Conferences

6TH MEDITERRANEAN GEMMOLOGICAL AND JEWELLERY CONFERENCE

The 6th Mediterranean Gemmological and Jewellery Conference (MGJC) took place 12–14 August 2022 in Thessaloniki, Greece. The 45 participants came from 13 countries spanning four continents. The conference was organised by **Branko Deljanin** (CGL Canadian Gemlab, Vancouver, Canada), **George Spyromilios** (Independent Gemological Laboratory, Athens, Greece) and **David Lazić** (GemHunters, Belgrade, Serbia).

On day one, **Travis Lejman** (Gemological Appraisal Laboratory of America, New York, New York, USA) led a workshop titled 'Opal Testing and Value' that focused on opal types, formation, localities, treatments, properties, grading and valuation, with a vast array of examples and time for hands-on inspection. The quality factors of different types of opal and their pricing were covered, while reviewing items discussed in Paul Downing's 2002 *Opal Identification & Value* book.

Branko Deljanin led a workshop titled 'Identification of Coloured Diamonds', with assistance from **George Spyromilios**. It covered methods to separate natural from synthetic coloured diamonds, treatments of HPHT- and CVD-grown diamonds, and a practical hands-on workshop using visual characteristics, fluorescence, birefringence and spectroscopy (Figure 1). Grading of coloured diamonds using the *Munsell Book of Color* and a master set were reviewed, and included pink diamond masters.

On day two, **Dr Lore Kiefert** (Gemological Consulting, Heidelberg, Germany) offered a 'Gem Country of Origin' workshop for the first time at the MGJC. Part 1 covered emeralds from Colombia, Zambia, Zimbabwe, Pakistan, Russia and Ethiopia, providing a comparison of their inclusions (including the overlapping presence of three-phase inclusions in emeralds from some localities). Part 2 covered rubies from Myanmar (Mogok and Mong Hsu) compared to stones from Mozambique, Thailand, Tajikistan and Vietnam. Part 2 also included a comparison of sapphires from Kashmir to those of Myanmar, Sri Lanka, Madagascar and stones of magmatic origin.

Dr Kiefert opened the gem-session lectures with the same topic, pointing out how similar properties can lead to confusion and that, to date, it is not always possible to distinguish the geographical origin of all sapphires. Also, some relatively new magmatic sapphire sources have been found in Madagascar and Ethiopia. Overlaps in gem characteristics provide a continuous challenge for gemmological laboratories, and it has been necessary to upgrade instrumentation to more high-cost equipment such as LA-ICP-MS. **Dr Stefanos Karampelas** (Laboratoire Français de Gemmologie, Paris, France) discussed the science behind the origin determination of coloured stones and natural pearls. He pointed out that even while using sophisticated instruments there are limitations because geological, biological and political borders are rarely the same. Gems of high quality that lack characteristic inclusions can be especially challenging.

Jeffery Bergman (Eighth Dimension Gems, Bangkok, Thailand) covered the history, origin, treatments, marketing and pricing of spinel. In addition to Mogok and Namya (or Nanyaseik) in Myanmar, spinel is mined in

Figure 1: During the MGJC's coloured diamond workshop, the author observes a treated pink diamond with an OPL spectroscope. Other participants shown are Mike Burnette (USA), Karolina Sobolewska (Poland) and David Weinstein (Israel). Photo by Branko Deljanin.

Figure 2: MGJC round-table participants include (from left to right) Branko Deljanin, Ioannis Alexandris, Jeffery Bergman, Travis Lejman and Dr Lore Kiefert, with moderator Yianni Melas standing. Photo by David Lazić.

Afghanistan, Madagascar, Sri Lanka, Tanzania, Tajikistan, Thailand and Vietnam. In Myanmar, where some of the most beautiful colours are found, spinel was recognised as a separate gem type as early as 1587. Heating experiments on spinels show no or only limited improvement to clarity and colour, and the treatment can easily be detected by microscopy and Raman/PL spectroscopy. **Dr Matthias Krismer** and **Dr Michael Schlamadinger** (Swarovski, Wattens, Austria) spoke on responsible sourcing and marketing of coloured stones. They explained that in the past decade, companies in mineral supply chains have been put under increasing pressure due to public interest in responsible business behaviour. Companies are being asked to provide traceability, prove and disclose the origin of raw materials, and account for their social and environmental footprint.

Day three included a workshop led by **Branko Deljanin** and **George Spyromilios** on the identification of colourless diamonds. Participants examined type Ia, Ib, IIa and IIb diamonds (natural, treated and synthetic) with various tools, including microscopes, mini-UV lamps, portable polariscopes and the EXA Natural Diamond Detector. New CVD-grown diamond samples were tested that do not show any diagnostic features under long- and short-wave UV radiation, requiring the use of cross-polarised filters and advanced instrumentation.

Then the lectures resumed, with **Elena Deljanin** (Gemmological Research Industries, Vancouver, Canada) describing how the study of the morphological features and surface characteristics of rough diamonds are influenced by their geological conditions of formation and deposition, and thus can give indications about their geographical origin. **Branko Deljanin** then provided a comparison of portable instruments used for screening and identifying laboratory-grown diamonds. After evaluating 11 such devices priced at less than USD10,000, he recommended that diamond-trade professionals not rely on just a single instrument. Instead, two or (preferably) three of them from different device groups should be used. In rare cases, advanced desk-model instrumentation may be necessary for robust identification. **John Chapman** (Gemetrix, Perth, Australia) delivered an online lecture on diamond testing. While long- and short-wave UV fluorescence are useful for determining if a diamond is natural or synthetic, in some instances this is insufficient due to low luminescence intensity or overlap in interpretations. Additional methods are then desirable, such as observing birefringence patterns of loose diamonds through crossed polarisers using the StrainView device. However, even these observations can be inconclusive, making photoluminescence and absorption spectroscopy necessary to confirm a diamond's identity.

Ioannis Alexandris (Gemolithos, Munich, Germany) spoke on the importance of antique jewellery in today's marketplace. Greater numbers of people are collecting antique jewellery, and it is critical that they have the knowledge needed to confidently invest in this important sector of the market. Such expertise includes understanding the styles, designs, terminology, available materials, gem materials, cutting techniques and manufacturing methods, along with some awareness of world politics, events and other influences during the era of the jewellery in question.

The day ended with a round-table discussion titled 'Origin of Gems and Grading Opinions on Diamonds when Gem Labs Agree to Disagree', moderated by **Yianni Melas** (Gemexplorer, Limassol, Cyprus) with panellists **Ioannis Alexandris**, **Jeffrey Bergman**, **Dr Lore Kiefert**, **Branko Deljanin** and **Travis Lejman** (Figure 2). Despite tremendous technological advancements, there remains

a small percentage of gems, predominantly sapphires, for which major gem labs disagree on origin determination. For example, in 2015 Christie's Hong Kong sold a sapphire with three lab reports containing three different opinions of origin (Madagascar, Sri Lanka and Myanmar). There are also differences in the quality grading of diamonds between major labs. When it comes to coloured diamonds, variations in hue (brown vs pink vs red) or intensity (Fancy vs Intense vs Vivid) can mean huge differences in value.

Four posters were also presented at the conference: (1) 'Gem minerals of Serbia for collectors' by David Lazić and Branko Deljanin; (2) 'Rubies from the Prilep dolomitic marble in northern Macedonia' by Dr Miha Jeršek, Branko Deljanin and David Lazić; (3) 'Spectroscopic study of Egyptian emeralds' (awarded first place by votes of participants) by Maria Nikopoulou, Dr Stefanos Karampelas, Dr Eloïse Gaillou, Ugo Hennebois, Farida Maouche, Annabelle Herreweghe, Prof. Lambrini Papadopoulou, Prof. Vasilios Melfos, Prof. Nikolaos Kantiranis, Dr Didier Nectoux and Aurélien Delaunay; and (4) 'Serbian gemstone deposits' by Dr Zoran Miladinović.

A post-conference tour took participants to the municipality of Prilep, North Macedonia, where they visited a marble mine which is also a source of ruby. The following day they toured a lapidary and metalsmith workshop that focuses on the cutting of Macedonian ruby. They also visited the home of a local mineral collector to view his world-class collection of rare minerals from North Macedonia. A private tour was also given at the natural history museum in Skopje, with an emphasis on their mineral collection. The group then went to the Rudnik Pb-Zn-Ag mine in Serbia and toured the processing plant. David Lazić then guided a gem hunt for quartz, followed by a visit to the home of a local gem collector to see his impressive collection of Serbian minerals. The tour ended in Belgrade, the capital of Serbia, where participants visited the museum of the Faculty of Mining and Geology at the University of Belgrade.

Branko Deljanin will host a BrankoGems Conference in July 2023 in Brisbane, Australia, and the next MGJC will take place in May 2024 in Italy/Slovenia.

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