BHP

A world-leading global resources company.

BHP is among the world’s top producers of major commodities, including copper, iron ore, coal, uranium and nickel. We also have substantial interests in oil, gas and energy coal.

We have a simple and diverse portfolio of 12 core operated assets around the world, with low-cost options for future growth. This allows us to apply our values and culture, emphasise safety and productivity, deploy technology and exert capital discipline to extract the most value and highest returns from our assets.

Our inclusive and diverse team of geoscientists apply cutting edge science and technology to discover, understand and optimise product recovery from across commodities, continents and markets.

The resources we produce help build cities, produce energy and give developing nations the resources they need to provide their people with a better life. We are committed to making a broader contribution through our social investments which aim to deliver lasting economic and social benefits for the communities where we operate.
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<tr>
<td>08:00 – 8:30</td>
<td>Coffee</td>
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<tr>
<td>08:30 – 9:15</td>
<td>Opening Ceremony</td>
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<tr>
<td>09:15 – 9:45</td>
<td>SEG Distinguished Lecturer: Lluís Fontboté</td>
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<td>09:45 – 10:00</td>
<td>Coffee Break</td>
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<tr>
<td>10:00 – 11:00</td>
<td>Keynote: Robert Friedland</td>
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<td>11:00 – 12:00</td>
<td>Keynote: Richard Sillitoe</td>
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<td>12:00 – 13:30</td>
<td>Lunch and Posters</td>
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<td>13:30 – 15:10</td>
<td>Technical Sessions</td>
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<tr>
<td>15:10 – 15:30</td>
<td>Coffee Break and Posters</td>
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<tr>
<td>17:30 – 19:30</td>
<td>Poster Reception</td>
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<tr>
<td>17:30 – 19:30</td>
<td>Poster Reception</td>
</tr>
<tr>
<td>19:15 – 22:30</td>
<td>Brew Pub Night</td>
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</tbody>
</table>

**REGISTRATION and HELP DESK**
Lobby, South Building, CUGB Convention Centre

- **Friday:** 14:00–18:00
- **Saturday:** 08:00–18:00
- **Sunday:** 08:00–18:00
- **Monday:** 07:30–17:00
- **Tuesday:** 08:00–17:00
- **Wednesday:** 08:00–17:00
- **Thursday:** 08:00–17:00 (help desk will be in the lobby of the hotel)

**EXHIBITS and POSTERS**
- **Monday:** 12:00 – 19:30
- **Tuesday:** 09:00 – 19:30
- **Wednesday:** 09:00 – 12:00

**SPEAKER PREPARATION**
Speaker Ready Room
- **Sunday-Wednesday:** 08:00-17:00
- **Room 103, 1st Floor,**
  - **South Building,**
  - **CUGB Convention Centre**

**WIFI ACCESS**
- **Wi-Fi:** gicc-wifi
- **Password:** gicc1223

**CONFERENCE PROCEEDINGS**
Attendees will have received an e-mail containing information on how to access the conference abstracts, slide presentations, and posters. If you are registered for the conference and have not received that e-mail, please contact jeffdoyle@segweb.org.

Opening ceremonies, exhibits, receptions, and posters will be at the China University of Geosciences, Beijing (CUGB).

Technical sessions will be held at the Geosciences International Conference Centre and Hotel.

For locations, see the floor plan on the inside back cover of this program.

Transportation is provided to and from the Brew Pub and the SEG Awards dinners.

For updates, go online to www.seg2017.org
Welcome to SEG 2017 in Beijing, China!

The Organizing Committee is pleased to welcome you to the SEG 2017 Conference, Ore Deposits of Asia: China and Beyond, which is jointly hosted by the Society of Economic Geologists and the China University of Geosciences Beijing (CUGB) at the Conference Centre and Hotel Complex of the CUGB. Asia comprises almost one-third of the world’s land area and is home to 60% of the world’s population. As the Asian countries have grown in the past decades, so has their demand for resources, which has been met by new brownfields and greenfields discoveries in eastern Russia, central Asia, China, and southeast Asia. This SEG conference, our first ever held in Asia, is focused on recent developments in our understanding of the evolution of eastern Asia and formation of its many world-class mineral deposits.

With more than 600 attendees from Asia and elsewhere in the world, including managers in the resource industry, exploration and mine site geologists, government earth scientists, and academics from dozens of universities, SEG 2017 is the most important international scientific meeting in economic geology ever held in modern-day China. The technical program includes a plenary session with addresses from globally recognized leaders in the areas of resource exploration and geology, with subsequently 150 talks on all aspects of economic geology in three parallel sessions, as well as dedicated poster session periods with many additional presentations. The conference includes an excellent offering of field trips throughout China and neighboring countries, as well as a series of ore deposit workshops from recognized leaders in the scientific community. Furthermore, we have an exceptional program of cultural activities associated with the conference that we hope many of you from overseas will enjoy, as Beijing and China have a rich and unique history of customs and traditions like nowhere else in the world.

Richard J. Goldfarb and Jun Deng
Co-Chairs, SEG 2017 Organizing Committee
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57-58 Exhibitors/floor plan
Back cover flap Thank you, Sponsors
Inside Back cover Conference Centre floor plan

Conference Information*

Organizing Committee Members
• Conference Co-Chairs: Richard Goldfarb, China University of Geosciences, Beijing (CUGB) and Colorado School of Mines; Jun Deng, China University of Geosciences, Beijing (CUGB)
• SEG Executive Director: Brian Hoal
• Technical Program: Larry Meinert, U.S. Geological Survey
• Publications: Zhiming Yang, Chinese Academy of Geological Sciences, Beijing
• Field Trips: Kezhang Qin, Chinese Academy of Sciences, Beijing
• Workshops: Zhaoshan Chang, James Cook University, Australia
• Poster Sessions: Liqiang Yang, China University of Geosciences, Beijing (CUGB)
• Fundraising: Chusi Li, Indiana University;
• Fundraising: Dawn Zhou, CSIT Consulting, Inc., China
• Fundraising: Feng Tao, Pangea Gold Corporation Limited
• Marketing/Publicity, China: Jingwen Mao, Chinese Academy of Geological Sciences
• Marketing/Publicity, Global: Nikki Morrison, SEG
• Marketing/Publicity, North Eurasia: Marina Yudovskaya, Institute of Geology of Ore Deposits (IGEM RAS) and University of Witwatersrand
• CUGB International Affairs Coordinator: Cathy Pian, China University of Geosciences, Beijing (CUGB)
• Student Activities: Yuling Xie, University of Science and Technology Beijing
• Administration/Logistics: Kunfeng Qiu, China University of Geosciences, Beijing (CUGB)
• Secretary/Students: Alison Cronk, SEG

SEG Contact Information
Society of Economic Geologists
7811 Shaffer Parkway, Littleton, CO 80127, USA
Tel. 1.720.981.7882
E-mail: seg@segweb.org; Website: www.segweb.org

Conference Organizer
Lucia Liu and Kathrin Brueggemeier, Project Managers
Beijing German-Inspired Events Services Co., Ltd
Tel: + 86 10 6410 8406; Mobile: + 86 152 0167 9841
E-mail: lucia@g-i-events.com

*For registration, exhibit, and speaker ready room hours, as well as an overview of schedules, please see the front inside cover of this program. An exhibit booth floor plan is located inside the back cover. All events, except where noted, will be held at the Geosciences International Conference Centre. For updates, please go to www.seg2017.org.
SEG Awardees

Please join us for the SEG Awards Ceremony on Tuesday, September 19, 2017, during the Awards Dinner at the Mei Zhou Dong Po Restaurant (ticket required).


**Steven D. Scott**  
University of Toronto, Canada

SEG Silver Medal for 2016

**John H. Dilles**  
Oregon State University, USA

SEG Ralph W. Marsden Award for 2016

**M. Stephen Enders**  
Colorado School of Mines, USA

SEG Waldemar Lindgren Award for 2016

**Sophie M. Decrée**  
Museum of Natural Sciences, Belgium

SEG Distinguished Lecturer for 2017

**Lluís Fontboté**  
Université de Genève, Switzerland

SEG International Exchange Lecturer for 2017

**Chusi Li**  
Indiana University, USA

SEG Thayer Lindsley Visiting Lecturer for 2017

**Daniel G. Wood**  
Adjunct Professor, WH Bryan Mining and Geology Research Centre, Australia

SEG Regional Vice President Lecturer for 2017

**Miguel A. Miranda Gasca**  
EGEX Exploration Services, Mexico

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Pre-Conference Program

Sunday, September 17, 2017  
*Geosciences International Conference Centre (2nd floor)*

**Student/SEG Young Professionals Forum and Presidential Address**

**Student Forum hosted by BHP**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>13:30–15:00</td>
<td><strong>Student Forum</strong></td>
</tr>
</tbody>
</table>
| 13:30–14:00 | Forum Panel: Scientific Publication—Problems and Recommendations  
*Richard Goldfarb*, Colorado School of Mines and China University of Geosciences, Beijing (CUGB)  
*Larry Meinert*, U.S. Geological Survey |
| 14:00–14:30 | Forum Panel: Challenges Facing Women in the Field of Economic Geology  
*Jane Hammarstrom*, U.S. Geological Survey  
*Libby Sharman*, Mineral Deposit Research Unit, Vancouver, Canada  
*Christina Wang*, Key Laboratory of Mineralogy and Metallogeny, Chinese Academy of Sciences (CAS)  
*Yuling Xie*, University of Science and Technology Beijing (USTB) |
| 14:30–15:00 | Forum Panel: What Industry Wants from New Graduates and How to Apply for Jobs in the Industry  
*Greg Hall*, Golden Phoenix International Pty Ltd  
*Cam McCuaig*, BHP Billiton  
*Feng Tao*, Pangea Gold Corporation Limited  
*Michael Guo*, Shandong Gold Group Co., Ltd. |
| 15:00–15:15 | Coffee Break |
15:15–16:45  **Young Professionals Forum**

15:15–15:20  **Opening Remarks**
An overview of the SEG Young Professionals Committee’s (YPC’s) functions and goals, discussion of sustainability within the industry and its importance, and overall session outline

**Kunfeng Qiu**, CUGB, SEG YPC Asian member

15:20–15:40  **Keynote**
The opportunities and challenges that young geologists face in today’s evolving industry

**Meng Wang**, President of the Young Earth Scientists’ Network, exploration geologist with MMG

15:40–16:00  **Keynote**
How to continue developing critical research skills as a young professional

**Xinfu Zhao**, Professor at CUG Wuhan, Young Thousand Talents Program Scholar

16:00–16:40  **Panel and Participants Discussion**
Panel:

**Zhansheng Ji**, Chinese Academy of Geological Sciences, (CAGS), Commissioner of Youth Work Committee of Geological Survey of China (GSC)

**Shaun Barker**, University of Waikato, New Zealand

**Doug Kirwin**, Consultant, Thailand

**Jianfeng Gao**, Institute of Geochemistry, Chinese Academy of Sciences (CAS), Commissioner of Youth Committee of Chinese Society for Mineralogy, Petrology, and Geochemistry

16:40–16:45  **Concluding Remarks**

**Brian Hoal**, SEG Executive Director

16:45–17:00  **Break**

17:00–17:30  **SEG Presidential Address**

**Laurence Robb**

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**Welcome Reception**

17:30 – 19:30  China University of Geosciences, Beijing (CUGB) Gymnasium
China University of Geosciences in Beijing (CUGB) traces its roots to Beijing College of Geology, founded in 1952. CUGB is among the first group of the higher level universities “211” project and is one of the first 33 universities to set up graduate schools in China. CUGB is one of China’s main centres for geological researchers. CUGB has 17 colleges with a total of 47 undergraduate and 118 graduate programs. At present there are 16,000 full-time students with a teaching and research staff of 1,200.

Technical Program

Talks for which the presenting author is a student can be identified by an asterisk (*) that follows the presenter. Posters can be viewed during all breaks.

DAY 1 - Monday, September 18, AM

08:30–09:15  Opening ceremony
Co-Chairs: Richard Goldfarb and Xuanxue Mo
Officials: Jun Deng (CUGB), Ziran Zhong (CGS-ML&R), Qiming Peng (China Mining Association)

09:15–09:45  Future supply of mineral resources
Lluis Fontboté (SEG Distinguished Lecturer)

09:45–10:00  Break

10:00–11:00  Exploration success—disruption in the art and science of discovery
Robert Friedland (Keynote)

11:00–12:00  Exploration success—some lessons learnt over the past half century
Richard Sillitoe (Keynote)

12:00–13:30  Lunch
### DAY 1 - Monday, September 18, PM

#### SESSION ONE

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Presenters</th>
</tr>
</thead>
</table>
| 13:30-13:50 | Tectonics and Metallogeny of Asia                                    | Co-Chairs: Noel White, Zengqian Hou  
Location: Geosciences International Conference Centre (2nd floor) |
|          | David Cooke (Keynote)                                                | Geodynamic complexities in arc and post-collisional settings of the SW Pacific and China—essential ingredients for porphyry mineralisation |
| 13:50-14:10 | New Discoveries and Exploration Potential of Asia                    | Co-Chairs: Greg Hall, Doug Kirwin  
Location: Geosciences International Hotel (2nd floor) |
|          | Michael MacDonald                                                    | Developing a newly discovered gold district in southwestern Mongolia      |
| 14:10-14:30 | Mineral Deposits of Tibet                                            | Co-Chairs: Zhiming Yang, Yongjun Lu  
Location: Geosciences International Conference Centre (1st floor) |
|          | Huanchun Qu                                                          | The discovery of sulfide melt inclusions of UST quartz layers in Qulong, Tibet: Implications for the genesis of porphyry Cu deposits |
| 14:30-14:50 | Jun Deng (Invited)                                                   | Temporal-spatial distribution of metallic ore deposits in China and their geodynamic settings |
|          | Richard Schodde (Keynote)                                            | Overview of exploration in Asia—the rising importance of China              |
| 14:50-15:10 | Nikolay Goryachev (Invited)                                          | Evolution of the mineral composition of gold deposits as result of crust-mantle contribution in Earth history |
|          | Jane Hammarstrom                                                     | Porphyry copper potential of Asia                                           |

#### SESSION TWO

<table>
<thead>
<tr>
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<th>Topic</th>
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<td>Relationship of crustal evolution and collage assembly to metallogenesis of China</td>
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<td>Zhaokun Wang</td>
<td>Comprehensive deep geological-geophysical studies and identification of new world-class resources, northwestern Jiaodong gold province, China</td>
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<td>The Zealandia-SE China connection: Permian-Cretaceous intrusive rocks and mineralisation</td>
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<td>Degao Zhai</td>
<td>Geochronological bracketing of hydrothermal events at the newly-discovered Bianjidayuan porphyry and base metal deposit, NE China</td>
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<td>Jeremy Richards</td>
<td>Paleo-Tethyan anoxia correlated with low porphyry Cu potential</td>
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<td>Ali Sholeh</td>
<td>New mineral discoveries and porphyry-epithermal exploration potential of Iran</td>
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<td>14:30-14:50</td>
<td>Chao Zhao*</td>
<td>A long way to run: The Paleozoic-Mesozoic evolution of magmatism, mineralization and structures of Duobaoshan Aurich porphyry Cu deposit in the eastern section of CAOB</td>
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<td>Large copper and gold systems of Kazakhstan and Tienshan: Geodynamics and metallogeny revisited</td>
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**Note:** The session schedule includes a break at 15:10-15:30.
### DAY 1 - Monday, September 18, PM (continued)

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<th><strong>SESSION THREE</strong></th>
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<tbody>
<tr>
<td>16:10-16:30</td>
<td>Yongjun Lu</td>
<td>Bo Xu*</td>
</tr>
<tr>
<td>*Zengqian Hou</td>
<td>Porphyry Cu fertility in the Lhasa terrane, southern Tibet: Insights from terrane-scale whole-rock geochemistry and zircon trace element and Hf-O isotopes</td>
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<tr>
<td>Recycling of metal-fertilized lower continental crust: Origin of non-arc Au-rich porphyry deposits at cratonic edges</td>
<td>The Malmyzh porphyry Cu-Au discovery, Khabarovsk Krai, Far East Russia</td>
<td>Ultrapotassic rocks and xenoliths from South Tibet: Contrasting styles of interaction between lithospheric mantle and asthenosphere during continental collision</td>
</tr>
<tr>
<td>16:30-16:50</td>
<td>Mark Arundell</td>
<td>Guangming Li</td>
</tr>
<tr>
<td><em>Wenjiao Xiao (Invited)</em></td>
<td>Potash in Asia</td>
<td>The Giant Rongna Cu deposit in Duolong ore cluster at the southern margin of Qiangtang terrane, central Tibet: A product of the telescoped porphyry and high sulphidation epithermal Cu(-Au) mineralization</td>
</tr>
<tr>
<td>Subduction slabs in the Altai-East Junggar-Tianshan orogenic collage and their control on metallogeny in the Altaiids</td>
<td>Oxidation condition and metal fertility of granitic magmas: Evidence from zircon trace-element data from porphyry Cu deposits in the Central Asian orogenic belt</td>
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<tr>
<td>16:50-17:10</td>
<td>Ping Shen</td>
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<td><em>Laurence Robb</em></td>
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<td>Metallogeny of Myanmar through zircons</td>
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### DAY 2 - Tuesday, September 19, AM

<table>
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<th><strong>SESSION FIVE</strong></th>
<th><strong>SESSION SIX</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Orogenic Gold Deposits of Asia</strong></td>
<td><strong>Structural Geology of Ore Deposits</strong></td>
<td><strong>Copper and IOCG Deposits of Asia</strong></td>
</tr>
<tr>
<td>Chair: Noel White</td>
<td>Co-Chairs: David Groves, Steve Cox</td>
<td>Co-Chairs: Lijuan Ying, Huayong Chen</td>
</tr>
<tr>
<td>Location: Geosciences International Conference Centre (2nd floor)</td>
<td>Location: Geosciences International Hotel (2nd floor)</td>
<td>Location: Geosciences International Conference Centre (1st floor)</td>
</tr>
<tr>
<td>08:30-08:50</td>
<td>David Rhys (Keynote)</td>
<td>Yanlu Xing*</td>
</tr>
<tr>
<td>Rich Goldfarb (Keynote)</td>
<td>Advances in the understanding of the structural controls on Carlin deposits in Nevada: Implications for Chinese Carlin-like systems</td>
<td>The role of fluorine on the formation of Iron oxide Cu-Au (IOCG) deposits: insights from in-situ XAS experiments and thermodynamic calculations</td>
</tr>
<tr>
<td>Orogenic gold deposits of China</td>
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<tr>
<td>08:50-09:10</td>
<td>Chunji Xue</td>
<td>Tong Hou</td>
</tr>
<tr>
<td>Geology, geochemistry and geochronological constraints on the genesis of newly discovered Katebasu gold deposit, western Tien Shan, Xinjiang, NW China</td>
<td>David Rhys (Keynote) (continued)</td>
<td>Magnetite-apatite ores formed as mushy hydrous Fe-P immiscible magma</td>
</tr>
<tr>
<td>09:10-09:30</td>
<td>Richen Zhong</td>
<td>Michelle Campbell*</td>
</tr>
<tr>
<td>Forming orogenic gold and base metal deposits via metamorphic devolatilization: Thermodynamic constraints</td>
<td>The geology of the deformed and dismembered Kerr-Sulphures-Mitchell porphyry Cu-Au-Mo district, British Columbia, Canada</td>
<td>Liping Zeng*</td>
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<td>Fluid metasomatism of fluorapatite from iron-oxide apatite deposit using in situ elemental and isotopic analysis: A case study from eastern China</td>
</tr>
<tr>
<td>Time</td>
<td>Session Four</td>
<td>Session Five</td>
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<tr>
<td>09:30-09:50</td>
<td><strong>Ying Ma</strong></td>
<td><strong>David Groves</strong></td>
</tr>
<tr>
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<td>Geology, isotope geochemistry, Ar-Ar and U-Pb geochronology constraints on the genesis of the Liyuan lode gold deposit, northern Shanxi Province, central North China craton</td>
<td>Exploration for orogenic gold deposits: Structural sequence vs. structural geometry</td>
</tr>
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<td>09:50-10:10</td>
<td><strong>Shaorui Zhao</strong></td>
<td><strong>Chester Gatse</strong></td>
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<td>Two separated Mesozoic molybdenum and gold mineralization events at the Xiaoqinling district, southern margin of North China craton</td>
<td>Genesis of Nabeba-Cabosse iron deposit, northwestern Republic of Congo</td>
</tr>
<tr>
<td>10:10-10:30</td>
<td>Break</td>
<td>Break</td>
</tr>
<tr>
<td>10:30-10:50</td>
<td><strong>Xiaoming Sun</strong></td>
<td><strong>Steve Cox (Invited)</strong></td>
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<tr>
<td></td>
<td>Geology, geochemistry and genesis of the Cenozoic Bangbu orogenic gold deposit, southern Tibet, China</td>
<td>Injection-driven failure and the dynamics of fluid migration in intrusion-related hydrothermal systems: Insights from coupled hydro-mechanical modeling</td>
</tr>
<tr>
<td>10:50-11:10</td>
<td><strong>Greg Hall</strong></td>
<td><strong>Steve Cox (Invited) (continued)</strong></td>
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<td></td>
<td>The CSH gold mine, Inner Mongolia</td>
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<tr>
<td>11:10-11:30</td>
<td><strong>Kai Feng</strong></td>
<td><strong>Shishi Chen</strong></td>
</tr>
<tr>
<td></td>
<td>Mineralization process at the Heilangou gold deposit, Jiaodong Peninsula, China: Constraints from the elemental mappings and in-situ sulfur isotope analysis of pyrite</td>
<td>Identifying sandstones affected by uraniferous hydrothermal activity using multivariate method and random forest classification, Athabasca Basin, Canada</td>
</tr>
<tr>
<td>11:30-11:50</td>
<td><strong>Xinghui Li</strong></td>
<td><strong>Shawn Hood</strong></td>
</tr>
<tr>
<td></td>
<td>Textural and chemical constraints of pyrites on the formation of gold mineralization at the Zhuangzi deposit, Jiaodong, southeastern North China craton</td>
<td>Fluid flow interpretation in fossilised hydrothermal systems using vein measurements from underground photography</td>
</tr>
<tr>
<td>11:50-12:10</td>
<td><strong>Hong-Rui Fan</strong></td>
<td><strong>Mate Lesko</strong></td>
</tr>
<tr>
<td></td>
<td>The giant Early Cretaceous gold mineralization event related to the North China craton destruction in the Jiaodong Peninsula</td>
<td>Appearance of smectite and its relation to the Mn-ore deposit of Ürüküt, Bakony Mts., Transdanubian Range, Hungary</td>
</tr>
<tr>
<td>12:10-13:30</td>
<td>Lunch</td>
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</tr>
</tbody>
</table>
### DAY 2 - Tuesday, September 19, PM (continued)

#### SESSION SEVEN

**Porphyry Provinces of the Western Pacific**
- **Co-Chairs:** John Dilles, Dave Cooke
- **Location:** Geosciences International Conference Centre (2nd floor)

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
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</tr>
</thead>
<tbody>
<tr>
<td>13:30-13:50</td>
<td>Chris Heinrich (Keynote)</td>
<td>How long does it take to make a giant porphyry copper deposit? Advances in high-precision geochronology and physical process modeling of magmatic-hydrothermal processes</td>
</tr>
<tr>
<td>13:50-14:10</td>
<td>Peter Pollard (Invited)</td>
<td>Formation of a giant Pleistocene porphyry and skarn Cu-Au deposit in 200,000 years: Re-Os and U-Pb evidence from OK Tedi, Papua New Guinea</td>
</tr>
</tbody>
</table>

#### SESSION EIGHT

**REE and Rare Metal Deposits**
- **Co-Chairs:** Yasushi Watanabe, Jingwen Mao
- **Location:** Geosciences International Hotel (2nd floor)

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>14:10-14:30</td>
<td>Mingqian Wu (Invited)</td>
<td>Magmatic and hydrothermal Ta-Nb oxides in the marginal pegmatite at the Yichun deposit, SE China</td>
</tr>
<tr>
<td>14:30-14:50</td>
<td>Sophie Decrée</td>
<td>Phosphate and associated strategic elements: A European perspective</td>
</tr>
</tbody>
</table>

#### SESSION NINE

**Sediment-Hosted Gold Deposits of China**
- **Co-Chairs:** Hong-Rui Fan, Dave Rhys
- **Location:** Geosciences International Conference Centre (1st floor)

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>15:10-15:30</td>
<td>John Dilles</td>
<td>Porphyry copper genesis and zircon geochemistry</td>
</tr>
<tr>
<td>15:30-15:50</td>
<td>Jianhui Su</td>
<td>Petrographic, geochemical, and isotopic characteristics of the early Silurian Miaoya syenite-carbonatite complex, central China: Implications for the origin of REE-enriched carbonatite melt</td>
</tr>
</tbody>
</table>

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**Sediment-Hosted Gold Deposits of China**
- **Co-Chairs:** Hong-Rui Fan, Dave Rhys
- **Location:** Geosciences International Conference Centre (1st floor)

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<tbody>
<tr>
<td>14:10-14:30</td>
<td>Hongda Hao *</td>
<td>Platinum-group element geochemistry used to determine Cu and Au fertility at the Northparkes porphyry Cu-Au deposits, Australia</td>
</tr>
<tr>
<td>14:30-14:50</td>
<td>Xuyong Pang *</td>
<td>Ordovician syn-ore high Sr/Y and pre-ore normal arc igneous rocks of the Tongshan porphyry Cu deposit in eastern part of CAOB</td>
</tr>
<tr>
<td>14:50-15:10</td>
<td>Terry Memagh</td>
<td>The role of high temperature fluids and melts in the Grasberg porphyry Cu-Au deposit</td>
</tr>
<tr>
<td>15:10-15:30</td>
<td>Rongqing Zhang</td>
<td>Pan-African tin mineralization events in the Damara orogenic belt, Namibia, SW Africa: Constraints of cassiterite U-Pb dating and trace element fingerprinting</td>
</tr>
<tr>
<td>15:30-15:50</td>
<td>Ian Graham</td>
<td>Unconventional sediment-hosted critical element mineralisation—insights from the Far East</td>
</tr>
</tbody>
</table>

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**Sediment-Hosted Gold Deposits of China**
- **Co-Chairs:** Hong-Rui Fan, Dave Rhys
- **Location:** Geosciences International Conference Centre (1st floor)

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<td>14:10-14:30</td>
<td>Yuling Xie (Keynote)</td>
<td>Rare earth element deposits in China: Characteristics and ore genesis</td>
</tr>
<tr>
<td>14:30-14:50</td>
<td>Danielle Schmandt*</td>
<td>Rare earth element minerals in the Olympic Dam deposit, South Australia: Petrography and compositional variation</td>
</tr>
<tr>
<td>14:50-15:10</td>
<td>Halley Keevil *</td>
<td>The White Mountain gold deposit, northeastern North China block: Genesis and relation to late Mesozoic magmatism and extension</td>
</tr>
</tbody>
</table>

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**Sediment-Hosted Gold Deposits of China**
- **Co-Chairs:** Hong-Rui Fan, Dave Rhys
- **Location:** Geosciences International Conference Centre (1st floor)

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<tr>
<td>15:10-15:30</td>
<td>Dongtian Wei</td>
<td>Sedimentary source for the Nibao sediment-hosted gold deposit in southwestern Guizhou Province, China</td>
</tr>
</tbody>
</table>
### DAY 2 - Tuesday, September 19, PM (continued)

#### SESSION SEVEN

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<tbody>
<tr>
<td>15:50-16:10</td>
<td><em>John Dilles</em> (continued)</td>
<td>The volcanic-plutonic connection and fertility of highly evolved magma systems: A case study from the Herberton Sn-W-Mo mineral field, Queensland, Australia</td>
</tr>
<tr>
<td>16:10-16:30</td>
<td><em>Wei Mao</em></td>
<td>Constraints of depth on hydrothermal fluid evolution in porphyry deposits</td>
</tr>
<tr>
<td>16:30-16:50</td>
<td><em>Yasushi Watanabe</em></td>
<td>A role of potassic alteration on Cu mineralization at El Salvador porphyry deposit, Chile</td>
</tr>
<tr>
<td>16:50-17:00</td>
<td><em>Kunfeng Qiu</em></td>
<td>Genesis of the Taiyangshan porphyry copper deposit, NW China: Insights from quartz cathodoluminescent textures, fluid inclusion assemblage petrography, and trace element geochemistry hydrothermal quartz</td>
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<tr>
<td>17:00-17:15</td>
<td><em>Lin Hou</em></td>
<td>Textures and in-situ chemical and isotopic analyses of pyrite, Huijiabao Trend, Youjiang Basin, China: Implications for paragenesis and source of S</td>
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<tr>
<td>17:15-17:30</td>
<td><em>Joel Brugger</em></td>
<td>REE+Y transport in hydrothermal fluids: An updated view from in situ XAS measurements</td>
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<tr>
<td>17:30-17:45</td>
<td><em>Jian Ma</em></td>
<td>In-situ sulfur isotope analysis of the sedimentary and magmatic rock hosted gold deposits from the north and south gold belt of the South Qinling orogen: Implication for the source of sulfur and their difference</td>
</tr>
<tr>
<td>17:45-17:50</td>
<td><em>Xinyu (Scott) Song</em></td>
<td>The discovery of Laogouxi gold deposit, Mohe County, Heilongjiang Province, NE China</td>
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<tr>
<td>16:30-16:50</td>
<td><em>Yonggang Feng</em></td>
<td>Geochemistry of mineralizing fluids in the T zone, Thor Lake rare-metal deposits, Canada: Implications for hydrothermal HFSE mineralization</td>
</tr>
<tr>
<td>16:50-17:15</td>
<td><em>Jun Duan</em></td>
<td>A new ore genesis model for the Jinchuan Ni-Cu-PGE deposit: Constraints from the multiple S isotopes and the spatial variation of PGE tenors</td>
</tr>
<tr>
<td>17:15-17:30</td>
<td><em>Doug Kirwin</em></td>
<td>Sediment-hosted gold deposits in southeast Asia</td>
</tr>
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### DAY 3 - Wednesday, September 20, AM

#### SESSION TEN

**Magmatic Ni-Cu-PGE Deposits of Asia**

- **Co-Chairs:** Steve Barnes, Mei-Fu-Zhou
- **Location:** Geosciences International Conference Centre (2nd floor)

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<tr>
<td>08:30-08:50</td>
<td><em>Yiguan Lu</em></td>
<td>Geochemistry and genesis of magmatic Ni-Cu(PGE) and PGE-(Cu)-(Ni) deposits in China</td>
</tr>
<tr>
<td>08:50-09:10</td>
<td><em>Chusi Li</em> (Keynote)</td>
<td>Magmatic sulfide deposits: China versus the world</td>
</tr>
<tr>
<td>09:00-09:30</td>
<td><em>Steve Barnes</em></td>
<td>Time scales and length scales in magmatic mineral systems</td>
</tr>
</tbody>
</table>

#### SESSION ELEVEN

**Skarn Deposits—Metal Content and Zonation**

- **Co-Chairs:** Zhaoshan Chang, Dave Lentz
- **Location:** Geosciences International Hotel (2nd floor)

<table>
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<tr>
<td>08:30-08:50</td>
<td><em>Larry Meinert</em> (Keynote)</td>
<td>Genesis and exploration for skarn deposits</td>
</tr>
<tr>
<td>08:50-09:10</td>
<td><em>Zhaoshan Chang</em></td>
<td>Skarn deposits in China</td>
</tr>
<tr>
<td>09:00-09:30</td>
<td><em>Zhaoshan Chang</em> (continued)</td>
<td>Zhengguang Au-Zn deposit in the eastern CAOB: The oldest intermediate sulfidation epithermal deposit in the world</td>
</tr>
</tbody>
</table>

#### SESSION TWELVE

**Epithermal Gold Deposits of Asia**

- **Co-Chairs:** Ruizhoung Hu, Kunfeng Qiu
- **Location:** Geosciences International Conference Centre (1st floor)

<table>
<thead>
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<tbody>
<tr>
<td>08:30-08:50</td>
<td><em>Jing Chen</em></td>
<td>The alteration, mineralization and structural evolution of Zjinshan high sulfidation epithermal deposit, Fujian Province, China</td>
</tr>
<tr>
<td>08:50-09:10</td>
<td><em>Angela Lay</em></td>
<td>Epithermal Ag-dominant mineralisation within the Drake Goldfield, Southern New England Orogen, north-eastern New South Wales</td>
</tr>
<tr>
<td>09:00-09:30</td>
<td><em>Le Wang</em></td>
<td>Zhengguang Au-Zn deposit in the eastern CAOB: The oldest intermediate sulfidation epithermal deposit in the world</td>
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<td>Zhengguang Au-Zn deposit in the eastern CAOB: The oldest intermediate sulfidation epithermal deposit in the world</td>
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<td>09:30-09:50</td>
<td>Marina Yudovskaya (Invited)</td>
<td>Nyein Sint *</td>
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</tr>
<tr>
<td>Exploring north: New types of PGE deposits in the Bushveld Complex</td>
<td>Genesis of skarn zonation and fluid evolution of the gold-copper skarn deposit, Shwe Min Bon area, Kalaw Township, southern Shan State, Myanmar</td>
<td>Characteristics of a detachment-hosted epithermal gold deposit—example from Banská Hodruša, Slovakia</td>
</tr>
<tr>
<td>09:50-10:10</td>
<td>Bernard Charlier (Invited)</td>
<td>Qihai Shu</td>
</tr>
<tr>
<td>Silicate liquid immiscibility and the formation of magmatic Fe-Ti-V-P deposits</td>
<td>Composition and evolution of fluids forming the Baiyin’nu’er Zn-Pb skarn deposit in NE China</td>
<td>Mass changes and hydrothermal alteration in the Masara gold district, Compostela Valley, Philippines</td>
</tr>
<tr>
<td>10:10-10:30</td>
<td>Break</td>
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</tr>
<tr>
<td>10:30-10:50</td>
<td>Christina Wang (Invited)</td>
<td>Merril Garay*</td>
</tr>
<tr>
<td>Origin of giant Fe-Ti-V oxide deposits hosted in the layered intrusions in the Emeishan large igneous province, SW China</td>
<td>Magnetite and epidote textures at Chalcobamba Cu-skarn deposit, La Bambas District, southern Peru</td>
<td>Veining and mineralization history of Bor porphyry copper-high sulfidation Cu-Au deposit (Serbia)</td>
</tr>
<tr>
<td>10:50-11:10</td>
<td>Bartosz Karykowski *</td>
<td>Kairan Liu *</td>
</tr>
<tr>
<td>Critical controls on the formation of contact-style PGE-Ni-Cu mineralisation: Evidence from the Monchegorsk Complex, NW Russia</td>
<td>Geochronology and genesis of the Wolfram camp W-Mo-Bi deposit, Queensland, Australia</td>
<td>Hyperspectral core scan and application to Zijinshan epithermal high-sulfidation Cu-Au deposit</td>
</tr>
<tr>
<td>11:10-11:30</td>
<td>Hong Zhong *</td>
<td>James Cannell</td>
</tr>
<tr>
<td>Contrasting petrological processes between the Yuanbaoshan and Qingmingshan mafic-ultramafic intrusions in the Neoproterozoic Jiangnan orogenic belt, South China: Implication for Ni exploration in the region</td>
<td>Intrusion, skarn and vein paragenesis of the Ferrobamba Cu-Mo porphyry-skarn deposit, Las Bambas porphyry cluster, Peru</td>
<td>Hydrothermal fluids in the Kekesayi gold deposit, Altay, China</td>
</tr>
<tr>
<td>11:30-11:50</td>
<td>Pete Hollings</td>
<td>Jaime Poblete *</td>
</tr>
<tr>
<td>The 1.1 Ga Midcontinent Rift of N. America—Passive rather than active rifting and the implications for mantle sources and Ni-Cu-PGE mineralization</td>
<td>The Watershed scheelite skarn deposit, Far North Queensland, Australia</td>
<td>Miaolong sediment-hosted antimony-gold deposit, Sandu-Danzhai metallogenic belt, Guizhou Province, China: A product of antimony mineralization superimposed by late gold mineralization</td>
</tr>
<tr>
<td>11:50-12:10</td>
<td>Lennart Fischer</td>
<td>Peter Illig *</td>
</tr>
<tr>
<td>Silicate liquid immiscibility in the Upper zone of the Bushveld Complex</td>
<td>Overlapping Au-Cu and Zn-Pb-Cu skarns at the Redcap prospect, Chillagoe district, Far North Queensland, Australia</td>
<td>In-situ element analysis of sphalerite from the Lengshukeng Ag-Pb-Zn deposit, Jiangxi, China: Implications for ore genesis</td>
</tr>
<tr>
<td>12:10-13:30</td>
<td>Lunch</td>
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</table>
### DAY 3 - Wednesday, September 20, PM (continued)

#### SESSION THIRTEEN

**Sediment-Hosted Base Metal and Gold Deposits**
- **Co-Chairs:** Murray Hitzman, Yucai Song
- **Location:** Geosciences International Conference Centre (2nd floor)

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<tr>
<td>13:30-13:50</td>
<td><strong>David Leach</strong> (Keynote, SGA)</td>
<td>Evaporites and sediment-hosted Zn-Pb ores in China: A new perspective</td>
</tr>
<tr>
<td>13:50-14:10</td>
<td><strong>Yingchao Liu</strong></td>
<td>Hydrothermal fluid origins of carbonate-hosted Pb-Zn deposits of the Sanjiang thrust belt, Tibet: Indications from noble gases and halogens</td>
</tr>
<tr>
<td>14:10-14:30</td>
<td><strong>Hao Li</strong></td>
<td>Geology and metallogeny of the giant Huoshaoqin zinc-lead deposit, Karakorum Range, northwestern Tibet</td>
</tr>
</tbody>
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#### SESSION FOURTEEN

**New Analytical Techniques**
- **Co-Chairs:** Jian-Feng Gao, Chris Heinrich
- **Location:** Geosciences International Hotel (2nd floor)

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<tr>
<td>13:30-13:50</td>
<td><strong>Joe Zhou</strong></td>
<td>SIMS techniques and application to refractory gold deposits</td>
</tr>
<tr>
<td>13:50-14:10</td>
<td><strong>Shaun Barker (Invited)</strong></td>
<td>Developing new stable isotope tools for mineral exploration: Applications and complications</td>
</tr>
<tr>
<td>14:10-14:30</td>
<td><strong>Antonio Arribas</strong></td>
<td>The isotopic composition of silver and its variation in silver-bearing ore deposits</td>
</tr>
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</table>

#### SESSION FIFTEEN

**Chinese and Other Deposits**
- **Co-Chairs:** Wenchang Li, Yanjing Chen
- **Location:** Geosciences International Conference Centre (1st floor)

<table>
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<tbody>
<tr>
<td>13:30-13:50</td>
<td><strong>Baochong Hou (Invited)</strong></td>
<td>Heavy mineral sands resources and what we know about these deposits in China</td>
</tr>
<tr>
<td>13:50-14:10</td>
<td><strong>Junhua Yao</strong></td>
<td>Petrology, chalcophile element (PGE, Se) geochemistry and Sr-Nd-Os-S isotopes of the Neoproterozoic Lengshuiqiong magmatic Ni-Cu ore deposits in western margin of Yangtze craton, SW China</td>
</tr>
<tr>
<td>14:10-14:30</td>
<td><strong>Qingfei Wang</strong></td>
<td>Geochronological, petrological and geochemical constraints on the origin of the Daxueshan magmatic Ni-Cu deposit in the northern part of the Sibumasu block, SW China</td>
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<td>14:30-16:10</td>
<td><strong>Neal Reynolds</strong></td>
<td>Zn-Pb-Ag mineral systems of southeast Asia and South China—tectonic context and discovery opportunities</td>
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<td>14:30-14:50</td>
<td><strong>Lingang Xu</strong></td>
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<td>14:50-15:10</td>
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<td>15:10-15:30</td>
<td><strong>Neil Banerjee</strong></td>
<td>Answers at the speed of light: Synchrotron solutions for mineral exploration, production, and remediation</td>
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<td>15:30-15:50</td>
<td><strong>Mao Mao</strong></td>
<td>Detrital apatite trace-element compositions: A robust new tool for mineral exploration</td>
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<td>15:50-16:10</td>
<td><strong>Guoxiang Chi</strong></td>
<td>Timing of oil-gas charging in the paleo-oil-gas reservoir at the Jinding Zn-Pb deposit and ambient P-T conditions: Significance for bacterial sulfate reduction (BSR) and mineralization</td>
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<td>15:30-15:50</td>
<td><strong>Mao Mao (continued)</strong></td>
<td>Variations in oxygen fugacity and sulfide compositions of the Permian magmatic Ni-Cu deposits in the southern Central Asian orogenic belt</td>
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<td>15:50-16:10</td>
<td><strong>Robert Sievwright</strong></td>
<td>Using magnetite chemistry to discriminate mineralised from barren porphyry copper systems</td>
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Post-Conference Field Trips

**Jinchuan Ni-Cu Field Trip (FT08)**  September 22–25  
Field Trip Leaders: Xie-Yan Song, Jian-Gang Jiao, Wen-De Suo, Yong-Cai Wang

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**Porphyry and Epithermal Systems**  September 21–27  
of the Sunda-Banda Arc, Indonesia (FT10)  
Field Trip Leaders: Adi Maryono, Lejun Zhang, Rachel Harrison, Iryanto Rompo

**The Metallogenic Provinces of Myanmar (Burma) (FT11)**  September 21–29  
Field Trip Leaders: Laurence Robb, Andrew Mitchell, Nick Gardiner

Post-Conference Workshops

**Understanding Orogenic Gold Deposits: Global- to Deposit-Scale Features and Exploration Criteria (WS10)**  September 21–22  
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**Skarn Deposits (WS11)**  September 21  
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**Volcanogenic Massive Sulfide Deposits (WS12)**  September 21–22  
Presenter: Thomas Monecke

**Carlin-Type Gold Deposits, Geology, and Models (WS13)**  September 21–22  
Presenter: Jean Cline

**Deformation Processes and Structural Analysis in Fracture-Controlled Hydrothermal Ore Systems (WS14)**  September 21–22  
Presenter: Stephen F. Cox
Posters will be on display during regular conference hours on the lower level of the venue.

Titles and authors of posters are listed below. Posters for which the senior author is a student can be identified by an asterisk (*) following the poster number.

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        Liandang Zhao, Huayong Chen, and Jinsheng Han

P 002  Geological characteristics of the Luohu iron deposit: The largest iron deposit in the Middle-Lower Yangtze River Valley metallogenic belt
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P 003*  Hydrothermal alteration and fluid evolution of the giant Aktogai porphyry Cu deposit, Kazakhstan
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P 004*  Sulfide inclusions in barite from the Ashele VMS deposit, northern Xinjiang, China
        Chunjing Bian, Hua Jiu Xu, Hui Zhang, Hui Xi Cheng, and Wei Ying Wang

P 005  Mesozoic magmatism and metallogeny in Philippine: Insight from the Atlas giant porphyry Cu-Au deposit, Cebu Island
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P 006  Initial approach of the identification criteria system for exploration of porphyry Cu deposits
        Shasha Li, Huayong Chen, and Bing Xiao

P 007*  Oxidation state of hydrothermal fluids in the Grasberg porphyry Cu-Au ± Mo deposit, Indonesia
        Adi Sulaksono, Takuya Echigo, and Yasushi Watanabe

P 008  A preliminary review of metallogenic regularity and minerogenetic series of copper deposits in China
        Lijuan Ying, Yuchuan Chen, Denghong Wang, and Juxing Tang

P 009*  Geochronology, geochemistry, alteration and mineralization intrusive rocks from the Roshtkhar Fe-Cu-Au deposit, Lut block, NE Iran: Evidence for a Cenozoic tectono-magmatic event and associated IOCG systems
        Elahe Alizadeh, Gholamreza Ghadami, Dariush Esmaeily, Changqian Ma, and David Richard Lentz

P 010  Mineralogy and geochemistry of the Cu-sandstone deposits from Kodar-Udokan area, south Siberia, Russia
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P 013*  The origin of different types of pyrite in gold-rich VMS deposits in the Bikou terrane, China
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P 014  Superimposed mineralization in the Paleozoic Tuwu and Yandong porphyry copper deposits, eastern Tianshan Mountains, NW China: Evidence from geology, fluid inclusions, and geochronology
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       Jiang Zhu

P 018* Genesis of the Heiniuao gold deposit, Baoshan block, Sanjiang Region: Constraints from fluid
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