

**SEG 2017**  
Beijing, China

# Ore Deposits of Asia: China and Beyond

September 17-20, 2017



[www.seg2017.org](http://www.seg2017.org)

SEG 2017 Conference

# 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.



@bhp

[bhp.com](http://bhp.com)

## SUNDAY

13:30 – 17:00

**Student/SEG Young Professionals Forum**

17:00 – 17:30

**Presidential Address**

17:30 – 19:30

**Welcome Reception**

### 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, 1<sup>st</sup> 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](mailto:jeffdoyle@segweb.org).

## MONDAY

08:00 – 8:30

**Coffee**

08:30 – 9:15

**Opening Ceremony**

09:15 – 9:45

**SEG Distinguished Lecturer: Lluís Fontboté**

09:45 – 10:00

**Coffee Break**

10:00 – 11:00

**Keynote:  
Robert Friedland**

11:00 – 12:00

**Keynote: Richard Sillitoe**

12:00 – 13:30

**Lunch and Posters**

13:30 – 15:10

**Technical Sessions**

15:10 – 15:30

**Coffee Break and Posters**

15:30 – 17:10

**Technical Sessions**

17:30 – 19:30

**Poster Reception**

20:00 – 22:30

**Brew Pub Night**

19:15–Pick up at hotel

## TUESDAY

08:00 – 8:30

**Coffee**

08:30 – 10:10

**Technical Sessions**

10:10 – 10:30

**Coffee Break and Posters**

10:30 – 12:10

**Technical Sessions**

12:10 – 13:30

**Lunch and Posters**

13:30 – 15:10

**Technical Sessions**

15:10 – 15:30

**Coffee Break and Posters**

15:30 – 17:50

**Technical Sessions**

17:50 – 19:15

**Poster Reception**

19:15 – 22:00

**Dinner and Awards**

18:30–Pick up at hotel  
Mei Zhou Dong Po  
Restaurant

## WEDNESDAY

08:00 – 8:30

**Coffee**

08:30 – 10:10

**Technical Sessions**

10:10 – 10:30

**Coffee Break and Posters**

10:30 – 12:10

**Technical Sessions**

12:10 – 13:30

**Lunch**

13:30 – 15:10

**Technical Sessions**

15:10 – 15:30

**Coffee Break**

15:30 – 17:10

**Technical Sessions**

17:15 – 17:45

**Final Panel Wrap Up and Best Papers**

Student Award Presentations  
Zhiming Yang, presenter

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](http://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*

## Table of Contents

1	Welcome
3	Conference Information
4	SEG Awardees
5	Pre-Conference Program
9	Technical Program
9	Monday
13	Tuesday
19	Wednesday
25	Post-Conference Program
26	Posters
57-58	Exhibitors/floor plan
<b>Back cover flap</b>	Thank you, Sponsors
<b>Inside Back cover</b>	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](mailto:seg@segweb.org); Website: [www.segweb.org](http://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](mailto: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](http://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).

SEG R.A.F. Penrose Gold Medal for 2016

**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

## 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**

---

13:30–15:00 **Student Forum**

---

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	<b>Young Professionals Forum</b>
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 <b>Kunfeng Qiu</b> , CUGB, SEG YPC Asian member
15:20–15:40	Keynote The opportunities and challenges that young geologists face in today's evolving industry <b>Meng Wang</b> , 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 <b>Xinfu Zhao</b> , Professor at CUG Wuhan, Young Thousand Talents Program Scholar
16:00–16:40	Panel and Participants Discussion Panel: <b>Zhansheng Ji</b> , Chinese Academy of Geological Sciences, (CAGS), Commissioner of Youth Work Committee of Geological Survey of China (GSC) <b>Shaun Barker</b> , University of Waikato, New Zealand <b>Doug Kirwin</b> , Consultant, Thailand <b>Jianfeng Gao</b> , 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 <b>Brian Hoal</b> , SEG Executive Director
16:45–17:00	Break
17:00–17:30	SEG Presidential Address <b>Laurence Robb</b>

## Welcome Reception

17:30 – 19:30	China University of Geosciences, Beijing (CUGB) Gymnasium
---------------	---

## Pre-Conference Field Trips

<b>Epithermal Au Mineralization and Associated Hydrothermal Alteration in Southern Kyushu (FT02)</b>	<b>September 10–16</b>
Field Trip Leader: Yasushi Watanabe	
<b>Porphyry Cu-Au and Cu-Mo Deposits of Southern Mongolia (FT03)</b>	<b>September 11–15</b>
Field Trip Leader: Jargalan Sereenan	
<b>Carlin-Like Gold Deposits in SW Guizhou Province, China (FT04)</b>	<b>September 14–17</b>
Field Trip Leaders: Yong Xia, Xingchun Zhang, Jianzhong Liu	
<b>Jiaodong Gold Deposits (FT05)</b>	<b>September 13–16</b>
Field Trip Leaders: Hongrui Fan, Kunfeng Qiu, Ryan Taylor	

## Pre-Conference Workshops

<b>Porphyry Copper, Gold, and Molybdenum Deposits (WS01)</b>	<b>September 16–17</b>
Presenter: David R. Cooke and Peter Hollings	
<b>A Global Perspective of Sediment-Hosted Zn-Pb and Cu Deposits from Genesis to Exploration (WS03)</b>	<b>September 16–17</b>
Presenters: David Leach, Murray Hitzman, Yucai Song	
<b>Uranium Deposit Systems and Implication for Exploration (WS05)</b>	<b>September 16–17</b>
Presenter: Michel Cuney	
<b>Magmatic Sulfide Deposits: From Research to Exploration (WS06)</b>	<b>September 16–17</b>
Presenters: Chusi Li, Edward Ripley, Steve Barnes	
<b>Application of Fluid Inclusion Studies in Economic Geology (WS09)</b>	<b>September 16–17</b>
Presenters: Jan Marten Huizenga, Lorena Ortega	





# 中国地质大学

CHINA UNIVERSITY OF GEOSCIENCES

北京 · BEIJING

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**

Lluís 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

**Tectonics and Metallogeny of Asia**

Co-Chairs: *Noel White, Zengqian Hou*  
Location: **Geosciences International Conference Centre (2nd floor)**

13:30-13:50 *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 *Jun Deng* (Invited)  
Temporal-spatial distribution of metallic ore deposits in China and their geodynamic settings

14:10-14:30 *Nikolay Goryachev* (Invited)  
Evolution of the mineral composition of gold deposits as result of crust-mantle contribution in Earth history

SESSION TWO

**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

*Richard Schoode* (Keynote)  
Overview of exploration in Asia—the rising importance of China

*Jane Hammarstrom*  
Porphyry copper potential of Asia

SESSION THREE

**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

*Chao Yang* \*  
Geology of the Tiegelongnan giant porphyry Cu (Au) deposit near Bangong suture zone, Tibet, China

*Zhiming Yang* (Keynote)  
Porphyry Cu deposits in China

*Zhiming Yang* (Keynote) (continued)

*Zhaokun Wang*  
Comprehensive deep geological-geophysical studies and identification of new world-class resources, northwestern Jiaodong gold province, China

*Degao Zhai*  
Geochronological bracketing of hydrothermal events at the newly-discovered Bianjiaodayuan porphyry and base metal deposit, NE China

*Junxing Zhao*  
How did magmatic and mineralizing processes in the Gangdese Paleocene-Eocene deposits respond to the India-Asia continental collision?

15:10-15:30 Break

Break

Break

15:30-15:50 *Jeremy Richards*

Paleo-Tethyan anoxia correlated with low porphyry Cu potential

*Ali Sholeh*

New mineral discoveries and porphyry-epithermal exploration potential of Iran

*Jia Sun* (Invited)

Porphyry and epithermal Cu-Au mineralization of the Duolong district, central Tibet

15:50-16:10 *Chao Zhao* \*

A long way to run: The Paleozoic-Mesozoic evolution of magmatism, mineralization and structures of Duobaoshan Au-rich porphyry Cu deposit in the eastern section of CAOB

*Reimar Seltmann*

Large copper and gold systems of Kazakhstan and Tienshan: Geodynamics and metallogeny revisited

*Haoyang Zhou* \*

Nano- to micron-particulate gold hosted by magnetite in the giant Beiya gold deposit: A product of gold scavenging by bismuth melts



**DAY 1 - Monday, September 18, PM (continued)**

	SESSION ONE	SESSION TWO	SESSION THREE
16:10-16:30	<i>Zengqian Hou</i> Recycling of metal-fertilized lower continental crust: Origin of non-arc Au-rich porphyry deposits at cratonic edges	<i>Thomas Bowens</i> The Malmlyzh porphyry Cu-Au discovery, Khabarovsk Krai, Far East Russia	<i>Yongjun Lu</i> Porphyry Cu fertility in the Lhasa terrane, southern Tibet: Insights from terrane-scale whole-rock geochemistry and zircon trace element and Hf-O isotopes
16:30-16:50	<i>Wenjiao Xiao (Invited)</i> Subduction slabs in the Altai-East Junggar-Tianshan orogenic collages and their control on metallogeny in the Altaiids	<i>Mark Arundell</i> Potash in Asia	<i>Bo Xu*</i> Ultrapotassic rocks and xenoliths from South Tibet: Contrasting styles of interaction between lithospheric mantle and asthenosphere during continental collision
16:50-17:10	<i>Laurence Robb</i> Metallogeny of Myanmar through zircons	<i>Ping Shen</i> Oxidation condition and metal fertility of granitic magmas: Evidence from zircon trace-element data from porphyry Cu deposits in the Central Asian orogenic belt	<i>Guangming Li</i> 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 sulfidation epithermal Cu(-Au) mineralization

**DAY 2 - Tuesday, September 19, AM**

	SESSION FOUR	SESSION FIVE	SESSION SIX
08:50-09:10	<i>Rich Goldfarb (Keynote)</i> Orogenic gold deposits of China	<i>David Rhys (Keynote)</i> Advances in the understanding of the structural controls on Carlin deposits in Nevada: Implications for Chinese Carlin-like systems	<i>Yanlu Xing*</i> The role of fluorine on the formation of iron oxide Cu-Au (IOCG) deposits: insights from in-situ XAS experiments and thermodynamic calculations
08:30-08:50	<b>Orogenic Gold Deposits of Asia</b> Chair: <i>Noel White</i> Location: <b>Geosciences International Conference Centre (2nd floor)</b>	<b>Structural Geology of Ore Deposits</b> Co-Chairs: <i>David Groves, Steve Cox</i> Location: <b>Geosciences International Hotel (2nd floor)</b>	<b>Copper and IOCG Deposits of Asia</b> Co-Chairs: <i>Lijuan Ying, Huayong Chen</i> Location: <b>Geosciences International Conference Centre (1st floor)</b>
08:50-09:10	<i>Chunji Xue</i> Geology, geochemistry and geochemical constraints on the genesis of newly discovered Katebasu gold deposit, western Tien Shan, Xinjiang, NW China	<i>David Rhys (Keynote) (continued)</i>	<i>Tong Hou</i> Magnetite-apatite ores formed as mushy hydrous Fe-P immiscible magma
09:10-09:30	<i>Richen Zhong</i> Forming orogenic gold and base metal deposits via metamorphic devolatilization: Thermodynamic constraints	<i>Michelle Campbell*</i> The geology of the deformed and dismembered Kerr-Sulphurets-Mitchell porphyry Cu-Au-Mo district, British Columbia, Canada	<i>Liping Zeng*</i> Fluid metasomatism of fluorapatite from iron-oxide apatite deposit using in situ elemental and isotopic analysis: A case study from eastern China

**DAY 2 - Tuesday, September 19, AM (continued)**

SESSION FOUR		SESSION FIVE		SESSION SIX	
09:30-09:50	<b>Ying Ma</b> Geology, isotope geochemistry, Ar-Ar and U-Pb geochronology constraints on the genesis of the Liyuan Iode gold deposit, northern Shanxi Province, central North China craton	<b>David Groves</b> Exploration for orogenic gold deposits: Structural sequence vs. structural geometry	<b>Olivier Mamur</b> Formation of the Kiruna-type Vergeroeg iron-fluorine deposit (South Africa) by silicate liquid immiscibility: An experimental study	09:50-10:10	<b>Shaorui Zhao *</b> Two separated Mesozoic molybdenum and gold mineralization events at the Xiaoqingling district, southern margin of North China craton
10:10-10:30	Break	Break	Break	10:30-10:50	<b>Xiaoming Sun</b> Geology, geochemistry and genesis of the Cenozoic Bangbu orogenic gold deposit, southern Tibet, China
10:50-11:10	<b>Greg Hall</b> The CSH gold mine, Inner Mongolia	<b>Steve Cox (Invited)</b> Injection-driven failure and the dynamics of fluid migration in intrusion-related hydrothermal systems: Insights from coupled hydro-mechanical modeling	<b>Chesher Gatse *</b> Genesis of Nabeba-Cabosse iron deposit, northwestern Republic of Congo	11:10-11:30	<b>Kai Feng *</b> Mineralization process at the Heilan'gou gold deposit, Jiaodong Peninsula, China: Constraints from the elemental mappings and in-situ sulfur isotope analysis of pyrite
11:30-11:50	<b>Xinghui Li *</b> Textural and chemical constraints of pyrites on the formation of gold mineralization at the Zhuangzi deposit, Jiaodong, southeastern North China craton	<b>Shawn Hood *</b> Fluid flow interpretation in fossilised hydrothermal systems using vein measurements from underground photography	<b>Shishi Chen *</b> Identifying sandstones affected by uraniferous hydrothermal activity using multivariate method and random forest classification, Athabasca Basin, Canada	11:50-12:10	<b>Hong-Rui Fan</b> The giant Early Cretaceous gold mineralization event related to the North China craton destruction in the Jiaodong Peninsula
12:10-13:30	Lunch	Lunch	Lunch	12:10-13:30	Lunch

**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)**

13:30-13:50 *Chris Heinrich* (Keynote)

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

13:50-14:10 *Peter Pollard* (Invited)

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

**SESSION EIGHT**

**REE and Rare Metal Deposits**

Co-Chairs: *Yasushi Watanabe, Jingwen Mao*  
Location: **Geosciences International Hotel (2nd floor)**

*Mingqian Wu* (Invited)

Magmatic and hydrothermal Ta-Nb oxides in the marginal pegmatite at the Yichun deposit, SE China

*Sophie Decrée*

Phosphate and associated strategic elements: A European perspective

**SESSION NINE**

**Sediment-Hosted Gold Deposits of China**

Co-Chairs: *Hong-Rui Fan, Dave Rhys*  
Location: **Geosciences International Conference Centre (1st floor)**

*Jian-Wei Li* (Keynote)

Sediment-hosted gold deposits in SW China: Current understanding and future trends

*Ross Large*

Sediment-hosted gold deposits; in a class on their own, with examples from central Asia

**SESSION SEVEN**

**Porphyry Provinces of the Western Pacific**

Co-Chairs: *John Dilles, Dave Cooke*  
Location: **Geosciences International Conference Centre (2nd floor)**

13:30-13:50 *Chris Heinrich* (Keynote)

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

13:50-14:10 *Peter Pollard* (Invited)

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

**SESSION EIGHT**

**REE and Rare Metal Deposits**

Co-Chairs: *Yasushi Watanabe, Jingwen Mao*  
Location: **Geosciences International Hotel (2nd floor)**

*Mingqian Wu* (Invited)

Magmatic and hydrothermal Ta-Nb oxides in the marginal pegmatite at the Yichun deposit, SE China

*Sophie Decrée*

Phosphate and associated strategic elements: A European perspective

**SESSION NINE**

**Sediment-Hosted Gold Deposits of China**

Co-Chairs: *Hong-Rui Fan, Dave Rhys*  
Location: **Geosciences International Conference Centre (1st floor)**

*Jian-Wei Li* (Keynote)

Sediment-hosted gold deposits in SW China: Current understanding and future trends

*Ross Large*

Sediment-hosted gold deposits; in a class on their own, with examples from central Asia

14:10-14:30 *Hongda Hao* \*

Platinum-group element geochemistry used to determine Cu and Au fertility at the Northparkes porphyry Cu-Au deposits, Australia

14:30-14:50 *Xuyong Pang* \*

Ordovician syn-ore high Sr/Y and pre-ore normal arc igneous rocks of the Tongshan porphyry Cu deposit in eastern part of CAOB

14:50-15:10 *Terry Mernagh*

The role of high temperature fluids and melts in the Grasberg porphyry Cu-Au deposit

*Ross Large* (continued)

*Yuling Xie* (Keynote)  
Rare earth element deposits in China: Characteristics and ore genesis

*Danielle Schmandt* \*

Rare earth element minerals in the Olympic Dam deposit, South Australia: Petrography and compositional variation

*Rongqing Zhang*

Pan-African tin mineralization events in the Damara orogenic belt, Namibia, SW Africa: Constraints of cassiterite U-Pb dating and trace element fingerprinting

*Halley Keevil* \*

The White Mountain gold deposit, northeastern North China block: Genesis and relation to late Mesozoic magmatism and extension

*Ian Graham*

Unconventional sediment-hosted critical element mineralisation—insights from the Far East

15:10-15:30 Break

Break

Break

15:30-15:50 *John Dilles*

Porphyry copper genesis and zircon geochemistry

*Jianhui Su*

Petrographic, geochemical, and isotopic characteristics of the early Silurian Miaoya syenite-carbonatite complex, central China: Implications for the origin of REE-enriched carbonatite melt

*Dongtian Wei*

Sedimentary source for the Nibao sediment-hosted gold deposit in southwestern Guizhou Province, China

**DAY 2 – Tuesday, September 19, PM (continued)**

	SESSION SEVEN	SESSION EIGHT	SESSION NINE
15:50-16:10	<i>John Dilles (continued)</i>	<i>Yanbo Cheng</i> The volcanic-plutonic connection and fertility of highly evolved magma systems: A case study from the Herberton Sn-W-Mo mineral field, Queensland, Australia	<i>Lin Hou</i> Textures and in-situ chemical and isotopic analyses of pyrite, Huijiabao Trend, Youjiang Basin, China: Implications for paragenesis and source of S
16:10-16:30	<i>Wei Mao</i> Constraints of depth on hydrothermal fluid evolution in porphyry deposits	<i>Joel Brugger</i> REE+Y transport in hydrothermal fluids: An updated view from in situ XAS measurements	<i>Jian Ma*</i> 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
16:30-16:50	<i>Yasushi Watanabe</i> A role of potassic alteration on Cu mineralization at El Salvador porphyry deposit, Chile	<i>Yonggang Feng</i> Geochemistry of mineralizing fluids in the T zone, Thor Lake rare-metal deposits, Canada: Implications for hydrothermal HFSE mineralization	<i>Xinyu (Scott) Song</i> The discovery of Laogouxi gold deposit, Mohe County, Heilongjiang Province, NE China
16:50-17:50	<i>Kunfeng Qiu</i> Genesis of the Taiyangshan porphyry copper deposit, NW China: Insights from quartz cathodoluminescent textures, fluid inclusion assemblage petrography, and trace element geochemistry hydrothermal quartz	<i>Jun Duan</i> 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	<i>Doug Kirwin (Invited)</i> Sediment-hosted gold deposits in southeast Asia

**DAY 3 – Wednesday, September 20, AM**

	SESSION TEN	SESSION ELEVEN	SESSION TWELVE
	<b>Magmatic Ni-Cu-PGE Deposits of Asia</b>	<b>Skarn Deposits—Metal Content and Zonation</b>	<b>Epithermal Gold Deposits of Asia</b>
	Co-Chairs: <i>Steve Barnes, Mei-Fu-Zhou</i> Location: <b>Geosciences International Conference Centre (2nd floor)</b>	Co-Chairs: <i>Zhaoshan Chang, Dave Lentz</i> Location: <b>Geosciences International Hotel (2nd floor)</b>	Co-Chairs: <i>Ruizhoung Hu, Kunfeng Qiu</i> Location: <b>Geosciences International Conference Centre (1st floor)</b>
08:30-08:50	<i>Yiguan Lu*</i> Geochemistry and genesis of magmatic Ni-Cu(PGE) and PGE-(Cu)(Ni) deposits in China	<i>Larry Meinert (Keynote)</i> Genesis and exploration for skarn deposits	<i>Jing Chen*</i> The alteration, mineralization and structural evolution of Zijinshan high sulfidation epithermal deposit, Fujian Province, China
08:50-09:10	<i>Chusi Li (Keynote)</i> Magmatic sulfide deposits: China versus the world	<i>Zhaoshan Chang</i> Skarn deposits in China	<i>Angela Lay*</i> Epithermal Ag-dominant mineralisation within the Drake Goldfield, Southern New England Orogen, north-eastern New South Wales
09:10-09:30	<i>Steve Barnes</i> Time scales and length scales in magmatic mineral systems	<i>Zhaoshan Chang (continued)</i>	<i>Le Wang*</i> Zhengguang Au-Zn deposit in the eastern CAOB: The oldest intermediate sulfidation epithermal deposit in the world

**DAY 3 -** Wednesday, September 20, AM (continued)

SESSION TEN		SESSION ELEVEN		SESSION TWELVE	
09:30-09:50	<i>Marina Yudovskaya (Invited)</i> Exploring north: New types of PGE deposits in the Bushveld Complex	<i>Nyein Sint*</i> Genesis of skarn zonation and fluid evolution of the gold-copper skarn deposit, Shwe Min Bon area, Kalaw Township, southern Shan State, Myanmar	<i>Peter Koděra</i> Characteristics of a detachment-hosted epithermal gold deposit—example from Banská Hodruša, Slovakia	09:50-10:10	<i>Bernard Charlier (Invited)</i> Silicate liquid immiscibility and the formation of magmatic Fe-Ti-V-P deposits
10:10-10:30	Break	Break	Break	10:10-10:30	Break
10:30-10:50	<i>Christina Wang (Invited)</i> Origin of giant Fe-Ti-V oxide deposits hosted in the layered intrusions in the Emeishan large igneous province, SW China	<i>Merril Garay*</i> Magnetite and epidote textures at Chalcobamba Cu-skarn deposit, Las Bambas District, southern Peru	<i>Barbie Ross Villaplaza*</i> Mass changes and hydrothermal alteration in the Masara gold district, Compostela Valley, Philippines	10:50-11:10	<i>Bartosz Karykowski*</i> Critical controls on the formation of contact-style PGE-Ni-Cu mineralisation: Evidence from the Monchegorsk Complex, NW Russia
11:10-11:30	<i>Hong Zhong*</i> Contrasting petrological processes between the Yuanbaoshan and Glingmingshan mafic-ultramafic intrusions in the Neoproterozoic JIangnan orogenic belt, South China: Implication for Ni exploration in the region	<i>James Cannell</i> Intrusion, skarn and vein paragenesis of the Ferrobamba Cu-Mo porphyry-skarn deposit, Las Bambas porphyry cluster, Peru	<i>Jing Li</i> Hyperspectral core scan and application to Zijinshan epithermal high-sulfidation Cu-Au deposit	11:30-11:50	<i>Pete Hollings</i> 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
11:50-12:10	<i>Lennart Fischer</i> Silicate liquid immiscibility in the Upper zone of the Bushveld Complex	<i>Peter Illig*</i> Overlapping Au-Cu and Zn-Pb-Cu skarns at the Redcap prospect, Chillagoe district, Far North Queensland, Australia	<i>Yingwei Wang</i> Hydrothermal fluids in the Kekesayi gold deposit, Altay, China	12:10-13:30	Lunch
	Lunch	Lunch	Lunch		Lunch

**DAY 3 -** Wednesday, September 20, PM (continued)

SESSION THIRTEEN

**Sediment-Hosted Base Metal and Gold Deposits**

Co-Chairs: *Murray Hitzman, Yucui Song*  
Location: **Geosciences International Conference Centre (2nd floor)**

13:30-13:50 *David Leach* (Keynote, SGA)  
Evaporites and sediment-hosted Zn-Pb ores in China: A new perspective

13:50-14:10 *Yingchao Liu*  
Hydrothermal fluid origins of carbonate-hosted Pb-Zn deposits of the Sanjiang thrust belt, Tibet: Indications from noble gases and halogens

14:10-14:30 *Hao Li*\*  
Geology and metallogeny of the giant Huoshayun zinc-lead deposit, Karakorum Range, northwestern Tibet

SESSION FOURTEEN

**New Analytical Techniques**

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

*Joe Zhou*  
SIMS techniques and application to refractory gold deposits

*Shaun Barker* (Invited)  
Developing new stable isotope tools for mineral exploration: Applications and complications

*Antonio Arribas*  
The isotopic composition of silver and its variation in silver-bearing ore deposits

SESSION FIFTEEN

**Chinese and Other Deposits**

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

*Baohong Hou* (Invited)  
Heavy mineral sands resources and what we know about these deposits in China

*Junhua Yao*  
Petrology, chalcophile element (PGE, Se) geochemistry and Sr-Nd-Os-S isotopes of the Neoproterozoic Lengshuqing magmatic Ni-Cu ore deposits in western margin of Yangtze craton, SW China

*Qingfei Wang*  
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

14:30-14:50 *Lingang Xu*

Early Cambrian black shales along the margin of the Yangtze Platform and associated mineralization, South China

14:50-15:10 *Lorena Ortega*

The Patricia ore deposit: An economic Zn-Pb-Ag polymetallic sulfide mineralization in northeastern Chile

15:10-15:30 Break

15:30-15:50 *Lingang Xu*

Metalliferous (Mo-Ni-V-Zn +/-Au-PGE) black shales in Guizhou, Hunan, Hubei, and Jiangxi provinces, South China, with comparison to global occurrences

15:50-16:10 *Guoxiang Chi*

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

*Dane Burkett*

Use of portable X-ray diffraction analysis in mineral exploration

*Neil Banerjee*

Answers at the speed of light: Synchrotron solutions for mineral exploration, production, and remediation

Break

*Mao Mao*

Detrital apatite trace-element compositions: A robust new tool for mineral exploration

*Mao Mao* (continued)

*Neal Reynolds*

Zn-Pb-Ag mineral systems of southeast Asia and South China—tectonic context and discovery opportunities

*Shawn Hood*\*

Relating altered rocks to equivalent protoliths using clustering and classification of geochemical data

Break

*Yajing Mao*

Variations in oxygen fugacity and sulfide compositions of the Permian magmatic Ni-Cu deposits in the southern Central Asian orogenic belt

*Robert Stewright*\*

Using magnetite chemistry to discriminate mineralised from barren porphyry copper systems



SESSION THIRTEEN		SESSION FOURTEEN		SESSION FIFTEEN	
<b>DAY 3 -</b> <b>16:10-16:30</b>	<b>Kyle Henderson *</b> Metal transport by liquid hydrocarbons: Evidence from metal-rich black shales and pyrobitumen veins, Selwyn Basin, Yukon, Canada	<b>Krisztian Szentpeteri</b> Drones (UAVs) in mining and exploration. An application example: Open-pit geology mapping and 3D geological modelling	<b>Ross Large</b> Random forest classification of pyrite trace element composition to identify ore deposit type in far-field exploration and vectoring	<b>David Lentz</b> Biotite geochemical analysis in the Sn-W-Mo-bearing Mt. Douglas leucogranite, southwestern New Brunswick, Canada: Analysis of metallogenic indices	<b>David Lentz (continued)</b>
<b>16:30-16:50</b>	<b>Yucai Song</b> Geology and mineralization of the world-class Mehdiabad Pb-Zn deposit, central Iran	<b>Dan Taranik</b> Exploration remote sensing: new technologies and trends	<b>Dan Taranik</b> Exploration remote sensing: new technologies and trends	<b>Zhenzhen Li</b> Geology, geochemistry, and hydrothermal evolution of the giant Chalukou high-fluorine porphyry Mo deposit, NE China	
<b>16:50-17:10</b>	<b>Demet Kiran Yildirim</b> Alteration geochemistry and sulfur isotope insights into metasediment-hosted Cu-Pb (-Zn) mineralization at Hallar area, NW Turkey				
<b>17:15-17:45</b>	Student Presentation Awards: <i>Zhiming Yang</i> , Presenter Final Panel Wrap-Up – Moderator: <i>Larry Meinert</i> <b>Reflections on what has been presented at the conference and best papers</b> Panel Members: <i>Dick Sillitoe</i> , <i>Rich Goldfarb</i> , <i>Kezhang Qin</i> (SEG Regional Vice President, Asia), <i>Marina Yudovskaya</i> (SEG Regional Vice President, North Eurasia)				

## 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

**Giant W-Cu, Sn, and Pb-Zn Deposits, NW Jiangxi Province (FT09) September 21–26**  
Field Trip Leaders: Shao-Yong Jiang and Xinkui Xiang

**Porphyry and Epithermal Systems of the Sunda-Banda Arc, Indonesia (FT10) September 21–27**  
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**  
Presenters: Richard J. Goldfarb, David I. Groves

**Skarn Deposits (WS11) September 21**  
Presenters: Larry Meinert, Zhaoshan Chang

**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

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.

For schedule updates, please go to [www.seg2017.org](http://www.seg2017.org).

## Copper and IOCG Deposits of Asia

- P 001 **The characteristics of ore-forming fluids and possible genetic type of the Hongshanliang copper deposit in Xinjiang**  
*Liandang Zhao, Huayong Chen, and Jinsheng Han*
- P 002 **Geological characteristics of the Luohe iron deposit: The largest iron deposit in the Middle-Lower Yangtze River Valley metallogenic belt**  
*Yinan Liu, Yu Fan, Taofa Zhou, and Noel C. White*
- P 003\* **Hydrothermal alteration and fluid evolution of the giant Aktogai porphyry Cu deposit, Kazakhstan**  
*Changhao Li, Ping Shen, and Hongdi Pan*
- 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**  
*Yu Zhang and Hua-yong Chen*
- 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 Luxing 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 Esmaeili, Changqian Ma, and David Richard Lentz*
- P 010 **Mineralogy and geochemistry of the Cu-sandstone deposits from Kodar-Udokan area, south Siberia, Russia**  
*Bronislav Gongalsky, Dmitry Krinov, Nadezhda Krivolutskaya, Larisa Magazina, and Elena Kovalchuk*
- P 011\* **Using in situ Sr isotopes of apatite to unravel the fluid evolution of an IOCG system: A case study from the Kangdian IOCG belt, SW China**  
*Wang Liao*
- P 013\* **The origin of different types of pyrite in gold-rich VMS deposits in the Bikou terrane, China**  
*Zhichao Zhang, Liqiang Yang, Xingzhong Ji, and Nan Li*
- 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**  
*Yunfeng Wang, Bing Xiao, and Huayong Chen*
- P 015 **REE characteristics of anhydrite in the Nihe magnetite-apatite deposit and its relation to mineralization, Middle-Lower Yangtze River Valley metallogenic belt**  
*Yu Fan, Yinan Liu, Taofa Zhou, Noel C. White, and Lejun Zhang*

## Epithermal and Carlin-like Gold Deposits of Asia

- P 016 **Geology, alteration and mineralization of the Karaağaç thrust related Au-Ag deposit, Turkey**  
*Bahri Yıldız, Osman Kurtuluş, Mustafa Seçkin Kılıç, and Suzan Ulusoy Uysal*
- P 017 **Geology, geochronology, and fluid inclusion characteristics of the Dongxi epithermal gold deposit, central China**  
*Jiang Zhu*
- P 018\* **Genesis of the Heiniuao gold deposit, Baoshan block, Sanjiang Region: Constraints from fluid inclusion, stable isotope and sulfide trace element studies**  
*Qingfei Wang, Fuchuan Chen, Gongjian Li, Qihai Shu, Pengfei Zhang, Jinyu Liu, and Rong Xu*
- P 019\* **Comparison between the Shuiyindong and Nibao gold deposits, southwestern Guizhou**  
*Songtao Li, Jianzhong Liu, Yong Xia, Guanghong Zhou, Ping Zhao, and Qinggang Chen*



**中国黄金集团公司**  
China National Gold Group Corporation

捍卫国家金融安全、引领产业转型升级、守护人民幸福生活  
Safeguard national financial security, Lead the industry transformation and upgrading, Protect the people's happy life

上海黄金交易所综合类会员  
黄金实物交易量  
Volume of Physical Gold Traded in Shanghai Gold Exchange as a Comprehensive Member

黄金投资产品市场占有率  
Gold Investment Products Market Share

六项指标 国内第一  
Ranks No.1 in 6 Indices in China's Gold Industry

黄金资源量  
Gold Resource Base

矿产金产量  
Mineral Gold Output

精炼金产量  
Refined Gold Output

黄金冶炼技术水平  
Gold Refining and Smelting Technologies



- P 020\* **Mass changes and hydrothermal alteration in the Masara gold district, Compostela Valley, Philippines**  
*Barbie Ross B. Villaplaza, Alfred Elmer Buena, Nichole Anthony D. Pacle, Betchaida D. Payot, Jillian Aira S. Gabo-Ratio, Noelynna T. Ramos, Carla B. Dimalanta, Decibel V. Faustino-Eslava, Karlo L. Queaño, Walter W. Brown, and Graciano P. Yumul, Jr.*
- P 021 **Metallogenetic setting and processes of gold, antimony, and arsenic deposition, SW Guizhou, China**  
*Ze Peng Wang, Jian Zhong Liu, Cheng Fu Yang, Jun Hai Li, Zhi Kang Fu, Da Fu Wang, Lei Li, and Dai Wei Tan*
- P 022\* **Genetic study of the micron-size sphalerite in pyrite from the Gengzhuang epithermal gold deposit, Shanxi, China**  
*Yaqun Ren, Fei Huang, Lizhang Yu, and Zhou Wang*
- P 023 **New data on the relationship between alabandite and tellurides from the Sacaramb Au-Ag-Te deposit**  
*George Dinca, Gheorghe C. Popescu, and Oana Barbu*
- P 024\* **The nature and origin of the Brucejack high-grade epithermal gold deposit, British Columbia, Canada**  
*Duncan F. McLeish, Anthony E. Williams-Jones, and Warwick S. Board*
- P 025 **Hydrogen and oxygen isotopes geochemistry of the Qixiashan Pb-Zn-Ag polymetallic deposit in Nanjing**  
*Mingchao Zhang, Renyi Chen, Jingchao Li, Lei Yao, and Hui Chen*
- P 026 **Characteristics of zunyite in the advanced argillic alteration zones of high-sulfidation epithermal deposits: Implications for exploration in lithocaps**  
*Lejun Zhang, Jiannie Chin, Carlos Jimenez, Noel White, David Cooke, and Evan Orovan*
- P 027 **Origin of the ore-forming fluid in the Liaotun gold deposit, Bama County, Guangxi, China**  
*Li Yuan-qiang, Pang Bao-cheng, Hao Yu-qi, Lai Xin, Lu Fu-yu, and Zhang Zhan*

## Magmatic Ni-Cu-PGE Deposits

- P 028 **New data on geochemistry and mineralogy of massive ores from Noril'sk deposits, Siberia, Russia**  
*Nadezhda Krivolutskaya, Nadezhda Tolstykh, Irina Kubrakova, Oksana Tyutyunnik, Bronislav Gongalsky, Larisa Magazina, Natalia Svirskaya, Larisa Pospelova, and Tamara Vekshina*
- P 029 **Genesis of the subduction-related Heishan magmatic Ni-Cu-(PGE) deposit at the southern margin of the Central Asian orogenic belt**  
*Wei Xie and Xie-Yan Song*
- P 030\* **Compositional variations of coeval magmatic sulfide deposits in the Kalatongke area, western China: Implications for sulfide concentration and further exploration**  
*Yanqing Feng, Zhuangzhi Qian, Jun Duan, Chusi Li, Edward M. Ripley, and Gang Xu*
- P 031 **Fe-Ti-V deposits of China and Russia: Tectonic setting, geochemistry and paleomagnetic data**  
*Nadezhda Krivolutskaya, Roman Veselovskiy, Xieyan Song, Lie-Meng Chen Lie-Meng, S-Yue Yu, Bronislav Gongalsky, Elena Belousova, Yana Bychkova, Kreshimir Malich, and Natalia Svirskaya*
- P 032 **Geochronology and Sr-Nd-Os-S isotopes of the Tulargen magmatic Ni-Cu deposit in the Central Asian orogenic belt, NW China**  
*Zhaowei Zhang, Yalei Wang, Chusi Li, Bing Qian, and Edward M. Ripley*
- P 033\* **Dynamics of magmatic sulfide droplets and silicate melts during transport in partially molten rocks and implications for magmatic sulfide ore formation**  
*Zhenjiang Wang and Zhenmin Jin*
- P 034 **Trace element geochemistry of co-crystallizing minerals in the Panzhihua layered intrusion, SW China**  
*Lie-Meng Chen, Xie-Yan Song, Song-Yue Yu, Hai-Long He, and Zhi-Hui Dai*

- P 035\* **The genesis of magmatic Ni sulfide deposits from recycling of continental crust: Geochemical and geochronological evidence from the post-collisional Kaipinggou magic-ultramafic complex, North Qaidam orogen, China**  
*Pengjie Cai, Rongke Xu, Youye Zheng, Jia Liu, Xin Chen, and Xiaozeng Chen*
- P 036 **The origin of nelsonite constrained by melting experiments and inclusions in apatite: The Damiao anorthosite complex, North China craton**  
*Tong Hou, Meng Wang, Ilya Veksler, and Zhaochong Zhang*
- P 037 **Geochemical and petrological studies on the early Carboniferous Sidingheishan mafic-ultramafic intrusion in the southern margin of the Central Asian orogenic belt, NW China**  
*Tao Sun, Zhuang-Zhi Qian, Joyashish Thakurta, Shu-Cheng Tan, Wan-Ting Li, and Ai-Ping Zhang*
- P 038 **Genesis of the Huangshandong Cu-Ni deposit in Eastern Tianshan, Central Asia orogenic belt: constraints from U-Pb and Re-Os geochronology and Sr-Nd isotopes**  
*RuiChun Duan, HongMei Yang, ChongPeng Liu, LiGuo Zhang, ShanSong Lu, and JuanJuan Tan*
- P 040\* **Petrology, mineral chemistry, and zircon U-Pb geochronology of the Baishiquan Ni-Cu-bearing mafic-ultramafic intrusion, central Tianshan, Xinjiang, NW China: Evidence for multi-stage magmatic activity**  
*Yanjie Niu, Dongmei Tang, and Kezhang Qin*
- P 041\* **Vanadium distribution in the Upper zone of the Bushveld Complex: Constraints on oxygen fugacity**  
*Lennart A. Fischer, Olivier Namur, Ingo Horn, Francois Holtz, and Bernard Charlier*
- P 042 **Modeling of the compositional variations of metal tenors in the Aguablanca Ni-Cu-(PGE) sulfide deposit, SW Spain**  
*Rubén Piña, Fernando Gervilla, Lorena Ortega, and Rosario Lunar*

## Mineral Deposits of Tibet

- P 043\* **Silicon isotope systematics and geochemical constraints on the enrichment mechanism of rare metals in geothermal areas of southern Tibet, China**  
*Wei Wang, Jiang Shao Yong, and Wei Hai Zhen*
- P 044 **Diversity of carbonatite-related REE deposits: The key example of the Mianning-Dechang belt**  
*Yan Liu*
- P 045\* **Petrogenetic and exploration implications from study of the Late Cretaceous intrusion at the Bangbule Pb-Zn-Cu deposit, western Gangdese, Tibet**  
*Kan Tian, Ye You Zheng, Bao Shun Gao, and Song Ouyang*
- P 046 **Characteristics of pyrite in the Tiegelongnan copper (gold) deposit, Duolong district, Tibet**  
*Huanhuan Yang and Juxing Tang*
- P 047\* **Skarn mineral signatures and their geological significance in the Nuocang Cu-Pb-Zn deposit, Tibet**  
*Jian Huang, Youye Zheng, Shunbao Gao, Junsheng Jiang, and Xinran Guo*
- P 048 **Textural, compositional and sulfur isotope variations of multistage pyrite in the Bengge gold deposit, southwestern Yunnan, China: Implications for ore genesis**  
*Lili Jiang, Zengqian Hou, Xuanxue Mo, and Chuandong Xue*
- P 049\* **Zircon U-Pb dating and Sr-Nd-Pb-Hf isotopes of the ore-associated granite porphyry at the Chagele Pb-Zn deposit, Tibet**  
*Yong-Chao Zhang, You-ye Zheng, Shun-Bao Gao, and Shu-Zhi Zhang*
- P 050\* **Ore-forming processes of the Laba porphyry-skarn Mo-polymetallic deposit, northwestern Yunnan, SW China: Evidence from petrology, mineralogy, and geochemistry of magnetite**  
*Kun Xiang, Chuandong Xue, Zengqian Hou, Tiannan Yang, Zhiming Yang, Lili Jiang, and Abdul Ghaffar*

- P 051\* **Evolution of the ore-forming fluid in the Chagele distal Pb-Zn skarn deposit, Tibet**  
*Xiaojia Jiang, Youye Zheng, Shunbao Gao, Yongchao Zhang, and Xinran Guo*
- P 052 **Mesozoic porphyry-skarn Cu-polymetallic systems of the Yidun terrane, Eastern Tethys: Implications for subduction- and transtension-related metallogeny**  
*Li-Qiang Yang, Wen-Yan He, Xue Gao, and Zhen Yang*
- P 053 **Ore textures and lead isotope compositions of the Zhaxikang Sb-Pb-Zn-Ag deposit in southern Tibet: Implications for ore formation**  
*Xiang Sun and Youye Zheng*
- P 054\* **The genesis of the Beina sub-rhyolite rocks: Implications for the potentiality of Pb-Zn deposits in the middle Gangdese**  
*Jun Liu, You Ye Zheng, and Shun Bao Gao*

SHANDONG GOLD  
ECOLOGICAL MINING

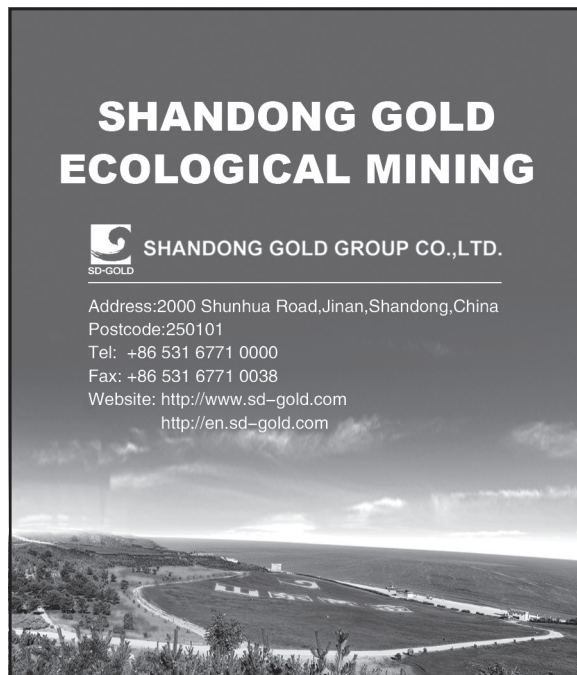
SHANDONG GOLD GROUP CO.,LTD.

Address: 2000 Shunhua Road, Jinan, Shandong, China

Postcode: 250101

Tel: +86 531 6771 0000

Fax: +86 531 6771 0038

Website: <http://www.sd-gold.com><http://en.sd-gold.com>



- P 055 **Fluid evolution of the Juno porphyry Cu-Mo deposit in Gangdese tract, Tibet, China: A fluid inclusion investigation**  
*Jie Dai, I-Ming Chou, Yong Huang, and Jun Ding*
- P 056 **Controls on the formation of Cu-rich magmas: Insights from the Late Triassic post-collisional Saishitang complex in the eastern Kunlun Orogen, western China**  
*Jinyang Zhang, Changqian Ma, Jianwei Li, and Yuanming Pan*
- P 057 **Tungsten-tin mineralization in the Baiganhu area during Paleozoic post-collisional rifting in east Kunlun belt, northern Tibetan plateau**  
*Yongbao Gao, Keiko Hattori, Wenyuan Li, and Kan Li*
- P 058\* **Ultrapotassic rocks and xenoliths from South Tibet: Contrasting styles of interaction between lithospheric mantle and asthenosphere during continental collision**  
*Bo Xu, William Griffin, Qing Xiong, Zeng-Qian Hou, Suzanne O'Reilly, Zhen Guo, Norman Pearson, Yoann Gréau, Zhi-Ming Yang, and Yuan-Chuan Zheng*
- P 059 **Volatile variations in magmas related to porphyry Cu-Au deposits: Insights from amphibole geochemistry at Duolong, central Tibet**  
*Jinxiang Li, Kezhang Qin, Guangming Li, Noreen J. Evans, Junxing Zhao, Yahui Yue, and Jing Xie*
- P 060 **Characteristics of veins in hornfels and their implications for exploration at the Jiama porphyry deposit, Tibet, China**  
*Xiaofeng Yao, Wenbao Zheng, Zhi Zhang, Wanyi Zhang, Yanfang Feng, and Delong Jia*
- P 061\* **Formation conditions and genesis of gold and silver minerals in the Jiama polymetallic system, southern Tibet**  
*Hong Zhong, Shi-Ji Zheng, Zhong-Jie Bai, and Wen-Jun Hu*
- P 062 **Minor and trace element abundances of scheelite from tungsten-tin deposits in the Baiganhu area, east Kunlun belt, northwestern China and their bearing on metallogenesis**  
*Yongbao Gao, Keiko Hattori, Wenyuan Li, Kan Li, and Huibo Zhao*

- P 063\* **Lower crustal gabbro and hornblendite in the eastern Gangdese arc: Constraint on the metal source of the postcollisional porphyry Cu deposits in southern Tibet**  
*Zhi-Ming Yang and Chao Yu*

### New Analytical Techniques and Equipment Applied to Ore Deposits

- P 064 **Silver isotope fractionation in native silver: Potential mechanisms and implications to ore genesis**  
*Ryan Mathur, Antonio Arribas, Peter Megaw, and Marc Wilson*
- P 065\* **Effect of present climate on the distribution of the world sandstone-hosted uranium deposits**  
*Feifei Wang, Chiyang Liu, Pei Guo, Shaohua Zhang, and Jianqiang Wang*
- P 066 **Department of gold in major types of gold ores and its importance in economic geology**  
*Jing Li and Joe Zhou*
- P 067 **LA-ICP-MS element mapping of pyrite and its applications**  
*Jian-Feng Gao and Simon E. Jackson*
- P 068\* **Stable isotopes as an exploration tool: Tracking cryptic alteration surrounding the Iscaycruz Zn (Pb-Cu-Ag) skarn-CRD deposit, central Peru**  
*Samuel F. Cantor, Craig Jr. Hart, Gregory Dipple, Abraham Escalante, James K. Mortensen, and Russ Algar*
- P 069\* **Use of multielement associations in till for detecting concealed Cu mineralization, south-central British Columbia, Canada**  
*Shishi Chen, Keiko Hattori, and Alain Plouffe*
- P 070 **Hardcap alteration in banded iron formation: Sulfur as an indicator**  
*Sanjib Banerjee, James Taylor, and Matt Crowe*
- P 071 **Modelling geochemical indices from hyperspectral reflectance spectra—applications for exploration and mining**  
*Rui Wang, Carsten Laukamp, Emma Beattie, Ian C. Lau, and Peter Mason*



- P 072 **Research on the mechanism of Rb-Sr dating with dilute acid leaching**  
*Hongmei Yang, Chongpeng Liu, Hong Cai, Guomin Du, Juanjuan Tan, Shansong Lu, and Yunfeng Wang*
- P 073\* **Characterization of hydrothermal fluids and application to exploration vectoring of gold-copper mineralization in the Calamaca Project, La Libertad, northern Perú**  
*Victor J. Torres, Alex E. Aquino, Marco A. Tapia, Brian K. Townley, and Juan C. Molano*
- P 074\* **Spectral analysis of hydrothermal alteration at the Marmato gold deposit, Colombia**  
*Julián D. Melo-Gómez, Leonardo Santacruz, Juan C. Molano, and Alessandro Cecchi*
- P 075\* **Intrusion sequence, vein evolution and timing of mineralization at Encuentro porphyry Cu-Au-Mo deposit, Chile**  
*Jaime I. Osorio, John H. Dilles, José Perelló, Eugene Tobey, and Eduardo Lazcano*
- P 076\* **Zircon trace element analyses as records of magmatic processes: Insights into the petrogenetic evolution of porphyry systems**  
*Rebecca J. Perkins, Brian Tattitch, Simon Tapster, Daniel J. Condon, Frances J. Cooper, and Jonathan Naden*
- P 077 **Scheelite deposits in the Taebaeksan region, Korea**  
*Jung Hun Seo, Bong Chul Yoo, Igor Villa, Jung Hee Lee, Tong Ha Lee, and Chan Su Kim*

- P 078 **Detecting different types of ore-forming fluids at Archean gold deposits using reflectance spectroscopy**  
*Rui Wang, Carsten Laukamp, Thomas Cudahy, John L. Walshe, and Adam Bath*
- P 079 **A new LA-ICP-MS mapping processing software—LalcpMs**  
*Fangyue Wang and Can Ge*
- P 080\* **Exhumation of Andean granites: Implications for porphyry copper formation and enrichment**  
*Simon Dahlstrom, Frances Cooper, Jon Blundy, Simon Tapster, Daniel Condon, and Andy Carter*
- P 081 **Microstructural characterization and in-situ sulfur isotopic analysis of gold-bearing sphalerite from the Edmond hydrothermal field, Central Indian Ridge**  
*Zhongwei Wu, Xiaoming Sun, Kaijun Cao, Haoyang Zhou, Huifang Xu, and Hiromi Konishi*
- P 082 **Chemical characteristics and composition of magmatic biotite from the Nashwaak Granite and related dikes, west-central New Brunswick**  
*Wei Zhang, David R. Lentz, Chris McFarlane, and Kathleen Thorne*
- P 083 **Zircon compositions as fertility indicator of Archean granites**  
*Yongjun Lu and Hugh Smithies*
- P 084\* **Trace element partitioning between silicate and sulphate melts at high pressure and temperature**  
*Michael C. Hutchinson, Richard A. Brooker, John H. Dilles, and Jon Blundy*
- P 085\* **Mass dependent fractionation in pyrite from the Golden Mile: Evidence for a mantle connection during gold mineralization**  
*Marcelo Godefroy Rodriguez, Steffen Hagemann, Crystal LaFlamme, and Marco Fiorentini*

100  
YEARS  
1857 - 2017

**IF YOU THINK EVERYWHERE IN  
THE WORLD HAS BEEN DISCOVERED,  
TRY MINING**

FUTURESMART MINING™



Real Mining. Real People. Real Difference

## New Discoveries & Exploration Potential of Asia

- P 086\* **Geological and geochemical characteristics of the Donggushan skarn deposit: The first discovery of a tungsten deposit in the North Luzong Orefield, Middle-Lower Yangtze River Valley metallogenic belt**  
*Liqing Nie, Taofa Zhou, and Noel C. White*
- P 087 **The volcanic-plutonic connection and fertility of highly evolved magma systems: A case study from the Herberton Sn-W-Mo mineral field, Queensland, Australia**  
*Yanbo Cheng, Carl Spandler, Zhaoshan Chang, and Gavin Clarke*
- P 088 **Results from gold exploration surveys within the Altai-Sayan region (Russia) from 2006-2015 and perspective trends for future gold exploration**  
*Alexandr I. Chernykh*
- P 089 **Porphyry copper: Grade and tonnage models revisited**  
*Jane M. Hammarstrom and Gilpin R. Robinson*
- P 090\* **Data driven predictive prospectivity mapping for epithermal gold, Dashui district, central China**  
*Xinhua Wang*
- P 091 **Origin of sulfide mineralization in the Podong mafic-ultramafic intrusion in the western Beishan orogenic belt, NW China: With exploration implications**  
*Shengchao Xue, Chusi Li, Kezhang Qin, Dongmei Tang, Edward M. Ripley, Yajing Mao, and Xinshui Wang*
- P 092 **SWIR application in alteration mapping and geometallurgy at the Kysisintaung high sulfidation copper deposit, Monywa ore field, Myanmar**  
*Yi Sun and Jing Chen*
- P 093 **Mineral resource potential of the Kingdom of Bhutan**  
*Philip C. Goodell, Munazzam Ali Mahar, Kezang Eden Phuntsho, and Tobgay Tobgay*
- P 094\* **Primary silver mineralisation from the Manuka MVT deposit, Cobar Basin, central New South Wales, Australia**  
*Angela Lay, Stephen Harris, Ian Graham, Paul Lennox, Karen Privat, Nigel Cook, and Luke George*
- P 095\* **Fluid evolution and ore genesis at the Dalingshang deposit, Dahutang W-Cu district, northern Jiangxi Province, south China**  
*Ning-Jun Peng and Shao-Yong Jiang*
- P 096\* **Geochemical evolution of hydrothermal fluids and alteration model of the Afyon-Sandikli porphyry copper deposit, Turkey**  
*Şafak Utku Sönmez and İlkey Kuşçu*
- P 097 **Petrogenesis and mineralization of W-Mo deposits in Jiannan transitional belt, northern Yangtze block**  
*Dayu Zhang, Taofa Zhou, Feng Yuan, Ouxiang Wei, Xuefeng Chen, and Noel Clarence White*
- P 098\* **Controls on polymetallic vein deposits and porphyry deposits in the Phum Syarung-Dok Yong Fault Corridor, Ratanakiri Province, Cambodia**  
*Craig T. Richardson, Craig Hart, Jr., K. Dunstone, and Adrian G. Mann*
- P 099\* **Discovery and geological significance of a cobalt-only deposit at Bayan Obo, Inner Mongolia**  
*Libao Liu, Xinbiao Lü, and Weiwei Wang*
- P 100\* **Geology and geochemical characteristics of lithocap in the Lu-Zong basin, Anhui, China**  
*Xuanxuan Li, Taofa Zhou, Noel C. White, and Yu Fan*
- P 101 **The Bekirli metamorphic rocks-hosted stratiform Cu-Zn mineralization in the Kömürlükdere area, eastern Pontides, Turkey**  
*Cihan Yalcin, Demet Kiran Yildirim, Mustafa Kumral, Zeynep Doner, Mustafa Selman Aydoğan, and Murat Budakoglu*
- P 102\* **Characteristics of the primary tin deposit, Pangkalan Baru area, central Bangka, Indonesia**  
*Friska Putri Ayunda, Lucas Donny Setijadji, I. Wayan Warmada, Hendra Ferdila, and Anton Murtono*

- P 103\* **The first case of Cenozoic porphyry copper occurrences in the eastern Pamir, Siruyidie'er copper polymetallic mineralization belt, Xinjiang**  
*Ruihua Li, Jingwen Mao, and Hegen Ouyang*
- P 104\* **Characteristics of primary tin mineralization associated with magnetite bedding-plane lodes, Belitung Island, Indonesia: A case study of the Batubesi and Pagar Damar prospects**  
*Yacobus Ekakrismi Nugraha, Jordan Romora Simarmata, and Lucas Donny Setijadji*
- P 105\* **Genesis of the Hehuashan zinc-lead deposit and implication for mineralization in the Tongling area, China**  
*Guangxian Liu, Feng Yuan, Yufeng Deng, Taofa Zhou, and Noel Clarence White*
- P 107\* **Application of chlorite to prospecting for porphyry ore deposits: An example from the Shaxi porphyry Cu-Au deposit, Middle-Lower Yangtze River Valley metallogenic belt, China**  
*Qingling Xiao, Taofa Zhou, and Shiwei Wang*
- P 108\* **Combining geology, geophysics, and geochemistry: Clues on relationship of Cu-Au deposits between epithermal high sulphidation, skarn and porphyry type mineralization system at Pacitan district, East Java, Indonesia**  
*Faisal Sangaji, Audi Tri Lavanto, Luga Chania, Fatimah Mirhana, Bektı Gunawan, and Rangga Aditya*
- P 109\* **Integrated analysis of hydrothermal alteration, structural features, and host rock lithologies associated with copper-gold mineralization, NW Saveh, central Iran**  
*Hassan Gohari, Hooshang Asadi Harooni, and Mohammad Hassan Karimpour*
- P 110 **Zircon ages, mineral zonings and geochemistry of Mg-skarn (containing nephrite) deposits along West Kunlun, Xinjiang, northwest China**  
*Yan Liu*
- P 111 **The discovery and exploration potential of Bogutu gold deposit, Tekesi County, Xinjiang, China**  
*Xinyu (Scott) Song and Tie Yao*

- P 112 **Lithological-structural setting and mineralisation styles of Reza high sulfidation epithermal gold deposit of Ugur exploration area, Gedabek ore district, Lesser Caucasus, Azerbaijan; A newly discovered orebody in Western Asia**  
*Anar Valiyev, Stephen Westhead, Aydin Bayramov, Javid Ibrahimov, Sabuhi Mammadov, Shakir Gadimov, and Zaur Jafarov*
- P 113 **Potential for deformed volcanogenic manganese deposits in southern Mongolia**  
*Baolin Zhang, Huizhong Li, and Guangjing Xu*
- P 114\* **The Xiuwacu Massif—geochronological evidence for overlapping magmatism and W-Mo mineralization, NW Yunnan, China**  
*Zhang Xiang Fei, Li Wen Chang, Yang Zhen, and Ren Zhi Ji*

### Orogenic Gold Deposits of Asia

- P 115 **Permian orogenic gold deposits of Eastern Kazakhstan and Western Siberia**  
*Evgeny Naumov, Alexander Borisenko, Yuri Kalinin, Konstantin Kovalev, Boris Diachkov, Marina Mizernaya, and Reimar Seltmann*
- P 116 **The metal source of gold deposits in the Yangshan gold belt, West Qinling, China: In situ LA-ICP-MS analysis and sulfur isotope of sulfides**  
*Nan Li, Liqiang Yang, and Jun Deng*

## Discover



For 140 years, we've been discovering safer, more effective and more sustainable ways to find, mine and process the minerals and metals essential for everyday life.

We aspire to be a company that is admired and respected for delivering superior value and for being the industry's most trusted partner.

Using the latest in technology and innovation, Rio Tinto Exploration is focused on smarter ways to find the mines of tomorrow.

We are currently seeking high quality opportunities to add to our growing Australian exploration portfolio.

For more information please contact  
Chief geoscientist—Mark Hartley  
mark.hartley@riotinto.com or  
General Manager commercial—Dave Palmer  
dave.palmer@riotinto.com.

Find our more at [www.riotinto.com](http://www.riotinto.com)

- P 117\* **Hydrothermal alteration and gold mineralization in NW Jiaodong Peninsula, China**  
*Zhongliang Wang, Binglin Zhang, Ruizhong Zhang, and Rongxin Zhao*
- P 118 **Genetic and exploration model of Jiadong-type gold deposits**  
*Li-Qiang Yang, Jun Deng, Zhong-Liang Wang, Liang Zhang, and Lin-Nan Guo*
- P 119 **The Vasilkovskoye intrusion-related gold deposit (Kazakhstan)**  
*Reimar Seltmann, Anastassiya Miroshnikova, Alla Dolgoplova, Marina Mizernaya, and Boris Dyachkov*
- P 120\* **Geology and age of the Jinchanggouliang gold deposit in North China**  
*Lingchao Mo and Fulin Liu*
- P 121 **CO<sub>2</sub>-rich fluid inclusions in gold-rich ores from the Dongtongyu-Wenyu gold deposits, Xiaoqinling Mountains, China**  
*Jiuhua Xu, Longhua Lin, Xiaogui Wu, Hao Wei, and Defeng Xian*
- P 122 **Orogenic gold deposits of eastern Yakutia: dwarfs on the shoulders of giants?**  
*Vasily Vasil'yevich Aristov and Irina Ivanovna Babarina*
- P 123\* **Modification of high-precision silver stable isotope analysis and implications for mineralization processes associated with Ag-Au deposits**  
*Qi Guo, Shaoyong Jiang, and Haizhen Wei*
- P 124\* **Ore mineralogy and fluid inclusion and stable isotope study of the Olon Ovoot gold deposit, southern Mongolia**  
*Oyungerel Sarantuya, Tetsuya Nakanishi, Kotaro Yonezu, Thomas Tindell, Adrian Boyce, Koichiro Watanabe, and Jargalan Sereenen*
- P 125 **Orogenic gold deposits of the Verkhojansk-Kolyma fold belt, northeastern Russia**  
*Valery Yurievich Fridovsky*
- P 126\* **Discovery of the first orogenic gold deposit in central Tibet**  
*Xiang Fang, Hanxiao Huang, Juxing Tang, Yang Song, Hong Liu, and Haifeng Li*

- P 127\* **Geochemistry of gold mineralization in the Muping-Rushan gold belt, Jiaodong Peninsula, China**  
*Li-qiang Yang, Binghan Chen, Zhongliang Wang, Shengxun Sai, and Sirui Wang*
- P 128 **Detrital zircon geochronology of gold-bearing black shale sequences in the Baikal-Patom Highlands (Siberia, Russia)**  
*Ekaterina Palenova, Marina Yudovskaya, and Dirk Frei*
- P 129 **Exploring the geological settings of Paleoproterozoic gold deposits in Suriname, South America**  
*Nicole M.E. Kioe-A-Sen*
- P 130\* **Fluid inclusion relationships for samples from underground and drill holes at the Xiadian gold deposit, Shandong Province, China**  
*Jinya Wang and Jianchao Liu*
- P 131 **Magmatic sulfur source for the Hatu gold deposit, West Junggar, NW China: Evidence from in situ sulfur isotope**  
*Fang An*
- P 132 **Phosphate geochemistry as a genetic indicator for gold deposits**  
*Ryan D. Taylor, Garth E. Graham, and Kunfeng Qiu*
- P 133 **Thermochronologic constraints on the formation and exhumation of the Mesozoic lode gold deposits, northwestern Jiaodong Peninsula, eastern China**  
*Li-Qiang Yang, Liang Zhang, and Zhong-Liang Wang*
- P 134\* **Mineralization timing of the Jiaodong gold province: A summary**  
*Shengun Sai, Zhongliang Wang, Liang Zhang, Ruizhong Zhang, and Binghan Chen*
- P 135 **Conditions for the formation of the Lena gold-bearing area, southern Siberia, Russia**  
*Nikolay A. Goryachev and Alexander E. Budyak*
- P 136\* **Two separate Mesozoic molybdenum and gold mineralization events in the Xiaoqinling district, southern margin of North China craton**  
*Shaorui Zhao, Shijian Bi, and Jianwei Li*

- P 137\* **Geology, geochronology, and geochemistry of the Tianjingshan lode gold deposit, China: Implications for Middle Triassic gold mineralization in southern Anhui Province**  
*Jian Wang, Jun Zhang, Huaning Qiu, and Jishan Wang*
- P 138 **Pyrite zonation and gold distribution in the Haopinggou deposit, southern North China craton: Constraints from LA-ICP-MS and EBSD analyses**  
*Zhan-Ke Li and Jian-Wei Li*
- P 139\* **Genesis of the Mandongshan gold deposit in Xinjiang, NW China: T-P-fS<sub>2</sub> and phase equilibria constraints from the Au-As-Fe-S system**  
*Huichao Zhang and Yongfeng Zhu*

### Porphyry Provinces of the Western Pacific

- P 140 **Porphyry Cu-Au-Mo potential of the Kamchatka Peninsula, Far East of Russia**  
*Evgeny G. Sidorov, Daria S. Bukhanova, and Ignatiev K. Evgeny*
- P 141 **Oxidation state of the Duobaoshan and Tongshan ore-bearing porphyritic intrusions, NE Central Asian orogenic belt, China: Evidence from Ce<sup>4+</sup>/Ce<sup>3+</sup> and Eu/Eu\* ratios in zircon**  
*Jian Wang, Keiko Hattori, Yanchen Yang, and Jiajia Zhang*



- P 142 **Mineral chemical anomalism in magmatic-hydrothermal epidote from SW Pacific porphyry and epithermal deposits**  
*Michael J. Baker, David R. Cooke, Jamie J. Wilkinson, Peter N. Hollings, Clara C. Wilkinson, Gabe Sweet, Zhaoshan Chang, and Huayong Chen*
- P 144\* **Reviewing the igneous history of the Spence porphyry copper deposit, northern Chile**  
*Edward G. Bunker, Jon Blundy, Frances Cooper, Daniel Condon, and Simon Tapster*
- P 145\* **Preliminary investigation of fluid and melt inclusions in unidirectional solidification textures in the Saginaw Hill hydrothermal system, Arizona**  
*Wyatt Moyer Bain and Matthew Steele-MacInnis*
- P 146 **Cathodoluminescence (CL) images and geochemistry of scheelite from the Tongshankou porphyry-skarn Cu-Mo-(W) deposit, Hubei Province, eastern China**  
*Minfang Wang, Kun Liu, and Ketao Wei*
- P 147 **A mature exploration environment? New copper and gold discoveries in underexplored high potential mineralized belts of northern Chile**  
*Ricardo Gonzalez Montecinos, Patricio Fernandez Mackenzie, and Darryl Desment Lindsay*
- P 148 **Mo mineralization in Xing'an-Mongolian Orogen and adjacent region: Contribution from dehydration melting of subduction-modified magma sources**  
*Yifei Liu, Leon Bagas, and Sihong Jiang*
- P 149 **Mineralogy and ore formation conditions of the Malmyzh copper-gold porphyry deposit, Far East of Russia**  
*Daria S. Bukhanova and Valery M. Chubarov*
- P 150 **Constraints of depth on hydrothermal fluid evolution in porphyry deposits**  
*Wei Mao, Hong Zhong, Brian Rusk, and Qingwen Zhang*

- P 151\* **Geochemistry of leucogranites and their relationship with Mo mineralization at the Zhunsujihua molybdenum deposit, Inner Mongolia, China**  
*Fei Huang, Xiaojun Zhang, Wenhao Liu, Chunliang Yao, Ying Qin, and Zhen Peng*
- P 152\* **Magnetite trace element chemistry as an indicator of the metallogenic fertility of arc magmas**  
*George T. Fry, Jamie J. Wilkinson, and Robert H. Siewwright*
- P 153\* **Fluid evolution of the Batu Hijau porphyry Cu-Au deposit, Indonesia**  
*Michael Schirra, Christoph A. Heinrich, and Thomas Driesner*

### REE and Rare Metal Deposits

- P 154\* **Phosphorite-hosted rare earth element deposits of the Zhijin region, Guizhou Province, China**  
*Shan He, Yong Xia, Zhuojun Xie, and Haiyan Guo*
- P 155 **Apatite trace element geochemistry—a comparison between regional magmatism and the Pea Ridge IOA-REE and Boss IOCG deposits, southeast Missouri, USA**  
*Celestine N. Mercer, Kathryn E. Watts, Juliane Gross, and Alan E. Koenig*
- P 156\* **Ore genesis and hydrothermal fluid evolution of the supergiant Zhuxi W-Cu skarn deposit, South China: Evidence from fluid inclusions, oxygen isotopes, and scheelite**  
*Ke Ke Sun and Bin Chen*
- P 157\* **A metallogenic model for REE mineralization in Shandong Province, China**  
*Chen Wang, Jianchao Liu, Zhixuan Xi, and Jinya Wang*
- P 158 **Scandium-bearing minerals in lateritic nickel ores of the Soroako deposit in Indonesia**  
*Kenzo Sanematsu, Adi Maulana, Takaomi D. Yokoyama, and Yoshiaki Kon*

- P 159\* **Petrographic, geochemical, and isotopic characteristics of the Early Silurian Miaoya syenite-carbonatite complex, Central China: Implications for the origin of REE-enriched carbonatite melt**  
*Jianhui Su, Xinfu Zhao, and Xiaochun Li*
- P 160\* **Genesis of uranium-bearing phosphorite layers and fluorite veins in the Triassic platform of Transdanubian Range, western Pannonian Basin (Hungary)**  
*Zsuzsa Molnár, Gabriella B. Kiss, István Dunkl, Tamás Budai, Federica Zaccarini, György Czuppon, Tamás Váczi, and István Dódy*
- P 161\* **In-situ geochronological investigation of the carbonatite complex from the Miaoya REE deposit, South Qinling orogenic belt, China**  
*Yuanfan Ying and Wei Chen*
- P 162 **Geology and mineralisation of the Verkhnee Espe REE-RM deposit, East Kazakhstan**  
*Alla Dolgoplova, Reimar Seltmann, Galiya Bekenova, Oleg Gavrilenko, Akmaral Baisalova, Olga Frolova, Alexander Stepanov, and Indira Mataibayeva*
- P 163 **Gold-antimony-tungsten deposits of the Stibnite district, Idaho, USA, and comparison to Chinese antimony deposits**  
*Virginia S. Gillerman, Christopher Dail, and Mark D. Schmitz*
- P 164 **Mineralogical indicators of the degree of evolution of rare-metal pegmatites, Chinese Altai, Xinjiang**  
*Qifeng Zhou, Kezhang Qin, Dongmei Tang, and Chunlong Wang*
- P 165\* **Study on genesis of the Bayan Obo Fe-REE-Nb deposit in Inner Mongolia, China**  
*YiSu Ren and XiaoYong Yang*
- P 166\* **Petrogeochemistry of the Lamera stanniferous granite pegmatites and genesis of the Lamera tin deposit, Kibara belt, DRC**  
*Rub'son Heritier, N'nahano-Ruhindwa, and Yun Deuk Jang*



- P 167\* **Exploration for REE mineralization in pegmatites using aerospectrometric, aeromagnetic, and field geology techniques, west-central Oaxaca, Mexico**  
*Perla Rodríguez Contreras and Lorenzo Martínez Gómez*
- P 168\* **Implications of the presence of parisite and bastnäesite for the formation of emeralds in the western margin of the Eastern Cordillera, Colombia**  
*Angel Verbel, Jimmy Fernandez, Analía Pantorrilla, and Ana Elena Concha*
- P 169 **Sn-isotopic evidence of vapor transport of tin in shallow mineralization systems, Geju polymetallic ore field, China**  
*Wayne Powell, Junming Yao, Marc Wilson, and Ryan Mathur*
- P 170 **Cassiterite U-Pb geochronology and trace element fingerprints of the Gaofeng tin deposit, Dachang district, South China**  
*Jia Guo, Weidong Sun, Rongqing Zhang, and Yongbin Hu*

### Sediment-Hosted Base Metal and Gold Deposits

- P 171\* **Geological relation between high-Ca calcite marbles and metallic ore deposits in Taebaseksan region, Korea**  
*Chan Su Kim, Jae Ho Jang, Tong Ha Lee, Se Il Sohn, Yun Seok Yang, and Jung Hun Seo*
- P 172\* **Stratiform copper deposits in the San Jeronimo Group, Cusco area, Peru: Petromineralogical and genetic case study of the Tambomachay deposit**  
*Carlos A. Salcedo Nunez and Marco Augusto M. Robles Ancajima*
- P 173\* **Geochemistry of the Zn-Pb orebodies in the Taebaeksan metallogenic belt, Korea**  
*Jun Hee Lee, Bong Chul Yoo, Chan Su Kim, Tong Ha Lee, and Jung Hun Seo*

- P 174\* **An experimental investigation of the role of liquid hydrocarbons in the formation of ore deposits**  
*Jethro Sanz-Robinson, A.E. Williams-Jones, and Ichiko Sugiyama*
- P 175\* **Geochemistry and geochronology of early Paleozoic volcanic rocks in the Dabaoshan orefield, South China: Implication for the genesis of stratiform Fe-Cu-Pb-Zn mineralization**  
*Shiqiang Su, Kezhang Qin, Guangming Li, Xuyong Pang, Xinyu Zou, and Chao Zao*
- P 176 **Genesis of the Wusihe Zn-Pb MVT deposit, Dadu River Valley district, Sichuan Province, SW China**  
*Suo-Fei Xiong, Shao-Yong Jiang, and Yong-Jun Gong*
- P 177\* **LA-ICP-MS in situ sulfur isotope analyses of sulfides from the “Dongchuan-type” deposits, Kangdian region, southwestern China: Implications for two ore systems**  
*Haitao Lin, Xinfu Zhao, and Zhikun Su*
- P 178\* **Integration of geological and geophysical data for sediment-hosted copper deposits: An example from the Deblin copper mine area, Kombat South, southern Otavi Mountain Land, northern Namibia**  
*Josia Shilunga, Judith Kinnaird, and Susan Webb*
- P 179\* **Sedimentary limonite deposit in black shale and mechanism for adsorption of Mo and Zn in the Lushi area, North China craton**  
*Libao Liu, Xinbiao Lü, and Weiwei Wang*
- P 180\* **Magmatic and hydrothermal processes in the Wondong area, Taebaeksan metallogenic belt, Korea**  
*Tong Ha Lee, Bong Chul Yoo, Chan Su Kim, Jun Hee Lee, and Jung Hun Seo*
- P 181\* **Mineralogy and geochemical characteristics of the Xialei manganese deposit, southwest Guangxi Province, China**  
*Fangge Chen and Qingfei Wang*

- P 182\* **Mineralogical constraints on paleoenvironmental changes during formation of the Eplény manganese deposit, Bakony Mountains, Hungary**  
*Richárd Zoltán Papp, Máté Zsigmond Leskó, Tamás Vigh, and Norbert Zajzon*
- P 183 **Single grain sphalerite-pyrite Rb-Sr dating of the Laochang silver polymetallic deposit in Lancang of Yunnan Province**  
*Sheng Han Long, Yi Tai Luo, and Long Zhi Huang*
- P 184\* **Possible two contrasting mineralization events of the Yata gold deposit in the Golden Triangle, SW China: New constraints from geochemistry, isotopes, and geochronology**  
*Xiaoye Jin, Jianwei Li, and Albert Hofstra*

### Skarn Deposits—Metal Content and Zonation

- P 185\* **The characteristics and growth process of the FeS<sub>2</sub> alternating bands in the Laozuoshan gold deposit, NE China**  
*Fei Huang, Lin Meng, Yan Dong Peng, Jia Liu, Dao Heng Wang, Jie Liu, Ke Xing Qiao, Yun Xi Meng, Teng Ma, and Wen Yuan Gao*
- P 186 **Nano- to micron-scale particulate gold hosted by magnetite: A product of gold scavenging by bismuth melts**  
*Xiaoming Sun, Haoyang Zhou, Nigel J. Cook, Hai Lin, Yu Fu, Richen Zhong, and Joël Brugger*
- P 187\* **Local deformation, metasomatism, permeability experiments, and numerical modeling for skarn formation at the Middle-Late Jurassic Tongshanling Cu-Pb-Zn deposit, Nanling Range, South China**  
*Stanislas Sizaret, Xudong Huang, Jianjun Lu, Alain Chauvet, Luc Barbanson, Rucheng Wang, Dongsheng Ma, Xu Zhao, Qiang Zhang, Xiaoyu Li, and Guanghong Chen*
- P 188\* **Evolution of ore-fluids and its implications for skarn Cu-Au mineralization at Jilongshan, SE Hubei Province, eastern China**  
*Gaohua Fan and Jianwei Li*
- P 189\* **Mineralogical characterization and zonation of the Payandé Cu skarn, Central Cordillera, Colombia**  
*Julian David Medina Arboleda, Julian David Melo, and Andrés Felipe Gonzalez*
- P 190 **A geochronological framework for early Mesozoic magmatism associated with Cu-Mo-Fe-Pb-Zn skarn deposits in the Qiman Tahg area, Qinghai Province, East Kunlun Orogen, western China**  
*Lei Yao, Zhicheng Lü, Zhenshan Pang, Xiaofei Yu, Lin Geng, Zhihui Zhang, and Mingchao Zhang*
- P 191 **Element chemistry of garnets and epidote minerals at the Cantung W-Cu skarn: Implications for nature of ore forming fluids**  
*Carlin Lentz and Chris P.E. Lentz*
- P 192 **The relationships of Au-Cu skarn and Au-Bi-Te mineralization: Examples from the Alati-Sayan fold belt, Russia and Kazakhstan**  
*Evgeny Naumov, Yuri Kalinin, Konstantin Kovalev, and Irina Tretiakova*
- P 193\* **Geology and isotope geochemistry of the Tongchanggou Mo-Cu deposit, southeast Yidun terrane, east Tibet**  
*Liqiang Yang, Xue Gao, Evan Orovan, and Jianyin Meng*
- P 194\* **Yanshanian Pb-Zn mineralization at the Baiyinnuoer deposit, Chifeng, Inner Mongolia: Evidence from geochronology and geochemistry**  
*Pengfei Zhang, Xiaojun Zhang, Shengsheng Xue, Ying Qin, and Yiwen Wei*
- P 195\* **Conditions of formation for magmatic-hydrothermal features in the Sn-mineralized Heemskirk Granite, western Tasmania, SE Australia**  
*Wei Hong, David R. Cooke, Lejun Zhang, and Nathan Fox*
- P 196\* **Tracing the aqueous fluid exsolution in mineralizing granite using patchy zoned amphibole: An example from the Tieshan Fe (Cu) skarn deposit, SE Hubei Province**  
*Deng-Fei Duan, Shao-Yong Jiang, and Yao-Ming Xu*

- P 197\* **Ore-bearing strata and newly discovered gabbro diorite at Longqiao skarn iron deposit in the Lu-Zong basin, Anhui Province, China**  
*Haolan Hong, Taofa Zhou, Noel Clarence White, Yu Fan, and Yinan Liu*
- P 198 **Metallogenic epoch and metal sources for deposits of the Tongshanling Cu-Pb-Zn-polymetallic ore field, southern Hunan Province, China**  
*Hongmei Yang, Chongpeng Liu, Yingxiong Cai, Liguo Zhang, Shansong Lu, Yunfeng Wang, Xiaofei Qiu, and Juanjuan Tan*
- P 199 **Fluid inclusions of the Gejiu world-class Sn-Cu polymetallic deposit and implication for ore formation**  
*Yongqing Chen, Zhenyi Wang, and Jiande Li*
- P 200\* **Geochemical studies in the exploration for gold, Atacocha Mining Unit, Cerro de Pasco, Peru**  
*Carlos Joel Rodriguez, Ivan Eliud Branes, Roger Feliciano Pino, and Paul Quispe*
- P 201\* **Trace elemental compositions of garnet in the Guilinzheng-Huangshanling deposit, Jiangnan transition zone, China**  
*Xuefeng Chen, Taofa Zhou, Yu Fan, Dayu Zhang, and Noel C. White*

### Structural Geology of Ore Deposits

- P 202\* **Structural controls on gold mineralization in the Jiaojia gold field**  
*Liqiang Yang, Zhongliang Wang, Sirui Wang, Ruizhong Zhang, and Xiaojie Yu*
- P 203\* **Mineralogical and structural characterization of a gold-rich porphyry deposit in Tolima, Colombia**  
*Iván Mateo Espinel Pachón, Andrés Felipe González Durán, Juan Carlos Molano Mendoza, and Juan David Alarcón Rodríguez*
- P 204\* **Chemical characteristics of zircons from the rare metal deposit in the Khaldzan Burgedei peralkaline complex, western Mongolia**  
*Sarangua Nergui, Watanabe Yasushi, Echigo Takuya, and Hoshino Mihoko*

- P 205\* **Three-dimensional structural geologic reconstruction of the Botija porphyry Cu-Mo (-Au) deposit, Cobre Panamá district, Panamá**  
*Michael D. Sepp and John H. Dilles*
- P 206 **Structural control of the world-class Sn district of San Rafael, Peru**  
*Stefano Gialli, Alain Chauvet, Kalin Kouzmanov, Andrea Dini, Richard Spikings, Miroslav Kalinaj, and Lluís Fontboté*
- P 207\* **Ore-controlling structural model of the Jiaojia gold belt, Shandong Province, China**  
*Liqiang Yang, Ruihong Li, Liang Zhang, Ping An, and Menghe Yun*
- P 208 **Magmatic deposits of the Kodar-Udokan area, Southern Siberia, Russia: Geology, geochemistry and modeling**  
*Bronislav Gongalsky, Elena Belousova, Alexey Petrov, Georgy Pavlovich, Konstantin Murashov, Nadezhda Krivolutskaya, and Alexandr Timashkov*

### Tectonics and Metallogeny of Asia

- P 209 **Stable isotope (O, D, S, Cu) geochemistry of selected gold deposits from eastern Turkey**  
*Ali Ucurum, Cigdem Sahin Demir, Taner Ekici, Nazmi Otlu, Greg B. Ahehart, and Ryan Mathur*
- P 210\* **Petrogenesis of the Saindak porphyry Cu-Au deposit, Chagai district, Balochistan, SW Pakistan: Evidence from petrology, geochemistry, U-Pb geochronology and Hf isotopes**  
*Abdul Ghaffar, Xue Chuandong, Hou Zengqian, Yang Zhiming, Yang Tiannan, Ullah Inayat, Kun Xiang, and Sher Sultan Baig*
- P 211 **Neoproterozoic VMS mineralization and tectonic evolution of northwestern Yangtze block**  
*Yanping Su, Baolin Zhang, and Huizhong Li*

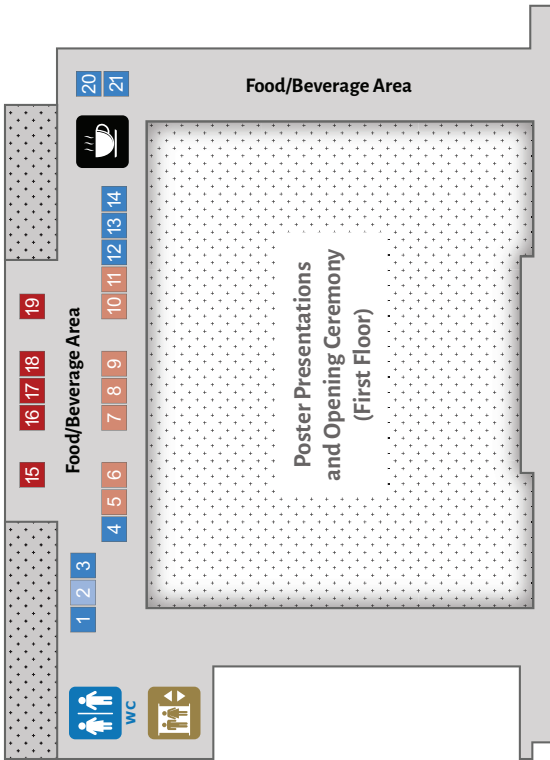
- P 212\* **Zircon U-Pb geochronology and geochemistry of the intrusions associated with the Jiawula Pb-Zn-Ag deposit in the Great Xing'an Range, NE China, and their implications for mineralization**  
*Sida Niu and Shengrong Li*
- P 213\* **Petrochronology of zircons from magmatic rocks of the Kışladağ Au (-Mo) porphyry deposit, Turkey**  
*Luca Paolillo, Massimo Chiaradia, Alexey Ulianov, Richard Spikings, and David Selby*
- P 214 **Sr, O, D and S isotopic compositions of celestine deposits from the Tertiary Sivas Basin, Turkey**  
*Ali Ucurum, Cigdem Sahin Demir, Albert H. Hofstra, Greg B. Arehart, and Ernst Pernicka*
- P 215 **Structural-metallogenic zones in the Lesser Caucasus of Azerbaijan: Geology, ore deposits and a Tethyan ore belt**  
*Anar Valiyev, Stephen Westhead, Mehman Talibov, Rashad Asgarov, Samir Murslov, Gulnara Alizada, and Aygul Abdurrahimli*
- P 216 **Indosinian magmatic activity and formation of the Muguayuan porphyry-type tungsten deposit, Hunan Province, China**  
*Yingchun Pang, Liang Shan, and Shunbo Cheng*
- P 217\* **Preliminary investigation of petrography and geochemistry on the plutonic rocks in the Loei fold belt, northeastern Thailand**  
*Patchawee Nualkhao, Ryohei Takahashi, Akira Imai, and Punya Charusiri*
- P 218 **Spatial and temporal distribution of tin deposits in the southern Great Xing'an Range, northeast China**  
*Lijie Liu, Taofa Zhou, Dayu Zhang, Guangxian Liu, and Noel Clarence White*
- P 219 **Metallogeny of the Xing-Mong orogenic belt**  
*Sihong Jiang, Bagas Leon, Lili Zhang, and Yifei Liu*
- P 220 **Zircon characterization as a pathfinder for porphyry Cu deposits**  
*Luis A. Parra-Avila, Marco L. Fiorentini, Yongjun Lu, Robert Loucks, and Steve Garwin*

- P 221 **Geochronology, geochemistry, and Hf isotope of the granite porphyry at Shimensi in the Dahutang tungsten district, northern Jiangxi Province**  
*Zhihui Zhang, Lin Geng, and Lei Yao*
- P 222\* **Transition from high sulfidation epithermal Au to porphyry Cu system and associated magmatism, Shangalon-Maharsan area, north-central Wuntho-Popa Arc, Myanmar**  
*Thiri Ye Htut, Kezhang Qin, Guangmiang Li, Kyaing Sein, and Shiqiang Su*
- P 223 **Tectonic magmatic evolution and mineralization of Bogda-Harlik tectonic belt, Xinjiang, China**  
*Zhixin Zhu, Ping Li, Tongyang Zhao, Liuyuan Jin, and Yanfei Zhu*
- P 224\* **Fluid inclusions and C-H-O-S isotope systematics of the Suyunhe porphyry Mo deposit, West Junggar, NW China**  
*Chong Cao and Ping Shen*
- P 225\* **Mineral inclusions in chromite from the Al-rich type chromite deposit in the Kudi ophiolitic suite, northwestern China**  
*Jian Wang, Jian G. Liu, and Keiko H. Hattori*
- P 226 **Regional metallogeny of Mo-bearing deposits in NE China**  
*Qihai Shu, Zhaoshan Chang, Yong Lai, Yitao Zhou, Yi Sun, and Cong Yan*
- P 227\* **Genesis of the Changjiang uranium ore field, northern Guangdong, South China**  
*Fujun Zhong and Jiayong Pan*
- P 228 **Age and geochemistry of granitoids from the Sijiaoyang-Niukutou and Kaerqueka skarn deposits, Qiman Tagh area, East Kunlun Orogen: Implications for Devonian magmatism and mineralization**  
*Lei Yao, Zhicheng Lü, Caisheng Zhao, Zhenshan Pang, Jianling Xue, and Hui Chen*

- P 229\* **Elucidating the host rock petrogenesis of the Masara gold district, Eastern Mindanao, Philippines: Implications for metallogenesis**  
*Alfred Elmer Buena, Barbie Ross Villaplaza, Betchaida Payot, Jillian Aira Gabo-Ratio, Noelynna Ramos, Decibel Faustino-Eslava, Queaño Karlo, Carla Dimalanta, Walter Brown, and Graciano Yumul, Jr.*
- P 230 **Geochronology and geochemistry of the Zhunsujihua intrusions and associated porphyry Mo deposit, northern Inner Mongolia, China: Analysis of petrogenesis, tectonic significance, and Mo mineralization**  
*Xiaojun Zhang, David R. Lentz, Chunliang Yao, Rui Liu, Zhen Yang, Ying Qin, and Fei Huang*
- P 231\* **Age and geochemistry of ore-related intrusions in the Zhonggu ore field, Middle-Lower Yangtze metallogenic belt**  
*Weian Sun, Feng Yuan, and Noel C. White*
- P 232 **Magmatic oxidation state of the Baogutu porphyry copper deposit, Xinjiang, China: Implications for porphyry copper mineralization**  
*ShaoNi Wei*
- P 233 **Source of Iranian porphyry copper hosted intrusions: Constraints from Hf isotope ratios in zircon**  
*Mehraj Aghazadeh, Zengqian Hou, Zahra Badrzadeh, and Zhiming Yang*
- P 234 **Origin of the Eocene porphyries and mafic microgranular enclaves from the Beiya porphyry-skarn Au polymetallic deposit, western Yunnan, China**  
*Wenyan He, Liqiang Yang, Xuanxue Mo, and Xinshang Bao*
- P 235 **Muscovite  $^{40}\text{Ar}$ - $^{39}\text{Ar}$  dating of the Tiantangshan Sn deposit in Nanling region, South China**  
*Lin Geng, Lei Yao, Zhihui Zhang, Ruya Jia, and Hongxiang Jia*
- P 236 **Research on the metallogeny and exploration potential of the Guilaizhuang goldfield, western Shandong**  
*Dapeng Li, Wei Shan, and Pengfei Wei*

## Exhibitors

Exhibitor	Booth no.	Website
International Association on the Genesis of Ore Deposits (IAGOD)	1	iagod.org
CODES	3	utas.edu.au
SGA	4	e-sga.org
ALS Minerals	12	alsglobal.com
ZEISS Microscopy	13	zeiss.com
Olympus (China) Co., Ltd.	14	olympus-ims.com.cn
China University of Geosciences, Beijing (CUGB)	15	cugb.edu
Society of Economic Geologists (SEG)	16	segweb.org
BHP	17-18	bhp.com
Shandong Gold Group	19	sd-gold.com
Springer	20	springer.com
EGRU	21	jcu.edu.au



**Exhibition Area**  
**CUGB Gymnasium**  
**(Second Floor)**

**General**  
 Reserved  
 Available

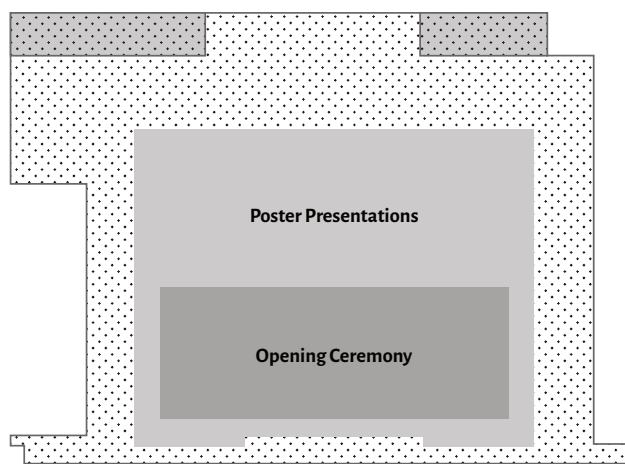
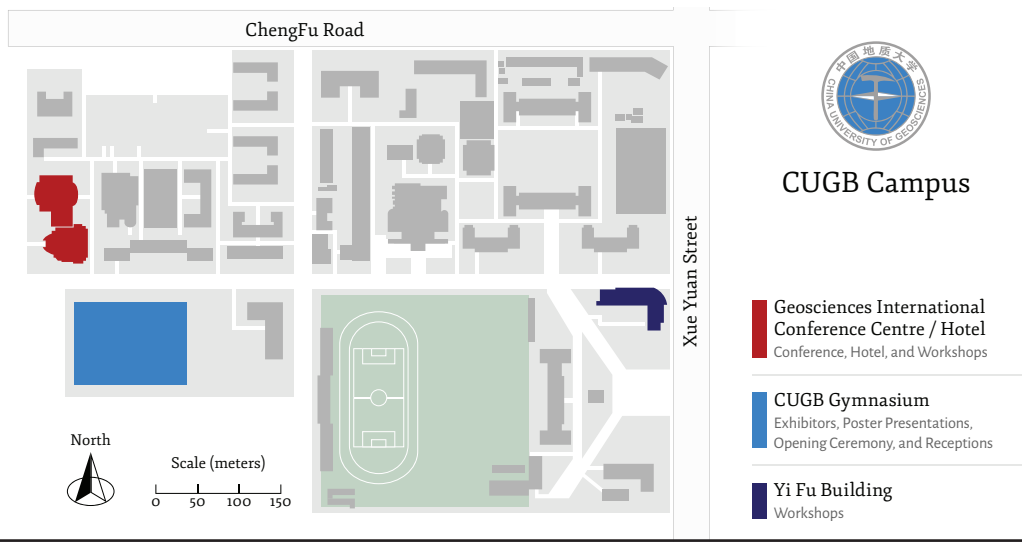
**Complimentary**  
 (Patron, Premier,  
 and Gold sponsors)  
 Reserved  
 Available



**16**



# SEG 2017 Conference Floor Plan



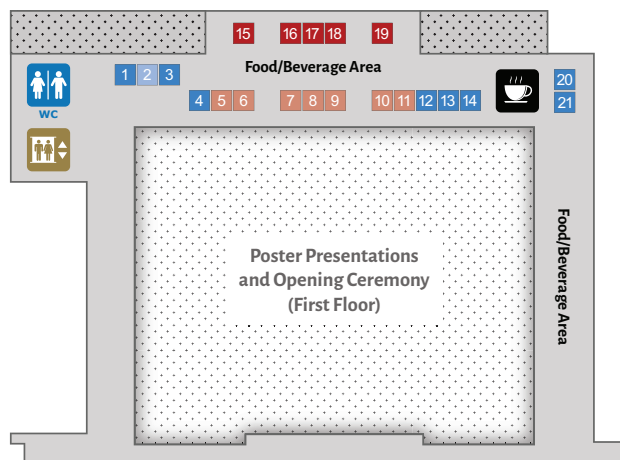
## Exhibition Area CUGB Gymnasium (Second Floor)

- General**
- Reserved
  - Available
- Complimentary**  
(Patron, Premier, and Gold sponsors)
- Reserved
  - Available



16

## Poster Presentations CUGB Gymnasium (First Floor)



# Thank You, Sponsors

## PATRON

# BHP

## PREMIER



## GOLD



China Gold International  
Resources Corp.



## SILVER



AngloAmerican



RioTinto



## BRONZE



CSIT Consulting

Dawn Zhou



## SUPPORTING ORGANIZATIONS



# SEG

www.segweb.org

## METALS, MINERALS, AND SOCIETY

Keystone, Colorado, USA  
September 22-25, 2018  
SEG2018.org

CALL FOR ABSTRACTS  
Deadline: March 31, 2018

This conference looks ahead at the types of ore deposits and the kinds of metals and minerals required to meet the demands of society.

### PLENARY SESSIONS

- Breakthroughs in economic geology
- Integrating geology, geochemistry, and geophysics
- Integrating mineral and petroleum systems approaches to sedimentary basins
- Implications for society

### TECHNICAL SESSIONS

- Precious metals: Au, Ag, PGE
- Base metals: Cu, Zn, Ni, Pb
- Infrastructure metals: Fe, Al, Mn
- Technology and energy metals and minerals: Co, Li, U, REE
- Looking to the future: What's next?

### FIELD TRIPS

Cripple Creek and Victor Au mine ● Bingham Canyon Cu and Mo mine ● REE and precious metals-Mojave and Death Valley regions ● Li and Au associated with rhyolites ● Climax and Henderson Mo mines and Leadville district ● Paradox Basin fluids and Colorado Plateau Cu, U, and V deposits

### WORKSHOPS

Cu-Mo porphyry deposits ● Introduction to geology-based domaining for resource estimation and grade control ● Structural geology in hydrothermal ore deposits ● Exploration geochemistry ● Geophysics for exploration geologists ● Spectral geology and hydrothermal alteration