



9th International Conference Mineralogy and Museums

**Under the auspices of the
International Mineralogical Association
(Commission on Museums)**

Program

**Earth and Man National Museum
24-26 August 2021, Sofia, Bulgaria**

National Organizers



Earth and Man
National Museum

Bulgarian Mineralogical
Society



National Organizing Committee: Ruslan I. Kostov (Chair); Kamen Bogdanov; Rositsa Nikolova; Pavel Stoev; Radostina Atanassova; Rossitsa Vassileva; Ognyan Todorov; Svetlana Encheva; Larisa Nesheva

International Advisory Committee (IMA-CM): Mike Rumsey (Natural History Museum, London, United Kingdom), Chair; Stuart Mills (Victoria Museum, Melbourne, Australia); Kim Tait (Royal Ontario Museum, Toronto, Canada)

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National Scientific Partners:

- Geological Institute “Strashimir Dimitrov”, Bulgarian Academy of Sciences, Sofia
- Institute of Mineralogy and Crystallography “Acad. Ivan Kostov”, Bulgarian Academy of Sciences, Sofia
- National Museum of Natural History, Bulgarian Academy of Sciences, Sofia
- Sofia University “St. Kliment Ohridski”, Sofia
- University of Mining and Geology “St. Ivan Rilski”, Sofia
- Regional Natural History Museum, Plovdiv
- Intergeoresource Ltd., Sofia

Partners: Credo Bonum Gallery; National Academy of Art

Company in charge of registration: Congress Management and Events Ltd., Sofia

General Information

The International Conference Mineralogy and Museums (MM9) deals with mineralogy, museums and related fields of science. The conference intends to bring together both professionally oriented scientists and museum curators, providing them with an opportunity to share ideas and strengthen international links.

MM9 (Sofia, 2021) is the ninth edition of the international conference series organized by the Commission on Museums of the International Mineralogical Association (IMA) since 1988. Previous MM conferences were held in: 1. London, UK (1988); 2. Toronto, Canada (1992); 3. Budapest, Hungary (1996); 4. Melbourne, Australia (2000); 5. Paris, France (2004); 6. Golden, Colorado, USA (2008); 7. Dresden, Germany (2012); 8. China (2016, canceled).

Scientific Program (oral and poster presentations; in-person and online)

- **Session 1: Mineralogical research and museums**
Systematic and regional mineralogy; nomenclature and classification; new minerals; symmetry and crystallography; crystal morphology; gem minerals and aggregates; meteorites; cave minerals; analytical techniques and methods.
- **Session 2: Archaeomineralogy and cultural heritage**
Archaeological mineralogy; archaeogemmology; archaeometry.
- **Session 3: Collection management and development**
Trends in mineralogical or complex geological and natural history museums; acquisition; conservation; unique samples; databases; computer and video applications.
- **Session 4: Museums, environment and society**
History of mineralogical collections and museums; education; specific exhibits (archaeomineralogy; ecomineralogy; ethnomineralogy; biominerals; medical mineralogy; technical mineralogy); minerals and the arts; public relations; geoheritage and geotourism.

Oral Presentations

Oral (including online) presentations are scheduled for Central and Art Hall. Each keynote presentation is limited to 20+5 minutes (regular presentations 12+3 minutes) in length, including time for questions and answers. There are no concurrent sessions. It is requested that for those presenters who have not sent in advance or previously uploaded their presentations on the conference computer, we ask that this process be completed on the morning of the presentation, prior to the start of the day's events.

Poster Presentations

Posters will be set up in the Central Hall. Online posters can be printed in Sofia. An alternative can be a short power-point presentation. Posters will be on display throughout the Conference. Set-up: August 24, 9:00-9:50. Take-down: August 26, 17.30-18.00. Specific poster time: August 26, 15.30-17.30.

Conference Venue

The MM9 conference will take place at the Earth and Man National Museum, Sofia, Bulgaria. Address: Sofia 1421; Blvd. Cherni Vrah 4. E-mail: earth.and.man@gmail.com; office@earthandman.org; http://www.earthandman.org/?page_id=951&lang=bg

The registration desk at the Earth and Man National Museum will be open during the following hours on August 24-25, 2021: 9.00-12.00 h.

Conference Language

The official conference language will be English.

Special Cultural Events

New Exhibitions at the Earth and Man National Museum

- Education in Crystallography and Mineralogy (1 floor; left)
- Minerals in Contemporary Literature (1 floor; left)
- Minerals and Gemstones on Stamps (1 floor; left, center)
- Poetry and Gemstones (posters and samples, 2 floor; right, center)
- Photo Gallery: Bulgarian Minerals (2 floor; right)
- First Bulgarian Geologists-Mineralogists (posters, 2 floor; center)
- Minerals as Objects of Art (drawings of students from the National Academy of Art) (2 floor, left)
- Prehistoric Treasures, the Golden Ratio and Units for Measurement: First gold of mankind; first copper mines in Europe; standardization of mineral, gemstone and metallic artifacts (posters; 1 floor, entrance)

Films on the Oldest Gold of Mankind and Ancient Measurements

- *The Aurolithic Varna Civilization*, 29 min.; author **Hristo Smolenov (Bulgaria)**
- *Codes in Space*, 27 min.; author **Hristo Smolenov (Bulgaria)**

IMA Commissions Meetings (online)

- The Commission on New Minerals, Nomenclature and Classification (CNMNC) will meet on Wednesday, 25 August at 16:30 pm (Art Hall).

PROGRAM

**The International Conference MM9
is dedicated to the centenary of the birth of
mineral collector and donator
D.h.c. Ilia Deleff (1921-2012)
for his outstanding contribution in preserving
the mineral heritage on our planet**

20.08.2021 Friday

Program for online MM9 participants

10.00-12.00 (for online participants in Europe, Asia and Australia) and 17.00-19.00 (for online participants in North America) Optional introductory Zoom meetings for testing system compatibility, internet connection and audio settings (**Eastern European Summer Time Zone EEST**; time zone in Sofia is 7 h ahead of Washington, 6 h behind Tokyo). If the time interval is not suitable, please ask for a personal Zoom invitation.

22-23.08.2021 Sunday-Monday

Pre-conference field trip B. 22-23 August 2021, 2 days; Mineralogical and geoarchaeological museums and sites in Southern Bulgaria: Sofia – Plovdiv (European town of culture 2019; Regional Natural History Museum with largest mineralogical collection in Southern Bulgaria) – Haskovo (Alexandrovo Thracian tomb – Museum Center “Thracian Art of Eastern Rhodopes”) – Kardzhali (Regional Historical Museum, Natural Sciences Department; “The Wedding” natural zeolite geosite; “Perperikon” rock-cut geoarchaeological site) – Sofia (start 22.08.2021 09.00 h at Hotel Hemus)

24.08.2021

09.00-10.00 Registration (Central Hall)

10.00-10.30 Official opening of the

9th International Conference Mineralogy and Museums

10.30-12.30 Oral session (20+5 min.)

- **Pasero, Marco (Italy).** Current trends in mineralogical systematics and the management of the IMA List of Minerals (online)
- **Rumsey, Mike (United Kingdom).** Type specimens in mineralogy: Current perspectives and challenges (online)
- **Kostov, Ruslan I. (Bulgaria).** Ilia Deleff: a life in search of unique crystals
- **Smolenov, Hristo (Bulgaria).** World's oldest gold from Varna Chalcolithic necropolis: codes, measures and proportions

12.30-13.30 Lunch at the museum

13.30-15.30 Sessions 1-2 (Art Hall; 12+3 min.)

- **Razvan Caracas (France), Lena Martin, Tim Bogels, Anais Kobsch, Zhi Li, Renata Schaan, Natalia V. Solomatova.** Moon Impact – a geological story
- **Gil, Grzegorz (Poland).** Combined mineralogical and Fe isotope characteristics allowing unequivocal identification of nephrites from Poland
- **Langhof, Jörgen, Andreas Karlsson, Dan Holtstam (Sweden).** Långban – a cornucopia for new mineral species?
- **Kaliwoda, Melanie, Malte Junge, Viktor H. Hoffmann, Claudia Trepmann, Wolfgang W. Schmahl (Germany).** Raman spectroscopy as a functional scientific examination method for minerals, crystals, rocks and meteorites in the mineralogical state collection Munich, SNSB; Germany (online)
- **Helmbrecht, Vanessa, Melanie Kaliwoda, Malte Junge, Wolfgang W. Schmahl (Germany).** Petrochemical investigation of meteorites from Mars and Vesta (4) (online)
- **Bogdanov, Kamen (Bulgaria).** Bi-Te-Se and Ga-Ge-In minerals vectors toward gold enrichment in porphyry-epithermal deposits from Panagyurishte ore region, Bulgaria
- **Kozhoukharova, Evgenia (Bulgaria).** HTP mineralization on the metamorphic complexes in Rhodope Massif

- **Gurova, Maria, Polina Andreeva, Elitsa Stefanova (Bulgaria).** Revisiting prehistoric flint artefacts and raw materials in Bulgaria using a new methodological and analytical approach
15.30-16.00 Coffee break
16.00-18.00 Sessions 1, 3-4 (Art Hall; 12+3 min.)
- **Kampf, Anthony R., John M. Hughes (USA).** Polyoxometalate minerals from post-mining assemblages in the Uravan Mineral Belt, Colorado and Utah, U.S.A. (online)
- **Alonso-Perez, Raquel (USA), James M. D. Day (USA), D. Graham Pearson (Canada), Ruan Hattingh (USA), Yan Luo (USA), Sudhakar Raju (USA), Manuel A. Palacios (USA).** Provenance of emeralds using laser-ablation inductively coupled plasma mass spectrometry and machine learning with multivariate analysis techniques (online)
- **Dunnell, Katherine (Canada).** Care and curation of the Gem and Jewellery Collection at the Royal Ontario Museum; a case study towards best practices (online)
- **Czaja, Kevin M. (USA).** New work on the Palermo #1 Mine Collection at the Mineralogical and Geological Museum at Harvard (online)
- **Farfan, Gabriela A., John Rakovan, Michael R. Ackerson, Benjamin J. Andrews, Jeffrey E. Post (USA).** Trapiche-like inclusion patterns in quartz from Inner Mongolia, China (online)
- **Anderson, Erika, Gabriela Farfan, Kimberly Vagner (Canada).** Mineral science communication: using social media to promote mineralogy and museums (online)
- **Im, Caroline (USA).** The cleaning of a mineral database (online)
- **LaPorta, Philip C., Margaret C. Brewer-LaPorta (USA).** The CINAQ lithiotech: The preservation of Native American through Historic Period mineral resources (online)
18.00-18.30 Conference Hall
- Film on the “First Gold of Mankind”: *The Aurolithic Varna Civilization*, 29 min., **Hristo Smolenov (Bulgaria)**
19.00 Welcome Party (Central Hall)

25.08.2021 10.00-12.00 Session 1 (Art Hall, 12+3 min.)

- **Miyawaki, Ritsuro, Toshiaki Shimura, Koichi Momma, Daisuke Nishio-Hamane, Seiichiro Uehara, Satoshi Matsubara, Akira Kato (Japan).** Re-examination on kobeite-(Y) (online)
- **Groat, Lee A. (Canada).** Gem deposit research and implications for exploration (online)
- **Mills, Stuart J. (Australia), Owen P. Missen (Australia), Mike S. Rumsey (United Kingdom).** Progress in understanding the mineralogy of secondary tellurium: crystal structures and new minerals from museum specimens (online)
- **Missen, Owen P. (Australia), Mike S. Rumsey (United Kingdom).** 150 years in the making: Characterising the ‘questionable’ mineral montanite (online)
- **Cotterell, Tom F. (United Kingdom).** Pondering the first occurrence of ponderous spar: an assessment of the Type Locality of witherite (online)
- **Momma, Koichi (Japan).** Visualization of crystal structures, electron and nuclear densities, and crystal morphologies for mineralogical studies and outreach activities (online)
- **Ehling, Angela (Germany).** GewiS – the Geoscientific collections of the BGR is going online (online)
- **Nowak, Katarzyna (Poland).** Potentially new mineral $(\text{Sr}, \text{Ca}, \text{K}, \text{Na}, \square)_{10}(\text{Al}, \text{Si})_{16}\text{Si}_{16}\text{O}_{64} \cdot 18\text{H}_2\text{O}$ with gismondine type framework from the Hatrurim Complex, Israel

12.00-13.00 Lunch at the museum

13.00-18.00 Visit to mineralogical museums in Sofia (optional):

- National Museum of Natural History, Bulgarian Academy of Sciences; Sofia University “St. Kliment Ohridski”; University of Mining and Geology “St. Ivan Rilski”

16.30 IMA commissions business meetings (Art Hall)

20.00 Official Dinner (Restaurant “Hemus”)

26.08.2021 10.00-12.00 Sessions 3-4 (Art Hall; 12+3 min.)

- **Liu, Guanghua, Eugene Huang, Ping He, Xiaoxu Zhou (China).** A multiple-function mineral museum in Nanchang, China: for science, education, arts and tourism
- **Kreher-Hartmann, Birgit (Germany).** A Mineralogical Society and its network or how to expand a collection
- **Gaillou, Eloïse (France).** Historic emeralds from the Paris School of Mines (online)
- **Barthe, Aude, Eloïse Gaillou (France).** Prince Napoleon: Expedition and collect in the North Seas (online)
- **Royce, Kathryn (United Kingdom).** Vulnerability of mineral collections to indoor environmental conditions – a synopsis (online)
- **Fabrizi, Lucilla, Vanni Moggi Cecchi, Luciana Fantoni, Marco Benvenuti (Italy).** The collection of mineral holotypes of the Natural History Museum of the University of Florence, Italy: an update (online)
- **Petti, Carmela, Piergiulio Cappelletti (Italy).** The *Real Museo Mineralogico* of the Federico II University (Naples, Italy): a long history (online)
- **Zdravković, Alena, Maja Milošević, Kristina Šarić, Ivana Jelić, Ana Černok (Serbia).** History of meteorite donations to the Collection of Minerals and Rocks of the University of Belgrade, Faculty of Mining and Geology (Serbia) (online)
- **Petrov, Petko (Bulgaria).** The pyrite decay problem

12.00-13.00 Lunch at the museum

13.00-15.00 Session 4 (Art Hall; 12+3 min.)

- **Starkey, Roy (United Kingdom).** Sir Arthur Russell – a British mineralogical hero (online)
- **Hansen, Robin (United Kingdom).** Enhancing Earth's Treasury: The challenges of refreshing gemstone and mineral displays in a museum (online)
- **Junge, Malte, Melanie Kaliwoda, Wolfgang W. Schmahl (Germany).** Discovering the world of minerals and raw materials hidden in technological devices of the everyday life – a workshop for school kids to increase the awareness of the need of minerals and raw materials for smartphones (online)

- **Maleev, Michail, Petko Petrov, Svetlana Encheva (Bulgaria)**. Sofia initiative “Preservation of Mineral Diversity”
- **Brandmiller, Fabian, Malte Junge, Melanie Kaliwoda, Cristina de Campos, Wolfgang W. Schmahl (Germany)**. Mineralogical characterization of podiform chromitite deposits in the Beja-Acebuches Ophiolite, Portugal (online)
- **Joseph, Fabio, Malte Junge, Melanie Kaliwoda, Wolfgang W. Schmahl (Germany)**. Digital 3D models of minerals and rocks integrated in an exhibition and for museum education at home (online)
- **Hentschel, Felix, Malte Junge, Melanie Kaliwoda, Wolfgang W. Schmahl (Germany)**. The research and collection platform Diversity Workbench applied to mineralogical and geological collections (online)
- **Kostov, Ruslan I. (Bulgaria)**. Gem minerals of the Bible and the arts: examples from Bulgaria
15.00-15.30 Coffee-break
15.30-17.30 Poster session (5+2 min.)

Session 1

- **Georgieva, Sylvina, Rossitsa Vassileva, Georgi Milenkov, Elitsa Stefanova (Bulgaria)**. Epidote-group minerals in altered pegmatites from Madan ore region, Central Rhodopes, Bulgaria: occurrence and chemistry
- **Holtstam, Dan (Sweden)**. Raman spectroscopy as a tool in mineral discoveries
- **Mihova, Manuela (Bulgaria)**. Raman spectroscopy analysis of macrocrystalline quartz varieties
- **Petrusenko, Svetoslav, Chavdar Karov (Bulgaria)**. Urdina's River glacial valley – a protected area for minerals in the Rila Mountain, Bulgaria
- **Vassileva, Rossitsa (Bulgaria), Kalin Kouzmanov (Switzerland)**. Manganilvaite from the Govedarnika deposit, Laki district, Bulgaria

Session 2

- **Kostov, Ruslan I. (Bulgaria), Elisabeth Strack (Germany)**. Comparative study of an ancient Chinese nephrite-jade scabbard slide from Chataalka in Bulgaria

Session 3

- **Alcalde-Fuentes, María Rosario, Vicen Carrió, Rosario García Giménez, Ramón Jiménez-Martínez, Juan Alberto Pérez-Valera (Spain)**. The Museum of Mineralogy at the University Autonomous of Madrid: the renewal in the service of teaching (online)
- **Bilyarska, Theodora (Bulgaria)**. The preserved heritage from the Krantz collection in the Museum of Mineralogy, Petrology and Mineral Resources, Faculty of Geology and Geography, Sofia University “St. Kliment Ohridski”
- **Bonaccorsi, Elena, Marilina D’Andretta, Alessandra Zannella (Italy)**. Audience preliminary study for multi-sensory exhibits along the mineral exposition of the Natural History Museum (University of Pisa) (online)
- **Karov, Chavdar, Iliya Dimitrov (Bulgaria)**. A new collection donated to the National Museum of Natural History at the Bulgarian Academy of Sciences, Sofia
- **Kunov, Angel (Bulgaria)**. Exposition of minerals in museums and schools in Vratsa, Northwest Bulgaria
- **Liu, Guanghua, Eugene Huang, Ping He, Xiaoxu Zhou (China)**. Developments of mineral museums in China
- **Lozano-Soria, Olivia, Antonio J. Romero-Baena (Spain)**. Riotinto room: a didactic exhibition to understand the significance of mining in the southwest of Spain (online)
- **Milošević, Maja, Biljana Djordjević, Alena Zdravković (Serbia)**. Structural characterization of traditional pottery produced from local clay, Rujište (Ražanj, Central Serbia), in an effort to preserve its geoheritage (online)
- **Pellino, Annamaria, Giuseppina Balassone, Carmela Petti, Piergiulio Cappelletti, Nicola Mondillo (Italy)**. Re-examination of “*Vesbine*” from Somma-Vesuvius volcano: new data from the Vesuvian Collection of the Royal Mineralogical Museum of Naples (Italy) (online)
- **Romero-Baena, Antonio J., Olivia Lozano-Soria (Spain)**. Didactic field trips in Riotinto mining Area (SW Spain) (online)
- **Shirose, Yohei (Japan)**. “Hiki Mineral Collection”, the mineral collection of Kyoto University, in the Kyoto University Museum, Japan (online)

Session 4

- **Delibaltova, Desislava (Bulgaria).** Teaching geology and mineralogy at the Earth and Man National Museum, Sofia
 - **Metodiev, Lyubomir (Bulgaria).** Mineral collections of the Geological Institute, Bulgarian Academy of Sciences, Sofia, Bulgaria
 - **Nesheva, Larisa (Bulgaria).** Earth and Man National Museum, Sofia: an accessible cultural and educational center of geology and mineralogy for blind and visually impaired visitors
 - **Stavrakeva, Dobrinka, Irena Mihailova (Bulgaria).** Mineralogy training and laboratory-museum at the University of Chemical Technology and Metallurgy in Sofia
- 18.00-18.30 Closing of the Scientific Program**
- Film on prehistoric measurements and proportions in metals and gemstones: *Codes in Space, 27 min.*, **Hristo Smolenov (Bulgaria)**

25-26.08.2021 10.00-14.00 Mineral Show (Central Hall)

- Bulgarian Minerals: *Intergeoresource Ltd.*
- Education in Crystallography and Symmetry: *Tonediko*

27.08.2021

- **Post-conference one day field trip A. 27 August 2021, Friday; Stara Planina Mountain:** Elatsite porphyry copper-gold deposit (start 09.00 h at Hotel Hemus)