publications, two books, and 12 new mineral discoveries. Dr. Schmetzer has shared his research with the community and strived to improve professional standards in the industry through work with CIBJO and other organizations.

Jennifer Stone-Sundberg

2019 Jewelry Industry Summit. The third Jewelry Industry Summit, held in Tucson February 2–3, revealed the successful implementation of several initiatives mapped out since the conference's inception in 2016.

Opening remarks by summit chair **Cecilia Gardner** and AGTA's **Doug Hucker** were followed by a session on mining communities. In a presentation on sustainable mining, **Assheton Stewart Carter** (The Dragonfly Initiative) discussed incentivizing improvements while managing environmental, social, and governance risks and needs at artisanal and small-scale mines. He explained how the Dragonfly Initiative creates partnerships with other organizations that can provide research, funding, and other assistance on the local level. This was followed by the Dragonfly Initiative's **Vivien Johnston, Fiona Wellington** of Myne, and **Mahumood Alam Mahsud** (Fine Cut Lapidary)—all by video chat—describing their efforts to create an emerald cutting and polishing center to employ and empower Pakistani women. **Tom Cushman** (Richfield Investor Services) recounted issues with sourcing gold in Madagascar, while **Toby Pomeroy** provided insights into the Mercury Free Mining Challenge, a quest to create a safe and effective alternative to the use of mercury by artisanal and small-scale gold miners. The Initiative for Responsible Mining Assurance, or IRMA, an organization dedicated to creating and sharing financial value for mines that achieve best practices, was introduced by consultant **Christina Miller** and **Lara Kortizke** of IRMA. Two breakout sessions occupied much of the first afternoon: one on creating an industry-accepted glossary (see www.gia.edu/gems-gemology/spring-2019-gemnews-jewelry-summit-glossary-initiative), and the other on building a business with responsible sourcing principles. This was followed by a lively discussion on the benefits and drawbacks of blockchain between **Mike Pace** (Connected Jewelry), **Robin Gambhir** (Fair Trade Jewellery Co.), **Carrie George** (Everledger), and **Mark Hanna** (Richline).

Day two provided a synopsis of the Jewelry Development Impact Index by **Patricia Syvrud** of the University of Delaware's Minerals, Materials and Society program (p. 148), as well as a discussion with Doug Hucker and Patricia Syvrud on the silicosis abatement program sponsored by GemHub, AGTA, and the Minerals, Materials and Society program. **Steven Benson** (CIBJO) reported on the release of CIBJO's Blue Book on the responsible sourcing of gemstones and precious metals (p. 158), available as a free download from www.cibjo.org. **Brian Cook** (Nature's Geometry) provided an update on the Bahia Brazil Golden Initiative, a cooperative of rutilated quartz miners in the Chapada Diamantina region of Bahia State, Brazil. Patricia Syvrud spoke with **Charles Lawson** (Lawson Gems International) on the outcomes from four years of gem and jewelry training for women sapphire miners in Sakaraha, Madagascar. The day ended with a screening of the gold mining documentary *River of Gold*, with a speaker panel consisting of producer **Sarah duPont**, **Torry Hoover** (Hoover and Strong), Toby Pomeroy, and Tom Cushman.

Jennifer-Lynn Archuleta

ANNOUNCEMENTS

Second annual Buccellati Award winner. Ching-Hui Weng, a 2018 graduate of GIA's Jewelry Design program in Taiwan, received the second annual Gianmaria Buccellati Foundation Award for Excellence in Jewelry Design. One of 18 finalists from GIA's seven schools, her winning design was a bird brooch (figure 57) featuring white and yellow gold, white and yellow diamonds, opal, aquamarine, lapis lazuli, black chalcedony, and coral. "My inspiration for this piece is the *Urocissa caerulea*, a blue bird that represents Taiwan," said Weng. "The gemstones in this piece illustrate the bird's fierce temperament and flight."

Weng will travel to Italy to meet Mrs. Buccellati and view part of the foundation's collection. She will also receive a plaque recognizing her achievement.

"We are pleased to congratulate Ms. Ching-Hui Weng, and look forward to welcoming her to Italy. Together with GIA, we hope to continue to encourage and support the dreams of young jewelry designers throughout the world," said Larry French, chief officer of North America strategies for the Gianmaria Buccellati Foundation. "We know Gianmaria would have been proud to have his name on an event that celebrates, so beautifully, the art of jewelry design, the art that he loved so much."

Submissions were presented as original, hand-rendered designs. Following several phases of judging, they were finally evaluated by a panel of industry experts. Weng was announced as the winner at the annual GIA alumni event held during the AGTA Gem Fair in Tucson.

The Gianmaria Buccellati Foundation sponsors the award to inspire beginning designers and honor the house's founder. The 2019 award is now open to GIA Jewelry Design students who meet the eligibility requirements.

REGULAR FEATURES

COLORED STONES AND ORGANIC MATERIALS

Unique orange sapphire with golden sheen effect reportedly from Kenya. Golden sheen sapphires from Kenya have been reported in this journal and elsewhere (e.g., T.N. Bui et al., "From exsolution to 'gold sheen': A new variety of corundum," *Journal of Gemmology*, Vol. 34, No. 8, 2015,

Figure 57. Ching-Hui Weng's design, which won the second annual Buccellati Award, was inspired by the Urocissa caerulea *bird, which is representative of her native Taiwan. The finished piece features white and yellow gold, white and yellow diamonds, opal, aquamarine, lapis lazuli, black chalcedony, and coral.*

pp. 678–691; N. Narudeesombat et al., "Golden sheen and non-sheen sapphires from Kenya," The Gem and Jewelry Institute of Thailand, July-August 2016, pp. 282–288). Those sapphires, however, were the cabochon-quality blue-green-yellow stones that exhibited a shimmering golden effect caused by the light reflection from hematite platelets and needle-like inclusions. No faceted transparent stones have been mentioned in the previous literature. Recently the Gem and Jewelry Institute of Thailand's Gem Testing Laboratory in Bangkok encountered a faceted orange sapphire with an attractive golden sheen effect that was reportedly from Kenya.

The sample was a transparent, 4.34 ct faceted mixed-cut stone of orange hue with attractive golden sheen effect almost throughout the crown facets (figure 58). Standard gemological testing revealed a refractive index (RI) of 1.765 to 1.775, a birefringence of 0.01 with a uniaxial negative optic sign, and a hydrostatic specific gravity (SG) of 3.98. The stone exhibited brownish orange and greenish yellow pleochroism and was inert to both long- and short-wave

Figure 58. *This 4.34 ct transparent oval-cut orange sapphire displayed an attractive golden sheen effect. Photo by Tasnara Sripoonjan.*

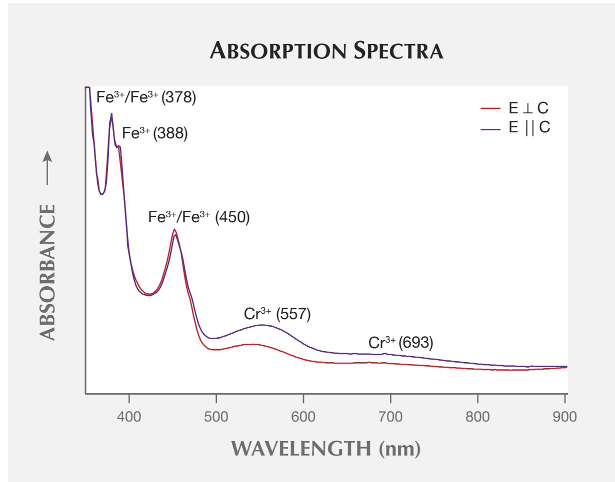

Figure 60. UV-Vis spectra of the orange golden sheen sapphire showing Fe^{3+}- and Cr^{3+}-related absorption peaks and bands.

UV radiation. Microscopic observation revealed abundant metallic hematite platelets and rutile needles (figure 59, left), confirmed by Raman spectroscopy, that were situated along the basal pinacoid face. A cluster of zircon crystals, as suggested by its crystal morphology, could also be found in the specimen (figure 59, right).

In previous studies, the golden sheen sapphires from Kenya were translucent to opaque, with yellow and blue bodycolor (Bui et al., 2015; Narudeesombat et al., 2016). They contained abundant internal features, such as exsolved intergrowth Fe-Ti oxide phases of hematite platelets and short ilmenite needles that gave the sheen effect, as well as inclusions of goethite, boehmite, and diaspore needles. They also had large surface-reaching cracks. The stone in this investigation is orange, transparent, and without surface-reaching cracks, though it also possesses a significant number of hematite platelets that are in part responsible for its golden sheen effect.

The polarized ultraviolet-visible (UV-Vis) spectra of the specimen displayed predominantly Fe^{3+}-related absorption bands at 378, 388, and 450 nm that are responsible for its yellow hue (e.g., J. Ferguson and P.E. Fielding, "The origins of the colours of natural yellow, blue and green sapphires," *Australian Journal of Chemistry*, Vol. 25, No. 7, 1972, pp. 1371–1385), whereas the absorption band at around 557 nm (also at ~410 nm) is caused by a Cr^{3+} transition contributing to the reddish hue (figure 60). As such, the stone coloration appears orange. *R*-line luminescence of Cr^{3+} near 693 nm also appears in the spectra. When compared to the more common non-sheen counterparts, the UV-Vis spectra yield only Fe^{3+}- and Fe-Ti-related absorptions (Narudeesombat et al., 2016).

The energy-dispersive X-ray fluorescence (EDXRF) results of the orange sapphire showed very high content of Fe_2O_3 (1.94 wt.%) with moderate content of Cr_2O_3 (0.05 wt.%) and TiO_2 (0.04 wt.%). Ga_2O_3 and V_2O_5 were equal at about 0.01 wt.%. This result (particularly the iron content)

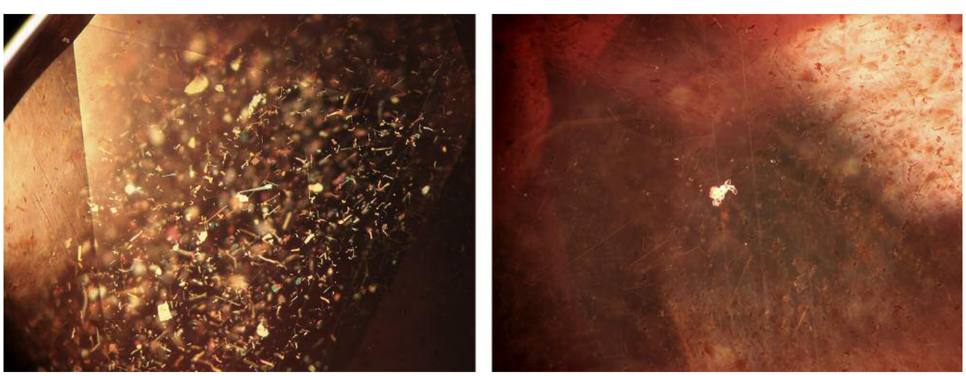

Figure 59. Internal features of the orange golden sheen sapphire: abundant metallic hematite platelets and rutile needles (left) and a cluster of zircon crystals (right). Photomicrographs by Saengthip Saengbuangamlam; field of view 3.00 mm.

TABLE 1. Comparison of chemical composition of orange golden sheen sapphire with golden sheen and non-sheen sapphires, analyzed by EDXRF.

Oxides (wt.%)	Orange golden sheen (this study)	Golden sheen (Narudeesombat et al., 2016)	Non-sheen (Narudeesombat et al., 2016)
TiO_2	0.04	0.01–0.02	0.02–0.07
Cr_2O_3	0.05	0.00–0.01	0.01–0.03
Fe_2O_3	1.94	1.00–1.50	1.19–1.58
V_2O_5	0.01	0.00–0.01	0.01–0.04
Ga_2O_3	0.01	0.02–0.05	0.02–0.04

is somewhat similar to those of the common golden sheen and non-sheen stones from Kenya in the previous work (table 1), which also suggests a similar magmatic source. Nonetheless, the Cr_2O_3 content in this orange sapphire is particularly distinctive, since such an oxide is almost undetectable in most golden sheen sapphires.

While Kenya is known to supply large amounts of golden sheen sapphires, some rare orange sapphires with sheen effect such as this one are also being supplied to the market. Sheen effect makes the stone distinctive compared to common orange sapphire from other sources, for example, from Songea in Tanzania (cf., originating from a metamorphic source and having somewhat lower iron content). However, the owner informed us that this specimen might eventually be subjected to heat treatment at a relatively low temperature to remove some silk-like inclusions and make it more transparent. Nevertheless, careful examination yielded no indication that this stone was heated. Its unique characteristics—heavily included hematite platelets and rutile needles that give rise to the golden sheen effect plus its high iron content—suggest a Kenyan origin.

Tasnara Sripoonjan (stasnara@git.or.th), Saengthip Saengbuangamlam, and Marisa Maneekrajangsaeng The Gem and Jewelry Institute of Thailand, Bangkok

Sapphires from Colombia. Colombian sapphires were first reported in *G&G* nearly 35 years ago and are still circulating in the market today (see P.C. Keller et al., "Sapphire from the Mercaderes–Río Mayo area, Cauca, Colombia," Spring 1985 *G&G*, pp. 20–25). The deposit is located in southern Colombia in the Cauca Valley, in the small town of Mercaderes. This location is notorious for being politically unstable and dangerous. This deposit continues to produce in small quantities, with most material extracted from riverbeds using picks and shovels. Independent miners collect year-round and go to Bogotá to sell the material. Vanessa Van Horssen (Carlsbad, California) recently purchased several unheated Colombian sapphires and learned about the active mines from a third-generation miner in Bogotá. She loaned GIA's Carlsbad laboratory five samples (figure 61) for scientific examination.

Figure 61. Five unheated Colombian sapphires, ranging from 0.41 to 3.65 ct. Photo by Diego Sanchez.

Colombian sapphires occur in a variety of colors, such as blue, pink, and violet, and there have been past reports of color-change sapphire from this deposit. The five samples consisted of a 0.41 ct pink faceted pear, a 0.92 ct color-change (blue to violet) faceted oval, a 1.66 ct pink rough, a 2.26 ct blue faceted octagon, and a 3.65 ct blue rough. All five had gemological characteristics consistent with corundum. They exhibited a refractive index of 1.762 to 1.770 and a specific gravity of around 4. Laser ablation–inductively coupled plasma–mass spectrometry (LA-ICP-MS) was performed to identify their chemical compositions. A high concentration of Fe ranging from 1515 to 1749 ppma suggested a magmatic source. Infrared spectroscopy showed no indications of treatment.

The internal features (figure 62) were color zoning, particle clouds, angular milky clouds, and twinning. The sap-

Figure 62. Zircon crystals scattered throughout angular milky clouds were more prominent in these sapphires compared to other high-Fe sapphires. Photomicrograph by Jessa Rizzo; field of view 4.7 mm.