2 , where 78.6% is tin and 21.4% is oxygen, the color can vary from brown, dark brown, brownish black, yellow, reddish orange, colourless, green or grey. With an

Nueva York, para procesar en los Estados Unidos el estaño boliviano que necesitaba la pujante industria automovilística estadounidense; compró bancos en la "city", en París y en Wall Street para financiar su incontenible expansión, e invirtió en empresas navieras que transportaban su estaño a todos los mercados del mundo. Ahora sí, Bolivia le quedaba muy chica. Si bien se fue a radicar a Europa, pero amaba profundamente a Bolivia. Cuando murió el 20 de abril de 1947, en Buenos Aires, Argentina, era dueño de las mayores reservas de estaño del mundo.

No es sorprendente que, como el principal mineral para la explotación de estaño en el mundo, la casiterita haya sido denominada "piedra de estaño" y "espato de estaño". Algunas variedades también tienen nombres asociados con el estaño. La "lata de masa", una variedad de color blanco de Cornualles, Inglaterra, tiene una textura como la masa de pan sin hornear. La "lata de ojo de sapo" parece una lata de masa, pero tiene estructuras cristalinas botrioidales (esferas o similares a uvas) o reniformes (similares a riñones). El "estaño de corriente" se presenta en formas redondas desgastadas por el agua. La casiterita es un constituyente primario de las rocas ígneas y pegmatitas, aunque es mucho más frecuente encontrarla en filones hidrotermales; en las pegmatitas, la casiterita está asociada a wolframita, scheelita y mispíquel. También, aparecen en sedimentos fluviales en forma de nódulos de casiterita, donde éstos por su propio peso, se asientan en los lechos de los ríos por efectos mecánicos (yacimientos de tipo placer). La mayor parte del estaño del mundo procede de los depósitos aluviales de Tailandia, Indonesia y Malasia.

El yacimiento más grande de casiterita registrado se encuentra en Yunnan, China; sin embargo, las mejores muestras que se han encontrado y se explotan están en Huanuni, Bolivia. Éstas son filones, fuente de la calidad gema de color amarillo, muy poco común y única. Si bien, el mineral de la casiterita se encuentra en muchos otros lugares del mundo, pero en Bolivia se produce la mayor parte del material de calidad gema. También, en la mina Araca en la provincia de Loayza, del departamento de La Paz, se produce piedras amarillas, grises, incoloras y de color marrón amarillento claro a marrón rojizo. Además, en otras minas del occidente de Bolivia, la casiterita se extrae en filones de color negro parduzco, marrón rojizo, marrón, anaranjado, amarillo, gris, blanco e incoloro, obteniéndose magníficas muestras. De este modo, las mejores vetas de casiterita primaria se encuentran en las minas de estaño de Bolivia, donde se encuentra en vetas hidrotermales cristalizadas. Asimismo, se concentran en vetas de cuarzo de alta temperatura y pegmatitas asociadas con inclusiones graníticas. Éstas vetas comúnmente contienen también, turmalina, topacio, fluorita, apatito, wolframita, molibdenita y arsenopirita.



Lustrous white Cassiterite crystal
(Courtesy of IGB)

adamantine shine, it can be transparent, translucent or opaque. In transmitted light it is colorless to brown, but also orange, yellow, or green; in reflected light it shows light gray coloration, with white to brownish internal reflections. Its hardness is between 6 and 7 on the Mohs scale and its density is between 6.98 and 7.01 g/cm³. It is brittle and resistant to acids.

On the other hand, cassiterite is used as a precious stone, due to its faceted cut. This gem attracts the attention of collectors, although there are brilliant minerals from Mereski, Russia, or the Bohemian cassiterite from the Czech Republic, but the most prolific in the production of specimens for collection is the Viloco deposit. Bolivia, of which are shown in the photos.

The largest amount of tin in the world is found in the countries of Bolivia, Malaysia, Congo, Indonesia, and England. The best-known Bolivian tin deposits with the best gem-quality cassiterite specimens are found in the departments of La Paz, Potosí and Oruro. The Bolivian deposits from which the best brilliant and sometimes transparent crystals come are Viloco (Araca), province of Loayza, department of La Paz; Huanuni, Dalcence province, Oruro department; and Llallagua, in the department of Potosí, these have been classified as world-class giants, due to their abundance and the economic potential they represent.

Research and training in the carving of these Andean diamonds is being developed by the Bolivian Gemological Institute, which is represented by the World Gem Foundation. The Institute collaborates with native miners and young people interested in the promotion, training and development of these brilliant faces.

Cassiterites without inclusions rarely weigh more than 1 carat. Opaque samples are up to hundreds of grams in weight. Gem cutters sometimes cut them into the shape



This sample is approximately 18 cm wide and comes from Viloco (Araca), Bolivia (Courtesy of IGB)

La casiterita es un mineral que pertenece al grupo de los óxidos, es un óxido de estaño, con formula química SnO₂, donde el 78,6% es de estaño y el 21,4% es de oxígeno, el color puede variar desde parda, marrón oscuro, negra parduzca, amarilla, anaranjado rojizo, incolora, verde o gris. De brillo adamantino, puede ser transparente, translúcida u opaca. Con luz transmitida es entre incolora y parda, aunque también anaranjada, amarilla o verde; con luz reflejada muestra coloración gris clara, con reflexiones internas de blancas a pardas. Su dureza es entre 6 y 7 en la escala de Mohs y su densidad está comprendida entre 6,98 y 7,01 g/cm³. Es frágil y resistente a los ácidos.

Por otro lado, la casiterita se emplea como piedra preciosa, por su corte en facetas. Esta gema atrae la mirada de los coleccionistas, si bien existen minerales brillantes provenientes de Mereski, Rusia, o la casiterita bohemia de la República Checa, pero el más prolífico en producción de ejemplares de colección, es el yacimiento de Viloco. Bolivia, del cual se muestran en las fotos.

La mayor cantidad de estaño en el mundo se encuentra en los países de Bolivia, Malasia, Congo, Indonesia, e Inglaterra. Los yacimientos de estaño bolivianos más conocidos con los mejores ejemplares de casiterita de calidad gema, se encuentran en los departamentos de La Paz, Potosí y Oruro. Los yacimientos bolivianos de donde provienen los mejores cristales brillantes y a veces transparentes son Viloco (Araca), provincia de Loayza, departamento de La Paz; Huanuni, provincia de Dalcence, departamento de Oruro; y Llallagua, del departamento de Potosí, éstos han sido clasificados como gigantes de clase mundial, por su abundancia y el potencial económico que representan.

La investigación y formación en el tallado de estos brillantes andinos está siendo desarrollado por el Instituto Gemológico Boliviano que tiene la



Cassiterite in the process of being faceted at the Bolivian Gemological Institute IGB by gemstone carver Daniel Romano (Courtesy of IGB)



Cassiterites of different sizes and colors, IGB - Bolivia (Courtesy of IGB)

of cabochons. At the Bolivian Gemological Institute (IGB), pale brown, dark brown, yellow brown, and orange gems of up to 15 carats are cut, brilliants of up to 25 carats have also been cut. The materials of the latter come from Viloco and Huanuni.

Among its most outstanding characteristics is that pure cassiterite is colorless, due to iron impurities it is generally found from brown to black and in Bolivian deposits it can appear yellow, orange, green, white or gray. They are included within the tetragonal crystal system, they present prismatic and strongly striated crystals, it is very common to find them in the form of twins.

Although rough cassiterite samples continue to be sold as collector's items to this day, faceted gem-quality crystals make excellent stones for jewelry. In recent years, thanks to the development and innovation of stone carvers, change is being forged to give added value to these magnificent crystals. Most of the cassiterite crystals have opaque and dark colors, usually black or brown, but in Bolivia, there is a high quality productive vocation to develop faceted crystals of lighter color, which are rare because they occur in small fragments.

Worldwide, it is considered rare to obtain cassiterite gems, since they must be faceted cut gems, be transparent, be without fractures, with high clarity and have a striking color. However, thanks to the training workshops given by the Bolivian Gemological Institute (IGB), the incursion of gem-quality cassiterites into jewelry is being encouraged, taking advantage of the best characteristics of the raw materials, namely, their adamantine shine, translucency, its clarity that is sometimes found transparent, its high dispersion, which is its ability to separate white light into its spectral

representación de la World Gem Foundation. El Instituto, colabora a los mineros autóctonos y a los jóvenes interesados en la promoción, formación y desarrollo de estos brillantes facetados.

Las casiteritas sin inclusiones rara vez pesan más de 1 quilate. Las muestras opacas tienen hasta cientos de gramos de peso. Los talladores de gemas a veces los cortan en forma de cabujones. En el Instituto Gemológico Boliviano (IGB), se tallan gemas de color marrón pálido, marrón oscuro, marrón amarillo, y anaranjado de hasta 15 quilates, también se han tallado brillantes de hasta 25 quilates. Los materiales de estos últimos, provienen de Viloco y Huanuni.

Entre sus características más sobresalientes esta que la casiterita pura es incolora, debido a las impurezas de hierro generalmente se la encuentra de marrón a negro y en los yacimientos bolivianos pueden aparecer de color amarillo, anaranjado, verde, blanca o gris. Están comprendidos dentro del sistema cristalino tetragonal, presentan cristales prismáticos y fuertemente estriados, es muy común encontrarlos en forma de maclas.

Si bien hasta el día de hoy, persiste la venta de muestras de casiterita en bruto como especímenes de colección, pero los cristales facetados calidad gema son excelentes piedras para joyería. En estos últimos años, gracias al desarrollo e innovación de los talladores de piedras, se está forjando el cambio para darle un valor agregado a estos magníficos cristales. La mayoría de los cristales de casiterita tienen colores opacos y oscuros, generalmente negros o marrones, pero en Bolivia, se tiene una vocación productiva de gran calidad para desarrollar cristales facetados de color más claro, que son raros porque ocurren en pequeños fragmentos.

colors, resulting in a colorful “fire”. Cassiterite has a dispersion of 0.071, much greater than diamond’s 0.044, which produces a greater “fire”. This property is only seen in cassiterite gems that are light in color.

In addition, cassiterite is characterized by having a relatively high density of 6.8 to 7.1 g/cm³, which could be excessive for a mineral with a non-metallic luster, and a high hardness of 6 to 7 on the Mohs scale. Due to its high density and hardness, cassiterite is weather resistant, which allows it to be transported for long periods of time. Although cassiterites have an imperfect cleavage plane, this does not present a major wear problem. Note that with a hardness of 7, a cassiterite equals quartz in durability and is suitable for any jewelry use and everyday use. However, at hardness 6, more care must be taken when placing and using your cassiterite from your accessories.

Finally, I wish to express my gratitude to the official photographer of the Bolivian Gemological Institute IGB, Mauricio Rocabado Durán, for the photographs and the support provided.



Faceted cassiterites of different colors and sizes
(Courtesy of IGB)



Faceted cassiterite set in a ring with diamonds
(Courtesy of IGB)

A nivel mundial, es considerado raro obtener gemas de casiteritas, puesto que se deben realizar el corte de gemas facetadas, ser transparentes, estar sin fracturas, con una claridad alta y que tenga un color llamativo. Sin embargo, gracias a los talleres de formación que imparte el Instituto Gemológico Boliviano IGB, se está fomentando la incursión de las casiteritas calidad gema en la joyería, aprovechando de las mejores características de las materias primas, a saber, su brillo adamantino, translucidez, su claridad que en ocasiones se lo encuentra transparente, su alta dispersión, que es su capacidad de separar la luz blanca en sus colores espectrales obteniéndose como resultado un colorido “fuego”. La casiterita tiene una dispersión de 0.071, mucho mayor que el diamante’s 0.044, lo que produce un mayor “fuego”. Esta propiedad solo se observa en gemas de casiteritas que tengan un color claro.

Además, la casiterita se caracteriza por tener una densidad relativamente alta de 6.8 a 7.1 g/cm³ lo que podría ser excesivo en un mineral con brillo no metálico, una dureza alta de 6 a 7 en la escala de Mohs. Debido a su alta densidad y dureza, la casiterita es resistente a la intemperie lo que le permite largos transportes. Aunque las casiteritas tienen un plano de clivaje imperfecto, esto no representa un problema importante para el desgaste. Tenga en cuenta que, con una dureza de 7, una casiterita iguala al cuarzo en durabilidad y es adecuada para cualquier uso de joyería y uso diario. Sin embargo, a las de dureza 6, se debe tener más cuidado al colocar y usar su casiterita de sus accesorios.

Por último, deseo expresar mi agradecimiento al fotógrafo oficial del Instituto Gemológico Boliviano IGB, Mauricio Rocabado Durán, por las fotografías y el apoyo brindado.



Cassiterite ring by Daniel Romano from IGB - Bolivia
(Courtesy of IGB)



FOCUS on

Laszlo Kupi

Laszlo Kupi, born in Székesfehérvár, Hungary, has become one of the leading figures in mineral photography. His interest in minerals began during childhood, inspired by his grandfather, a miner and mineral collector. Growing up, Laszlo often joined his family on mineral-collecting trips, and this passion for minerals continued through his education. He earned a Master's degree in Economic Geology from Eötvös Loránd University and pursued further studies in Exploration Geology. His career as a geologist allowed him to work in various countries, including Hungary, Slovakia, Turkey, and Romania, but the opportunities to build his personal mineral collection were limited at that time.

Laszlo's journey into photography started when friends introduced him to exquisite mineral specimens. Through practice and dedication, he mastered mineral photography and eventually turned it into a profession.

In 2016, he began working as a commercial mineral photographer, capturing high-quality images for private collectors, institutions, and publications. His photography has been featured in the prestigious *Mineralogical Record*, *Rocks and Minerals*, *Lapis*, and other educational magazines, and he gained further recognition by winning Tucson mineral photography contests in both the macro and micro categories in 2022 and 2023.

Quartz & Epidote from San Felipe Mine, Sartimbamba, La Libertad, Peru (53mm) Courtesy of Laszlo Kupi



While he continues to photograph minerals for various clients, some of whom have become close friends, Laszlo is also considering the balance between his family life and professional commitments. With a young daughter, he has scaled back on his geological work, focusing more on photography, which allows for shorter trips. His work has taken him to major mineral shows worldwide, and he plans to expand his photography to international markets, particularly in Japan and China, where there is a growing demand for mineral photography.

Laszlo's future ambitions include organizing photography workshops to share his expertise and inspire others to capture the beauty of minerals. Through his work, he not only documents the natural beauty of minerals but also fosters a deeper appreciation for these treasures among collectors and enthusiasts worldwide.

All images copyright Laszlo Kupi



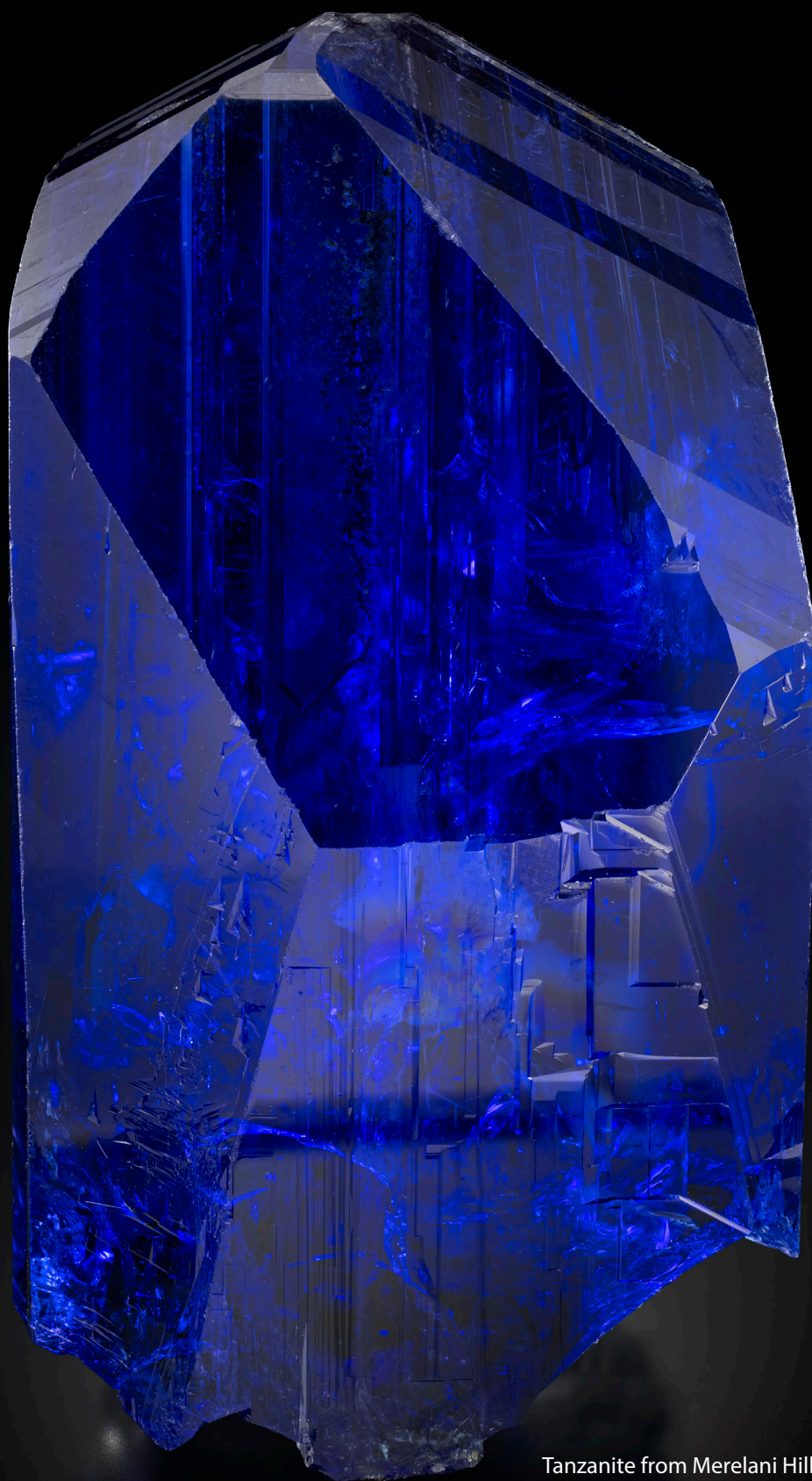
Laszlo Kupi (Photo by Laura Sigulinszki)



Zircon from Ntendezi, Nyamasheke, Rwanda (8mm) Courtesy of Laszlo Kupi



Tourmaline, Quartz & Albite from Pala Chief Mine,
San Diego, California, USA (10cm)
Courtesy of Green Mountain Minerals

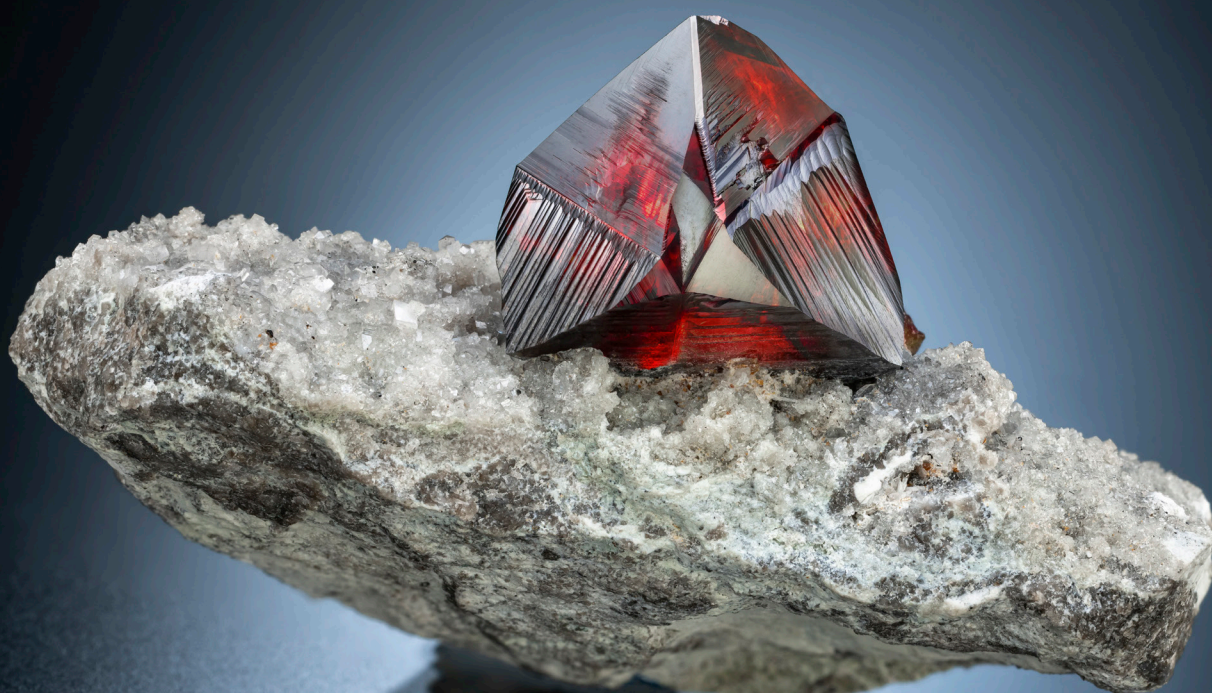


Tanzanite from Merelani Hills, Tanzania (72mm)
Courtesy of Arkenstone

Tourmaline from Bevoandrano, Fianarantsoa,
Madagascar (Largest Crystal 4.2cm)
Courtesy of Luke Gray



Sphalerite, Calcite from Elmwood Mine, Carthage,
Smith Co., Tennessee, USA (40mm)
Courtesy of Laszlo Kupi





Quartz and Halloysite from Cabiche, Quípama
Municipality, Boyaca Department, Colombia (65mm)
Courtesy of Laszlo Kupi

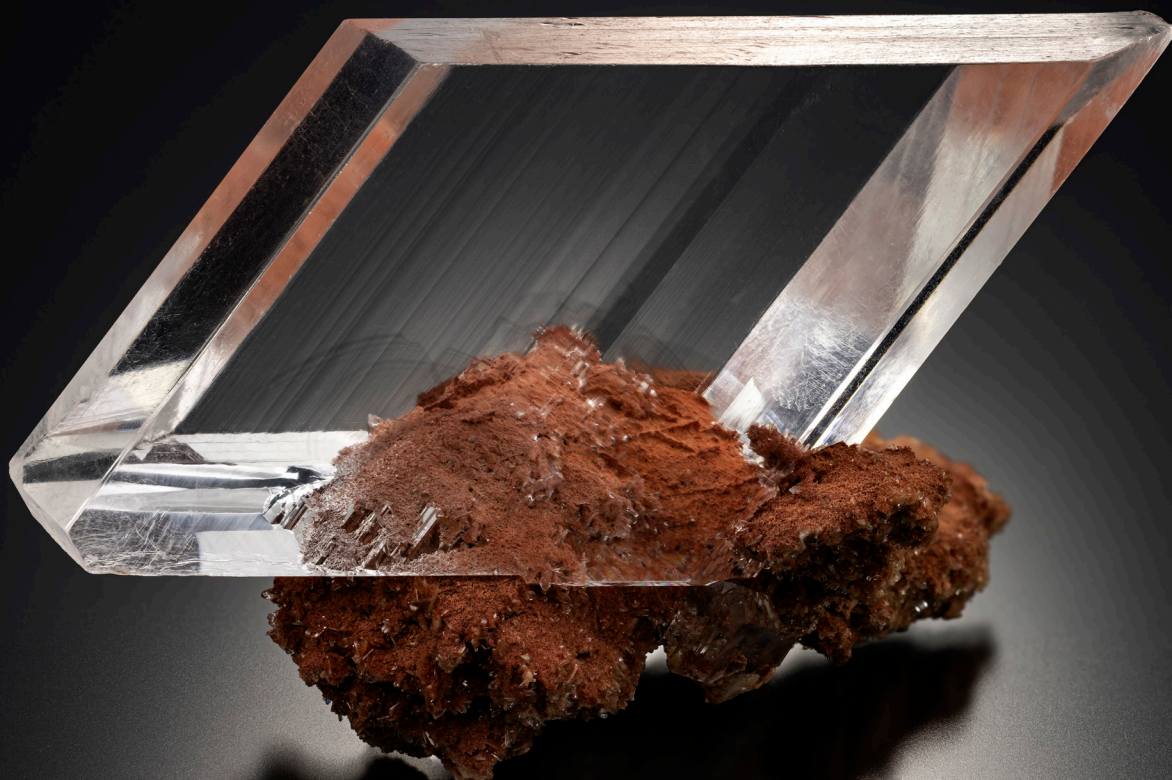


Emerald from the Muzo Mine, Boyaca, Colombia (1.80ct)
Courtesy of Aliz Emerald



Pyrite from Ampliación A Victoria Mine,
Navajun, Spain (8cm)
Courtesy of Jonathan Feigin

Gypsum from Naica, Mexico (68mm)
Courtesy of Focal Crystal



Fluorite from Erongo Mountains, Karibib,
Namibia (8.6cm)
Courtesy of Andreas Empl





Aquamarine, Apatite & Albite from Shigar Valley,
Pakistan (3.2cm)
Courtesy of Arkenstone

Stibnite from Herja Mine, Baia Mare,
Maramures, Romania (63mm)
Courtesy of Gabor Koller



Aquamarine from Vietnam (1.2cm)
Courtesy of Splendor

Spessartine from Chilas, Gilgit-Baltistan, Pakistan (8mm)
Courtesy of Laszlo Gal



Calcite & Stilbite from Jalgaon District,
Maharashtra, India (6cm)
Courtesy of Laszlo Kupi



Rhodochrosite from Sweet Home Mine, Alma,
Colorado, USA (8cm) Courtesy of Stephanie Joplin

Rhodonite & Quartz from San Martín Mine,
Bolognesi Province, Ancash, Peru (26mm)
Courtesy of Laszlo Kupi





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 gemological laboratory 'Hardy's', followed by the installation of the colored stone and diamond cutting facilities in the jewelry school EIBMA.

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

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

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

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

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

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

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

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.

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: 1,236
 LinkedIn Followers: 1,227
 Total Value of Scholarships Awarded: € 231,003

MEET OUR TEAM OF PROFESSIONALS



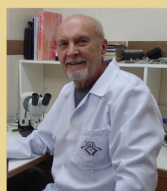
Geoffrey M. Dominy
World Gem Foundation
Founder / CEO
Executive Board Member



Leone Langeslag
Dutch Gem Academy
Executive Board Member



Jack Ghazalian
American Gem Academy



Gérard Raphaël Quintin
South American Gem Academy
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Italy



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Gem Academy of Belgium



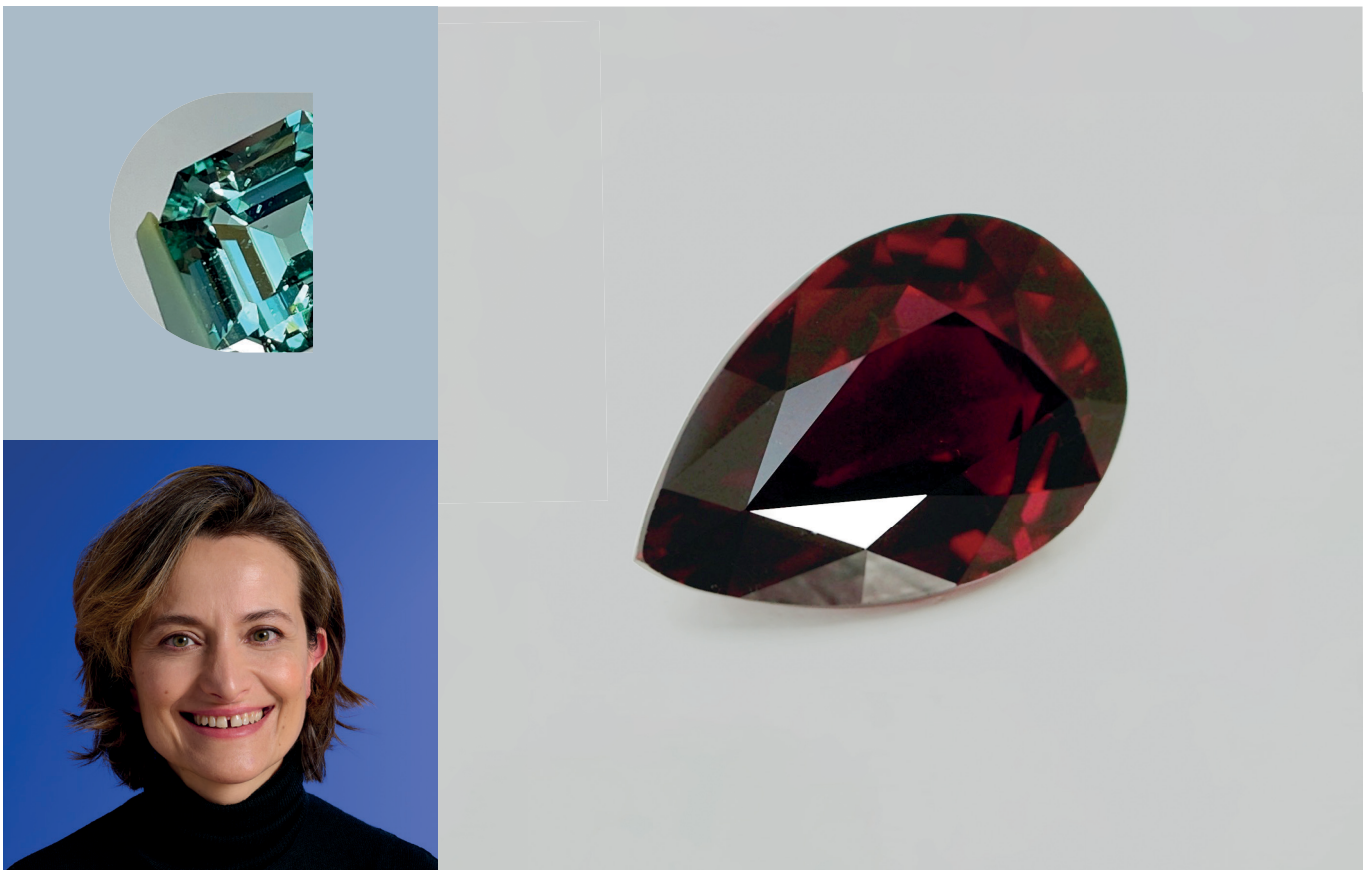
WGF directory

Who we are and how to find us

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

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