

# GIT 2016 Pre-Conference Field Trip to Mogok, Myanmar

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The Gem and Jewelry Institute of Thailand (GIT) organized a field trip to Mogok, Myanmar, to accompany the 5th GIT International Gem and Jewelry Conference, which was held 14–15 November 2016 (see report on pp. 445–447 of this issue). This 9–13 November pre-conference excursion was attended by 15 overseas participants from various fields related to gems and jewellery (i.e. gemmologist, mineralogist, journalist, gem retailer, gem wholesaler, gem collector and retail jeweller): Marcelo E. Souza (Brazil), Dr Geng Li (China), Ioan-

nis Alexandris (Germany), Arent and Helene Heilmann (Greenland), Mary Ng (Hong Kong), Meenu Brijesh Vyas (India), Kentaro Emori (Japan), Yoko Okubo (Japan), William Wold (Netherlands), Sang Phil Oh (South Korea), Young Soo Chung (South Korea), Yuanchan Chaiyawat (Thailand), Chen Shen (USA) and Cynthia Unninayar (USA). The group was led by Aung Naing Thun, a representative of the Myanmar Gem and Jewellery Entrepreneurs Association, as well as three GIT gemmologists (the authors).

The goal of the five-day trip was to examine gem deposits, active mining operations and stone trading in Mogok. Participants had many opportunities to learn about the geology, mining and recovery techniques, as well as ruby and sapphire

production. Other attractions included visits to educational facilities, gem markets and several historical pagoda sites.

**En Route to Mogok:** The group flew from Bangkok to Mandalay and then boarded a van. Our first stop was the Werawsana Jade Pagoda near Amarapura Township, about 20 km from the airport. The pagoda is decorated with several varieties of jadeite jade, including 'ice', green and lavender types. We then visited a gemmological laboratory and school in Mandalay, where we stayed overnight before proceeding to Mogok early the next morning.

Our route followed the Mandalay–Myitkyina highway, passing through an immigration checkpoint near Pyin Oo Lwin in the

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*Editor's note:* This report gives a description of the Mogok area just before it was closed to foreigners by Myanmar's government in December 2016. For two previous Excursions reports on Mogok, see *The Journal*, **34**(1), 2014, 55–67.



A panoramic view of 'Ruby Land' greets visitors to the Mogok valley. Photo by T. Sripoonjan.

Shan Highland, some 67 km east of Mandalay. The trip to Mogok took around six hours on good pavement alternating with dirt road, often quite winding. Upon our arrival, we checked into the King Bridge Hotel and then visited a viewpoint on the main road to the east of the gem mining region. It provided a panoramic vista of the Mogok Valley with numerous villages flanked by forested mountains.

**Mogok Monasteries:** We visited three pagodas in the Mogok area. At the Phaung Daw Oo temple, a white marble Buddha is flanked on both sides by sa-

cred gilded Buddhas. The Buddhas are brought out for worship and placed on gem-studded, gold-and-silver plinths for one day each year. The plinths are decorated with various gemstones, including ruby, sapphire, jadeite and others. The stones were mainly donated by gem dealers and local people, notably a former governor, and kept as one of the secret treasures of Mogok. Our group was fortunate to see these plinths, which are rarely displayed for visitors.

Chan Thar Gyi is another famous temple in Mogok. It is situated on the hill of Minn Phaya

in Shansu Quarter. Like Phaung Daw Oo, this temple contains white marble Buddhas, along with cabinets displaying innumerable gemstones donated by local people. The gems and jewellery on display there are a sign of the cultural affluence and respect for the Buddha by the Burmese people.

The Daw Nan Kyi temple is located in a spectacular setting at around 1,520 m (5,000 ft) elevation, above the western side of Mogok. From there, we could see the town of Kyat Pyin and surrounding hillsides comprising the Mogok Stone Tract.

#### EN ROUTE TO MOGOK

(A) The beautiful Werawsana Jade Pagoda near Amarapura is decorated with jadeite of various colours. (B) Thousands of tons of jadeite slabs are cemented to the surface of the pagoda. (C) U Tommy Thein (left) introduces his gemmological school in Mandalay. Photos by T. Sripoonjan (A–B) and S. Saengbuangamlam (C).







## MONASTERIES IN MOGOK

(A) The former governor of Mogok and his son showed us treasures of the Phaung Daw Oo temple. (B) Chan Thar Gyi temple contains a collection of valuable gemstones and antique jewellery. (C) The Daw Nan Kyi Monastery affords an excellent view of the Mogok Stone Tract. Photos by T. Sripoonjan.

**Bernardmyo Peridot Deposits:** Fine peridot is mined from the Pyaunggaung area near Bernardmyo, located in the north-west part of Mogok. The deposits in this area are well-known for producing peridot from veinlets and pockets within a fine-grained peridotite rock. Although many of the mines are run by the government, we visited a private operation owned by Purify Co. The authors climbed down a shaft on traditional wooden ladders, where we saw active drilling using pneumatic hammers. There also was a small shaft used to transport equipment and mined material. Near this peridot mine is a military station

and sanatorium established after the Third Anglo-Burmese War. A cemetery there dates back more than 120 years, based on the years 1888–1898 that were inscribed on headstones of British soldiers.

**Baw Mar Sapphire Mine:** Located northwest of Kyat Pyin Township, about 18 km west of Mogok, is a well-known blue sapphire mine called Baw Mar. We accessed the site in four-wheel-drive pickup trucks provided by the mine owners. The geology of the area is complex, consisting mainly of regionally metamorphosed rocks, especially calc-silicates and graphitic

marble, often with weathered gneiss, and is locally intruded by syenite or pegmatite veins. The mine is operated with heavy machinery, and excavators initially remove up to 20 m of overburden to reach secondary deposits containing the sapphires. The miners use water cannons to wash the gravels from the pit, and the material is then routed to a washing plant.

We had an opportunity to discuss the mine operation with the owners at their home. Our hosts gave us a warm welcome and took our group to view the gem-sorting process. The mine recently has produced blue sapphire in relatively large siz-





#### PYAUNGAUNG PERIDOT MINING AREA

(A) The entrance of the Purify Company's peridot mine is located in the mountains of the Bernardmyo area. (B–C) The Purify mine is accessed by a traditional wooden ladder, and a rope is attached to a winch for transporting mining equipment. (D) This view shows the typical underground workings in the Purify peridot mine. (E) Graves of British soldiers from the late 19th century are located near the peridot mines. Photos by T. Sripoonjan.

#### BAW MAR MINE

(A) The large open pit at Baw Mar is mined for blue sapphire. (B) Miners use water cannons to mobilize gravels in the pit. (C) Sorting of rough blue sapphires is done on-site. (D) U Ye Min Tun (left), one of the owners of the Baw Mar mine, displays some rough and faceted blue sapphires. Photos by T. Sripoonjan (A–B) and S. Saengbuangamlam (C–D).





es (up to 3+ cm in diameter) in low-to-moderate qualities. Fine gem-quality sapphire is occasionally found, and additional production consists of spinel of various colours.

## **Yadana Shin Ruby Mine:**

One of the most famous ruby mines of Mogok, Yadana Shin, is located approximately 4 km north-west of the town of Mogok. Yadana Shin is a relatively modern operation that is exploited underground as well as in open pits. Miners access the underground workings using a series of ladders. Ruby mineralization is hosted by fine-grained marble with some brown mica. The ruby-bearing marble pieces are placed in secure bags and transported to the surface using a cable pulley system. All the material then

passes into jaw crushers, and the fragments are washed into jigs using water jets. The jigs are hand-picked for ruby, spinel and other gems, and the rejected material is further sorted by workers with metal blades before it is transported to the tailings pile outside the mine, where local people are allowed to go through it. Most of the mine's ruby production is not of high quality, but only a few good stones are needed to make the operation viable.

**Ruby Dragon Mine:** This mine is located near Yadana Shin in the Bawpadan area. Operated by Ruby Dragon Jade and Gems in a joint venture with the Myanmar government, this is one of the largest ruby mines in the Mogok area. The best overall ruby production occurred in

2012, yielding approximately 450,000 carats. By comparison, in 2016 the mine produced around 100,000 carats of ruby. At the time we visited, mining took place almost 400 m below the surface in a complex network of tunnels following the ruby-bearing marble layers. However, most of the ruby-rich layers were found at around 90 m depth. The mine manager used a scale model of the workings to explain the sophisticated operation. The manager also took us to visit the mine entrance, but unfortunately visitors were prohibited from entering. The gem material (faceted pieces averaging 2–3 ct; exceptionally up to 10 ct) is sorted on-site into various qualities, and the least transparent stones are reportedly heated to improve their clarity.

## **YADANA SHIN MINE**

(A) Yadana Shin is one of the most well-known ruby mines in Mogok. (B) The mine workings are accessed by shafts, (C) which contain wooden ladders and timbering. (D) The mined material is passed through jaw crushers and then into jigs. (E) Workers sort the crushed rock by hand to recover the rubies. Photos by S. Saengbuangamlam (A, C) and T. Sripoonjan (B, D–E).







#### RUBY DRAGON MINE

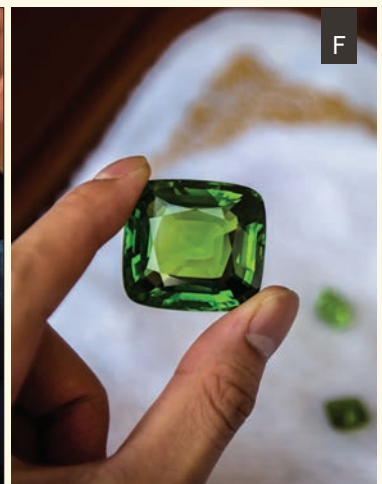
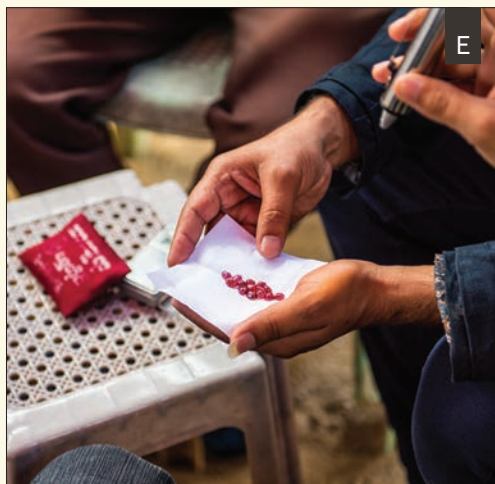
(A) The Ruby Dragon mine is surrounded by steep, forested slopes. (B) An elevator is used to access this Ruby Dragon shaft. (C) The mine manager shows a scale model of the underground workings. (D) The air in the shaft is hazy from the mining activities below. (E) Ore carts are used to bring the mined material to the surface. Photos by T. Sripoonjan (A–D) and S. Saengbuangamlam (E).





#### MOGOK GEM MARKETS

(A) Many kinds of rough samples, faceted stones and some jewellery are offered at the Cinema Lane market. (B) This old cinema gives the gem market its name. (C) Gem traders enthusiastically offer their stones to prospective buyers. (D) A strong torch is an indispensable tool for gem trading. (E-F) Faceted rubies and peridots were available during our visit to Mogok. (G) The gem-trading atmosphere is busy at the so-called blue umbrella market. Photos by T. Sripoonjan.







Our international group of participants gathered together at the Mogok Valley viewpoint. Photo courtesy of T. Sripoonjan.

**Gem Markets in Mogok:** There are two notable gem markets in the town of Mogok, as well as several smaller markets scattered throughout the Mogok area. At these open-air markets, mostly low- to medium-quality rough and cut rubies, sapphires and other gems are traded among the locals. The Yoke Shin Yone gem market (also known as the 'crystal market', or Cinema Lane since it is located within sight of the old cinema) operates daily in the morning. It occupies both sides of the street for about 100 m. Some of the minerals and rough gem parcels there were reasonably priced. Also present were ornamental rocks and less-common specimens, including shells and fossils. A small amount of imitations and synthetics was noted at this market.

We then visited the Panchan (or 'blue umbrella') gem market, the largest in Mogok, which opens from 1:00 pm to around 4:00 pm. In addition to Burmese traders, it is frequented by peo-

ple of Indian, Chinese and other ethnic backgrounds, along with some Thais. The buyers sit at tables under numerous blue umbrellas and are offered gems by local dealers or brokers. We saw energetic dealers buying and selling gemstones enthusiastically. Interestingly, we encountered some of the same dealers that we saw at the morning gem market, offering us the same stones. The sellers especially focused on foreigners once anyone showed interest in buying, and negotiating the prices was a long, painstaking process. We saw various qualities of ruby, sapphire, spinel and peridot, particularly as rough stones. Nevertheless, the prices seemed relatively high. We were not offered any obvious synthetics or imitations in this market.

**Conclusions:** The gem town of Mogok has retained its charm as one of the most desirable places for gem enthusiasts to visit. There are several active mining operations in the area, mainly for ruby and sapphire, and mechanized techniques are commonly used. However, the production of fine-quality ruby and sapphire is scarce. We hope that Mogok will once again be open to visits by foreigners in the future.

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