

MSA Centennial Symposium  
**“The Next 100 Years of Mineral Sciences”**  
June 20-21, 2019

MSA will hold a celebratory Centennial Symposium on June 20-21, 2019 at the [Carnegie Institution for Science Building](#), located at 1530 P St NW, Washington, DC 20005. Fourteen theme colloquia will offer a vision for exciting new directions in mineralogy, geochemistry, and petrology as MSA begins its second century. Each theme colloquium will include two 20-minute presentations by invited speakers followed by 15 minutes of moderated audience discussion.

Lunches will be included with your registration fee, and attendees are invited for a private evening reception in the Janet Anneberg Hooker Hall of Geology, Gems, and Minerals in the US National Museum of Natural History, Smithsonian Institution. We thank the Gemological Institute of America for sponsoring this evening reception.

Please join us for this once-in-a-century event! Registration details will appear on this web site soon!

### **Schedule of Theme Colloquia**

#### **Thursday, June 20, 2019**

##### **1) Sustainable Development of Mineral Resources and its Societal Impact**

Gordon Brown (Stanford Univ.): The environmental legacy of mercury, gold, and asbestos mining: Evaluation of long-term impacts  
Mike Hochella (Virginia Tech): Newly discovered environmental impacts of mineral resource utilization: Direct and indirect incidental nanomaterials  
Moderator: Georges Calas (Université Pierre et Marie Curie)

##### **2) Linking Metal (Bio)geochemical Cycling from the Atomic to Landscape Scale**

David Singer (Kent State Univ.): From atoms to mountains: New frontiers in X-ray science  
Michael Schindler (Laurentian Univ.): Nano-mineralogy: A new dimension to understand the fate of metal(loid)s in the environment  
Moderator: Patricia Maurice (Notre Dame Univ.)

##### **3) A Second Golden Age for Metamorphic Petrology**

Ross Angel (Univ. Pavia): The importance of physics to thermobarometric research

Lucie Tajcmanová (Univ. Heidelberg): What's Next? Exploring the future of metamorphic geology

Moderator: Sarah Penniston-Dorland (Univ. Maryland)

#### **4) Advances in Mineral Analysis: What Improvements Will We See in the Chemical and Isotopic Analyses of Minerals?**

Michael Wiedenbeck (DGFZ-Potsdam): SIMS and related technologies: Where they stand, where they are headed, and where things need to go

Simon Jackson (Geological Survey of Canada): LA-ICPMS mineral analysis: Prospects for development and improved integration with other technologies

Moderator: Paul Sylvester (Texas Tech Univ.)

#### **5) Unraveling the Roots of Continents: From Paleo-island Arc to Mature Continental Crust on Earth**

Othmar Müntener (Univ. Lausanne): Lower crust formation and differentiation constrained by field studies and experimental petrology

Roberta Rudnick (UCSB): Earth's continents through time

Moderator: Mattia Pistone (Univ. Lausanne)

#### **6) Mineral Inclusions in Diamonds from the Deep Earth**

Fabrizio Nestola (Univ. Padua): In-situ, ambient analysis of diamond-captured mantle transition zone and lower mantle minerals

D Graham Pearson (Univ. Alberta): The diamond record of plate tectonic recycling of H, C, N, and B

Moderator: Steven Shirey (Carnegie Institution for Science)

#### **7) Museum Mineral Collections in the next 100 years**

Kim Tait (Royal Ontario Museum): The Kirwin collection: Looking ahead for the next 100 years at the Royal Ontario Museum

Aaron Celestian (Natural History Museum of Los Angeles County): Unlocking the collections: Making minerals accessible in the next 100 years

Moderator: Jeff Post (US National Museum)

### **Friday, June 21, 2019**

#### **8) Synchrotron-based Studies of High-Pressure Mineral Behavior**

Przemyslaw Dera (Univ. Hawaii): Hypervalent penta-coordinated silicon and metastable phase transitions in chain silicates

Jin Zhang (Univ. New Mexico): Elastic anisotropy and phase transitions in the Earth's upper mantle  
Moderator: Carl Agee (Univ. New Mexico)

**9) Mineralogy Beyond the Boundaries of Earth: Advances in the Mineralogy of Mars**

Elizabeth Rampe (Johnson Space Center): New perspectives of ancient Mars: Mineral diversity and crystal chemistry at Gale crater, Mars from the CheMin X-ray diffractometer  
Harry McSween (Univ. Tennessee, Knoxville): The mineralogy of Mars from rocks in hand  
Moderator: Doug Ming (Johnson Space Center)

**10) The Future of Data-Driven Discovery in Mineralogy, Crystallography, and Petrology**

Shaunna Morrison (Geophysical Laboratory, Carnegie Inst.): The future of data-driven discovery in mineralogy and crystallography  
Simone Runyon (Univ. Wyoming): The future of data-driven discovery in petrology and geochemistry  
Moderator: Robert Hazen (Geophysical Laboratory, Carnegie Inst.)

**11) Applied Mineralogy as a Tool to Research the Provenance and Technology of Ancient Ceramics**

Michael Tite (Oxford Univ): The mineralogy of opaque ceramic glazes: Development in the Islamic world and Europe from the 7<sup>th</sup> to the 16<sup>th</sup> centuries CE  
Gilberto Artioli (Univ. Padova): Modern mineralogy and ancient pots: The archaeometry of ceramics  
Moderators: Pamela Vandiver (Dept. Mat. Sci. and Eng., U Arizona) and Robert Heimann (Technische Universität Bergakademie Freiberg)

**12) Scientific Characterization of High-Value Gemstones**

Wuyi Wang (GIA): Challenges in the identification of synthetic diamonds  
Mandy Krebs (GIA): Determining the provenance of colored gemstones  
Moderators: Wuyi Wang (GIA) and Jim Shigley (GIA)

**13) The Societal Relevance of Apatite**

John Hughes (Univ. Vermont): The geological and agricultural significance of calcium phosphate apatite  
Jill Pasteris (Washington Univ. St. Louis): Biomineralization and biomaterials: Apatite and the human body

Moderator: John Rakovan (Univ. Miami-Ohio)

**14) Minerals and Industry: Evaluating the Real Impacts of Mineral Dusts on Human Health**

Ann Wylie (Univ. of Maryland): What makes an amphibole “asbestos”? History and status of regulatory issues dealing with amphiboles

Matthew Sanchez (R J Lee Group): Mineral misidentification in connection to potential hazards of mineral dusts

Moderator: Jessica Elzea Kogel (NIOSH)