

Gems & Jewellery

Winter 2022 / Volume 31 / No. 4

ETHICAL MAKING WITH THE
SCOTTISH GOLDSMITHS TRUST

DISCOVERY OF THE
HARPOLE TREASURE

4D PHOTOGRAPHY OF
GEMSTONES AND JEWELS

2022 PHOTOGRAPHER OF
THE YEAR COMPETITION



Gem-A
THE GEMMOLOGICAL ASSOCIATION
OF GREAT BRITAIN



REGISTER NOW!



GemINTRO

GemIntro is a Level 2, online, entry-level course which will introduce you to the fascinating world of gemmology and the enormous variety of beautiful gems available. You can discover the basics of gemmology at your own pace - perfect for anyone looking to start or grow their career in the gems and jewellery trade, or for those completely new to gemmology and with an interest in gems.

Register now at gem-a.com/gemintro



Gem-A
THE GEMMOLOGICAL ASSOCIATION
OF GREAT BRITAIN



Gems & Jewellery

WINTER 2022

ETHICAL MAKING

How The Scottish Goldsmiths Trust is bringing their Ethical Making Programme, which promotes responsible and sustainable practices in jewellery and silversmithing, to the rest of the UK.



12



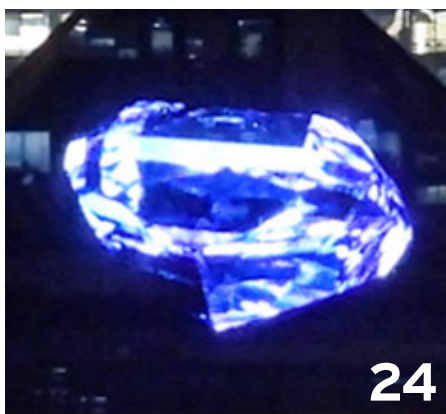
18

HARPOLE TREASURE

An extraordinary and significant gold-and-gemstone necklace, dating from the seventh century CE, discovered during an archaeological dig in April 2022.

SEBRING REVOLUTION

A New York-based company brings 360-degree photography – and 4D technology – to the gem and jewellery industry.



24



COVER PICTURE

Our cover photo, of negative cavities containing black and hexagonal graphite inclusions and diaspore needles within a Sri Lankan sapphire host, was the winner of the 2022 Photographer of the Year Contest (see pp. 32-35). Photo by Valentin Fejoz.

Published by

Gem-A (The Gemmological Association of Great Britain)
21 Ely Place, London EC1N 6TD
t: +44 (0)20 7404 3334
f: +44 (0)20 7404 8843
e: editor@gem-a.com
w: www.gem-a.com

Registered charity no. 1109555
Copyright 2022 ISSN 1746-8043
Gem-A is a company limited by guarantee, registered in England, number 01945780

Editor-in-Chief:

Jennifer-Lynn Archuleta

Contributing Editor: Olga González

Design and Production

Zest Design +44 (0)7768 233653

Editorial and Advertising

For editorial enquiries, media pack and advertising rates please contact editor@gem-a.com.

Any opinions expressed in *Gems & Jewellery* are understood to be the views of the contributors and are not necessarily those of the publishers.

Contributors	4	Gem Fairs	30
CEO Comment	5	Photographer Of The Year Competition	32
Gem-A News	6	Gem-A Student Project	36
Designing and Cutting a Tanzanian Garnet	10	Jewellery Trends	40
Instruments & Technology	16	Book Review	42
Membership	20	Gemstone Verification	45
Trade Shows	26	Last Impression	46

Twitter @GemAofGB

Facebook Gem-A

LinkedIn Gem-A

WeChat @GemAofGB

Instagram @GemAofGB

YouTube Gem-A Official Channel

Gems & Jewellery

Winter 2022 Edition Featured Contributors



1



2



3



4



5



6

1. ELYSHKA SALAZAR AVILES

Elyshka Salazar Aviles is a marketer, writer, and vivid reader. Her love for writing and marketing are articulated in her media releases. She is a recent graduate of New York's Mercy College, where she received a B.S. in business administration: marketing.

2. NICOLE AHLINE

Nicole Ahline FGA GG is a senior staff gemmologist at the Gemological Institute of American in Carlsbad, California. She completed her undergraduate studies at Cornell College. Since starting at GIA in 2016, she has been a frequent contributor to gemmology journals and has given talks on numerous topics. Ms Ahline's current research interests include origin of colour in coloured diamonds and geographic origin of corundum and emeralds.

3. MICHAEL MAGEE

Michael Magee is an award-winning computer-aided design (CAD) jewellery designer with over fifteen years of experience teaching CAD to the industry. After graduating from Cornell University with a B.S. in Communications, Mr Magee trained as a goldsmith, apprenticing with jewellery designer George Sawyer. He then created and ran his own custom jewellery business before joining the Jewelry Manufacturing Arts (JMA) department at the GIA in Carlsbad, California. In his position as senior subject specialist at GIA, Mr Magee divides his time between leading

curriculum development for JMA courses, researching new developments in CAD/CAM and teaching.

4. STUART POOL

Stuart Pool is a specialist in responsibly mined and fully traceable coloured gemstones, mainly sourced directly from mines in Sri Lanka and Tanzania. He runs gem trading companies Nineteen48, Rubyfair and Crown Gems. He is also one of the co-founders of Fair Luxury and a key member of the Moyo Gemstones project. Mr Pool works very closely with local mine owners to provide a mine-to-market service, from extracting the rough gem material right up to the sale of gems to the end customer, both wholesale and retail. The emphasis throughout the supply chain is on maximum transparency and fair benefits to everyone involved. Mr Pool's companies support charitable projects in both Sri Lanka and the UK; he is also committed to educating the widest possible audience about the issues within the jewellery sector.

5. SMITHA SADANANDAN

Smitha Sadanandan is a freelance journalist, specialising in the luxury industry. She tracks international trends in the jewellery and watches sector and provides an insightful perspective as an analyst. Ms Sadanandan also consults with brands on media-strategy projects. She has contributed to the *Financial Times*, *South China Morning Post*, *Prestige* (HK), *Vogue* (India), *Solitaire*

(Asia Pacific), *Natural Diamond Council*, *The Adventurine*, *Solitaire International* (GJEPC) and *Marie Claire* (Arabia). She is the editor-at-large of the South Africa-based *JZA Magazine*.

6. RICHA GOYAL SIKRI

Richa Goyal Sikri began her gemmological journey in late 2013, travelling and curating trips to gemstone mines, manufacturing centres, and artist studios to learn and become a discerning collector. Laterally, she studied jewellery design history, enrolled in a GIA course, and started documenting her bespoke experiences and learning on Instagram. In 2017, after 20+ years as director at STIC Travel Group, one of Asia's largest aviation, and tourism companies, she decided to pursue a second career as a journalist, storyteller and creative strategist. Ms Sikri has written and executed projects for the *Robb Report*, *Harper's Bazaar*, *Vogue*, *Rapaport Magazine*, Art Science Museum (Singapore), GemGenève, the World Emerald Symposium (Colombia), the Asian Institute of Gemological Studies (AIGS), Gem and Jewellery Export Promotion Council (GJEPC), Diamond Exchange of Singapore (DES), the International Colored Gemstone Association (ICA) and the Natural Diamond Council (NDC). Ms Sikri is currently writing her first book — a collection of short adventure stories related to coloured gemstones from Africa that are based on actual events. The book will be published in early 2023.

Straight from the heart

Opinion and comment from CEO Alan Hart FGA DGA

Even the end of the year is busy at Gem-A! We would like to extend our deepest thanks to those of you who attended Conference in early November; it was, of course, our first in-person Conference since the pandemic. It was a wonderful day filled with knowledgeable speakers who were generous with their time and attention.

Similarly, our Graduation, at the Royal Institution in Green Park, was one of the highlights of my year. I am always proud to meet and bestow Diplomas on the Students. Many thanks to Gem-A Chairman and Alumni Justine Carmody; her moving, illuminating speech was so inspiring to our graduates. Once again, congratulations to both the graduates who attended, and to those who were able to join us that evening. I also want to say a heartfelt thank you to everyone who made these events possible.



While we may be at the end of 2022, we at HQ are already looking forward to a fruitful new year. Gem-A is thrilled to announce that we are teaming up with both the Canadian Gemmological Association and the American Gemmological Association to deliver our Gem-A bash during the Tucson gem shows. I look forward to catching up with many of you then.

Our staff are also working on delivering the examination in February. And we are excited to welcome our onsite and online and distance learning students for the February and March terms respectively.

We are also excited to bring you the last *G&J* issue of 2022. The results of our popular Photographer of the Year contest are in, and your votes on social media contributed to the selection of the winning image, which is on the cover of this issue. You can find out more about the photo, as well as the runners-up and a special selection made by our guest judge, within these pages.

Other content includes a review of the Ethical Making Programme run by the Scottish Goldsmiths Trust (SGT). The Programme, which was created in 2017 and which includes the Ethical Making Pledge – originally signed with seven Scottish art

colleges that offered jewellery making and silversmithing programmes – is now coming to institutions across the UK. SGT's first partnership outside Scotland is with London's Goldsmiths' Centre.

The recent discovery of the Harpole Treasure, a burial site in Northamptonshire that yielded a 1,300-year-old gold-and-gemstone necklace, is also covered. A ground-breaking method of 4D



photography, used to capture and display jewellery and gemstones, is explored. A new luxury show in Singapore called UltraLuxe encompasses the previously established JeweLuxe, and we report on the new event. We also describe a new type of verification, from PhotoScribe Technologies, which uses overt and covert markings to confirm gemstone identity. We also look at how designers are using colour and diamonds to diversify their enamel jewellery offerings, as this trend seems to have tremendous staying power.

I wanted to mention that we are now accepting membership renewals for 2023, and six of our distinguished Alumni took the time to explain to *G&J* Readers all the benefits Gem-A Membership has brought them; we hope you enjoy reading their stories. You should have already received an email inviting you to renew. If you renew before 31 December, you can also take advantage of our early bird discounted fee while maintaining all the benefits that Association Membership grants.

However you are spending the next few weeks, we at Gem-A wish you and yours a wonderful holiday season. We are looking forward to supporting you and your goals in 2023 and beyond.

Alan Hart

Best Wishes,
Alan Hart FGA DGA

Gem-A News

A round-up of the latest industry news from Gem-A

ANNUAL CONFERENCE AND GRADUATION RECAP

Gem-A's annual Conference returned to its in-person format for the first time since the 2019 event. Over two hundred attendees were present at the etc.venues County Hall in central London on Sunday, 6 November to hear dynamic, educational presentations about all aspects of the trade by eight knowledgeable presentations. Topics ranged from a survey of jadeite and nephrite sources to gem-quality tourmaline deposits in Mozambique; from a discussion on the gemstones found in crowns from the Late Medieval period to future implications for the field of gemmology as synthetic diamond production continues to grow. Opening remarks by CEO Alan Hart FGA DGA and the closing talk by new Gem-A president Richard Drucker FGA introduced, summarised and anchored the day's itinerary.

The Conference itself was followed by a well-attended gala dinner, where Students, Alumni, Members and other attendees were able to get to know each other and reflect on the day's talks. Those present were entertained by Matt Daniel-Baker, a magician and mind reader who astonished the group with his ability to perceive their thoughts and reactions.

After a day of optional workshops and field trips, the Gem-A Graduation Ceremony and Presentation of Awards took place on the evening of Monday, 8 November. It was wonderful to see the dedication our Students put into their studies bear fruit as they received their Gemmology Foundation Certifications, Diplomas in Gemmology and Diamond Diplomas. This year's keynote was delivered by global director of production at Jessica McCormack (and Gem-A graduate) Justine Carmody FGA, who moved our new graduates with her



David Fisher spoke to Conference attendees on challenges and future implications in identifying lab-grown and treated diamonds. Photo courtesy of Gem-A.

motivating and inspiration speech. We look forward to celebrating with current Students at next year's ceremony.



A group shot from Gem-A's Graduation Ceremony. Photo courtesy of Gem-A.

SOTHEBY'S NEW YORK AUCTION INCLUDES COLOMBIAN EMERALD RING TO BENEFIT UKRAINE

The Magnificent Jewels auction, held by Sotheby's New York on 7 December, included a rich assortment of exceptional gemstones. These included a 5.27 ct Colombian emerald ring salvaged from the legendary Nuestra Señora de Atocha shipwreck of 1622. The ring was from the collection of author and philanthropist Mitzi Purdue, who received it in 1988 upon her engagement to the late Frank Perdue. Over the course of five minutes the ring was subject to furious bidding from eighteen potential buyers by phone and on Sotheby's online bidding platform. In the end, the emerald finally sold for an astounding \$1.2 million (est. £984,960), more than seventeen times its pre-sale estimate of \$50,000-70,000, to a private buyer in the United States. Proceeds from the sale will go toward

humanitarian efforts in Ukraine, a cause that is very dear to Mrs Perdue's heart. "I could not be more thrilled about the sale of my emerald engagement ring with Sotheby's," she said. "I am immensely proud to donate full proceeds of the sale to benefit humanitarian efforts in Ukraine and I feel honoured to have even played a small part in helping those who need it most. I have treasured this ring for nearly thirty years, and I'm excited for its next historic chapter and the joy it will bring to its new owner."

Other remarkable gems in the auction included the 303.10 ct Golden Canary Diamond – known as the Incomparable Diamond prior to cutting – which sold for \$12.4 million (£10.1 million), or \$40,874 per carat (£33,528.94 per carat) to a private buyer in Southeast Asia. As of the sale, the Golden Canary became the third



The 303.10-ct Golden Canary Diamond, a pear-shaped Internally Flawless Fancy Deep Brownish Yellow diamond, is the third most-valuable yellow diamond ever sold at auction. Photo courtesy of Sotheby's.

most-valuable yellow diamond ever sold at auction. Discovered in the early 1980s in the Democratic Republic of Congo, the Fancy Deep Brownish Yellow specimen is the world's largest known Internally Flawless diamond and is the largest Flawless or Internally Flawless diamond ever graded by the Gemological Institute of America (GIA).

To mark the 100-year anniversary of the discovery of King Tut's tomb, Sotheby's also offered a selection of Egyptian-themed jewels for sale. Pieces included a Lacloche pair of Egyptian-revival coloured stone and diamond pendant earclips which sold for \$352,800 (~ £289,578). Eight out of the nine 'Egyptomania' sold, achieving a combined total of \$1.8 million. (~ £1.4 million).



Mrs Mitzi Purdue sold her engagement ring, which was salvaged from the shipwreck of the Nuestra Señora de Atocha, at auction to benefit humanitarian efforts in Ukraine. The ring is mounted with a 5.27 ct Colombian emerald. Photo courtesy of Sotheby's.

HM KING CHARLES III VISITS THE GOLDSMITHS' CENTRE

On 23 November HM King Charles III visited the Goldsmiths' Centre to meet with trainees and apprentices.

The visit was to celebrate the ten-year anniversary of the educational charity, dedicated to improving skills and shaping the careers of jewellers, silversmiths and

people working in the precious metal industry. He spent time talking to current and alumni apprentices about their goals for the future.

During his visit, The King hand struck the King's Mark (the town mark for London) onto a Processional Cross for the Church in Wales. The Cross was

commissioned by The Goldsmiths' Company on behalf of The King while he was the Prince of Wales; the Church in Wales and the Roman Catholic Church in Wales will share it. Both Churches were represented at the hallmarking.

Also during his visit, His Majesty was presented with a gold-plated pin by Sophie Welch, a Foundation Programme alumna. The pin was designed to mark the Centre's decade of training and educating jewellers and silversmiths.

PRINCESS THYRA OF DENMARK'S SAPPHIRE TIARA SOLD AT AUCTION, AMONG OTHER ROYAL JEWELS

A number of items from Denmark's royal family came up for auction on 1 December, including a sapphire tiara once owned by Princess Thyra (1880-1945), daughter of King Frederick VIII and Queen Louise. Sold by Bonhams-owned Brunn Rasmussen, the tiara realised DKK650,000 (£76,050), within its pre-sale estimate of DKK600,00-800,000. It was purchased by a private buyer.

The tiara was given to the princess by her parents; it is believed to have been a gift for her eighteenth birthday. The tiara is set with five cabochon sapphires (~15.61 tcw) that are probably of Sri Lankan origin. These can be traded out for turquoise cabochons that were included in the sale. The gemstones are mounted in upright,



Danish auction house Brunn Rasmussen sold this tiara, composed of sapphire, diamond and gold, in December 2022 for DKK650,000 (£76,050). Photo courtesy of Brunn Rasmussen/Creative Commons.

foliated and scrolling heart-shaped ornaments and surrounded by numerous old-mine, rose- and single-cut diamonds (~10.00 tcw). Ornamentation to the back consists of minor foliated flowers, set with rose-cut diamonds and presumably natural pearls (diameter 2.53-2.61 mm), all mounted in 14K gold, rose gold, and silver on a curved circlet base.

Princess Thyra did not marry or have children, and the tiara was inherited by her niece, Hereditary Princess Caroline-Mathilde of Denmark, who passed it down to her daughter, Princess Elisabeth of Denmark. The tiara has remained with descendants of King Frederick VIII and Queen Louise until it was sent for auction.

Other royal jewels that were auctioned on 1 December were several mourning medals owned by Queen Louise, Thyra's mother; an 18K gold-and-garnet pendant worn by Princess Charlotte Frederik of Denmark (1784-1840); and an art deco emerald-and-diamond bracelet that belonged to Queen Alexandrine of Denmark (1879-1952), consort of Christian X. This latter piece, sold to a private buyer, is a platinum bracelet set with approximately 7.54 tcw sugarloaf cabochon emeralds (presumably Colombian) and four cushion-shaped old-mine cut diamonds. The ornaments themselves are surrounded by rose- and old-mine-cut diamonds (26.10 tcw; an included extra diamond link weighs ~2.90 ct). It sold for DKK700,000 (£82,040), over its projected DKK300,000-400,000 (£35,160-46,880).



Queen Alexandrine's art deco bracelet, with sugarloaf emeralds and diamonds in various cuts set in platinum, sold for DKK700,000 (£82,040), over its projected DKK300,000-400,000 (£35,160-46,880). Photo courtesy of Brunn Rasmussen/Creative Commons.

VIKING-AGE JEWELLERY FOUND IN SWEDEN

A hoard of Viking-age jewellery was unearthed in Viggbyholm, a village near Stockholm by archaeologists affiliated with National Historical Museums Sweden. While working at a site where they believe there was a settlement from 400 CE into the Early Middle Ages, researchers unearthed a ceramic pot. Inside they found eight torque-style

neck rings, one finger ring and two armrings, coin pendants (often used as jewellery), pearls and rings in near-mint condition. The jewellery was sent to Acta Konserveringscentrum, a Stockholm-based conservation company, for cleaning and preservation.

Some of the coins used in the pendants originated in Europe – probably from regions like Bohemia,

Bavaria and England – while others were Arabic coins called *dirhams*. This indicates that the people living in Scandinavia during this time participated in wide-reaching trade relationships. While there is no indication as to why the owners chose to hide the jewellery, archaeologists said that people tended to bury or hide items of value during periods of unrest.

TWO HISTORICAL RINGS FOUND IN UK AUCTIONED BY NOONANS

Two historical rings found by chance in different parts of England were auctioned by Noonans in November 2022.

A Celtic ruler's 2000-year-old ring, which spent 28 years in the previous owner's cupboard after he found it in a field in Knaresborough, North Yorkshire, in the 1990s, sold for £36,000 on 15 November. The ring dates to about

100 BCE; it may have belonged to a Corieltauvi chieftain. This tribe ruled over parts of what are now the Midlands and Yorkshire prior to the Roman invasion. The ring's new owner, a private British collector, is in talks with the Yorkshire Museum to put the ring on display.

The second ring, a medieval gold-and-diamond ring comprising two entwined bands, sold for £38,000

on 29 November. It was found, via metal detector, by David Board near Thorncome, Dorset in February 2019. The ring, 'in very fine condition' according to Noonans, is believed to have been a gift, dating to the fourteenth century, to Lady Joan Brook from her husband, Sir Thomas Brook, on the occasion of their wedding in 1388. Sir Thomas Brook owned the land where the ring was located. The ring is inscribed with the Medieval French words 'ieo vos tien foi tenes le moy', which translates to 'as I hold your faith, hold mine'.



Two historical rings found in England that were auctioned by Noonans in November 2022. The Iron Age gold ring (left), found in Knaresborough, North Yorkshire, dates back to 100 BCE and may have belonged to a Corieltauvi chieftain. The diamond-and-gold ring (right) is presumed to be a wedding gift to Lady Joan Brook from her husband, Sir Thomas Brook, on their wedding day in 1388. Photos courtesy of Noonans.

GEM-A'S ATHENS ATC CELEBRATES ITS THIRTIETH ANNIVERSARY

We are proud to announce that our Associated Teaching Centre (ATC) in Athens has celebrated its thirtieth anniversary.

The Gem Testing Laboratory (GTL) Athens ATC is in the centre of the city, in the Jewellery Manufacturer's District in Syntagma Square. It moved to the present location in 2001. It is estimated that more than six hundred students have worked towards the Diploma in Gemmology, Diamond Diploma and the Certificate in Gemmology at this location.

Reflecting on the history of the ATC, director and tutor Alexandros

Sergouloupoulos FGA DGA said, "Already thirty years! It seems like it was not so long ago that we began; almost like it was yesterday. But it is not, and it takes a while to believe it! As time stands still for most people, you consider time only if you compare it with facts: my daughter was a newborn, and I had just hired my secretary. However, every time you meet in the street one of our former students, who is now a professional, you realise that it worth was every moment of these thirty years and you are encouraged to continue teaching for thirty more!"

We extend our congratulations to our colleagues at the GTL Athens ATC!



Members of the Gem Testing Laboratory Athens ATC staff (from left): tutor Aristeia Bakayianni (tutor), director and tutor Alexandros Sergouloupoulos and secretary Afroditi Zaggana. Photo courtesy of GTL.

Unfoldi Through



Using Geometry in Gem Cutting

Justin K Prim is inspired by the great thinkers of the Renaissance when designing and cutting a Tanzanian garnet.

For thousands of years, humans have been exploring new and different ways to make gemstones shine, from experiments with polishing techniques to the refinement and revision of cutting patterns. For my most recent cutting collection, Wizard Cuts, I have been looking back to the geometers and philosophers of the Renaissance for guidance and insight. The gem cutter works with extraordinary natural materials, so it is logical to look at the natural world for inspiration. I chose to consider how those thinkers of long ago saw the world around them differently than we do today.

Some Renaissance philosophers believed that by analyzing oneself, you could understand Nature; in turn, by analyzing Nature, you could understand yourself. The worldview of a Renaissance thinker was complicated and sometimes convoluted, involving spheres, planets and the elements. In this process of self-analysis, they would attempt to purify their minds and souls through rituals in a meditation chamber filled with objects such as gemstones and geometrical figures.

Modern science doesn't support the idea that the planets or gemstones have any metaphysical impact on humans, but the romance of this antiquated worldview excited me when I discovered it. I started looking deeper into the roots of geometry, the platonic solids and mathematical astronomy, and started to get familiar with names including Euclid, Ficino, Brahe and Kepler. I started to translate some of these ideas about modeling the universe – as well as the human soul – into the modeling of gemstones. The process of self-analysis became my design process, and my ritual was the cutting of the stones.

For this particular stone, a 1.6 ct reddish orange garnet from Tanzania, I wanted to create something that felt familiar but fresh at the same time. My first decision was to use an odd number of sides, as my research had shown me that an odd symmetry produces a brighter face-up color. When experimenting with the outline shape, I chose a seven-fold pattern because nine sides resembled a normal round shape and five sides makes a star, which is too familiar and more geometrically 'blocky' than I wanted for this piece. A seven-sided design can be as soft as a flower, while still appearing geometrically fresh and interesting. From there, I built the rest of the design to be simple, but as bright as possible.

The result of my ritual did not produce the ability to influence the world through the invisible, divinely appointed powers that the Renaissance philosophers were seeking. When looking at the resulting beauty of the gemstone, I see that it did produce magic in the form of color, contrast and geometric harmony. If somewhere along the way, my long hours of sitting at the cutting bench purified my mind and soul and allowed me to see into the rough stone with pure perception, then that is all the better.

Justin K Prim
www.magusgems.com

ETHICAL MAKING

Jeweller Hannah Louise Lamb, who was featured in an Ethical Journey Case Study for the SGT's Ethical Making Resource, soldering in her workshop in North Berwick, Scotland. Photo by James Robertson.

The Scottish Goldsmiths Trust is bringing their Ethical Making Pledge to the rest of the UK. *G&J* spoke to Ebba Goring, the Trust's chief executive, and Dr Karen Westland, programme manager of the Ethical Making Programme, to learn about the Trust's past, current status and future goals.

While not the only nation interested in transparency, traceability, and fair play in the trade over the decades, organisations in the United Kingdom were among some of the first actors in the ethical and sustainable jewellery movement, looking out for members of the trade along the supply chain. The UK is, after all, the birthplace of both Fairmined and Fairtrade Gold, as well as the Responsible Jewellery Council. It is therefore not a surprise that these concerns have come to affect the population; *Ethical Consumer* reported in 2021 that ethical spending had grown 2.4% over the last decade, with the public seeking more sustainable options in food and other products, including jewellery. That same year, a Deloitte survey reported that 32% of UK consumers took sustainability and ethics into consideration when making their purchases.

This has also impacted trade organisations and education, including the Scottish Goldsmiths Trust (SGT). Based in Edinburgh, the SGT is dedicated to promoting the education, art and craft of Scotland's gold and silversmithing heritage and trade. The charity was founded by the Incorporation of Goldsmiths of the City of Edinburgh in 2000. The SGT has a robust programme of activities and events, many of which benefit students of metalworking. In

a step further, since 2017, the SGT established their Ethical Making Programme to support the adoption of responsible and sustainable practices in jewellery and silversmithing. In 2018, all seven Scottish art colleges that offered jewellery and silversmithing courses at the HND level signed The SGT's Ethical Making Pledge, which made a commitment to embed practical and theoretical learning about ethical making into higher education. In 2022, due to

“The traceable narrative fitted so well with the story that surrounds many high-quality Scottish makers who make with care and attention to the smallest detail.”

the Pledge's successful implementation and the SGT's partnership with the Goldsmiths' Centre, the Pledge became available to educational institutions with non-accredited courses and institutions from across the UK.

In addition to the Ethical Making Programme, the SGT supports the jewellery and silversmithing sector in numerous ways, including but not limited to holding Elements Festival of Jewellery, Silver and Gold in Edinburgh; developing the Marchmont Silversmithing Workshop in the Scottish Borders; administering precious metal bursaries for Scottish art colleges and a graduate commission on behalf of their founders, The Incorporation of Goldsmiths of the City of Edinburgh; and curating various exhibitions.

According to Ebba Goring, chief executive of the SGT since 2020, the turning point in the Trust's position regarding ethical making came roughly five years ago. "In 2017 we held our annual conference, 'It's in Our Hands — The Future of Ethical Making in Scotland' at the University of Dundee and invited jeweller Ute Decker and activist Dr Greg Valerio MBE to speak. Students and designer-makers attending were shocked that they were not learning more about the impact of their industry and had a lot of questions." Reacting to this response from attendees made the SGT consider what their role should be in supporting ethical making; this responsibility felt stronger when Ute Decker approached the SGT to share her years of independent research on the subject to make it accessible to the broader community. From this, the Ethical Making Programme, which consists of three parts – the Ethical Making Resource, the Ethical Making Pledge and the annual symposium – was born.

Creating the programme was not without challenges. According to Ms Goring, "At the time, it was difficult for consumers to find makers who used traceable materials. It felt odd that Scotland as a country and as a sector, we could not meet this demand. This was relevant as the traceable narrative fitted so well with the story that surrounds many high-quality Scottish makers who make with care and attention to the smallest detail; had awareness of the whole process, not just buying in



mass-produced components; and were in large part inspired by the landscape, and the image of natural beauty that goes with this." Ultimately, the SGT was able to create a website filled with practical information, called the Ethical Making Resource, with the help of Ute Decker, Dr Greg Valerio, Dr Peter Oakley and industry not-for-profit Fair Luxury (for information on Fair Luxury, see Summer 2021 *G&J* pp. 24-25).

From there, the other calls to action followed. The Ethical Making Pledge, created to help students learn practical and theoretical methods of ethical making, was signed in 2018. Dr Karen Westland, current programme manager of ethical making at the SGT, explained that "The Ethical Making Pledge is a collaborative and community-based

initiative for jewellery and silversmithing educational institutions. It was drafted in collaboration with the course leaders from all Scottish colleges and comprises six points which signatories strive to work toward. The pledge points are broad to allow each institution to respond to the Pledge in a meaningful way that will support their students and is a structured framework for course tutors and leaders to work with to sustain the adoption of ethical making into their courses and departments more broadly."

Each Pledge signatory agrees to do the following:

1. Share the Ethical Making Pledge with staff and students in the department.
2. Nominate two student ambassadors each year, who will take part in biannual information sessions with the SGT and who will support the adoption of ethical making practices within the department.
3. Work towards the transition to ethical metal sourcing in the department with support from the SGT.
4. Incorporate ethical making into the curriculum with the goal of writing ethical making awareness into curriculum requirements.
5. Work towards incorporating ethical making practices into workshop methods and providing students with the skill sets necessary to build their own ethical practice.
6. Collaborate with the SGT to sustain and build the Pledge for future years. →



The Pledge signing for all Scottish independent institutions. Photo by James Robertson.



A Fairmined gold ring by Hannah Louise Lamb. Photo by James Robertson.

Dr Westland indicated that they have seen a number of new projects in the four short years since the Pledge was first signed. "Many of the signatories have been embedding ethical making into their curriculum through annual and one-off projects for students. For example, in 2021 City of Glasgow College challenged their HND level students to design a climate change inspired brooch to present to Scotland's First Minister for COP26. The winning brooch, selected by Nicola Sturgeon, was by jewellery student Aileen Dickie Adams, who took inspiration from the Corryvreckan whirlpool."

In addition to these projects, Dr Westland also discussed some beneficial changes that have occurred at the colleges that have signed the Pledge. "Duncan of Jordanstone College of Art and Design (DJCAD) in Dundee have changed their silver stock within the department to 100% recycled. Other signatory institutions have projects dedicated to using a particular traceable precious metal to raise awareness about different options available when selecting materials. Across the board, colleges have addressed hazardous chemical use within their workshops and continue to explore alternative materials and processes. Whilst there is no way of knowing whether these are changes that may have happened independently of the Pledge, course leaders do relay that the Ethical Making Pledge has been a useful prompt

to work toward. The collective effort from the student ambassadors across the institutions encourages motivation and innovation in this area, as ideas are shared across all Pledge signatories." Notably, student ambassadors take their responsibilities seriously and have been known to uphold the pledge within their own departments. Since the Pledge started, students have spearheaded various projects, including an online group to swap old or unwanted tools across year groups within their college.

In 2021 the SGT formed a partnership with The Goldsmiths' Centre in London, the first organisation outside Scotland to sign the Ethical Making Pledge. Dr Westland explained, "Our first year of partnership with The Goldsmiths' Centre has seen a range of collective benefits including sharing our events and resources across online platforms to reach a broader audience, the formalisation of our Ethical Making committee who support the programme strategy, the re-launch of the Ethical Making Resource and lastly the expansion of the Pledge." However, this is not the only strategic relationship that the SGT has fostered. The SGT has informally collaborated with Fair Luxury for years, and jeweller Arabelle Lebrusan, team member of Fair Luxury, sits on the Ethical Making Committee; Karen Westland is also a team member of Fair Luxury. And the SGT collaborated with Ethical Metalsmiths to host the Radical Jewelry Makeover with students from all Scottish art colleges; the project ended with an exhibition in Glasgow in March 2022. Dr Westland stated, "Discussing the development of the programme at regular intervals with our partners has enabled us to align our efforts in ways that can signpost to great work already being done, or to identify areas of opportunity for the future."



The signing of Ethical Making Pledge with the Goldsmiths' Centre. From left: student ambassador Luke Potts, Goldsmiths' Centre director Peter Taylor MBE and Ethical Making programme manager Dr Karen Westland. Photo by Julia Skupny, (c) The Goldsmiths' Centre.



Jewellery featured in the 2018 Elements exhibition 'Perspectives, Creating Jewellery for a Fairer Future.' Above: Engulf necklace by Emma Aitchison. Right: Opal rings by Jodi Gonsman.



Due to the success of the Pledge over the past four years, and the SGT's recent partnership with The Goldsmiths' Centre on the Ethical Making Programme, the Ethical Making Pledge expanded UK-wide to welcome educational institutions with non-accredited courses and institutions outside Scotland. According to Ebba Goring, "Jewellery and silversmithing are now in the public consciousness as industries with potentially hazardous sources and processes and makers need to address these issues where they can. The Ethical Making Programme was established to help makers and designers consider the journey from the start of the jewellery supply chain and create more socially and environmentally conscious jewellery and precious metal objects. We aim to empower makers to be able to give consumers a better understanding of the material origins." The Ethical Making Resource is free to access and well used, not just in the UK, but globally. The annual symposium allows the SGT to create a theme that addresses a different aspect of ethical

making. Dr Westland noted, "This year, our ChangeMaking event explored circular design and how we can create change through making. This was captured through a range of speakers including jewellery students, academics, suppliers, independent makers and small businesses to offer a holistic approach to the theme."

Overall, the future is bright for The Scottish Goldsmiths Trust and the Ethical Making Programme. While the SGT is a charity and must fundraise for all projects, they have ambitious and accessible plans to achieve their goals. The organisation is open to collaboration and welcome anyone interested in projects to reach out via their website. Overall, they are receiving positive feedback and that only strengthens their commitment to the goals they set for themselves, and for their partner institutions, five years ago. In the words of Ebba Goring, "Ethical making is not just a standalone programme for us, it is a thread that ties all our activity together, whether it be

commissioning in responsibly sourced metal, or using our Creative Learning Resource to have conversations with children about where materials come from and circular economies. Furthermore, we are seeing more makers exhibiting with us at Elements Festival who have also attended our symposium and then started their ethical-making journey, displaying their collections with traceable gemstones and metals. This really highlights how our different programmes have a symbiotic nature to support makers holistically in their educational and professional endeavours." ■

To learn more about The Scottish Goldsmiths Trust, visit scottishgoldsmithstrust.org.

To use the Ethical Making Resource, go to ethicalmaking.org

All photos courtesy of the Scottish Goldsmiths Trust unless otherwise indicated.

The ASSURE 2.0 Online Portal

Emphasises the Importance of Diamond Verification Testing

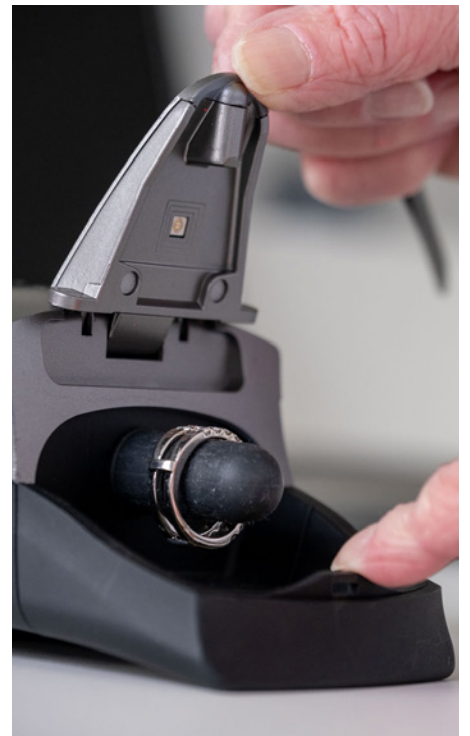
Nicole Ahline FGA discusses how the Natural Diamond Council promotes diamond verification and consumer protection through assessment and promotion of diamond testing instruments.

In the summer of 2022, the Natural Diamond Council (NDC) launched the new ASSURE 2.0 online portal. The NDC's mission is to advance the integrity of the modern diamond jewellery industry and inspire, educate and protect the consumer. They are able to accomplish these actions in part through their ASSURE Program for diamond verification instruments (DVI). These devices are used to separate natural diamonds from their laboratory-grown counterparts; some are also able to identify diamond simulants such as cubic zirconia, glass, moissanite and white sapphire.

There are many DVIs on the market to choose from, with different advantages. ASSURE assesses instruments to deliver objective and transparent data to the diamond industry, either prior to purchasing or for their current use of a particular device. The online portal allows users to navigate through the many types of equipment and understand their features while also seeing results

from the most current ASSURE testing performed. In a statement about the positive impact the ASSURE 2.0 Program will have on the trade, the NDC said that "The jewellery industry is built on a foundation of consumer confidence. The ASSURE program plays a key role by providing the jewellery trade with objective information on the capabilities and performance of DVIs available in the market and by promoting their use throughout the supply chain."

The ASSURE 1.0 Directory launched in 2019, and listed test results for many different instruments from 2019 - 2020 (these findings are still accessible). Testing for the 2.0 version of ASSURE, which is ongoing, has been updated to sample natural diamonds, lab-grown diamonds, and diamond simulants in a range of sizes. This is essential as, according to Natural Diamond Council CEO David Kellie, "At the centre of consumer protection is the ability to distinguish between natural diamonds, laboratory-grown diamonds, and



There is a broad selection of DVIs available in the market; some, like the one shown here, are used for testing a single jewellery piece.

The online portal allows users to navigate through the many types of equipment and understand their features while also seeing results from the most current ASSURE testing performed.

diamond simulants." The test stones were chosen based on current and anticipated market trends, along with stones that will likely present a challenge to DVIs. The newest version also allows for the analysis of diamond-set jewellery (open and closed-back mountings).

According to the NDC, the ASSURE 2.0 Directory will have a new filtering system to review DVIs. Filters will include types of diamonds used, volumes of diamonds

processed, size of device and level of expertise required, among others. The key metrics under analysis are False Positive Rate (optimally 0% where no synthetic diamonds - or diamond simulants - are classified as natural diamonds), Diamond Referral Rate (again, the ideal rate is 0%, where no diamonds are referred for further testing) and Diamond Accuracy (the optimal rate - where all diamonds are correctly classified as 'diamond' - is 100%).

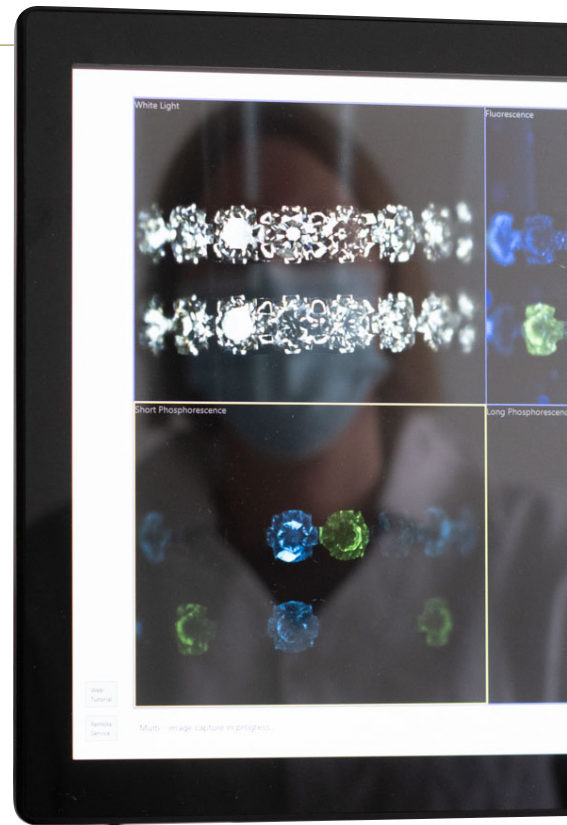
A key resource that the Natural Diamond Council provides, one that complements the portal, is in-person showcases that promote the use of DVIs. The London Diamond Bourse hosted one such event - the first London ASSURE Showcase - from 20 June to 29 July 2022. There, members of the trade were able to learn about many of the instruments currently available on the market. Attendees who brought their own diamonds and diamond jewellery were able to try the equipment themselves.

Both the London Diamond Bourse and the NDC were pleased with the showcase. "We were delighted with the

Diamond verification instruments (DVIs) can distinguish lab-grown diamonds from natural diamonds (shown here under different lighting conditions on a computer screen).

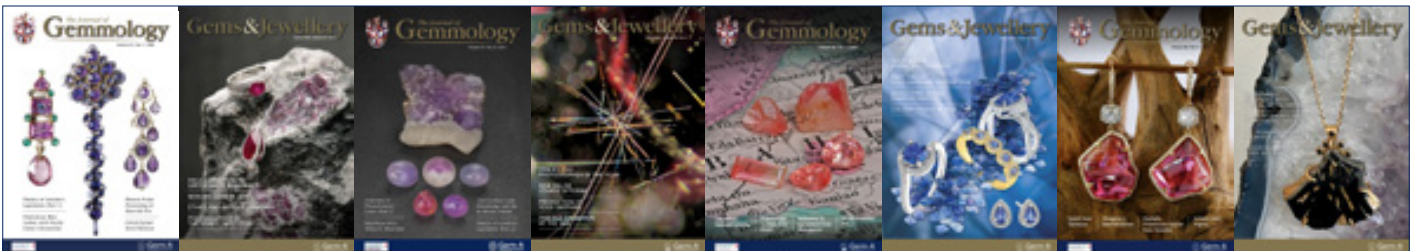
turnout from the trade and independent jewellers," stated Alan Cohen, president of the London Diamond Bourse. "The feedback received was positive, with many commenting on the wide variety of machines available to suit any size organisation and budget. We are expecting to see an uptake in the prevalence of Diamond Verification Instruments in the British jewellery trade because of the ASSURE Showcase." In turn, NDC CEO David Kellie noted, "The success of the ASSURE Showcase in London demonstrates the shared commitment to ensuring consumer confidence across the jewellery industry. The UK has taken a strong stance on this."

The Natural Diamond Council welcomes the submission of new DVIs from manufactures, as well as any existing instruments whose ASSURE Tested Certification is expiring. ■



To learn more about ASSURE 2.0, visit naturaldiamondcouncil-access.com/project-assure/

All photos courtesy of the National Diamond Council.



Don't forget to renew your 2023 Gem-A Membership!

We've made it easier for you to renew your Membership with us.

Pay Using **GoCardless, Paypal or Bank Transfer**

When paying with **GoCardless subscription**, payment is taken automatically every year, so you no longer have to worry about not renewing on time and missing your issues. For information about other payment options please contact membership@gem-a.com.

If you renew before 31st December 2022 you only pay £120*

**(£145 thereafter)*

To renew, simply log in to the Gem-A website at <https://gem-a.com/log-in>, click on the Membership renewal banner and choose the payment method you wish to use.

Don't want to subscribe? You can still log in and make a one-off payment.

Archaeologists Unearth 1,300-Year-Old Necklace from Medieval Female Burial Site in Northamptonshire

An extraordinary and significant gold-and-gemstone necklace, dating from the seventh century CE, was discovered during an archaeological dig in April 2022.

In early December, the Museum of London Archaeology (MOLA) announced that they had made a 'once-in-a-lifetime' discovery during a dig in Northamptonshire, approximately 97 km northwest of London. During excavations in April 2022, made ahead of a Vistry Group housing development, archaeologists uncovered a 1,300-year-old necklace, one of the burial goods of a high-status woman. The necklace, which comprises thirty pendants and beads made of Roman coins, gold, garnets, glass and semi-precious stones, dates roughly from 630 - 670 CE. This large



Thirty pendants, including some made from gemstones and Roman coins, are part of the necklace. The centre pendant, made from gold and garnets, is also shown. Photo by Andy Chopping.

and ornate piece of jewellery suggests the woman may have been an early Christian leader, such as an abbess, or perhaps royalty (or even both). Experts believe this is the most significant female burial from the era ever discovered in

Great Britain. The find has been named the 'Harpole Treasure', after the name of the local parish.

MOLA site supervisor Levente-Bence Balázs, who led the team of five that unearthed the Harpole Treasure, stated, "When the first glints of gold started to emerge from the soil, we knew this was something significant. However, we didn't quite realise how special this was going to be. We are lucky to be able to use modern methods of analysis on the finds and surrounding burial to gain a much deeper insight into the life of this person and their final rites."

The focal point of the jewel is a rectangular pendant with a cross motif. Made of red garnets set in gold, it serves as the centrepiece of the necklace and is the largest and most intricate element. MOLA specialists believe it was originally half of a hinged clasp before it was re-used in this necklace. The burial site also contained two decorated pots and a shallow copper dish. Further, X-rays taken on blocks of soil lifted from the grave revealed a tantalising find — a striking and elaborately decorated



X-rays taken on blocks of soil lifted from the grave revealed an elaborately decorated cross with depictions of faces cast in silver.

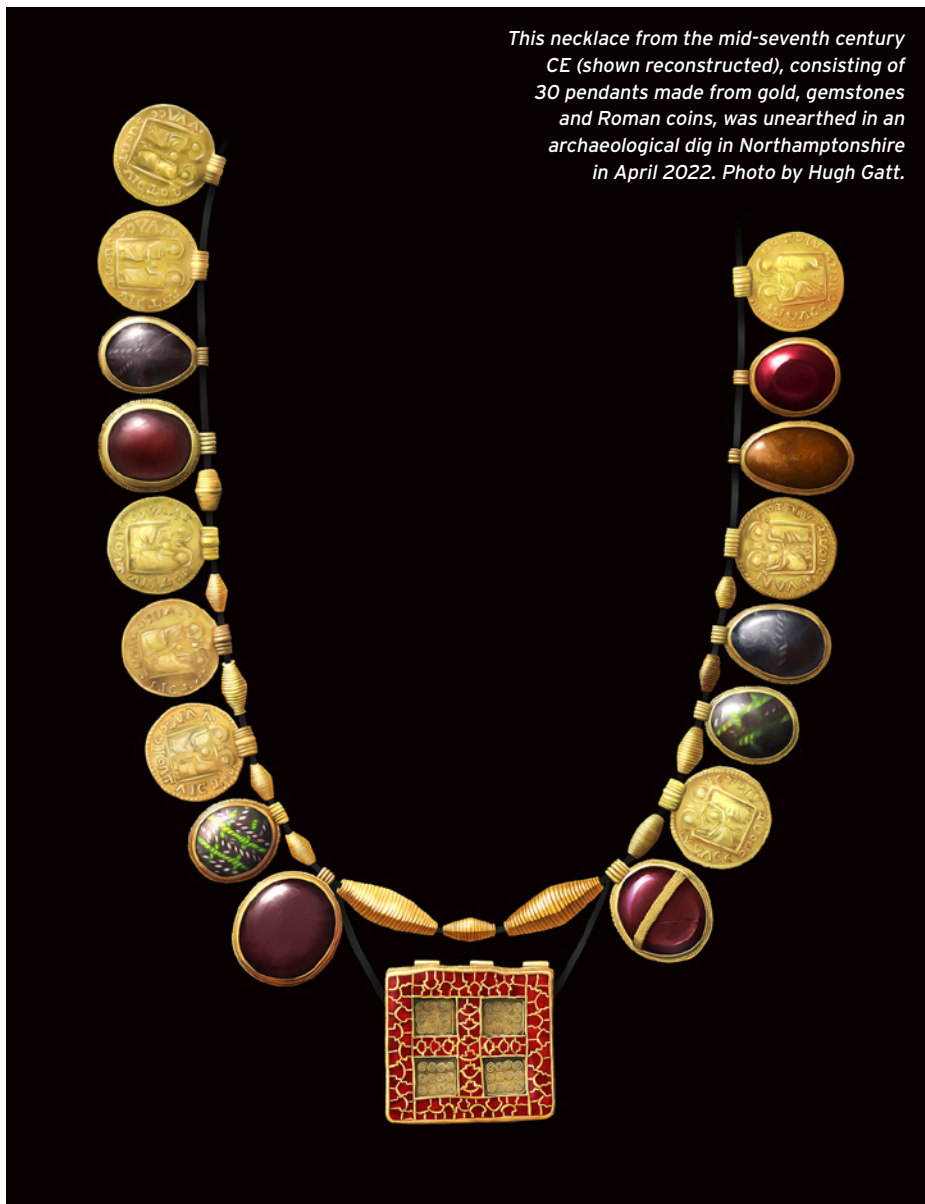
cross featuring highly unusual depictions of human faces cast in silver.

Surprisingly, the area surrounding the elite burial was completely unremarkable. One other burial was present nearby but did not contain any high-status grave goods, nor has it been firmly dated. Having surveyed the entire site, archaeologists are confident there is nothing else to find.

MOLA conservators are working diligently to examine and conserve the finds. They are currently engaged in identifying and recording traces of organic remains within the burial and on the surface of the artefacts. It is possible the deceased was placed on a bed within the grave and traces of soft furnishings may be found. Analysis could also detect residues that show how artefacts were used in life or in the burial ritual.

A handful of similar necklaces dating from the same period have been discovered in other regions of England, including the Desborough Necklace, which dates to the Early Anglo-Saxon Period. Also excavated from Northamptonshire (in 1876) and now part of the British Museum collection, the Desborough Necklace is strung with an alternating sequence of irregular gold and cabochon garnet pendants, gold 'bullae' pendants and biconical gold wire spacer beads, with an equal-armed cross at its centre. However, none of the necklaces unearthed thus far are as ornate as the Harpole Treasure piece.

Liz Mordue, who serves as archaeological advisor for West



This necklace from the mid-seventh century CE (shown reconstructed), consisting of 30 pendants made from gold, gemstones and Roman coins, was unearthed in an archaeological dig in Northamptonshire in April 2022. Photo by Hugh Gatt.



Above: The archaeologists' first view of the necklace; the glint of gold in the ground led to the unearthing of the burial site and the discovery of the Harpole Treasure.

Left: The unearthed plot is believed to be the most significant medieval British female burial site ever found. A reconstruction of the burial of the deceased woman wearing the necklace is shown here. Photo by Hugh Gatt.

Northamptonshire Council, stated, "This is an exciting find which will shed considerable light on the significance of Northamptonshire in the Saxon period. It also serves as a reminder of the importance of archaeology in the planning and development process." Simon Mortimer with RPS, archaeology consultants who worked with MOLA on this dig, concurred: "This find is truly a once-in-a-lifetime discovery — the sort of thing you read about in textbooks and not something you expect to see coming out of the ground in front of you.

The Harpole Treasure will be featured in BBC Two's 'Digging for Britain', which starts on BBC Two in early January 2023.

For updates on the Harpole Treasure, visit mola.org.uk. ■

THE JOYS OF GEM-A MEMBERSHIP

During the most wonderful time of the year, several Members from around the world tell our Readers the benefits of belonging to the Association.

After two years of distance, 2022 saw us returning to in-person work, learning and events, including our annual Conference and Graduation ceremony. While we pride ourselves on how we adjusted to the pandemic-impacted world, it was wonderful to be 'face-to-face' again with our Members and other people in our community.

In the spirit of this renewed personal interaction, we have asked some Association Alumni to express, in their own words, how their Gem-A affiliation has helped in their education and professional development. We hope you enjoy these stories as much as we enjoyed gathering our Members' perspectives.

Guy Borenstein FGA
Senior Gemmologist at Stuller, Inc.
Lafayette, Louisiana



My passion for gems started at age 10, as a mineral collecting hobby. This became a career path in 2006, when I began

gemmology studies at Israel's European Gemological Center. Near the end of the programme, the institute offered me an internship in their laboratory. Once in the lab, I felt there was much more to know about gems and that I needed to upgrade my knowledge base to become better at my work.

I started browsing the internet for the next-level options and discovered Gem-A. What I read about the Association was so positive that I had to explore the curriculum. After consulting with the head of the institute – a graduate and advocate of Gem-A – it was a 'no-brainer'. I decided to enrol in the Gemmology Diploma course.

The studies at Gem-A were eye-opening. I thought I understood gemmology, but I realised, for instance, that I did not always know how some features form. Suddenly, after finishing every chapter, everything looked so clear and logical. For every phenomenon, mechanism, treatment or growth method, I got a detailed scientific description that clearly explained the process. In a short time, I changed from the student that asked the hard questions in the lab to the person that answered them.

The Gem-A tutors were friendly, openly sharing insights from their knowledge and experiences. They saw me as a

future colleague and showed that they would be open to communication and for consultation even after the course ended. That support was so instrumental that when the Association offered me a Gemmology Diploma tutoring position, I did not hesitate to say yes. For eight years, I helped to train another generation of gemmologists. I can proudly say that some of the graduates I worked with climbed into critical roles in the trade. They are now my colleagues, and our two-way communication regularly benefits each other's work.

Today, I work as a senior gemmologist for leading jewellery supply wholesaler Stuller Inc. Besides directing the operations of the fully equipped, high-volume gemmological laboratory, my responsibilities include developing screening protocols for all diamonds and gemstones, providing consultations about the origin and the existence of treatments in gems, conducting training of company associates and directing research projects and evaluations of new testing technologies.

Looking back, I am confident that learning through Gem-A was the right decision; none of my achievements could have happened without that foundation. I urge anyone who is prospecting Gem-A courses to enrol. From my own experience, there is a big difference between knowing to test gems and knowing gemmology and being good at what you do will always open doors.

ENROLMENT, RENEWAL AND UPDATING INFORMATION

We have made it simple to enrol in or renew current Membership via the Gem-A website. Current Members simply login and choose to pay via annual subscription via GoCardless or PayPal; you may also make a one-off payment.

We also accept bank transfers.

If you have questions about personal or corporate Membership or updating your information, our Membership Secretary is available at membership@gem-a.com. It is important to keep your information,

such as your email and postal addresses, up to date, to ensure you stay current with *The Journal of Gemmology* and are up-to-date on alerts, email correspondence and online publication of *Gems&Jewellery*.

Alessandro Borruso FGA DGA PJVai
Deputy Director of Sotheby's
Diamonds for Europe
London, England

Sotheby's Diamonds for Europe is part of Sotheby's Luxury Division; we specialise in very rare diamonds and unique pieces of jewellery. For us, the diamond is the main character of our story and always dictates the inspiration for our design. We often use other gems to complement and complete the diamond's narrative. Everything we make tends to be a unique creation to emulate that sense of scarcity that our client experiences when they acquire a piece at auction.

I was a geologist back home in Italy when a former colleague from university called and asked me if I wanted to go with him to London to learn English. At that point in my life I knew I needed a change. So off I went, and after a few months of working (at different times I was a barman, potato picker, beverage waiter and marketing researcher for Ipsos) I joined Gem-A, following my old passion for rocks and minerals. Since

I felt that London was going to be my second home it was easy to decide to pursue my studies at Gem-A. This was an opportunity for me not only to deepen my knowledge but to embrace English culture, a mission I fully accomplished eight years ago when I married an English rose (if you publish this it will save me a wedding anniversary present!).

Eventually I got my Gemmology and Diamond Diplomas leading to FGA and DGA Membership, as well as my PJVai; I also joined other professional organisations. Since I started in this wonderful trade, I realised that clients appreciate it when they find somebody who has invested time and energy to pursue a passion. As there is a lot of competition in my field, professionalism is no longer an option.

Since the beginning Gem-A provided me with a sense of community, which is crucial when you are walking a new path. Thanks to Gem-A I met my dear friend Helen Dimmick, who offered me a work opportunity that led me to where I am now. Membership has offered me a structure and a methodology, a *modus*



operandi that helps one to be more credible and to build your confidence at work, and a solid foundation on which to lay more knowledge and expand your expertise.

In my opinion the most important step Students and new Members can take is to put your foot in the door and get into this sparkling world. At the beginning you will struggle to find the perfect job, so take any position available in the trade and prove you are worth it! Excel in what you do with conviction and passion; while you gain credibility and visibility, time will do the rest for you.

E. Billie Hughes FGA
Gemmologist at Lotus Gemology
Bangkok, Thailand



I got my start in gemmology at an early age: My parents are both

gemmologists and have been taking me to visit gem mines and markets since I was about two years old! However, I didn't always intend to become a gemmologist. Once I finished university, I wasn't sure what I wanted to do, so my parents suggested I pursue a Diploma from Gem-A. It was while I was in class, looking at inclusions through the microscope, that I gained a greater understanding and interest in gemmology. Each specimen we looked at

contained its own micro-world, and I was fascinated by what I saw in each stone.

In 2014, my parents and I founded our laboratory, Lotus Gemology, and I was able to use the knowledge that I gained while studying for the Gemmology Diploma. The course provided me with a strong foundation, which I was able to build upon with practical work in the lab. For me, one of the most interesting parts of the coursework is the focus on crystallography. Over the last few years I've developed a strong interest in photomicrography, and when I'm photographing an inclusion, I often think back to the lessons about crystal structure.

One of the things I've enjoyed about being a Gem-A Member has been the opportunity to attend the Conferences

in London and other Association affairs, such as social events during the annual Tucson gem shows. These gatherings have allowed me to meet other gemmologists who share similar interests. The Conference outings have provided access to wonderful experiences like private museum tours.

Students and new Members should gain as much hands-on experience as possible. Gemmology classes are a great foundation to build on, but there is no substitute for real experience. Having the opportunity to travel into the field and meet and learn from people from different aspects of our trade, who run the gamut from miners, traders, cutters, jewellers and other gemmologists, has been a tremendous asset to my gemmological education.

The best thing about Gem-A Membership is access to the international community, especially at Conference, which connects Members from all over the world.

Sammantha Maclachlan
FGA DGA MIRV MJVA CPAA
Independent Valuer and Gemmologist
Glasgow, Scotland



I am an independent valuer of jewellery and watches. I have my own business based in Glasgow City Centre, where I also offer gem testing and identification. I am also a keen photomicrographer and was a runner-up in the Gem-A 2021 Photographer of the Year competition. I have been lucky

enough to be loaned some beautiful rare and unusual gems to photograph, and I especially enjoy using crossed-polarising filters with my microscope.

I started in the jewellery industry nineteen years ago, as a temporary salesperson during the Christmas season. I had found the industry for me, but I wanted to work with high-end products, so I moved into luxury jewellery and watch sales. I progressed within the retail business, but I realised I was not interested in a management role. I was more attracted to the prospect of becoming a jewellery valuer and gemmologist. In 2015 I began studying with Gem-A's Foundation in Gemmology ODL course, which was approved by the National Association of Jewellers Institute of Registered Valuers as a first step in becoming a valuer (I qualified as a registered valuer in 2016 and started my own company, Sammantha Maclachlan FGA Ltd., in 2020). Though not required,

pursuing the Diploma in Gemmology allowed me to gain more knowledge of topics such as treatments, chemical and physical properties and methods of synthesis. I eventually earned the Gemmology and Diamond Diploma (with merit) in 2019 and 2022, respectively. I felt that, as a jewellery professional, it was important for me to have both of those 'gold standard' post-nominals.

Before I started studying gemmology and furthered my education in diamonds, I thought I knew all there was to know – how wrong I was! We are part of an ever-evolving industry, with new treatments, synthetics and simulants appearing frequently. My advice to anyone embarking on a gemmological course of study would be to read, read, read. There is a wealth of knowledge to be found online in research papers and in Gem-A's publications. I also recommend attending conferences and symposiums to grow your network of industry contacts and colleagues.

Ayako Naito FGA DGA
Jewellery Consultant and
Gemmology ODL Tutor
Tokyo, Japan

It is difficult to express my job title in one phrase, because I work at several roles: gem and jewellery consultant, education coordinator and gemmology tutor.

My interest in jewellery started when I was a little girl, when my grandmother bought me a heart-shaped ring made with red paste. For many years I wanted to do something related to gems and jewellery, but I did not start in this field until fifteen years ago, after other several job experiences. My turning point came during an internship in the decorative arts department of a London-based auction company. A colleague advised me that "if you want to be a professional in jewellery industry and do it seriously, you have to get a Gemmology Diploma from Gem-A and become an FGA!"

When I came back to Japan, I started my Gemmology coursework in Japanese. After I finished, I worked towards my Diamond Diploma in English. Luckily, I could study for both Diplomas in English AND Japanese; this taught me the cultural differences about how tutors and students approach the topics. I wanted to share my experience at museums in and with antiques in the UK with interested Japanese people. This led me to my current position.

One of my activities is to organise Japanese akoya cultured pearl field trips and workshops for my students. Recently we visited the Ise-Shima Peninsula, in Mie Prefecture. People have long been fascinated by this material, with its very particular sheen, and we saw how such beautiful specimens are grown while learning about the background of the cultured pearl industry in Japan. It is unusual to see the harvesting of a cultured pearl up close, but we were able



to open the oysters and remove some samples.

The best thing about Gem-A Membership is access to the international community, especially at Conference, which connects Members from all over the world. I found new friends every time during this fantastic event, and some of them visited Japan and joined my field trips and workshops. I always look forward to seeing people from the Association in Japan, or elsewhere in the world!

CORPORATE MEMBERS

Our Corporate Members support the goals and initiatives of Gem-A and sponsor events such as our annual Conference. We would like to express our gratitude to: American Gem Society • A. E. Ward & Son • Adam Lippitt Trading Organisation Ltd • AGA • AGGL • American Gemological Laboratories

(AGL) • B.K.T. Rings • Bentley & Skinner Ltd. • Berganza Ltd • C.W. Sellors • Casa Jewels Co. Ltd. • Chenevix Jewellery • D. Barker & Son Ltd • E.W. Balasuriya & Co. Pvt. Ltd • F. Hinds Ltd • Fabula Gems • Fair Trade Gemstones Ltd • Gemological Appraisal Laboratory of America • Gems of Note • Gemworld • George Pragnell Ltd • Heidi Kjeldsen Ltd. • Holts • Japan

Germany Gemmological Laboratory • Jewellery Validation Service Ltd • Joseph Lewin Ltd (T/N Lewins Jewellers) • M&J Gems Ltd • MacIntyres of Edinburgh • Marmalade Jewellers • McKenna & Co (Fine Jewels) Ltd • Scarab Antiques • Streeter & Co. • Studley Jewellers • The Ebor Jetworks • The Rock Hound • Webb's Jewellers Ltd

Gem-A was the natural choice for my education, with its reputation for excellence, rigour, difficulty and the opportunity to be part of a globally recognised and respected gemmological community through being a member of the Association.

Sandrina C. Ramanantsoa
FGA DGA

**Independent Gemmologist
and Consultant**
Antananarivo, Madagascar

I was working in Madagascar in my late father's businesses, involved in the local economic *paysage* (i.e., representation of the local environment), but around 2015 - 2016 I felt the need to pursue my own route. The gemstone sector, and the study of gemmology, was a way for me to combine my childhood passion for gems and jewellery, my political science educational background and the experiences and observations made during my time in the private sector. I was not afraid to start over, and determined to get the best education, experiences and apprenticeships possible to start my new career.

I had heard of Gem-A and was encouraged to be thorough regarding my foundations in my chosen field, especially since I was not initially accustomed to the trade. Gem-A was the natural choice for my education, with its reputation for excellence, rigour, difficulty and the opportunity to be part of a globally recognised and respected gemmological community through being a member of the Association. I earned the Diploma in Gemmology in 2018. I took time to become familiar with other facets of the industry (such as laboratory testing, gem cutting, trading, sorting, sourcing and designing) while furthering my education through specialised shorter courses in known gemstone locations. I have continued with this personal commitment at



least once a year to further and update my own understanding. During the COVID-19 pandemic and imposed pauses we all had to take,

I decided to pursue my Diamond Diploma. After its successful completion in August 2022, I am an independent gemmologist and consultant with FGA and DGA post-nominals, available by referral or appointment only.

Part of my job is being called to analyse, source, design and advise on several aspects, through my network and so, internationally. I adore the freedom, opportunities for growth and discretion that my very young career has allowed me so far. I know that the education I have received, and being part of the Gem-A community, plays a prime role in that. A degree is a steppingstone in this sector, in a world of ever-changing international frameworks and rapid scientific advancements. It can be a tricky environment to evolve in. Therefore, I would encourage those keen to engage in this fascinating field to arm themselves with the proper tools, knowledge, flexibility and patience, and to trust that ethics and professionalism will always open the right doors. ■

ABOUT POST-NOMINALS

We have successfully invited Gem-A Graduates to become Fellows since 1931. Unfortunately, one of the most common mistakes in the wider Gem-A community is the misuse of post-nominals, specifically by those who have completed Gem-A courses but are not Members. We remain committed to making sure everyone associated with Gem-A understands this distinction.

Gem-A currently offers a range of membership options that accommodate Alumni of our Gemmology Diploma and Diamond Diploma courses, corporate businesses and individuals without gemmology qualifications (or current Students) who can apply for Associate Membership.

Those who have successfully completed the Gem-A Gemmology Diploma or Diamond Diploma and apply to become Members can use the post-nominals FGA (Fellow of the Gemmological Association) or DGA (Diamond Member of the Gemmological Association) after their name. Post-nominals are an exclusive Membership benefit that demonstrate knowledge and professionalism on an international level. The FGA DGA Register is publicly displayed on the Gem-A website so customers, clients and colleagues can see they are working with someone who can be trusted.

We want to thank all our Members for their ongoing support. As part of our highly regarded and well-respected global network of gemmology professionals, you are actively helping the Association to continue its core focus – developing the next generation of gemmologists – for many years to come.



SEBRING REVOLUTION

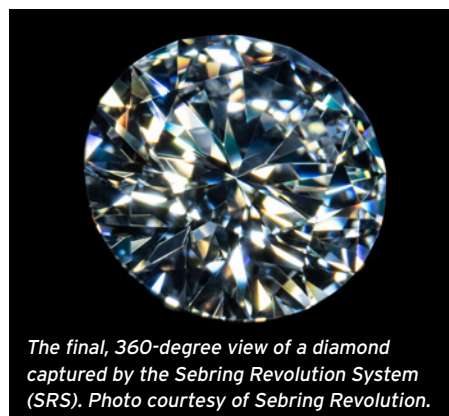
Brings 360-Degree Photography, and 4D Technology, to the Jewellery Industry

A cutting-edge firm that has developed methods of capturing multiple high-resolution photographic images to create seamless 4D images has brought its capabilities to the gem and jewellery space. Olga Gonzalez FGA DGA discusses how Sebring Revolution explained its technology to members of the trade.

Technology is usually developed and discussed within three dimensions: length, width and depth, but there isn't an understanding of the 4D transition the world is undergoing. Four-dimensional (4D) technology adds both space and time to the existing equation. When considering the visuals surrounding the gem and jewellery industry, images are taken on-camera, facing one direction. For three-dimensional space, the length, width and depth of an image is taken from a camera lens. Videography is a series of still images put together to create the illusion of movement, but it is still viewed on one plane. New York-based Sebring Revolution is using 360-degree photography to capture immediate high-resolution photographic images from multiple angles. The company has worked across various performance spaces and events, including rock concerts, television

shows and even the Met Gala. They have now brought this technology to the gem and jewellery trade.

The gaming industry was the first to break ground in four-dimensional space. Using computer-generated imagery (CGI), animated characters move through environments, with gamers interacting with each other across time and space to



The final, 360-degree view of a diamond captured by the Sebring Revolution System (SRS). Photo courtesy of Sebring Revolution.

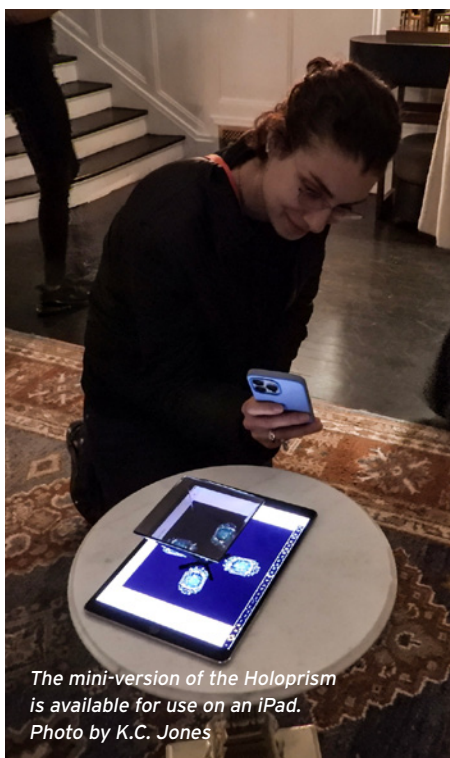
play within the same digital surroundings. CGI soon found applications in other industries. The Women's Jewelry Association New York Metro Chapter partnered with the De Beers Code of Origin programme to educate the trade on the Sebring Revolution System (SRS), a revolutionary technology that is able to create photorealistic 4D diamond, coloured gemstone and jewellery assets with an array of applications. "Tiffany & Co., Christie's and the Smithsonian Institution are a few of the partnerships we have cultivated over the years," noted award-winning creative director Steven Sebring. Hosted by LUXUNY Atelier at their space in Bryant Part Studios in midtown Manhattan, Sebring presented the company's cutting-edge products and services that will push the trade into the future.

Using the SRS, multiple images are captured at the same time to generate a 360-degree view of a single person or

object, such as a gemstone or piece of jewellery. The more images are produced, the easier it is to capture slow motion (accounting for the time aspect of the fourth dimension). Like Marcel Duchamp's *Nude Descending a Staircase, No. 2*, Sebring's studio can capture movement, like the 'swoosh' of a dancer moving in a circle. The SRS can hone in on the beauty of inclusions inside a gem, and render the inside of a stone visible into a larger, more visible space. Captures can be created in 2D, 3D and 4D, allowing for the development of media assets one could have only dreamed of years ago. The captures are immediate, making it easy for brands to attain unique content with a quick turnaround, with assets available in hours.



These still images show the process of the SRS capturing the world-famous Tiffany Yellow Diamond. Photos courtesy of Sebring Revolution.



The mini-version of the Holoprism is available for use on an iPad. Photo by K.C. Jones

During the event, Steven Sebring introduced the Holoprism, which allows an image capture to float and rotate as a hologram. For a retailer, the Holoprism – which is customisable – provides a unique display for showing customers gemstones and jewellery in the store, or stock that is anticipated. For designers looking for on-the-go 4D technology, Sebring Revolution has a mini-version of the Holoprism that can be added to an iPad, for showing holograms at a trade show, at the studio or from anywhere the user might choose to demonstrate the programme.

Another offering, Sebring House, is a user-navigable virtual experience populated with content captured using SRS that acts as the designer's metaverse. On the platform, products such as jewellery can be displayed for a virtual shopping experience. Users can navigate each room and click on the products within to 'try on' each piece in augmented reality (AR). Additionally, users can click on the product and be directed to purchase it online. The platform allows for livestreaming, educational conferences, virtual jewellery shows and designer exhibitions. Within the latter, there is space within each platform for either a line of products or a full-body image, where each designer can speak, walk and even show off their individual mannerisms, making for a wholly personalised experience. Sebring House offers a new, immersive and branded retail experience for those looking to step into the future with their sales.

"Our systems capture artifacts with immediacy and pure photographic reality,

without having to re-create anything through different kinds of technologies / software. This is always the best way to authenticate the assets and their purest forms," explained Steven Sebring. "When creating immersive content, catching these moments in real time can't be matched in any other way."

Sebring Revolution's image captures may also be used as digital collectibles and align well with the growing non-fungible token (NFT) market. A blockchain-based digital asset, a jewel can be sold not only as a physical product but alongside its digital token. Additionally, the high resolution 360-degree images are perfectly posed for 3D printing, and can be printed as art. If someone who owns the digital asset decides to 3D print the piece as art, the printed piece can act as an additional mode of income for a given product. ■

To learn more about Sebring Revolution Systems and see their captures play onscreen, visit sebringrevolution.com



Steven Sebring (centre), creative director of Sebring Revolution, with Elyssa Jenkins-Perez, president of WJA's New York Metro Chapter (left) and author Olga Gonzalez (right). Photo by K.C. Jones.

UltraLuxe Courts Jewellery Lovers in Singapore

After a two-year hiatus, Singapore's iconic jewellery show, JeweLuxe, returns alongside two new exhibitions under the marquee of UltraLuxe. Richa Goyal Sikri recounts the events of the October 2022 luxury festival.

Photo courtesy of SICIS Jewels

Singapore is once again open for work and play, with a robust calendar of conferences and events offering nonstop action. Close on the heels of the annual Formula One Grand Prix race, the city-state held a ten-day festival from 21 to 31 October dedicated to luxury, aptly named UltraLuxe. Housed under a beautiful, air-conditioned marquee in the heart of Orchard Road, Singapore's shopping street, the event primarily focused on jewellery connoisseurs, with nearly ninety brands represented. The festival, with the theme 'The Luxury of Niche', hosted two new events: the inaugural Singapore Watch Fair as well as The Advocacy, which focuses on 'purposeful luxury'. Notably, UltraLuxe featured the return of the iconic

jewellery show JeweLuxe after a two-year hiatus because of the COVID-19 pandemic. JeweLuxe 2022, which ran 21 - 30 October in the Tent@Ngee Ann City Civic Plaza, offered over sixty local and international designers a platform to present their collections to affluent individuals from Singapore and neighbouring countries such as Malaysia and Indonesia.

This year, JeweLuxe – which had its own inaugural show in 2017 – took things up a few notches with daily runway shows featuring celebrated Asian fashion designers who collaborated with their peers in the jewellery world to display a fantastic array of jewels. The glamorous events, held almost every evening of JeweLuxe's run, provided exhibitors

with the opportunity to highlight their pieces in front of a discerning audience of collectors with elite members of the press and media. As always, JeweLuxe split into two 'editions'. The first, called Icons & Legacies, ran from 21 to 25 October (at the same time as UltraLuxe's Advocacy show), was focused on 'presenting world-class brands with strong heritage, iconic award-winning creations and reputed for their unique and rare gems.' Edition 2, Artistry & Craft, ran concurrently with the watch show (26 - 30 October). Here, 'independent jewellery brands and watchmakers from Europe and Asia take centre stage'. In addition to the runway shows, the organisers also conducted talks during the day, which ranged from styling presentations of exotic hats with designer pieces to IKEBANA floral demonstrations inspired by jewels at the show. Each event was carefully curated to attract visitors, and provide engaging, educational content in a fun manner.

The 2022 show saw many new names, such as Silvia Furmanovich, who brought pieces from her new Silk Road collection as well as jewels from the celebrated Marquetry line.

Brazilian jeweller-designer Silvia Furmanovich was a first-time exhibitor at JeweLuxe. She designed her Blue Mushroom earrings (far left) with 18K gold, diamond, grey pearl and wood marquetry, while her Pink Begonia Leaf earrings (left) are made from 18K rose gold, diamond, rubellite, pink tourmaline and wood marquetry. Photos courtesy of Silvia Furmanovich.





These bracelets from Paolo Costagli comprise blue sapphire, moonstone, diamond and rose gold. Photo courtesy of Paolo Costagli.

Many Singaporeans who had been following the Brazilian designer's work on Instagram were delighted to meet and acquire pieces directly from Furmanovich. Singapore-based jewellery connoisseur Shu Yen Lee explained, "It was an absolute treat to have JeweLuxe return this year. I really enjoyed my visit. It was great seeing old friends from the industry and the jewels they had created during the pandemic. I particularly enjoyed seeing first-time exhibitors, such as the fabulous Silvia Furmanovich, who brought a unique type of jewellery to Singapore. Her Marquetry collection was amazing, and I simply had to acquire a piece!"

Other first-time exhibitors included Alexander Laut, who brought his exquisite collection of jewels featuring rare gemstones, and Mousson Atelier from Bangkok, who presented fine- and high-jewellery creations alongside a charming collection of miniature musical instruments in gold, precious stones and enamel. In her first time participating at JeweLuxe, Russian fine-jewellery artist Liza Borzaya brought her ethereal jewelled creations embellished with diamonds and mesmerising hues of enamel. Thailand-based Zahira, a newcomer in the fine-jewellery market, garnered new customers and sales within the first forty-eight hours of the show's opening.

Previous participants, such as Rota e Rota, Zydo Jewellery, Tenzo, SICIS Jewels, Kavant and Shararat, to name a few, were thrilled to exhibit at JeweLuxe after the show's 2020 and 2021 cancelations. Award-winning Italian jewellery designer Paolo Costagli, who has been exhibiting at the show for years, shared his experiences. "JeweLuxe is a platform that allows us to present our creations to an international and sophisticated clientele in a chic environment that is not to be found anywhere else in the world. JeweLuxe keeps getting better and better."

Singapore-based jewellery designers were also present and accounted for at JeweLuxe. Sarah Sze, the creative force behind An Order of Bling, chose JeweLuxe to launch her new collection called Record Love. Inspired by her father's comprehensive collection of vinyl records, it took Sze more than a year to work out the design and production aspect of this line. Each piece features grooved black onyx carved to mirror the form of a vinyl record that is then studded with a diamond solitaire in the centre and further embellished with gold. "JeweLuxe is a well-curated festival that really understands the life of a discerning clientele, who are seeking jewels that embody their style and meet the standards of their refined eye," Sze explained. "It is a festival we look forward

"JeweLuxe is a platform that allows us to present our creations to an international and sophisticated clientele in a chic environment that is not to be found anywhere else in the world."



The Record Love collection by Sarah Sze was inspired by Sze's father's record collection. The earrings, pendants, cuff bracelets and cufflinks, which recreate the appearance of vinyl records in miniature, are composed of grooved black onyx, diamond and gold. Photo courtesy of An Order of Bling.



Russian-based jewellery house Tenzo returned to exhibit at JeweLuxe. Among the pieces on display were these earrings made from ametrine, citrine, amethyst, diamonds, yellow gold and silver. Photo courtesy of Tenzo.

to in Singapore, as clients come out in full force to view our presentations and encourage us designers. It is an annual glittering party for jewellery lovers." Jaipore by Ritu Aurora brought a gorgeous collection of jewels featuring rare conch pearls that were surrounded by rose-cut and brilliant-cut diamonds. Dejade Jewellery, a Hong Kong-based jewellery salon that is planning to open a retail outlet soon in Singapore, showcased their contemporary fine jewellery collection of jade and diamond pieces and brought a few spectacular pendants. One featured an 89.79 ct Colombian emerald with only a minor oil enhancement, and another had a 43.47 ct yellow sapphire that could put the Sun to shame.

With the growing influx of wealth in Singapore from Hong Kong, China and other countries, combined with a sophisticated resident palette, the future for UltraLuxe looks bright.

The Advocacy Show, marketed by UltraLuxe as provide 'a focus on purposeful luxury that sustains and elevates nature, culture, talent, passions and the community', was held 21 - 25 October. Eighty-three Singaporean and international brands across the

jewellery, fashion and living-style industries were able to collaborate on runway shows. At The Studio, jewellery connoisseurs could meet, converse, make connections with and learn about the artanship of bespoke designers. As UltraLuxe cofounder Angela Loh stated in an interview, Advocacy was able to allow "brands from all over the world that incorporate meaning and purpose into their creations, and bring the fashion, jewellery and living spheres together to present a whole new experience of shopping for a new generation of consumers."

Watch lovers also had much to enjoy in the section of UltraLuxe dedicated to the Singapore Watch Fair (26 - 30 October), which featured Grand Prix d'Horlogerie de Genève (GPHG) award-winning brands such as L'Epée 1839, Genus and Furlan Marri. L'Epée 1839 put on a fantastic display of their high-end clocks entirely designed and produced in-house. Visitors had an opportunity not only to purchase these one-of-a-kind



The focal point of this ring, based on our Solar System, is the 8.3 ct ruby cabochon at its centre. It is surrounded by diamonds, sapphires, amethysts and emeralds and set in 18K yellow gold. Photo by Richa Goyal Sikri.



SICIS Jewels, based in Ravenna, Italy, are known for their stunning mosaic pieces. They are previous participants in JeweLuxe and brought eclectic jewels to Singapore, including their Blue Ribbon ring (left, featuring sapphire, topaz and diamonds mounted in white gold) and their Destino Incantanto necklace (above, with tanzanite, rubellite and diamonds set in white gold). Photos courtesy of SICIS Jewels.

kinetic works of art but also to interact and learn from the CEO and artistic director, Arnaud Nicolas. Knowledge was at the heart of the Singapore Watch Fair with daily presentations and talks on subjects that ranged from collecting vintage watches, the disruptors, ladies' watches and the OHM Universe. On the vintage side international auction house Phillips had a strong presence, offering visitors a view of some collectible pieces that were coming up for sale, while 2toneVintage – cofounder of the watch fair – had a double booth to display their collection of collectible antique timepieces.

With any consumer-centric show, timing is key and almost always difficult to perfect. The UltraLuxe festival overlapped with the long Diwali

weekend. Perhaps the organisers expected an increase in foot traffic and shopping because of the festive nature of the Hindu New Year, but it had the opposite effect, causing a drop-in visitors and business activity. This was an unfortunate minor dent in what was otherwise a fantastic show, featuring fashion shows, workshops, educational talks, and a nonstop festive atmosphere for ten days. Even with the lower-than expected turnout, UltraLuxe reportedly attracted more than 8,000 shoppers and generated sales of over US\$6 million (~£4.96 million).

Most of the brand representatives interviewed reported satisfactory sales and confirmed that they would return next year. With the growing influx of wealth in Singapore from Hong Kong,

China and other countries, combined with a sophisticated resident palette, the future for both JeweLuxe and the Singapore Watch Fair (under the uniting banner of UltraLuxe) looks bright. Brazilian jewellery designer Silvia Furmanovich's words perfectly summarise the experience. "Attending JeweLuxe was a very rewarding experience and opportunity to tap into a market previously unfamiliar with my jewellery. The women I met evoked the vibrancy and modernity of the city of Singapore."

The next UltraLuxe festival is scheduled for 13 - 22 October 2023. ■

For more information on UltraLuxe - JeweLuxe, the Advocacy and the Singapore Watch Fair - go to ultraluxe.io.

UltraLuxe

JEWELUXE | SINGAPORE WATCH FAIR | THE ADVOCACY

The Return of the UK Gem Fair

Events Dedicated to Ethical Sourcing Around Great Britain

In-person trade shows are once again appearing on calendars. Stuart Pool of Nineteen48 travelled around the United Kingdom with his ethically sourced gemstones; he shared his observations about commonalities at these events.

After a two-year hiatus, the gem and jewellery industry has returned to some semblance of normality. Of course, that reversion to 'normal' has meant reducing our Zoom calls, webinars and other forms of distance communication and getting back to face-to-face meetings with our customers. Whilst I have been incredibly grateful for the various forms of online interaction during our enforced separation, I have welcomed seeing people again. A dual pleasure is seeing my colleagues at gem shows dedicated to responsible practices in the trade; these events have slowly developed in the United Kingdom over the past few years.



The author shows a range of gems offered by Nineteen48 to a potential customer at the Birmingham School of Jewellery.

My year started with a trip to Tucson, Arizona, to be part of the Ethical Gem Fair that was established two years prior by the Ethical Gem Suppliers group. The event was a great success, attracting numbers beyond our expectations. Having had such a productive and fun time in February, I returned home with the intention to get back on the road and see what would happen in the UK.

Over the course of this year, I followed a busy schedule of events, mostly at new venues but visiting some old favourites as well. My travels have taken me from Penzance, Cornwall, to Edinburgh, Scotland, and many places in between.

The fairs have been held at jewellery schools, workshops and studios, as well as in the occasional hotel meeting room. Though attendance at the events has varied considerably, there are certainly some common threads.

There is, of course, no substitute for placing a range of gems in front of jewellery designers and makers. Sending material by post is fine as far as it goes, but designers want to see the gemstones and engage with suppliers in person. At each fair, there was the customary buzz of excitement as jewellers perused the range of sparkly gems from our main sources in Sri Lanka, Tanzania and Australia, including sapphires, rubies, aquamarine and opals.

For a long time, I have held the opinion that focused events, where customers know what to expect, are the way forward. These would be preferable to some of the larger shows, where there is too much 'white noise' and distraction. Our customers appreciate that they are coming to look at gemstones and nothing else. So whilst attendances at this year's shows might not have been huge, the buyers came with a purpose.

The buying behaviour from most customers has been one of caution and prudence. I am sure this reflects the general global economic situation in which we find ourselves. However, trade customers have certainly continued to buy in pre-pandemic volumes, perhaps focusing on what they know will sell rather than anything too experimental. Having said that, our millennial customers and non-professional jewellery makers have shown great diversity in their selections, so I was glad to hold a variety of stock that caters for their eclectic needs. Stones that I sold over the summer that fall into this category include chalcedony, ammolite, jasper and chrysoprase.

Particular mention should be made

of my visit to Birmingham School of Jewellery with my colleagues from Gemstones Brazil. This was by far the largest event of the summer for us, and we were given a warm welcome by staff and students alike. Alongside the gem fair itself, we gave a talk on artisanal mining to a packed lecture theatre. This showed how much interest there is in the jewellery supply chain; makers, not least those who are newcomers to our industry, are giving more thought to responsible sourcing.

Overall, I have been satisfied with the results of my efforts over the last few months. The gem fairs are not only about selling, but also relationship building and the ongoing education of our target audience about the issues and opportunities relating to responsible sourcing. I see this model continuing to flourish in the years ahead, as our industry's supply chains become more transparent.

As we head into the traditionally quieter Christmas period (for gem suppliers), my thoughts are already turning to plans for 2023. In addition to another show in Tucson, we will return to London, Brighton, Edinburgh, Bristol and Birmingham, and hold more educational events and workshops. I look forward to all this activity with great excitement. ■



Kathy Chappell of Fair Trade Gems (left) poses with the author at an event in Hatton Garden.



Bid on exceptional gemstones, *selected by Catawiki experts*

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



Naomi Howard, FGA, GIA DG, AJP
Expert Gemstones

Buy and sell on catawiki.com



Metamorphosis Captured

The Winners of the Photographer of the Year Competition

The votes are in! Our annual competition garnered images that depicted different ideas about the concept of change; here are our winners.

The Gem-A Photographer of the Year Competition is such a lovely way for each year to draw to a close. Not only do we get to see the best moments in gemmology captured in time, but it also allows our social media audience to see the work that their peers and colleagues around the globe are engaged in.

This year's theme, 'Metamorphosis', is defined as 'any complete change of physical form or substance, character or appearance'. This gave us and our followers the chance to see how our contributors, Gem-A Members and non-members alike, interpreted the theme. Once the late October deadline for entries passed, we set about sorting through the photos to create a longlist; these ten photos were posted to Facebook (@GemAofGB) for public voting.

To progress onto the next stage of the competition, a 'shortlist' of five entries for our guest judge to assess, photographs had to earn the 'Likes' of our Facebook audience. With the longlist gallery shared over 50 times and well over 1,000 votes cast by the time voting ended in late November, our Facebook followers showed as much enthusiasm about the selection as we did. We were pleased to turn the top five photographs in the shortlist over to our guest judge, world-renowned gem expert and educator Rui Galopim de Carvalho choose our winner and two runners-up.

THE WINNER

We extend our warmest congratulations to our first-prize winner, **Valentin Fejoz**, whose photo (above) of an inclusion scene in a Sri Lankan sapphire (field of view 4 mm) graces our cover. Using a monocular microscope and 28MP C-mount camera, he created a focus stacking of 48 photos. The negative cavities contain black and hexagonal graphite inclusions, and diaspore needles. Inside we can see a fluid and many gas bubbles. This effect was obtained by heating sapphire above 31.1°C to reach the supercritical point of CO₂. At this temperature, a homogenisation of the phases takes

place, and the central inclusion seems 'empty'. It is by cooling the stone that a multitude of bubbles appear. In corundum of metamorphic origin, the presence of carbon dioxide (CO₂) fluid inclusions is a diagnostic indicator that no heat treatment. The choice of this photo is linked to the theme of the 'metamorphoses of two states of matter that coexist: fluid and gaseous, also called the supercritical point. It also allows a diagram to understand the pressure at which the fluid has been trapped. As a result, the sapphires of metamorphic origin crystallised under a pressure of 74 ATM, or approximately

75 bars. Lighting is by four fibres, one of which is blue to accentuate the colour. Of the photograph, de Carvalho said, "In detecting gem treatments, an understanding of the geological processes behind mineral growth is critical and sometimes microscopy reveals clues to that understanding. In this case, the behaviour of these fluid inclusions in a blue sapphire can be interpreted."

Mr Fejoz received his gemmology diploma from L'École des Gemmes in Paris. Passionate about photomicrography, he recently wrote the *Guide d'Identification des Gemmes* with Françoise Besset PhD. Mr Fejoz also passionate about spectrometry and is creating a wide library of dedicated not only to the Raman spectra of gemstones, but also to the study of gems in photoluminescence and Fourier-transform infrared (FTIR) spectroscopy. He told *G&J*, "I am very happy to have won this competition and to be able to highlight my work through a great institution like Gem-A and a magazine as prestigious as *Gems&Jewellery*."

As the winner of this year's competition, Mr Fejoz will be gifted a £300 voucher to spend at Gem-A Instruments, along with one year's free Membership of Gem-A.

“In detecting gem treatments, an understanding of the geological processes behind mineral growth is critical and sometimes microscopy reveals clues to that understanding. In this case, the behaviour of these fluid inclusions in a blue sapphire can be interpreted.”

THE RUNNERS-UP

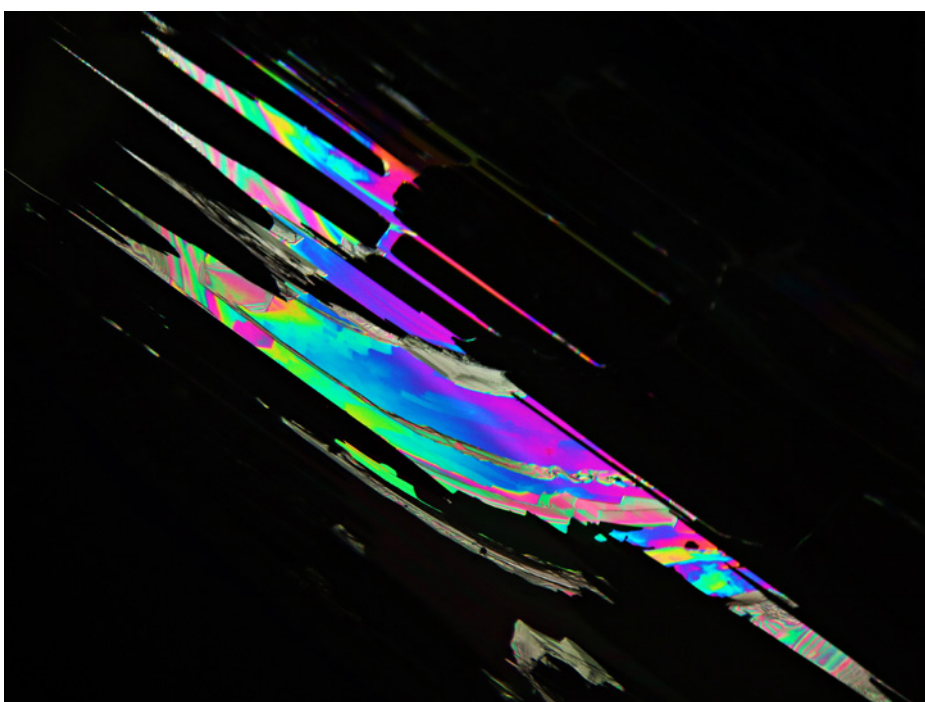
Our first runner-up is **Muzdareefah Thudsanapbunya** who submitted a photomicrograph (below) of an inclusion resembling a rainbow-coloured polearm in apatite (field of view 5.90 mm). The extensive interconnected fluid inclusion suggests that this stone occurs in a pegmatitic environment. Iridescence is created when the illumination conditions change. The use of oblique illumination with right angles discloses more magnificent phenomena and more details than regular darkfield illumination. The photo was captured by a microscope equipped with an SLR camera and optical fibre-oblique lighting. Mr de Carvalho noted that this submission was “A colourful example of the visual impact under magnification of

thin-film interference of light that we call iridescence that occurs when light passes through a planar fissure of a certain thickness in a certain angle. A delight for gem students.”

Ms Thudsanapbunya is a gemmologist specializing in coloured stones and diamonds at International Gemological Institute (IGI) Thailand, where she developed an affinity for photomicrography. Prior to joining IGI she completed her bachelor’s degree at Burapha University in Saen Suk, Thailand, where she discovered her passion for gemmology. She also holds a Graduate Gemologist diploma from the Gemological Institute of America. Ms Thudsanapbunya knows that gemmology as a science is very complex and obtaining knowledge in the field

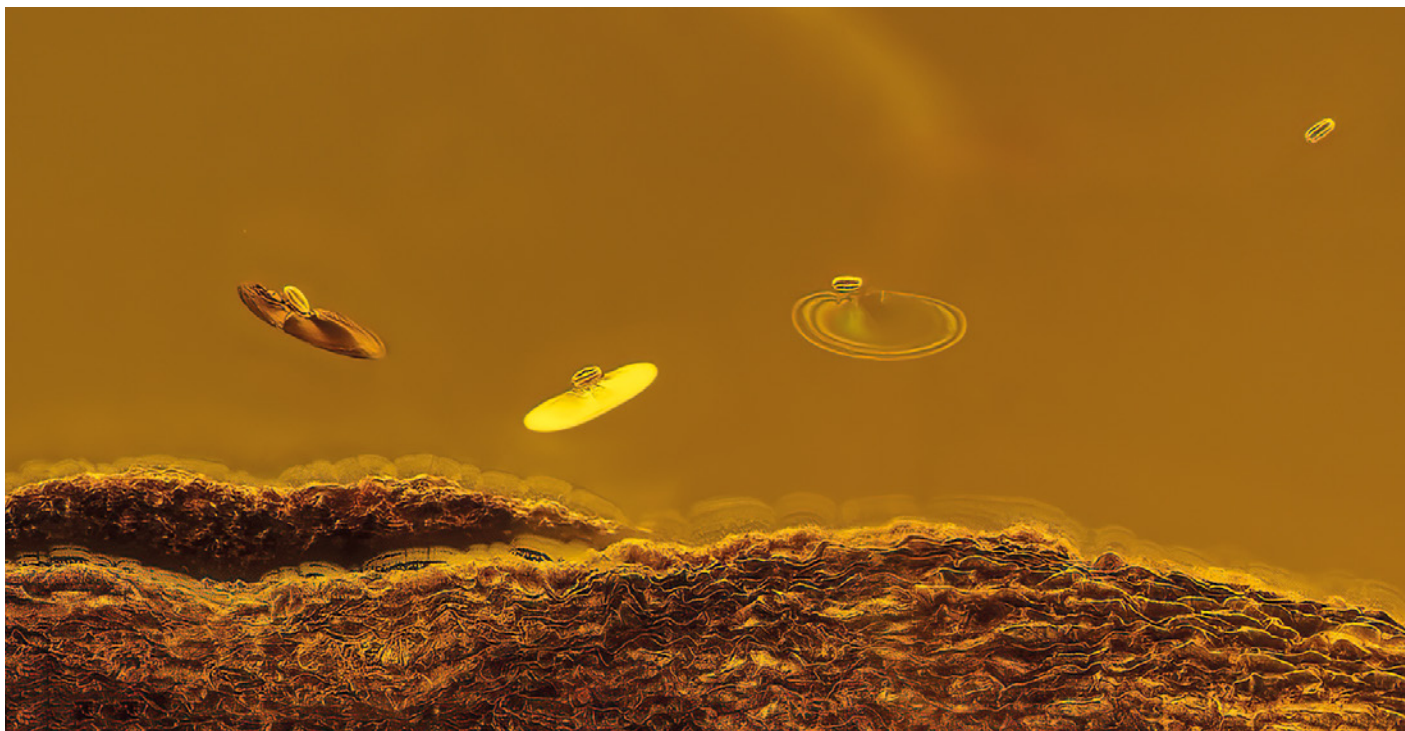
is a constant and ongoing process; she continues her education through research and publications. Upon finding out that she was a runner-up in the Photographer of the Year Competition, she said “I am a huge fan of Gem-A, and this is the first time that I participated in the Competition. I am grateful for the opportunity to share one of my photomicrographs.”

Our other runner-up is **James Evans EG**, who placed with his photograph (below) of lab-grown ruby-filled glass. The lamellar synthetic rubies were brooded



by Edmond Frémy. Their incubation lasted for 20 days within a clay crucible filled with alumina, lead oxide and potassium bichromate (to provide colour to the gems). The transformation from alumina occurred symbiotically with the crucible’s metamorphosis to acicular crystals of mullite and glass — the same transformation that occurs whenever porcelain is fired. What results is a fantastical concoction of textures, lustres and forms. The crucible fragment dates from the nineteenth century and belongs to the Natural History Museum, London (Collection number: BM. 1926, 1209); thanks to Robin Hansen BSc (Hons) FGA for making the specimen available. Of this image, Mr de Carvalho stated “Sometimes an image can be something different than a visual-impacting super photography. It may document an historical period, as in this case with a





relic of the early stages of laboratory-grown gem materials back in the late nineteenth century."

Mr Evans is a UK-based gemmologist specialising in man-made gemstones. He founded Lustre Gemmology in 2018 and has since been developing a new range of practical gemmology tools (including the Sheffield Red Compensator). James earned his Gemmology Diploma from Gem-A in 2019. In studying for this award, his written project examined the history of synthetic ruby and pushed back, by 37 years, the date at which the first fusion of ruby was thought to have occurred (along with the first synthesis of corundum). It was during this research, at Gem-A's Sir James Walton Library, that James first became aware of the photographed specimen. Within Herbert Smith's 1913 book, *Gemstones*, this crucible fragment

was described as being lined with 'glistening ruby flakes' and exhibited in the British Museum (Natural History). Mr Evans has since published a book on *The History of Synthetic Ruby* as well as research articles, including "The First Identification of Spinel"; "Blue Ruby" (on the terminology used in gem marketing); "The Early History of Synthetic Diamond"; and *Free & Legal* (on the legality of Alrosa's adamantite output). He is delighted with his runner-up prize in this year's Photographer of the Year contest and continues to dream of locating one of the brooches made from Frémy's synthetic gemstones.

As runners-up, Ms Thudsanapbunya and Mr Evans will each receive a £50 voucher to Gem-A Instruments, for use in purchasing gemmological equipment, tools and books.

SPECIAL MENTION

While not part of the shortlist, our guest judge was particularly taken with **Enrico Bonino's** 'Pollen Grains Over Anther Baltic Amber' (above) and asked that the photograph receive a Special Mention in the issue. In Mr Bonino's photo (field of view 1.9 mm), four grains of pollen seem to take off from the rough surface of an anther. The scene was acquired using an extreme-macro technique, using a Mitutoyo APO objective 5x. The subject is embedded in Baltic amber, and is dated at about 40 million years old. Of this photograph, Mr de Carvalho explained, "Inclusions in amber are a world of beauty and scientific value, and this sci-fi-like scenario featuring pollen grains with tension hallows is a fine example of why mastering microscopic observation is so keen to gemmology students, inviting imagination and delight to momentarily take over scientific focus."

Enrico Bonino is a geologist with a degree in stratigraphy and palaeontology from the University of Earth Sciences in Genoa, Italy. He is the author and editor of Paleozoic-related scientific books and articles on arthropods, fossil *lagerstätten*, trilobites and inclusions in amber. A deep passion for Earth, from microcosmos to macro-cosmos, motivates him daily to explore the possibilities of extreme-macro photography of microfossils. Insects trapped in amber are his favourite subjects.

"Inclusions in amber are a world of beauty and scientific value, and this sci-fi-like scenario featuring pollen grains with tension hallows is a fine example of why mastering microscopic observation is so keen to gemmology students."

Skilled in digital image processing, mathematical morphology, and gifted with an artist's eye, Mr Bonino's photographs offer a bright, new, and incredible vision of tiny creatures. You can follow his microcosmos acquisitions by visiting www.enrico-bonino.eu.

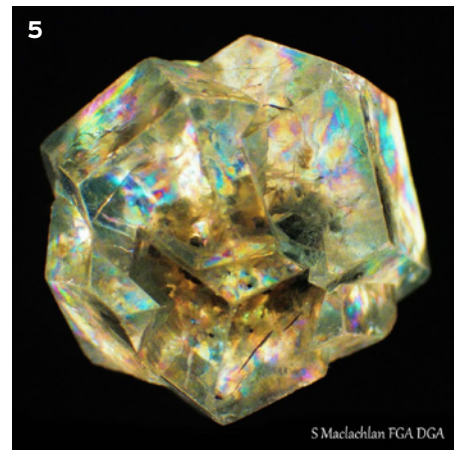
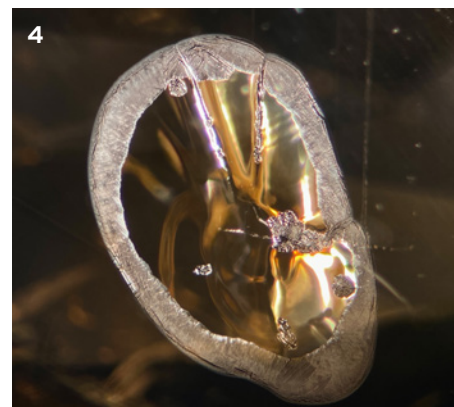
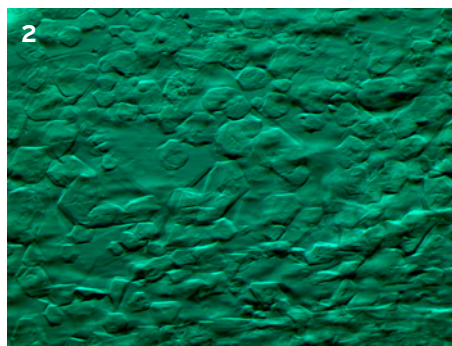
Of this honour, Mr Bonino told *G&J* that "Participating in the Gem-A contest gives me the possibility to discover the absolutely fascinating world of gemmology and the techniques required to develop skills in evaluating gems. I'm very interested in applying the extreme-macro techniques that I have developed in recent years into the gemmological domain to investigate the

possibilities of inclusion detection and analysis. The fact that this photo could have been published astounds me, and I'm very proud to know that the image with the pollens was selected and received a special mention in your competition. Thank you very much, Gem-A!"

THE LONGLIST

If you haven't had chance to view the longlist on Facebook, here's a recap of the remaining six images that were posted for public voting this year. We thank all our contributors for taking the time to enter this year's Competition, and to Rui Galopim de Carvalho for his time and expertise.

1. **Enrico Bonino:** Psocoptera in Baltic Amber (field of view 5.3 mm)
2. **Jonathan Muyal FGA:** 'Gota de Aceite' in Colombian Emerald (field of view 1.58 mm)
3. **Christian Carriere:** Opal Submerged in Water
4. **Priyam Puri:** Embryonic Discoid Fracture in Yellow Sapphire
5. **Sammantha Maclachlan FGA:** Anomalous Birefringence in Demantoid Garnet (field of view 1.41 mm)
6. **Lauren Shoff:** Amethyst Crystal Mined by the Photographer ■



OUR GUEST JUDGE

Rui Galopim de Carvalho FGA DGA is a gem education consultant, author and international lecturer on gemmology and the history of gem materials in jewellery of cultural heritage. He has studied numerous national collections, including the Portuguese crown jewels. Founder of the Home Gemmology webinars offered during the COVID-19 lockdown, he is also editor of the educational account @portugalgemas on Instagram and shares gemmological content actively across social media, helping high jewellery sales associates across the world to have fact-based storytelling narratives in plain language. He is associate editor of Gem-A's *Journal of Gemmology*, vice-president of Sector A and of the Coral Commission of The World Jewellery Confederation (CIBJO) and is a member of the Communications Committee of the International Colored Gemstone Association (ICA). He is also a member of the Society of Jewellery Historians, the Society of Mineralogy Museum Professionals and an honorary member of the Portuguese Association of Excellence Brands, (LAUREL, member of ECCIA).



A Study of Sapphire Origin Determination Methods

The geographical origin of gemstones is determined using microscopy, spectroscopy and chemical analysis. Josef Caldaron FGA GG discusses the challenges of, and methods of analysis used in, the origin determination of sapphires.

In April 2014, a 30.08 ct sapphire sold at Bonhams in London. It was accompanied by three gemmological laboratory reports, which denoted two different geographical locations: Myanmar (Burma) and Sri Lanka, historically known as Ceylon (Ogden 2017). There is great potential for confusion in the trade, as consumers and dealers alike may not fully understand that origin determinations are 'probable and never to be considered absolute' (C.P. Smith, pers. comm., 2020). Occasionally, highly regarded

gemmological laboratories – such as American Gemological Laboratories (AGL), Swiss Gemmological Institute (SSEF) and Gübelin Gem Laboratory (GGL) – offer differing origin determinations. These opinions have major financial implications, as origin has increasingly become a primary value factor in sapphire. In a 2020 interview, Christopher P. Smith FGA GG of AGL stated that the types of inclusions present in the material often hold the greatest key to the most probable origin.

Above image: This articulated necklace set with approximately 15.00 – 17.00 tcw baguette diamonds, with an unheated step-cut sapphire of Sri Lankan origin weighing 39.83 ct, sold at Sotheby's in September 2020 for £68,750. Photo courtesy of Sotheby's.

The most prized sapphires are all extracted from metamorphic deposits, and 'metamorphic blue sapphire poses one of the biggest challenges in geographic origin determination' (Palke et al., 2019). The four most prestigious geographical origins for fine, gem-quality sapphire are Kashmir, Myanmar (Burma), Sri Lanka and Madagascar. The value differences between these origins – a Kashmir sapphire of low-to-average quality would likely be much more valuable than a Burmese or Sri Lankan specimen of finer quality (McClure et al., 2019) – can be quite drastic, as demonstrated in three different Christie's auctions within a six-month period. A ring mounted with a 5.71 ct Kashmir sapphire in classic 'cornflower' blue sold at auction for the equivalent of £340,676 in November 2018; ten days later, a ring containing an 8.11 ct 'Ceylon' sapphire sold for roughly £17,380. In May 2019, a ring featuring a 7.45 ct Burmese gem sold for £66,127. None of the three specimens showed evidence of thermal enhancement.

While there is certainly variation in value due to other factors, including tone, hue, saturation, cut quality and clarity, it is evident that seemingly similar sapphires may have drastically different values based solely on geographical origin. Yet despite



Sapphire sources surrounding the Indian Ocean; many of these localities are thought to have once been connected to each other as part of the supercontinent Pangaea (350 – 175 Ma).

significant advances in technology and analytical methodologies, C.R. 'Cap' Beesley of AGL estimated that there is an approximately 20% rate of inaccuracy in determining (blue) sapphire corundum origin (Larif, 2021). Kashmir sapphires can be confused with those from Sri Lanka and Madagascar; additionally, material from the latter two sources can be confused with that from Myanmar. However, 'Burma and Kashmir should never be confused', since their inclusion types do not overlap at all (C.P. Smith, pers. comm., 2020).

Gemmological laboratories have been placed in the unintended position of being 'market makers' and their findings on origin can dictate a sapphire's value. There are few gemmological laboratories that are qualified to assert a credible origin determination that will be unilaterally accepted by the industry, and often two or three reports from different laboratories are requested to corroborate origin (particularly Kashmir origin). The most important distinction between the sapphire origins is with Kashmir, because of the extreme difference in value that this origin denotes. Kashmir has become almost like a sapphire brand; this provenance gives



The ring on the left, with a 5.71 ct Kashmir sapphire surrounded by diamonds and set in platinum, sold at auction in 2018 for roughly £340,676. The ring on the right sold a few months later; it features a smaller sapphire (7.45 ct) from Myanmar. This ring is also set with diamonds and set in platinum but sold at auction for about £66,127. Photos © Christie's Images Limited.

from Sri Lanka and Madagascar. It is, however, entirely possible that the metamorphic formation environments of these two origins were almost if not completely identical.

Hundreds of millions of years ago, when sapphire deposits were forming, Madagascar and Ceylon were likely conjoined and bordering each other prior to tectonic shift, according to the Pangaea supercontinent theory (Lovett, 2008). The resulting mineralized belt stretches from Antarctica through Madagascar, Mozambique, Tanzania and northward. Age and isotopic tests indicate that the crystalline basement of Sri Lanka is more closely related to the

years ago, as part of Pangaea. This supercontinent is theorised to have existed during the late Paleozoic and early Mesozoic eras (Lovett, 2008). According to Gübelin Gem Lab, "...as a logical consequence it must be expected that the mineralogical-gemological properties of the sapphires originating from these environments are also widely overlapping."

Microscopic analysis of inclusion types in sapphire is crucial to the formulation of geographical origin opinions – to say nothing of separating mined sapphires from lab-grown specimens. Chemical analysis is helpful in providing corroboratory data, but determinations must be based on the foundation of primarily microscopic, and spectral evidence (Krzemnicki and Halicki, 2012). The most practical method of geographic origin determination is to "simply exclude as many origins as possible, leaving only a few candidates for the final decision" (Palke et al., 2019).

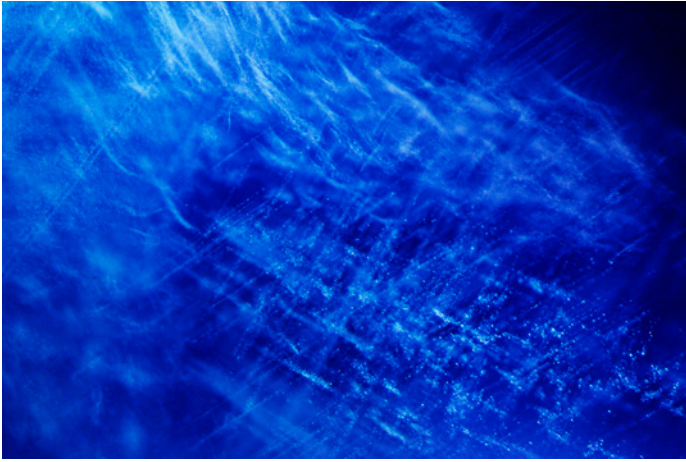
The first step is looking at source types. Sapphire can be broadly separated into two groups based on geological conditions of formation: 'metamorphic' and 'basalt-related' (magmatic) blue sapphire. Christopher P. Smith developed a coherent corundum source-type classification system, which for sapphire separates eleven major geographical origins into a combination of two factors: 1) Broad geological formation conditions: magmatic, metamorphic and combination metamorphic-magmatic; and 2) An inclusion type-classification system, numbered I - IV. Type I comprises 'silk' inclusions, needles of rutile; →

It is evident that seemingly similar sapphires may have drastically different values based solely on geographical origin.

the gem a much greater level of prestige (Krzemnicki, 2013).

Gübelin Laboratories (2006), which pioneered origin determination in the 1950s, asserted that 'the most important gemmological-mineralogical criteria used for the characterisations of gemstones' are inclusion features, chemical fingerprinting, spectral fingerprinting, optical properties, infrared (IR) characteristics and luminescence behaviour. The challenge lies in the fact that two seemingly distant locations may have hosted sapphire growth in similar environments. A case in point is in discerning between material produced

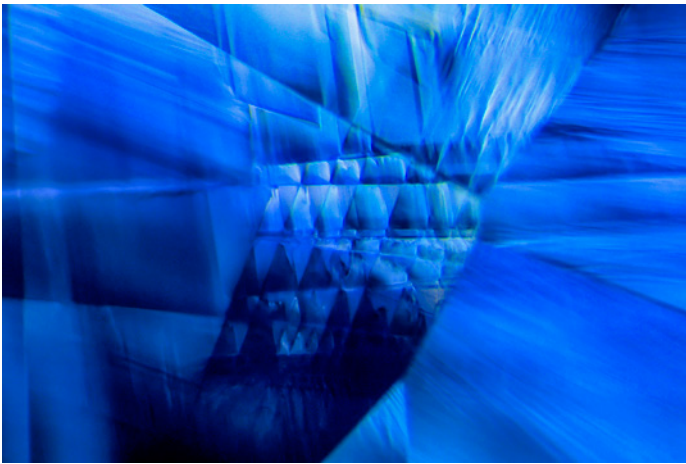
southeastern part of Madagascar than to southern and eastern portions of India. This might be counterintuitive based on the modern-day proximity of Sri Lanka to India; however, the concurrences of gem materials, as well as geological and mineralogical similarities in these two localities, strongly indicating a shared geological formation (Dissanayake and Chandrajith, 1999). Many of the world's important sapphire-producing sources form a ring on the perimeter of the Indian Ocean, where many of the localities are thought to have once been connected to each other approximately 350 - 175 million



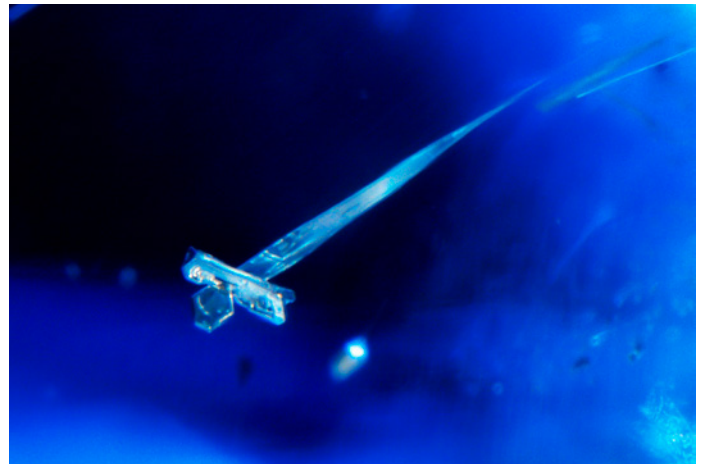
This Kashmir sapphire shows characteristic pattern clouds of tiny inclusions, along with clouds of nanoparticles that result in their highly prized velvety appearance. Field of view 1.90 mm.



Elongate exsolution silk (i.e., tiny rutile needles) sometimes occurs in sapphires, as it does in this unheated Sri Lankan specimen. Field of view 2.00 mm.



Complex growth patterns known as 'grating' are often observed in sapphires, particularly in sapphires from Madagascar. Field of view 4.00 mm.



This Chatham flux-grown synthetic sapphire shows a platinum crystal inclusion; this feature is diagnostic of flux growth. Field of view 1.72 mm.

Type II contains zonal clouds; Type III contains crosshatch and flake-like inclusions; and Type IV contains zircon and/or crystals with thin-film-type inclusions (C.P. Smith, pers. comm., 2020). Type II inclusions are considered, according to Smith, 'Kashmir or Kashmir-like'; it is sometimes problematic that Sri Lanka and Madagascar sapphires, both mined from metamorphic sources with similar formation conditions, can contain these 'Kashmir-like' inclusions. Kashmir sapphires can also carry other distinctive and specific inclusions, such as pargasite needles, short-prismatic dravite (tourmaline), corroded zircons, resorbed feldspars and very fine patterns of crossing dust tracks, dust clouds, and dust veils similar to the strokes of a brush (Krzemnicki, 2013). Other internal characteristics analysed through optical microscopy are colour zoning, growth patterns and morphology,

which can also aid in identifying a possible geographical origin.

Traditional microscopy – the oldest method of origin determination – typically uses a binocular microscope (trinocular for photomicrography) with darkfield illumination to create greater contrast to view inclusions and paired with intense fibre-optic light that enables the gemmologist to view rutile silk more easily (Groat et al., 2019). Other microscopes have proven to be useful

in identifying and analysing inclusions for origin determination, including the horizontal immersion microscope and the scanning electron microscope (SEM). The horizontal immersion microscope is a powerful tool. By immersing the sapphire in a liquid such as di-iodomethane, which has a refractive index (RI) of 1.74, or a mixture of immersion liquids that yields a similar RI to sapphire, inclusions and internal features are much more easily viewed, with greater detail and

Microscopy coupled with Raman spectroscopy represents the most effective combination of processes for identifying and analysing inclusions to determine geographical origin.

sharper image quality. This is because the surface is rendered almost invisible, blending into the immersion liquid of similar RI. Surface reflections are thus eliminated, and the light is not diffracted, but rather continues in a direct path to the optics (Read, n.d.). The scanning electron microscope is only helpful for the identification and analysis of surface-reaching inclusions. It is attached to a dispersive x-ray analysis system (EDS), and this combination may be used to magnify a material's surface up to at least 20,000× (GIA, 2018). While this method cannot be utilized for the analysis of internal characteristics, it can prove extremely useful due to the level of magnification that can be achieved.

Microscopy coupled with Raman spectroscopy represents the most effective combination of processes for identifying and analysing inclusions to determine geographical origin (Krzemnicki, 2013). The Raman spectrometer is a non-destructive advanced testing tool that measures the Raman scattering effect, named after



Pargasite inclusions in sapphires are indicative of a Kashmir origin. Photos by Jonathan Muyal (right; field of view 7.19 mm).



Nobel Prize-winning Indian scientist C.V. Raman, who first documented the effect in 1928. The Raman scattering effect occurs when the molecules of a material are exposed to light; while most of the light exits unchanged (Rayleigh scattering), some of the reflected light is scattered or absorbed by the material. This latter light undergoes a shift in energy to a different wavelength, called Raman scattering (Groat et al., 2019).

The Raman spectrometer measures this shift, a diagnostic identifier, which is particular to the chemical structure of a material, and inclusions can be positively identified through the measurement of this shift. The results are quantified in spectroscopic graph format. When compared to the spectra in established molecular databases, this data may be used to identify the exact chemical nature of an inclusion. The power of this tool rests in the fact that it can isolate minute individual subsurface features, enabling the gemmologist to identify distinct inclusion types which may be indicative of certain origins, such as the pargasite found in a sapphire host that strongly suggested Kashmir origin (Muyal, 2018).

In conclusion, origin determination of sapphire is a complex and highly specialised field, sometimes fuelled by gut feelings, that must always be corroborated through scientific methods. It is, in a way like a fascinating gemmological puzzle that needs to be carefully pieced together by 'identifying the possibilities and limitations' (C.P. Smith, pers. comm., 2020). As time goes by it will be interesting to see if origin perceptions change based on new discoveries and technological advancements. While it is evident through our discussion that origin determination truly is, in the words of Christopher P. Smith, a 'blend of art and science', a more accurate description might be 'a blend of art, science, AND economics'. ■

A list of references can be obtained by emailing the editor.

All inclusion photos © GIA.

ABOUT JOSEF CALDARON FGA GG

The author of this issue's Student Project tells G&J about the impetus for studying at Gem-A and the inspiration for his Diploma Project.

I was always fascinated with gems, ever since I was a little kid, from my first field trip visit to the American Museum of Natural History in New York City. Gemstones always were, and still are, magical to me. In the late 2000s I decided to follow my passion and made a drastic career change from real estate into jewellery. I went to work for Tiffany & Co. in New York; then, after a brief stint at GIA's laboratory in Ramat Gan, Israel, I moved back to New York and focused on building my own business.

At present, I run my own jewellery advisory and diamond company in Manhattan's Diamond District, called josefc.com, and concurrently serve as director of fine jewelry for Winston Art Group, the nation's leading independent appraiser of personal property. As a gemmologist appraiser working with extremely important and high-value collections, Gem-A's Diploma in Gemmology, which I earned back in 2021, gave me added credibility as well as a deeper understanding of gemstones from a more scientific and crystallographic perspective. I am most proud of listing the FGA post-nominal letters after my name which, in addition to my Graduate Gemology degree from GIA and status as New York's sole Certified Master Appraiser of the National Association of Jewelry Appraisers, has solidified my credentials at the highest level. I am currently working on finishing the Diamond Diploma; it seems I just can't get enough of Gem-A!

I chose this topic because on a few occasions while working on fair market value appraisals, I noticed important sapphires accompanied by multiple reports from well-regarded gemmological laboratories, some noting different geographical origin determinations. From an economic perspective, there is such a great value difference between each of the origins. This intrigued me, I wondered, "Why does this happen?" My curiosity led me to this paper topic, which helped answer that question.



Enamoured by Enamel: Looks to Unbox This Season

Enamel jewellery, a trend for the past several years, is still popular among jewellery consumers. Smitha Sandanandan looks at designers who are looking to new colour palettes to freshen up their collections.

Fine jewellery designers are embracing colour through sprightly modern designs rendered in enamel, with colour palettes moving between monochromes and contrasts, and pastels and neons on everyone's radar. Not only does enamelled jewellery seem to be staying in vogue, but diamonds are also now being used in these pieces, either as minimalist accents or employed to create a more 'wow-worthy' look based on the designer's aesthetics. Anything colourful in enamel is almost guaranteed to uplift the mood, and diamonds add extra sparkle to the design. With luxury concierge platforms like Threads Styling and luxe e-tailers Moda Operandi and Net-a-Porter reflecting a demand for such pieces, the decision for designers to offer enamelled pieces in exclusive styles or colours makes great sense.

Jewellery designers and best friends Bea Bongiasca and Ananya Malhotra have teamed up as Ananya x Bea to dabble with colour and fun. As part of their collaborative effort, Ms Bongiasca delved into her palette of bright colours while Ms Malhotra revisited her bestselling Chakra bracelet. Their latest limited-run offering, the Rainbow Chakra Bracelet, is made in 9K yellow gold and set with round and princess-cut diamonds. The design is offset with rainbow enamelling around the bar and bracelet.

New York-based fine jewellery designer Melissa Kaye offers two broad colour categories across her enamel collections — pastels and neons. Each season, she adds new colourways or reimagines bestsellers in hot new shades. Adorned with diamonds, her ear wraps, huggie hoops, u-hoops, bracelets and Lola needle pendants are stunning. Ms Kaye's



The Rainbow Chakra Bracelet, a collaboration between Bea Bongiasca and Ananya Malhotra, is made in 9K yellow gold and set with 0.35 tcw round diamonds and 0.44 ct princess-cut diamonds. Photo courtesy of Ananya x Bea.



This ring by Robinson Pelham features a 2.10 ct Muzo emerald surrounded by bright green enamel, encircled by 1.20 tcw pavé diamonds and mounted in 18K yellow gold. Photo courtesy of Robinson Pelham.

Enamel is not just for special occasions; the staying power of this trend is leading to a demand for jewellery options that work well for everyday wear.

pieces can be easily layered and stacked, making them a fantastic addition to your jewellery box.

British fine jeweller Robinson Pelham's iconic Identity collection has cool new additions. The enamel Identity bars are available in four colour pops — pale blue, pale pink, hot pink and yellow. These bars, featuring a discreet hook, enables the wearer to attach a wider variety of their pendants or EarWish pieces set with diamonds or coloured gems. The Muzo Emerald Colombia collection, now expanded with the Muzo Arena ring, sees the designers melding the vivid 2.10 ct centre emerald from Muzo, Colombia, with bright green enamel. The central

gem, surrounded by a pavé of diamonds, infuses the silhouette with an informality.

Emirates-based brand Ailes offers enamel across its core collections — Stars, Silhouette and Wave. Again, diamonds are combined with enamel in the company's jewellery to add a pop of colour, including blush pinks and neon blues. The rings, necklaces and pendants also feature reds, greens, yellows and lavenders in stylish compositions. The brand is a new favourite for clients of Threads Styling.

Enamel and diamond-adorned rings or Shooting Star cuffs from Dubai-based jewellery brand Aisha Baker, hoops tricked out in black enamel and diamonds by Greek designer Nikos Koullis and statement pieces from Singapore-based brand State Property are great self-purchases and ideals for gifting. For symbolic



The Feelings earrings consist of yellow gold chain with white diamond baguettes and black enamel. Photo courtesy of Nikos Koullis Jewels.

of Boochier brought along. the most delightful Fruit Hoops. They were not edible, but luckily for jewellery fans, they were wearable. Lovely shades of pink, blue and coral are entwined with diamond-encrusted shapes and transformed into rings, cuffs and hoops. Drawing on her Chinese-Ghanaian roots, the Hong Kong-based designer, who founded her company in 2019, brightens up the jewellery world with her playful designs that also evoke a sense of nostalgia.

Eclectic pieces from Italian jewellery brand Eéra, a favourite with pop star Dua Lipa, are illuminated in metallic hues. Co-founded by Chiara Capitani and Romy Blanga, the sleek wearables are handmade in Vicenza, Italy, and are designed for mixing and matching. The fascinating jewellery they create, including their diamond-and-enamel pieces, is inspired by

the snap hook, a piece first seen at a vintage store in Tokyo.

Enamel is not just for special occasions. The staying power of this trend is leading to a demand for jewellery options that work well for everyday wear, as well. Those seeking out such pieces can find stunning enamels by Alison Lou and Marlo Laz, both based in New York City. While Ms Lou is inspired by 'a sense of humour and an appreciation for luxury', Jesse Marlo Lazowski creates her jewellery for those who have an appreciation for the rare, unexpected and the exquisite'. Both attitudes are reflected in their enamels.

Enamel jewellery has been an established trend for several years, and that does not seem likely to change soon. Now that designers are busy rustling up so many options in enamel, there are no excuses for jewellery lovers to resist stocking up on these pieces. ■



The Medium Linear Band by Alison Lou, with pavé diamonds and neon-pink enamel. Photo courtesy of Alison Lou.

references rendered in enamel, explore Greek jeweller Lito Karakostanoglou's enamelled eye jewels — and ward off evil. Karakostanoglou's evil-eye bracelets, necklaces and earrings are hand painted, in a variety of colours, by a Russian iconographer. They are then enamelled, encased in gold and adorned with diamonds or precious gems.

Abu Dhabi-based engineer turned jewellery designer Tariq Riaz pushes the boundaries of technique to create stretchable enamel rings. He has snapped up a few honours, including the JCK Best of the Best and AGTA Spectrum Awards. *InStore Magazine* named him the Cindy Edelstein Memorial Emerging Designer of 2021. Inspired by his Middle Eastern heritage, Mr Riaz's enamel creations are a nod to architecture, geometry and nature. His rings and hoop earrings are an intriguing mix of craft and technique.

At the recent international design and art fair PAD London, Melinda Zeman



The Aria Dagger Huggie Hoop earrings by Melissa Kaye are 16 mm long, and made from 18K gold, 0.89 ct diamonds and pastel-blue enamel. Photo courtesy of Melissa Kaye.

ADVANCED JEWELLERY CAD MODELLING IN RHINO

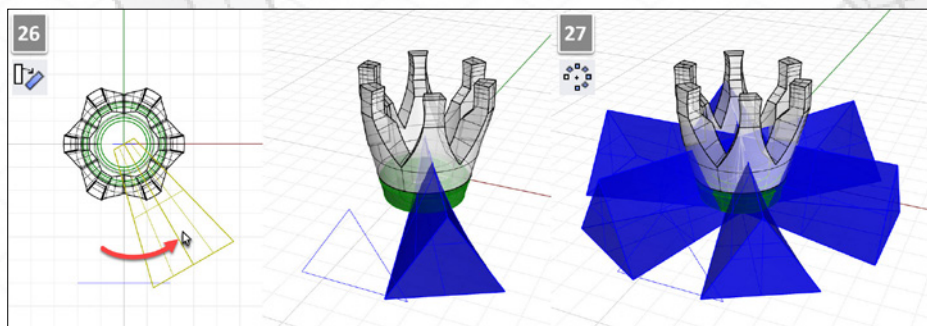
Reviewed by Michael Magee

If you have not been in the market for a 3D modelling book for jewellery, then you may not know just how rare it is to find one that is well written and relevant. The jewellery industry makes up only a small part of all the potential applications of computer-aided design (CAD), so most books are written for other industries. Additionally, since CAD software is continually being updated, the knowledge needed for a current and accurate guidebook may change faster than it can be published. Jack Meyer's *Advanced Jewellery CAD Modelling in Rhino* is the rare exception, tailoring CAD knowledge to the jewellery industry and containing modelling strategies that will remain applicable even if tools evolve.

This book covers several different modelling strategies with step-by-step project instructions for creating jewellery designs using the Rhinoceros 7 software,

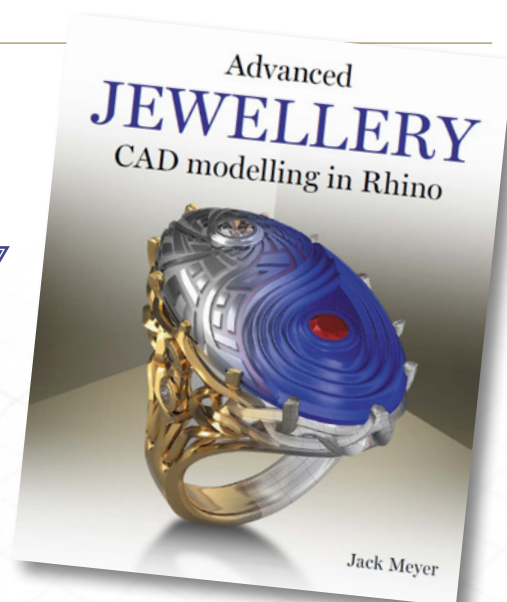
instead, they demonstrate what can be achieved using the tools and strategies taught in the book.

As the title implies, the lessons in this book are not an introduction to Rhino. The intended reader should already have a working knowledge of how to create curves, surfaces and solids in Rhino. This book is also not an introduction to jewellery design. In addition to some CAD skills, the reader should already be familiar with how CAD is used in the manufacture of jewellery, along with general jewellery terms; they should also have some knowledge of jewellery and setting styles. In short, the ideal audience for this book is the CAD modeller who is looking for a deeper understanding of why tools behave the way they do in Rhino, a strategy for deciding which tools to use for a given design, or guidance for creating more complex jewellery shapes and forms.



commonly referred to as Rhino. Nearly every page is filled with wonderful images, using both screenshots and photo-realistic renderings created with Rhino. The screenshots are a helpful visual guide to the instructions. The renderings, on the other hand, are primarily inspirational. There is a single page at the beginning that shows a rendering for each of the twelve projects contained within the book. Most of the rest of the renderings, including the ring on the cover, are not projects that the author walks us through;

In the first chapter, Meyer touches on his decision to focus solely on Rhino, instead of any of the various popular jewellery-specific plugins for Rhino. Thankfully, the skills he teaches apply both to Rhino and to Rhino-plugins. Early in the second chapter, Meyer describes what he calls his 'Comprehensive CAD Problem-Solving Strategy', which is broken down into three different sub-strategies: Solid Modelling, Surface Modelling and Subdivision Modelling. These three divisions each have an entire



By Jack Meyer, paperback, 320 pp., illus., publ. by Crowood Press Ltd., Ramsbury, UK, 2022, £25.00.

chapter explaining the concept and tools behind them, along with several step-by-step projects illustrating the strategy's workflow and decision-making process.

While an updated version of the Rhino software may be released after this book's publication, Meyer's strategies are broad enough to retain their usefulness throughout many versions and software revisions, focusing more on problem-solving techniques and the core principles of how Rhino works rather than on individual commands. For instance, the entire strategy of Solid Modelling is broken down into a concise list of six commands. Meyer describes each command in detail, including the advantages and limitations of each. This short list helps focus the modeller on a few proven, useful commands to create many jewellery shapes.

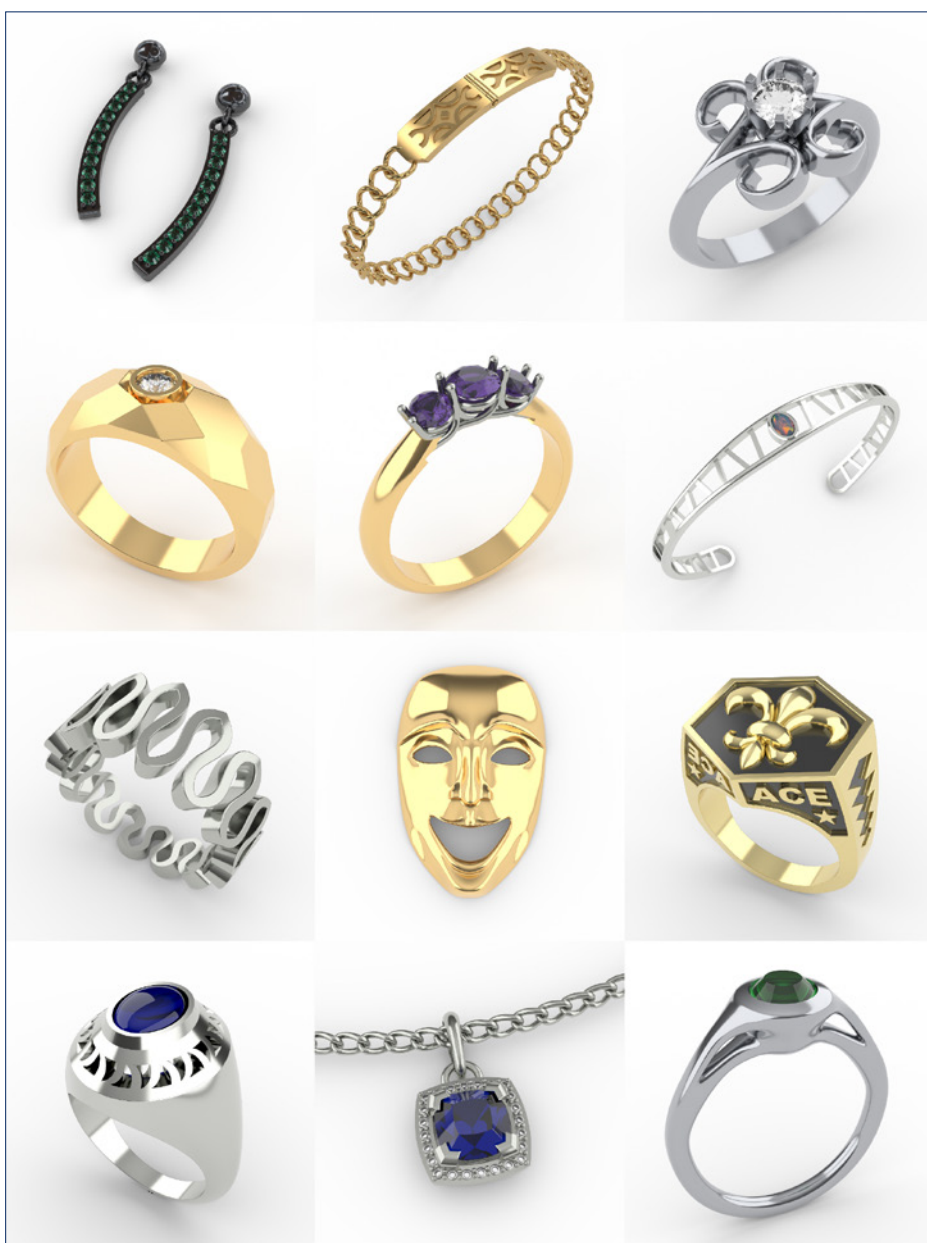
With so much of the reader's attention freed up by focusing on only a few Rhino tools, Meyer takes this opportunity to introduce the concept of jewellery tolerances. Distinct from Rhino tolerances, jewellery tolerances cover how to make practical jewellery designs, including the design of effective settings. Starting with this chapter and throughout the remainder of the book, the author offers step-by-step instructions on how to create different jewellery designs, accompanied by illustrative screenshots from Rhino. Unfortunately, there are a few minor inconsistencies between the written instructions and the images. Still, a savvy CAD modeller will be able to avoid any problems by following the images closely.

Meyer does cover a few common setting styles, such as standard claw, bezel, rex, bead and pavé settings. General information about these settings styles, ring sizes and troubleshooting information is set apart from the text in easily referenced call-out sections. Keep in mind, however, that this book focuses more on how to model the geometry of jewellery forms rather than on any specific gem-setting styles or jewellery tolerances.

Before diving into the Surface Modelling strategy, Meyer devotes an entire chapter to the logic of non-uniform rational basis spline (NURBS) surfaces in Rhino. For the intermediate-to-advanced Rhino modeller, this chapter alone is a good reason to acquire this book. As Meyer correctly

points out, most explanations of these foundational concepts for Rhino surfaces are either too technical and math-heavy for the typical jewellery designer or oversimplified to the point of being useless. Meyer successfully threads the needle between being too technical and too simplistic. His explanations give just enough information about surface edges, singularities, isocurves, UV curves and surface normals to be practical and useful. Meyer goes further to explain the related concepts of continuity and degree of curvature for both curves and surfaces using practical examples, all without needing to break open a math textbook. Each of these concepts come into play whilst troubleshooting

The author offers step-by-step instructions on how to create different jewellery designs, accompanied by screenshots from Rhino.

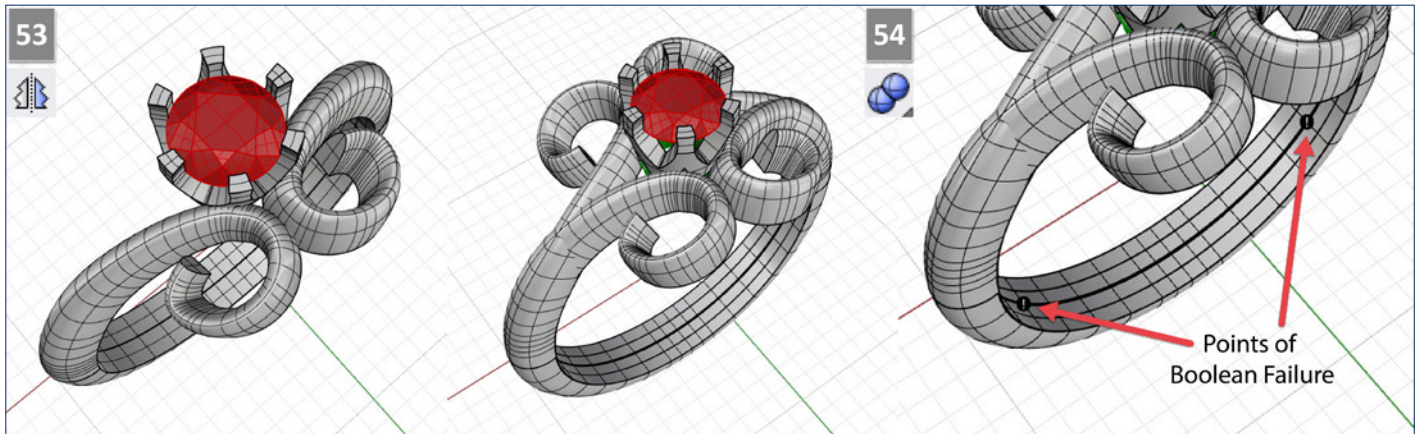


potential problems in creating new surfaces or placing embellishments upon surfaces.

With these important concepts at hand, we next dive into Meyer's strategy for Surface Modelling. This section focuses on six additional tools, describing and utilising each one in turn. As most CAD modellers know, there is always more than one way to create a desired object. Meyer proves this by working through six different methods to model a signet ring, each focusing on different commands and elaborating upon the strengths and limitations of each method.

After creating surfaces through either Solid or Surface Modelling, the author switches over to methods of surface decoration. Here, Meyer focuses on different methods of placing curves onto surfaces, then using those curves to create embellishments using his Surface Modelling strategies. This chapter ends with two examples using the 'flow along surface' command and an excellent callout on troubleshooting this tool, although much more could be said about the use of this tool for embellishment.

Everything in the book up to this point would still be relevant to any CAD modeller who was using the older versions of Rhino 5 or 6, until we reach Subdivision Modelling. SubDivision, or SubD for short, is a new object type in Rhino 7 that behaves by its own set of rules and is not beholden to the logic of NURBS. Again, Meyer's strength as an educator is shown in explaining the concepts and theory of SubD in a concise yet practical way. →



The exercises in this chapter start off being deceptively simple, easing the user into this new method. Each exercise builds upon the last until the reader is creating dragons, theatre masks and organic bezel rings, forms that would be extremely challenging using only Rhino's NURBS tools and strategies. Meyer's helpful callouts on troubleshooting SubD tools are easy to find and reference, not only for the exercises but for future projects as well.

The book's last chapter covers the rendering process using Rhino 7's built-in rendering program. This part of the book reads more like a beginner's introduction,

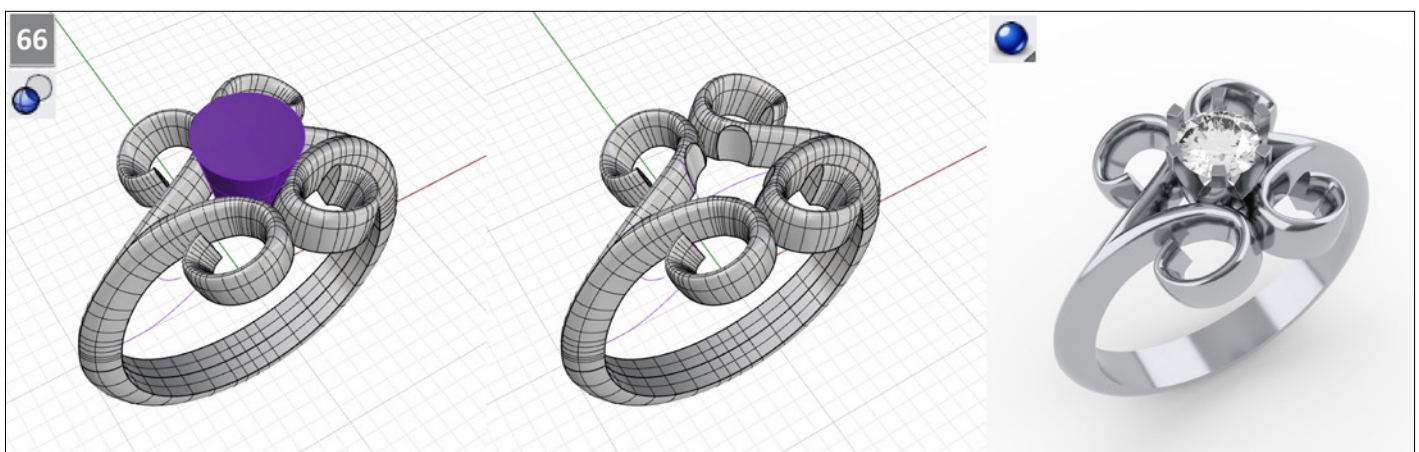
explaining the basic principles and commands as well as all the options within the commands. While this may seem odd in a text for advanced users, this is an excellent decision on Meyer's part. Many intermediate and advanced Rhino users may be more familiar with other rendering software packages that are common to the jewellery industry, such as V-Ray or Keyshot. This approach eases the reader into the idea of using Rhino for everything from modelling to rendering, without the need for any third-party plug-in software. Meyer's explanations of the process and tools are thorough, yet pared down to the

essential tools and concepts that one might be most likely to use.

In *Advanced Jewellery CAD Modelling in Rhino*, Jack Meyer has created an excellent guide to jewellery modelling for the intermediate-to-advanced user. Beginning CAD modellers usually need to learn the answers to questions starting with 'how'? How do I use this tool? How do I build this shape? What makes this book exceptional, however, are Meyer's thoughtful answers to the questions on 'why'? Why should I use this command over that command? Why is my Rhino surface giving this unexpected result? More important than the twelve step-by-step projects contained in the book are Meyer's definitions of modelling strategy and his explanations of the foundational concepts that drive Rhino's tools. These two strengths are what allow this book to clearly explain the 'why' questions of an advanced jewellery modeller. ■

The illustrations show different steps and commands from the chapter on Jewellery Manufacturing Tolerances in CAD. All illustrations courtesy of the author.

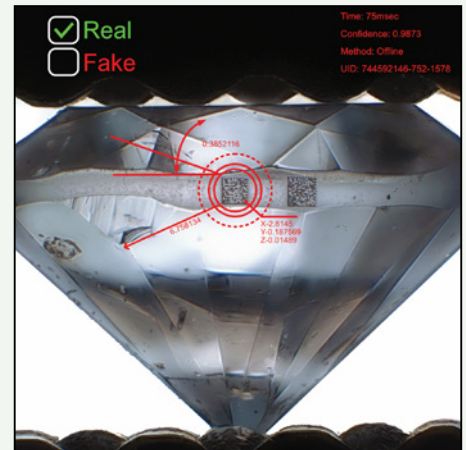
Each exercise builds upon the last until the reader is creating dragons, theatre masks and organic bezel rings, forms that would be extremely challenging using only Rhino's NURBS tools and strategies.



PhotoScribe

Protecting the Jewellery Industry with Newly Acquired Patent

Elyshka Salazar Aviles reports on a new patent that allows the world's leading innovator in diamond inscription to identify counter-forges and ensure the authenticity of gemstones.



This photo shows how PhotoScribe's newly patented Unique Secured Produced ID (USPID) uses overt and covert markers to authenticate a diamond's identity. Photo courtesy of PhotoScribe.

The world's leading innovator in diamond inscription, U.S.-based PhotoScribe Technologies, has secured a patent – for the Unique Secured Produced ID (USPID) – to ensure the proper identification of a diamond and protect against the counter-forgery of diamonds and coloured gemstones with a security mark.

PhotoScribe's signature laser, the LMS 650, can be upgraded to allow clients to bring the technology to their own facilities, giving laboratories and other companies the ability to guarantee the identification of a diamond or gemstone. By combining overt and covert technology, the new patent offers the assurance that a gemstone will always be the stone original to the client, matching the issued certificate.

Using both covert and overt information, a specimen can be verified, or a forged marking can easily be identified.

The patented system uses a secure mark to validate a gem's identity. A self-identifying security mark can certify itself without a connection to a central database, while overt identifiers are outwardly verifiable – for example, a serial number or barcode marked on a diamond. The overt identifier is cross-examined with the covert data – what one does not see, or realise, is part of the code. Because no two gemstones are ever alike, even when inclusion-free, the combination of the internal coordinates and code ensure authenticity. Using both covert and overt information, a specimen can be verified, or a forged marking can easily be identified. The USPID can help prevent others from forging inscriptions, because when the inscription doesn't match the covert information, the gem is flagged. The technology uses a machine-vision algorithm for either remote or local verification.

Located in Teaneck, New Jersey, PhotoScribe is the global leader in designing, manufacturing, and optimizing custom laser systems and technologies for micro- and nano-scale fabrication. For three decades, the company has helped businesses, including members of the gem trade, advance their competitive edge via laser development and innovative technologies. "My goal is to promote trust in our industry by eliminating forgeries and giving consumers peace of mind," said David Benderly, PhotoScribe's founder and CEO. "A

secure product identification helps consumers and businesses make informed purchasing decisions because they can trust that the products they buy are genuine."

PhotoScribe's lasers have been used by leading gemmological laboratories, synthetic diamond-related industries, mining companies, manufacturers, retailers and brands. The company can assist with the automation of security marking of gemstones through a machine-vision automation integrated with the PhotoScribe LMS-650 laser system. This allows users to authenticate whether a gem is real or fake when the secure mark is placed under the microscope. Using PermaScribe, PhotoScribe's sub-surface diamond-marking technology, further increases security, as the inscription (which may be visible or invisible at 10× magnification and can be placed anywhere on a faceted diamond) is considered permanent and cannot be removed without damaging the stone. PhotoScribe also provides software-only solutions with the guidance of their algorithm and database.

PhotoScribe
TECHNOLOGIES

For more information about PhotoScribe Technologies and their offerings, including the USPID patented system, visit <https://www.photoscribetech.com/>.

Looking Back at *Gems&Jewellery*

An overview of some of the stories that *G&J* has brought to our readers over the years.

Since it was first published in 1991, *Gems&Jewellery* (originally known as *Gem & Jewellery News*, a joint venture between the Association and the Society of Jewellery Historians until 2008) has kept Members and Students well-informed by publishing articles on industry-related topics. While the newsletter format of yesteryear has evolved into today's digital magazine, *G&J's* dedication to delivering news to our readers has never wavered. Here is a brief look back at some past issues of *Gems&Jewellery*.

Five Years Ago...

Winter 2017: The lead article of the issue, by Deborah Craig FGA DGA, reported on the new ruby mine in Aappaluttoq, Greenland. Responsible business strategist Vivian Johnston explained how large-scale mining interests and luxury brands created in the Coloured Gemstone Working Group (CGWG) to align with ethical industry initiatives such as the Responsible Jewellery Council's Code of Practices. Craig Thomas FGA discussed mining activity in Ethiopia, where emerald and sapphire deposits were recently discovered. The cover photo is the Photographer of the Year Overall Winner and Internal Category Winner. It shows a growth blockage with thin-film rosette in a Sri Lankan sapphire using modified Rheinberg illumination (field of view 1.34 mm). Image courtesy of Jonathan Muyal FGA.

Ten Years Ago...

Winter 2012: After a report on Conference and Graduation, the Winter 2012 issue led off with Gary Roskin FGA visiting the Great American Guitar Show, where the instruments are

frequently inlaid with ornamental hard stones, mother of pearl, ivories or horn. Jack Ogden provided a history of pink pearls, including the story of the missing Queen Pearl, while Harry Levy FGA wrote extensively on the complexities of gem nomenclature, value, rarity and the impact of the trade on pricing. The cover photo is the overall winner of the Photo Competition (also the winner of the Natural category); the image is of a thin-film inclusion in an aquamarine crystal specimen. Photo by Tony de Goutière GG.

Twenty Years Ago...

December 2002: The work of Joel Arthur Rosenthal (JAR) has been compared to that of Fabergé and Lalique in terms of craftsmanship and creativity. His 400-piece exhibition at Somerset House was the cover story of the December 2002 issue of *Gem & Jewellery News*. Internal content included an article about diamond-related issues that impacted the entire trade, alongside a write-up about the World Federation of Diamond Bourses, both by Harry Levy. Jack Ogden wrote



Necklace of silver, amethysts and green and white enamel, the colours of the suffragette movement. English, Birmingham, by Arthur and Georgina Gaskin, c. 1910. Image © National Museums Scotland.

on finding written records in the seventeenth, eighteenth and nineteenth centuries reporting on imitation emeralds, seed pearl provenance and colour treatments, respectively.

Twenty-Five Years Ago...

December 1997: This issue reported that Christie's held their first-ever sale of Indian jewellery in the autumn of 1997, with the entire catalogue realising £4 million (~£7.14 million in 2022). Goodletite, an ornamental rock from New Zealand's South Island, was examined. Charles Burnett, Ross Herald of Arms, lectured on the Honours of Scotland (the Scottish Crown Jewels). Also included in the issue was a long piece on the importance of treatment disclosure and the last instalment of a three-part history of Hatton Garden.

Thirty Years Ago...

December 1992: Our front page announced that the Cullinan I (AKA the Great Star of Africa) had been displaced as the world's largest cut diamond. The 'Unnamed Brown', today known as the Golden Jubilee Diamond, was cut by Gabi Tolokowsky from a 755.50 ct rough into a modern fire-rose cushion cut weighing 545.67 ct – 15.37 ct heavier than the Cullinan I. Other content included reports from deposits in Myanmar (corundum and diamond), Vietnam (corundum) and Thailand (sapphire and pearl) and acquisitions updates from the National Museums Scotland, including the necklace shown.



Over 110 years of experience in gemmology education

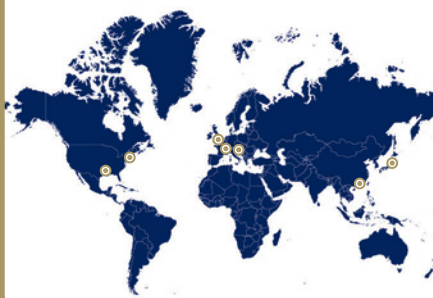
Our FGA and DGA Members are located around
the world – join them by studying with Gem-A.

STUDY IN ONE OF THREE WAYS

At Gem-A
HQ London



Worldwide at
one of our ATCs



Online with
practical lab
classes in your area



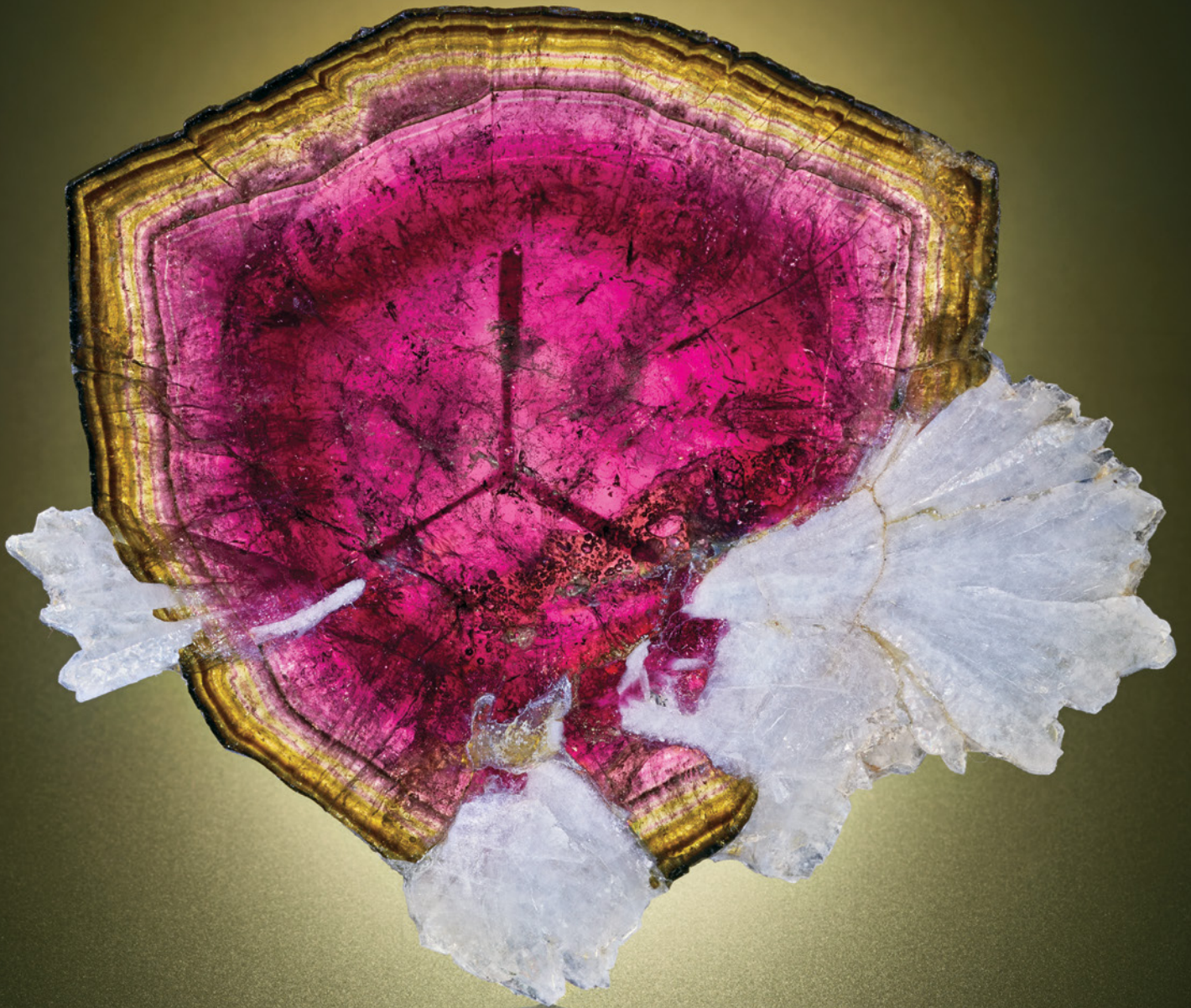
Find out more by contacting
education@gem-a.com



Gem-A

THE GEMMOLOGICAL ASSOCIATION
OF GREAT BRITAIN





SGRPE
\$199.99

The Sisk Gemology Reference by Jerry Sisk Professional Edition

A comprehensive and visual gemology resource
featuring prominent and noteworthy gemstones.

jtv[®]
jewelry love

jtv.com/sgr