



# Tethyan Tectonics and Metallogeny

September 25–28, 2016  
Çeşme, Turkey

[www.seg2016.org](http://www.seg2016.org)

SEG 2016

SEG 2016 conference



bhpbilliton

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## Sunday

### Student Mentoring Activities

3:00pm – 5:00pm

### Presidential Address; Opening Remarks

5:00pm – 6:00pm  
Main Meeting Hall

### Welcome Reception

6:00pm – 9:00pm  
Outdoors,  
Sheraton Çeşme Hotel

## REGISTRATION

Saturday: 1:00pm – 8:00pm  
Sunday: 12:00pm – 8:00pm  
Monday: 7:30am – 5:00pm  
Tuesday: 8:00am – 5:00pm  
Wednesday: 8:00am – 3:30pm

## EXHIBITS and POSTERS

Sunday: 6:00pm – 8:00pm  
Monday: 9:30am – 6:30pm  
Tuesday: 9:30am – 6:30pm  
Wednesday: 9:30am – 3:30pm

## SPEAKER PREPARATION

### Speaker Ready Room

Off the Main Meeting Hall

### WIFI ACCESS

Password Available at  
Registration

## CONFERENCE PROCEEDINGS

Attendees will have received an e-mailed link to a Dropbox containing pdf files of 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

8:30am – 10:00am

### Plenary Session

Main Meeting Hall

10:00am – 10:30am

### Coffee Break and Posters

Lower Level

10:30am – 12:00pm

### Plenary Session

Main Meeting Hall

12:00pm – 1:30pm

### Lunch and Posters

Lower Level

1:30pm – 3:00pm

### Technical Sessions

Main Meeting Hall  
Parallel Meeting Hall

3:00pm – 3:30pm

### Coffee Break and Posters

Lower Level

3:30pm – 5:00pm

### Technical Sessions

Main Meeting Hall  
Parallel Meeting Hall

5:00pm – 6:00pm

### Reception

Lower Level

## Tuesday

8:30am – 10:00am

### Technical Sessions

Main Meeting Hall  
Parallel Meeting Hall

10:00am – 10:30am

### Coffee Break and Posters

Lower Level

10:30am – 12:00pm

### Technical Sessions

Main Meeting Hall  
Parallel Meeting Hall

12:00pm – 1:30pm

### Lunch and Posters

Lower Level

1:30pm – 3:00pm

### Technical Sessions

Main Meeting Hall  
Parallel Meeting Hall

3:00pm – 3:30pm

### Coffee Break

Lower Level

3:00pm – 5:00pm

### Poster Session

Lower Level

4:00pm – 5:00pm

### SEG Awards

### Student Presentation Prizes

Main Meeting Hall

5:00pm – 6:00pm

### Reception

Lower Level

## Wednesday

8:30am – 10:00am

### Technical Sessions

Main Meeting Hall

10:00am – 10:30am

### Coffee Break and Posters

Main Meeting Hall

10:30am – 12:00pm

### Technical Sessions

Main Meeting Hall  
Parallel Meeting Hall

12:00pm – 1:30pm

### Lunch and Posters

Main Meeting Hall

1:30pm – 3:00pm

### Plenary and Technical Sessions

Main Meeting Hall

3:00pm – 3:30pm

### Coffee Break and Posters

3:30pm – 4:30pm

### Technical Session and Invited Commentary

Main Meeting Hall

4:35pm – 5:00pm

### Panel and Open Discussion

Main Meeting Hall

Followed by

### Closing Remarks

All sessions and social events are held at the Sheraton Çeşme Hotel, Resort, and Spa, unless otherwise noted. Technical Sessions are in the meeting rooms in the Arkhe Convention Hall. Posters, Exhibitors, and Lunch/Coffee/Reception breaks are on the lower level. See the floor plan on the inside back cover of this program.

For updates, go online to [www.seg2016.org](http://www.seg2016.org)



## ***Welcome to SEG-MJD 2016 and to Çeşme, Turkey!***

This year, the SEG Conference, *Tethyan Tectonics and Metallogeny*, is jointly hosted by the Society of Economic Geologists and Maden Jeologları Derneği (MJD). On behalf of the Organizing Committee, it is our pleasure and privilege to extend to you a warm welcome to Çeşme. This conference promises to be one of the most exciting and rewarding that the Society has organized, given its location and focus on the Tethyan metallogenic belt, and the extension of this theme and its underpinning of geology and tectonics to many terranes worldwide.

The technical sessions will provide a very full program of topics covering all aspects of metallogenesis, mineral exploration, and mining, with international keynote speakers for each theme. Technical talks will be supplemented by posters that cover a variety of topics in economic geology that are the focus of current research. Pre- and post-conference field trips are complemented by guest activities that will allow participants the opportunity to explore this beautiful and culturally diverse country.

We take this opportunity to warmly express our gratitude to all our sponsors, listed in this program, who have contributed to making this an unforgettable experience by ensuring the attendance of first-rate speakers and a diverse group of students from all corners of the globe. The participation of students has been an important focus of the conference and students will make up a significant proportion of the conference attendees as a direct result of strong support from sponsors. Many of these sponsors are also exhibitors, creating a setting for professional networking and the renewal of old acquaintances.

We trust that you will enjoy this major technical and social event as well as the culture, cuisine, and hospitality for which Turkey is famous.

**Mesut Soylu**, *Chairman,*  
*SEG 2016 Organizing Committee*

**Brian G. Hoal**, *Executive Director,*  
*Society of Economic Geologists*

## Table of Contents

<b>1</b>	Welcome
<b>3</b>	Conference Information
<b>4</b>	SEG Awardees
<b>5</b>	Pre-Conference Program
<b>6</b>	Technical Program
<b>6</b>	Monday
<b>10</b>	Tuesday
<b>15</b>	Wednesday
<b>18</b>	Post-Conference Program
<b>19</b>	Posters
<b>28</b>	Exhibitors/floor plan
<b>30</b>	Thank you, Sponsors
<b>Inside Back cover</b>	Conference Center floor plan

## Conference Information\*

### Organizing Committee Members

- Conference Chairman: **Mesut Soylu**, Mineral Consultancy
- **Brian Hoal**, Executive Director, Society of Economic Geologists
- Conference Vice-Chair and Sponsorship: **Steve Enders**, Eurasian Minerals
- Technical Program: **İlkay Kuşcu**, Muğla Sıtkı Koçman University
- Field Trips: **Bayram Artun**, Teck Resources Ltd.
- Conference Publication Editor: **Jeremy Richards**, University of Alberta
- Student Programs: **Cengiz Demirci**, Asia Minor Mining
- Short Courses: **Richard Tosdal**, Consultant
- Administration/Logistics: **Arda Arcasoy**, Consultant
- Social Events: **Mehmet Deveci**, Consultant
- Secretary/Students: **Alison Cronk**, Society of Economic Geologists

### 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 Manager/Exhibits/Registration

ZED Event Management and Consultancy  
[seg2016@zed.com.tr](mailto:seg2016@zed.com.tr)  
Tel. +90.312.219 57 00 /ext. 393

\*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 Sheraton Çeşme Hotel. For updates, please go to [www.seg2016.org](http://www.seg2016.org).



## SEG Awardees

Please join us for the SEG Awards Ceremony on Tuesday, September 27, 2016, from 4:00 to 5:00 p.m. in the Arkhe Convention Hall, Sheraton Çeşme Hotel.

SEG R.A.F. Penrose Gold Medal for 2015

**RICHARD H. SILLITOE**  
Consultant, United Kingdom

SEG Silver Medal for 2015

**JEREMY P. RICHARDS**  
University of Alberta, Canada

SEG Ralph W. Marsden Award for 2015

**STEPHEN E. KESLER**  
University of Michigan, USA

SEG Waldemar Lindgren Award for 2015

**ZOLTAN ZAJACZ**  
University of Toronto, Canada

Brian J. Skinner Award for 2015

**CELESTINE MERCER**  
University of Oregon, USA

SEG Distinguished Lecturer for 2016

**JOHN E.H. THOMPSON**  
Consultant, Canada, and Cornell University, USA

SEG International Exchange Lecturer for 2016

**MURRAY W. HITZMAN**  
Colorado School of Mines, USA

SEG Thayer Lindsley Visiting Lecturer for 2016

**JEREMY P. RICHARDS**  
University of Alberta, Canada

SEG Regional Vice President Lecturer for 2016

**CÉSAR E. AGUIRRE**  
Consultant, Peru

## Pre-Conference Program

*Sunday, September 25, 2016*

*Sheraton Çeşme Hotel*

Student Reception

3:00 p.m.

Student Mentoring Forum

3:30 p.m.–5:00 p.m.

Student Mentoring Forum

Hosted by  **bhpbilliton**

SEG Presidential Address: Bob Foster; Opening Remarks  
5:00 p.m.–6:00 p.m.

## Forum Panel

**David Bickford**, V.P. and General Manager,  
Eldorado Gold Corp., Turkey

**Francisco Crignola**, Superintendent for  
Copper Exploration, BHP Billiton, Chile

**Stephen Enders**, Director and COO,  
Eurasian Minerals, Inc.

**Bob Foster**, SEG President 2016, Consultant  
**Brian Hoal**, Executive Director,

Society of Economic Geologists

**Jason Odette**, Principal Exploration Geologist,  
BHP Billiton, USA

## Welcome Reception

*Outdoors, Sheraton Çeşme Hotel*

6:00 p.m.–9:00 p.m.

## Pre-Conference Field Trip

**Biga Peninsula:**

**September 20–24**

**Au-Cu-Mo-Pb-Zn Deposits**

Field Trip Organizer: Nuri Ceyhan

## Technical Program

Talks for which the presenting author is a student can be identified by an asterisk (\*) that follows the title. Names of invited speakers are **highlighted**. If the presenter is not the first author or if two speakers will present, speaker names are **underlined**. Posters can be viewed during all breaks.

*Day 1: Monday, September 26, 2016*

*Main Meeting Hall*

### Introductory Plenary Talks:

Tethyan Tectonics and Metallogeny

**Chairs: Mesut Soylu and Bob Foster**

**Tethyan Orogens in Eurasia: Where Do They Fit in the Structure of the Continent and in the World of Metallic Ores?** .....8:30 am  
A.M. Celal Şengör

**Tethyan Tectonomagmatic Processes and Metallogeny** .....9:15 am  
Jeremy P. Richards, *SEG Thayer Lindsley Lecturer*

**BREAK 10:00 AM**

### Plenary Session

**Overview of Exploration in the Tethyan** .....10:30 am  
Richard Schodde

**Changing World—Changing Exploration** .....11:15 am  
John F.H. Thompson, *SEG Distinguished Lecturer*

**LUNCH 12:00 PM**

### Two Concurrent Sessions:

*Main and Parallel Meeting Halls*

### Session 1a: Tethyan Tectonics and Metallogeny

**Chairs: István Márton and Cam McCuaig**

KEYNOTE: **Western Tethyan Metallogeny in the Mediterranean Realm**..... 1:30 pm  
Ferenc Molnár

**Timing of Magmatism and Mineralization in Southeastern Europe** ..... 2:00 pm  
Albrecht von Quadt, Daniela Gallhofer, Stoyan Georgiev, and Irena Peytcheva

**Lithospheric Controls on the Porphyry Cu-Au-Mo Mineralization along the West-Central Neotethyan Metallogenic Belt**..... 2:30 pm  
Aleksandar Mišković

### Session 2a: Tools for Research and Exploration

**Chairs: Lawrence Meinert and Stephen Kesler**

KEYNOTE: **Zircon Chemistry as a Pathfinder for Porphyry Cu ± Mo ± Au Systems** ..... 1:30 pm  
Yongjun Lu, Robert R. Loucks, Marco Fiorentini, T. Campbell McCuaig, Noreen J. Evans, Zhiming Yang, Zengqian Hou, Chris L. Kirkland, Luis A. Parra-Avila, and Alan Kobussen



**Tracking Magmatic Input into Fe Skarn and Ore Formation: Elba Island, Tuscan Metallogenic Province, Italy**..... 2:00 pm

Kalin Kouzmanov, Andrea Dini, Carlos Arbiol, Natalia Karadima, Nuria Bach, Luca Caricchi, and Markus Wälle

**Geochemical and Quartz Mineralogical Vectors to Epithermal Ore in Lithocaps in the TV Tower District, Biga Peninsula, Turkey, and Kassiteres-Sapes District, Greece**..... 2:20 pm

Thomas Bissig, Thomas Monecke, Elizabeth Ann Holley, Graham Leroux, Panagiotis Voudouris, and Aleksandar Mišković

**Spectral Analyzes for Hydrothermal Alteration Mapping of Porphyry Type Deposits in Southern Jabal-e-Barez Region, Southern Part of Kerman Copper Belt, Iran**..... 2:40 pm

Seyyed Jabber Yousefi, Hojatollah Ranjbar, David Lentz, Saeed Alirezaei, and Sara Dargahi

**BREAK 3:00 PM**

**Two Concurrent Sessions:**

*Main and Parallel Meeting Halls*

**Session 1b: Tethyan Tectonics and Metallogeny**

*Chairs: Kalin Kouzmanov and Nurullah Haniilçi*

**Reconstructing the Tethys\***..... 3:30 pm  
Nurbike G. Sağdıç, Nalan Lom, Semih Can Ülgen, and A.M.C. Şengör

**Space and Time Evolution of Ore Deposits in the Eastern Mediterranean Region During the Last 100 Myrs:**

**A Matter of Subduction Dynamics**..... 4:00 pm  
Armel Menant, Laurent Jolivet, Laurent Guillou Frottier, Johann Tuduri, Christelle Loiselet, Guillaume Bertrand, Pietro Sternai, and Taras Gerya

**Fertile Magmatism from the Northern Part of the Central Srednogie Segment of the Late Cretaceous Apuseni-Banat-Timok-Srednogie Magmatic/Metallogenic Belt**..... 4:20 pm

Stoyan Todorov Georgiev, Raya Raicheva, Peter Marchev, Irena Peytcheva, Elitsa Stefanova, Albrecht Von Quadt, and Ianko Gerdjikov

**Geologic Setting and Tectonic Evolution of Porphyry Cu-Au, Polymetallic Replacement, and Sedimentary Rock-Hosted Au Deposits in the Northwest Timok Magmatic Complex, Serbia**..... 4:40 pm

Richard Tosdal, Matias Knaak, Istvan Márton, Van Der Toorn Justin, Hasson Sean, Dragana Davidovic, Ivan Strmbanovic, Mladen Zdravkovic, and Jelena Ivanovic

**Session 2b: Exploration and Ore Deposits of Iran**  
*Chairs: Saeed Saadat and Peter Leaman*

**Geophysical Signature of the Bafq Iron-Oxide-Apatite Deposits in Central Iran: Implications for Exploration**..... 3:40 pm

Adam Wooldridge, Reza Ravasan, Jon Andrew, Jude King, Gavin Doyle, Ian Basso, Farzad Mahdavi, and Hartwig Frimmel

**Structural Interpretation of New High-Resolution Aeromagnetic and Radiometric Data in Central Iran**..... 4:00 pm

Ian James Basson, Reza Ravasan, Farzad Mahdavi, Yeganeh Hemmati, Mohammad Sabzehparvar, Mehdi Masoodi, Adam Wooldridge, Jon Andrew, Gavin Doyle, and Jude King

**Combining Airborne Geophysical Data with Available Geology and Geochemistry to Identify Prospective Areas for Pb-Zn Mineralisation in Central Iran**..... 4:20 pm

Reza Ravasan, Adam Wooldridge, Jon Andrew, Hartwig Frimmel, Gavin Doyle, Ian Basson, and Farzad Mahdavi

**Regional Integrated Structural and Alteration Analysis of Magnetic and Infrared Remote Sensing Data from the Kerman Belt, Iran**..... 4:40 pm

Anna Fonseca, Aleksandar Mišković, James Siddorn, Sarah Monoury, and Mana Rahimi

**RECEPTION 5:00 PM**



*Day 2: Tuesday, September 27, 2016*

**Two Concurrent Sessions:**

*Main and Parallel Meeting Halls*

**Session 3a: Tethyan Tectonics and Metallogeny**

**Chairs: Vasilios Melfos and Vertrees Canby**

**Constraining Contrasting Styles of Magmatism and Metal Endowment along the Maronia**

**Magmatic Corridor, NE Greece\*** .....8:30 am  
Rebecca J. Perkins, Frances J. Cooper,  
Jonathan Naden, and Daniel J. Condon

**Magmatic and Metallogenic Framework of Au-Cu Porphyry and Polymetallic Carbonate-Hosted Replacement Deposits of the Cassandra Mining District, Northern Greece\*** .....8:50 am

Chris R. Siron, John F.H. Thompson, Tim Baker,  
Richard Friedman, Pavlos Tsitsanis, Sally Russell,  
Scott Randall, and Jim Mortensen

**Post-Subduction Porphyry and Epithermal Gold Systems and Associated Magmatism of the Miocene Anatolian Metallogenic Belt, Turkey\*** ...9:10 am

Fabien Rabayrol, Aleksandar Mišković, and  
Craig J.R. Hart

**KEYNOTE: Metallogeny of the Lesser Caucasus: From Arc Construction to Post-Collision**

**Evolution** .....9:30 am  
Robert Moritz

**Session 4a: Tethyan Ore Deposits and Exploration**

**Chairs: Huseyin Yilmaz and Stephen Enders**

**Discovery of the Öksüt Million-Ounce High-Sulfidation Gold Deposit, Turkey** .....8:30 am

Bahri Yildiz, Richard Sillitoe, Robert Foster,  
David Hall, and Malcolm Stallman

**Öksüt Gold Project; from Grassroots Discovery to Reserve and Forward to Mine Developments**

Mustafa Cihan, Deniz Can Serçe,  
and Semih Bekarslan

**A New Geological Model for the Chelopech Au-Cu Deposit in Bulgaria: Exploring a Maar-Diatreme System within an Intrusive Environment** .....8:50 am

Istvan Marton, Yaroslav Dintchev, Mariana Trifonova,  
Neli Hadzhieva, Miglena Grigorova, Aneta Aleksieva,  
Georgi Ivanov, Slaviša Milinkovic, Alexandru Szakács,  
Mathias Knaak, Kuncho Kunchev, and Richard Gosse

**Crustal Extension and Its Relationship to Porphyry Cu-Au and Epithermal Au Mineralization in the Biga Peninsula, NW Turkey** .....9:10 am

Matías G. Sánchez, Ken R. McClay, and Adrian King

**The Source and Transport of PGEs in Tethyan Porphyry Deposits—Bi-Te-Se Melts as a Collector Mechanism for PGEs in the Skouries Cu-Au Deposit, Greece\*** .....9:30 am

Katie McFall, Stephen Roberts, John Naden,  
Paul Lusty, Adrian Boyce, and Damon Teagle

**Hydrothermal Evolution of the Çöpler Porphyry-Epithermal Au Deposit, Erzincan Province, Central Eastern Turkey** .....9:45 am

Ali Imer, Jeremy P. Richards, and  
Karlis Muehlenbach

**BREAK 10:00 AM**



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**Arnaud Brion**  
arnaud.brion@riotinto.com

**General manager exploration**  
**Jonte Beswick**  
jonte.beswick@riotinto.com

riotinto.com

**RioTinto**

Two Concurrent Sessions: Main and Parallel Meeting Halls

### Session 3b: Tethyan Tectonics and Metallogeny

**Chairs:** Irena Peytcheva and Adrian King

**New Re-Os Molybdenite Ages for Porphyry-Type Prospects from the Eastern Pontides Paleomagmatic Arc, Turkey** .....10:30 am  
Okan Delibas, Robert Moritz, and David Selby

**Tracking Magmatic-Hydrothermal Cycles from Subduction-Related to Post-Subduction Settings over 30 m.y. in the Meghri-Ordubad Pluton, Southern Armenia, Lesser Caucasus\*** .....10:50 am  
Herve Rezeau, Robert Moritz,  
Jorn Frederik Wotzlav, Samvel Hovakimyan,  
Rodrik Tayan, and Alexey Ulianov

**Eocene Subduction to Oligo-Miocene Post-Collisional Tectonic and Metallogenic Evolution of the Southernmost Lesser Caucasus, Armenia: Palaeostress Field Reconstruction and Structural Controls of Major Porphyry and Epithermal Deposits\*** .....11:10 am  
Samvel Hovakimyan, Robert Moritz, Rodrik Tayan,  
Rafael Melkonyan, Marianna Harutyunyan, and  
Arshavir Hovhannisyian

**Tethyan Tectonic and Metallogenic History of Iran and Neighboring Areas** .....11:30 am  
Ali Sholeh and Jeremy P. Richards

### Session 4b: Tethyan Ore Deposits and Exploration

**Chairs:** Firuz Alizade and Miodrag Banjesevic

**Reservoir Minerals: 12 Years of Exploration Targeting and Discovery in the Balkan Sector of the Tethyan Metallogenic Belt** .....10:30 am  
Timothy Fletcher, Miodrag Banjesevic,  
Aleksandar Obrenovic, Vojislav Mrdja,  
Zeljko Sofronijevic, Dusan Bjelotomic,  
Daniela Bombol, Simon Ingram, and Duncan Large

**Application of the Prospect Generator Business Model in Turkey: A Case History of Eurasian Minerals from 2003–2016** .....10:50 am  
Eric Jensen and Mesut Soylu

**Rank Statistical Analysis of Gold Endowment in Terranes of Differing Exploration Maturity: Selected Examples from Turkey and Southern Africa** .....11:10 am  
John Paul Hunt and Ozcan Yigit

**The Geology of the Kışladağ Porphyry Gold Deposit, Turkey** .....11:30 am  
Timothy Baker, David Bickford, Stephen Juras,  
Peter Lewis, Yucel Oztas, Kika Ross, Ahmet Tukac,  
and Fabien Rabayrol

**Exploration Overview of the Sayacık and Kışladağ Gold Porphyries, Western Anatolia Volcanic Province, Turkey**  
David Bickford, Ahmet Tukaç, Yücel Öztaş,  
and Tim Baker

**LUNCH 12:00 PM**

Two Concurrent Sessions:  
Main and Parallel Meeting Halls

### Session 5: Tethyan Tectonics and Metallogeny

**Chairs:** Douglas Kirwin and Peter Lewis

**Fluid-Fluxed Melting and Mixed Magma Sources: The Origin of Post-Collisional Porphyry Cu Deposits in Eastern Gangdese Belt, Southern Tibet** ..... 1:30 pm  
Rui Wang, Roberto F. Weinberg, William J. Collins,  
and Jeremy P. Richards

**Generation of Post-Collisional Porphyry Copper Deposits in Southern Tibet Triggered by Subduction of the Indian Continental Plate** ..... 1:50 pm  
Zhiming Yang, Richard Goldfarb, and  
Zhaoshan Chang

**A Genetic Linkage Between Subduction- and Collision-Related Porphyry Cu Deposits in Continental Collision Zones** ..... 2:10 pm  
Zengqian Hou, Zhiming Yang, Yongjun Lu,  
and Anthony Kemp

**KEYNOTE: Metallogenesis and Tectonic Processes along the Tethyan Mountain Ranges from Oman to Himalaya, Karakoram, Tibet, Burma, Thailand, Malaya** ..... 2:30 pm  
Michael P. Searle, Laurence J. Robb, and Nicholas J. Gardiner

### Session 6: Turkey Ore Deposits

**Chairs: Tayfun Cerrah and Kemal Revan**

**Structural and Hydrothermal Fluid Evolution of the Efemçukuru Epithermal Au Deposit, Western Turkey\*** ..... 1:30 pm  
Kaleb Boucher, Aleksandar Mišković, Matías Sánchez, Tim Baker, Craig J.R. Hart, Çağlar Acımaç, Nadir Arslan, Ömer Ilgın, Mustafa Özkayhan, Orbay Yavuz, and Özgür Akyürek

**Geology of the Halilağa Porphyry Cu-Au Deposit and Emergence of an Eocene Porphyry Belt in NW Turkey\*** ..... 1:50 pm  
Paula Brunetti, Aleksandar Mišković, Craig J.R. Hart, Andrew Davies, and Robert Creaser

**Structural Controls on the Kiziltepe Au-Ag Low-Sulfidation Epithermal Vein System, Western Turkey** ..... 2:10 pm  
Ahmet Kerim Sener, Izak Johannes Van Coller, Burak Mert, and Selim Senoz

**Magmatic Evolution and Metallogeny of Turkey** ..... 2:30 pm  
İlkay Kuscü

**BREAK 3:00 PM**

**POSTER SESSION 3:00 – 5:00 PM**

SEG Awards Ceremony and Student Poster Presentations ..... 4:00 pm

**RECEPTION 5:00 PM**

*Day 3: Wednesday, September 28, 2016*

*Two Concurrent Sessions: Main and Parallel Meeting Halls*

### Session 7: Exploration, Discovery and Development in the Tethyan

**Chairs: David Hall and Richard Sillitoe**

**Relationship Between Porphyry Copper Systems, Crustal Preservation Levels, and Amount of Exploration in Magmatic Belts of the Central Tethys Region** ..... 8:30 am  
Lukas Zürcher, Jane M. Hammarstrom, John C. Mars, Stephen D. Ludington, and Michael L. Zientek

**Timok Cu-Au District, Serbia: A Brief Review of Recent Exploration and Discovery** ..... 9:00 am  
Dejan I. Koželj, Vertrees M. Canby, and Leon Z. Naftali

**Geology, Discovery and Development of the Illova Porphyry Copper-Gold Deposit, Macedonia** ..... 9:30 am  
Dimitar L. Dimitrov and Patrick Forward

### Session 8: Tethyan Sedimentary Basins and Supergene Environments

**Chairs: Maria Boni and Richard Herrington**

**Lateritic Nickel-Cobalt and Bauxite Deposits of the (Western) Tethyan and Peri-Tethyan Belt** ..... 8:30 am  
Richard Herrington, Nicola Mondillo, Maria Boni, Robert Thorne, and Metin Tavlan





**Tethyan Belt Trona and Borate Deposits: An Overview** .....9:00 am  
Cengiz Demirci

**The Sources of Cretaceous Karst Bauxites in Southern Italy: A Review** .....9:30 am  
Maria Boni, Giuseppina Balassone,  
and Nicola Mondillo

**BREAK 10:00 AM**

**Two Concurrent Sessions:**

*Main and Parallel Meeting Halls*

*Main Meeting Hall*

**The Amulsar “drive-by” Discovery, Armenia; We Had to Be There for a Reason?** .....10:30 am  
T. J. Coughlin, R. J. Holcombe, and N.H.S. Oliver

**Anatomical Similarities and Differences Between Spatially Associated Porphyry Copper-Gold Deposits at Reko Diq, Pakistan** .....11:00 am  
Abdul Raziq, Richard Tosdal,  
and Farhad Bouzari

**Discovery of the Jiama Skarn-Porphyry Cu-Mo Deposit, Tibet** .....11:30 am  
Ying Lijuan, Tang Juxing, Greg Hall,  
and Zheng Wenbao

*Parallel Meeting Hall*

**Sr and Nd Isotopic and Elemental Evidence for the Sources of B-As-Li Sediment-Hosted Deposits of West Turkey: Exploration Implications** .....10:30 am  
Duncan Anderson and Charles Moon

**Chemical Evolution of Continental Basement Brines—the Relation of Evaporites with Metal-Bearing Hydrothermal Fluids in the Tethyan Belt\*** .....10:50 am  
Benjamin Florian Walter, Mathias Burisch,  
and Gregor Markl

**Strata-Bound, Zn-Pb Mineralization, Tethyan Metallogenic Province, Hakkari, Turkey** .....11:10 am  
Nurullah Hanilçı, Hüseyin Öztürk,  
David A. Banks, and Hayrettin Koral

**Tethyan Salt Diapir-Related Mississippi Valley-Type Pb-Zn Deposits of Tunisia and Eastern Algeria Atlasic Province** .....11:30 am  
Salah Bouhlef, David Leach, and Hechmi Garnit

**LUNCH 12:00 PM**

**Plenary Session: Comparative Tectonics and Metallogeny**

**Chairs: Celal Şengör and Richard Sillitoe**

**Mineralization in a Neoproterozoic Accretionary Orogen: Insights from the Arabian-Nubian Shield** ..... 1:30 pm  
Peter R. Johnson

**Tectonics and Metallogeny of the Central Asian Orogenic Supercollage: A Product of Interplay Between the Tethyan and Pacific Oceans** ..... 2:00 pm  
Alexander Yakubchuk

**Tectonic Triggers for Porphyry Copper Mineralization: The Central Andean Case** ..... 2:30 pm  
Constantino Mpodozis

**BREAK 3:00 PM**

**Growth and Metallogeny of the North American Cordillera: A Contrast with the Tethysides** ..... 3:30 pm  
Richard J. Goldfarb, Craig J.R. Hart,  
and Jeremy P. Richards

**Tectonic and Metallogenic Differences within the Tethyan Belt** ..... 4:00 pm  
Jeremy P. Richards

INVITED COMMENTARY ..... 4:15 pm  
A.M. Celal Şengör

INVITED COMMENTARY ..... 4:25 pm  
Richard H. Sillitoe

Open Discussion with  
Panel of Speakers and Chairs ..... 4:35 pm

Followed by Closing Remarks

## Post-Conference Field Trip

### **Balkans: Tour of Greece and Bulgaria with a Mix of Porphyry-Epithermal Deposits and Recent Discoveries**

**September 29–October 3**

Field Trip Leaders: Panagiotis Voudouris, Chris Siron, and István Márton

## 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.seg2016.org](http://www.seg2016.org).

- P 001\* **Review of the Geology of Porphyry Ore Deposits in the Tethyan Orogenic Belt—a Case Study of the Bangpu Mo-Cu Porphyry Ore Deposits, Tibet, China**  
*Hafizullah Abba Ahmed, Hafizullah Abba Ahmed, Lianxun Wang, Mukhtar Habib, and Mohammed M. Abdallsamed Ishag*
- P 002 **Mineralogy and Geochemistry of Hydrothermal Alteration Zones in the Sungun Porphyry Cu-Mo Deposit, Northwestern Iran, Tethyan Metallogenic Belt: Footprints for Porphyry Copper Exploration**  
*Farhang Aliyari, Ali Abedini, Maryam Pirgharebaghi, and Hou Zengqian*
- P 003\* **Geology and Geochemistry of Subvolcanic Rocks and Faulting in the Roshtkhar Prospecting Area, Northwest of Sangam Mine, Lut Block, NE Iran: Analysis of Controls on Mineralization**  
*Elahe Alizadeh, Gholamreza Ghadami, Dariush Esmaily, and David Lentz*
- P 004 **Evaluation of Surface Soil Geochemical Data and Statistical Modeling of Akarca Fula Tepe Low Sulfidation Epithermal Au-Ag Mineralization (Bursa), Turkey**  
*Derya Bal and Mesut Soyulu*
- P 005 **Hydrothermal and Tectonic Processes Key to the Origin of the Efemçukuru Au Deposit, Western Turkey**  
*David Banks, Nurullah Hanilci, Gulcan Bozkaya, Fatih Ozbas, and Nadir Arslan*
- P 006 **A Case Study of Alteration Mapping and Targeting on a Regional Scale from Satellite Spectral Data: An Example from the Iran-Pakistan Sectors of the Tethyan Belt**  
*Robert Beeson and David Gamble*

- P 007\* **Mineralogical Similarities Between Modern Sea-floor Chimneys from Brothers Volcano, Kermadec Arc, and Eastern Pontide (NE Turkey) Paleochimney Fragments**  
*Heidi Berkenbosch, Cornel De Ronde, J. Bruce Gemmell, Andrew McNeill, Chris Ryan, and Daryl Howard*
- P 008\* **Geochemical and Geochronological Characterization of the Early-Middle Eocene Magmatism and Related Epithermal Systems of the Eastern Pontides, Turkey**  
*Mustafa Erde Bilir and Ilkay Kuşçu*
- P 009 **The Bongarà Zn-Nonsulfides District in Northern Peru: Mineralogical and Geochemical Characteristics**  
*Giuseppe Arfè, Maria Boni, Nicola Mondillo, Giuseppina Balassone, and Tommaso Di Palma*
- P 010 **High Sulfidation Epithermal Au and Porphyry Cu-Au Mineralization at the Karaayı Target, Biga Peninsula, Northwestern Turkey**  
*Hakan Boran, Ender Özyaydin, Tolga Incekaraoğlu, Ali Sevimli, Alper Büyüksolak, Moira Tracey Smith, William Adamas Lepore, April Barrios, Ken Raabe, Graham Leroux, and Katherina Ross*
- P 011\* **Zonation and Macroscopic Mineralogy of Pampano Skarn, Peru**  
*Ivan Eliud Brañes, Carlos Joel Rodriguez, Roger Feliciano Pino, and Juan Carlos Salva*
- P 012\* **Tracing Fluid Migration Pathways in the Root Zone Below Unconformity-Related Hydrothermal Veins: Insights from Trace Element Systematics of Individual Fluid Inclusions**  
*Mathias Burisch, Benjamin F. Walter, Markus Wälle, and Gregor Markl*
- P 013\* **Hydrothermal Fluid Provenance and Evolution in the Epithermal Polymetallic Deposit of Colquijirca: Insights from In Situ Oxygen Isotope Analyses and Fluid Inclusions in Quartz**  
*Vincent Casanova, Kalin Kouzmanov, Anne Sophie Bouvier, Lukas Baumgartner, and Luís Fontboté*
- P 014\* **Metallogeny of Gold Deposits in the Republic of Guinea (Conakry), West Africa**  
*Mamady Cissé, Xinbiao Lu, and Mariama Aly Bangoura*

- P 015 **Climate Change, Groundwater Flow, and Super-gene Enrichment in the Central Andes: Insights from (U-Th)/He Hematite Geochronology**  
*Frances Cooper, Byron Adams, Jon Blundy, Ken Farley, Ryan McKeon, and Alberto Ruggiero*
- P 016 **IODP Drilling of Brothers Volcano, Kermadec Arc, New Zealand: Volatile Flux, Metal Transport, and Conditions for the Formation of Life**  
*Cornel E.J. De Ronde*
- P 017\* **Assessing Geological Controls for Iron Oxide Copper-Gold Mineralization in the Punta del Cobre District, Chile**  
*Irene Del Real, John Francis Hugh Thompson, and Jorge Carriedo*
- P 018 **The Geology and Mineralogy of Akarca Gold-Silver Deposit, Bursa, Turkey**  
*Cengiz Demirci*
- P 019\* **The Origins of Miocene Ore-Bearing and Ore-Barren Porphyry Rocks in Jiama, South Tibet: Implications for Porphyry Cu Mineralization in Continental Collisional Zone**  
*Jilin Duan, Yiming Gao, and Juxing Tang*
- P 020\* **Strata-Bound Cu-(Ag) Deposits in the Jurassic La Quinta Formation, Northern Colombia**  
*Andrés Felipe González Duran, Juan Carlos Molano Mendoza, and Janeth Sepúlveda*
- P 021\* **Geochemical and Petrographic Analysis of a Copper Sediment-Hosted Mineralization at Chiquinquirá Village, Boyacá Department, Colombia**  
*Luis Felipe Mahecha Escobar and Carlos Augusto Zuluaga Castrillón*
- P 022 **Genesis of Subduction-Related Late Cretaceous Mafic-Intermediate Rocks from Pirin Mts (West Rhodopes): Constraints from Isotopic (Sr, Nd, and Hf) Study**  
*Petyo Filipov, Peter Marchev, Irena Peytcheva, Carsten Münker, and Maria Kirchenbauer*
- P 023\* **Mineral Occurrences of the Eastern Greater Caucasus, Georgia**  
*Nona Gagnidze and Avtandil Okrostsvardize*



- P 024\* **Magmatic Sulfides in Quaternary Ecuadorian Arc Magmas**  
*Ariadni Afroditi Georgatou and Massimo Chiaradia*
- P 025\* **Geological Framework and Evolution of the Saindak Porphyry Cu-Au Deposit, Chagai District, Balochistan, SW Pakistan**  
*Abdul Ghaffar, Xue Chuan Dong, Xiang Kun, Xie Zhi Peng, and Inayat Ullah*
- P 026\* **Structural Controls on Kestanelik Epithermal Vein System, Lapseki, NW Turkey: Implications for Permeability Enhancement Processes During Epithermal Gold Mineralization**  
*Nilay Gülyüz, Zoe Sipton, İlkey Kuşçu, Richard Lord, Nuretdin Kaymakçı, and David Gladwell*
- P 027\* **Four Exploration Stages at the Dalli Porphyry Cu-Au Deposit, Central Iran**  
*Hooshang Asadi Haroni, Yongjun Lu, William Xavier Chávez, Jr., and Maral Malekian*
- P 028\* **The Characteristics of Fenitization of the Syenites at Bengge Gold Deposit, Northwestern Yunnan, China**  
*Lili Jiang, Zengqian Hou, Chuandong Xue, Xuanxue Mo, and Kun Xiang*
- P 029 **Geology of Iran and Discussion on Exploration and Investment Potential**  
*Mark Kenwright and Ceylan Polat*
- P 030\* **Trace Elements Vectors in Pyrite and Molybdenite from Elatsite PCD, Bulgaria**  
*Ivan Dimitrov Krumov, Kamen Bogdanov Bogdanov, and Dimitrina Angelova Dimitrova*
- P 031 **Preliminary Findings on Formation of the Gökçedogan Region Cu-Zn-Pb Base Metal Mineralization, Kargi-Çorum, Turkey**  
*Mustafa Kumral, Nurullah Haniilçi, Cihan Yalçın, and Mustafa Selman Aydoğan*
- P 032\* **Compositional Characteristics, Petrogenesis, and Metallogenic Significance of Biotite from Granodiorite in the Laba Porphyry Mo-Polymetallic Deposit, Northwestern Yunnan, SW China**  
*Xiang Kun, Xue Chuan Dong, Jiang Li Li, Li Shi Lei, Abdul Ghaffar, and Sher Sultan Baig*
- P 033 **Preliminary Findings on Epithermal Au Mineralization of Bayındır, Kaman, Kırşehir, Turkey**  
*Gülşay Sezerer Kuru, Mahmut Özdoğan, and Zühal Arslan*
- P 034\* **Characteristics of Ore-Forming Fluid of Nuri Cu-W-Mo Multi-Metal Deposit in Southeast Gangdese, Tibet, China**  
*Xiaowen Liu, Keqiang Hua, and Congjun Huang*
- P 035\* **Geochemical Characteristics of Magnetites from the Lala IOCG Deposit of Huili Sichuan, China, and Their Genetic Research**  
*Liu Xiaowen*
- P 036 **Re-Os Molybdenite Geochronology from Turkish Porphyry Copper Prospects**  
*Daniel Marinov, Fernando Barra, and Firuz Alizade*
- P 037 **Quantitative Ore Mineralogy and Variations in Vein Textures in the World-Class Waihi Epithermal Au-Ag District, New Zealand**  
*Jeffrey L. Mauk, Sarah J. Fyfe, Erin G. Skinner, Andrew H. Menzies, Heather Lowers, and Alan Koenig*
- P 038\* **Geochemical Characteristics of Ore and Alteration Minerals from an Intrusion-Related Gold System in the Tran Region, W Bulgaria: Combined SEM, QEMSCAN and LA-ICP-MS Study**  
*Stefan Metodiev, Kalin Kouzmanov, Irena Peytcheva, Dimitrina Dimitrova, Elitsa Stefanova, and Dimitar Dimitrov*
- P 039 **Chahmesi Vein-Type Polymetallic Deposit, Urumieh-Dokhtar Belt, Iran**  
*Saeed Alirezaei, Haleh Modrek, and Zahra Abbasloo*
- P 040\* **Biotite Geochemical Characteristics as Vectors to Barren and Mineralized Intrusions at the Sungun Porphyry Copper Deposit, Northwestern Iran**  
*Parinesa Moshfeji, Mohammad Reza Hosseinzadeh, Mohsen Moayyed, and David R. Lentz*
- P 041\* **Constraints on the Paleoredox Conditions at Time of the Deposition of the Ab-Bagh SEDEX-Type Zn-Pb Deposit, Southeastern Part of the Malayer-Esfahan Metallogenic Belt, Iran**  
*Mehdi Movahednia, Ebrahim Rastad, Abdorahman Rajabi, Francisco J. González, and Flavien Choulet*

- P 042\* **Petrographic Study of the Magmatic Phases and Hydrothermal Vein Types from Degrmen Au-Cu Mineralization (Southern Serbia)**  
*Szabolcs Orbán, István Márton, Ferenc Kristály, Tamás Weiszburg, Zsolt Benkó, and Siniša Glisic*
- P 043\* **Mineral Prospectivity Mapping Using Remote Sensing and Geophysical Data Processing, Kajan Area, Central Iran**  
*Kiyavash Parvar, Pezhman Rasekh, Hooshang Hasadi, and Seyed Hassan Tabatabaei*
- P 044\* **Petrology, Geochemistry, and Metallogenic Potential of the Parguaza Granite in Eastern Colombia**  
*Daniel Prieto, Juan Carlos Molano, and Gloria Prieto*
- P 045 **Gold Metallogenesis and Detecting Areas of High Potential Gold Mineralization Using Large Spatio-Temporal Datasets, Northwest Iran, Western Sector of Tethyan Metallogenic Belt**  
*Mana Rahimi, Ali Reza Jafari Rad, Ali Reza Almasi, Bahram Samani, and Farzin Talebi Rad*
- P 046\* **Controls on Polymetallic Vein Deposits and Porphyry Deposits in the Phum Syarung-Dok Yong Fault Corridor, Ratanakiri Province, Cambodia**  
*Craig Tamm Richardson, Craig J.R. Hart, Adrian G. Mann, and Kurtis Dunstone*
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*Bertrand Rottier, Kalin Kouzmanov, Lluís Fontboté, and Markus Wälle*
- P 048 **Benefits of Soil Clay Fraction Geochemistry for Surficial Exploration: A Case Study from the Tethyan Belt**  
*Chris Benn, Jamil Sader, Nikolay Zhivkov, Tsvetana Jeleva, and Roger Anderson*
- P 049 **Geology of the Kinsevere Cu Deposit, Democratic Republic of the Congo**  
*Ahmad Saleem, Marcus J. Tomkinson, and Mike Northcott*
- P 050\* **Mn-Ilmenite in the Marmato and Aguas Claras Gold Deposits, Colombia: Implications for Magma Genesis and Magnetic Geophysical Techniques**  
*Leonardo Santacruz, Nilson Botelho, Massimo Matteini, Stewart Redwood, Juan Carlos Molano, and Alessandro Cecchi*
- P 051 **Example of Ore Characterization by the Use of Automated Mineralogical Analyses Using Mineralogic Mining (ZEISS) Technology: Results on the Hakkari Samples (Turkey)**  
*Licia Santoro, Richard Herrington, and Maria Boni*
- P 052 **Geology and Mineralogy of Terziali Gold Mineralization; Implications of Shear Hosted Gold Mineralization in Central Anatolia**  
*Özgür Sapancı, Özgür Sapancı, Özgür Sapancı, Nezihi Köprübaşı, Emin Çiftçi, and Ufuk Demirel*
- P 053\* **Spatial and Temporal Alteration Model of Afyon-Sandikli (As) Alkaline Porphyry Cu-Au Deposit**  
*Şafak Utku Sönmez and Ilkay Kuşcu*
- P 054 **The Tatna Copper Project, Lesser Caucasus, Southern Armenia: An Example of a Rapid, Geology-Focused, Exploration Assessment**  
*Paul Stenhouse and Jean Francois Milian*
- P 055\* **Mineralogical, Geochemical, and Structural Constraints of the Vathi Porphyry Cu-Au ± U ± Mo Mineralization, N. Greece**  
*Christos Stergiou, Vasilios Melfos, Panagiotis Voudouris, Kleopas Michailidis, and Paul Spry*
- P 056 **Igneous Rock Geochronology and Timing Relationships to Gold Mineralisation Within the Tanjianshan Gold Project, Qinghai Province, P.R. China**  
*Jozef Story, Gregory Collins, Tim Baker, Scott Randall, and Craig Hart*
- P 057\* **The Deformation of Sulfides in the Tectonically Reworked Porphyry Cu-Mo Deposits: An Example from the Kalaxing porphyry Copper Ore Belt (NW China)**  
*Hong Tao, Xu Xing Wang, Wu Chu, Xiang Peng, You Jun, and Li Hao*

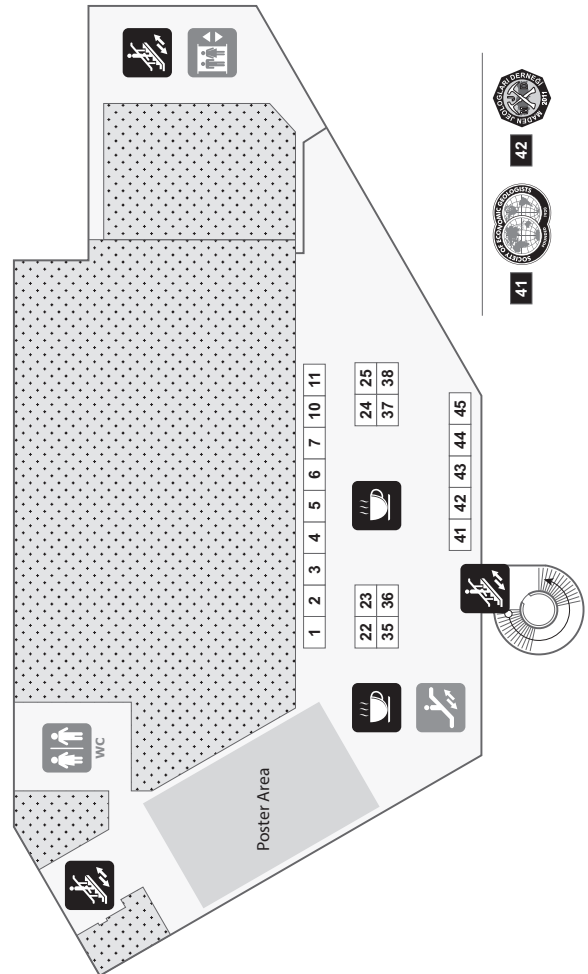
- P 058\* **Occurrence and Mobility of REE-Bearing Minerals in A-Type Granites of the Besar Group, Peninsular Malaysia: Potential for REE Deposits**  
*Siti Zaniza Tohar, Ben J. Williamson, Frances Wall, and Azman A. Ghani*
- P 059\* **Structural Control on a Shear Zone Hosted Gold Mineralization in Gümüşler, Niğde (Turkey)**  
*Mustafa Tokoğlu, İlkay Kuşçu, and Nuretdin Kaymakçı*
- P 060\* **Mineralogical Characterization and Rare Earth Elements Potential in the Pegmatites of Adam Mine (Ancash, Peru)**  
*Victor Julio Torres*
- P 061 **The Application of SWIR and Multi-Element Geochemistry in Exploration at the Fisoka Cu ± Au Porphyry System, Halkidiki, N. Greece**  
*Pavlos Tsitsanis, Chris R. Siron, Tim Baker, and Ifigenia Kyriakoglou*
- P 062\* **Fluid Inclusion and Sulfur Isotope Studies on the Salu Bulu Prospect, South Sulawesi, Indonesia: A Metasedimentary Rock-Hosted Gold Deposit**  
*Muhammad Zain Tuakia, Ryohei Takahashi, and Akira Imai*
- P 063 **Geochemistry and Nd, Sr Isotopes of the Pohrenk Fluorites (Kırşehir-Turkey)**  
*Yusuf Uras, Anatoly V. Nikiforov, Fevzi Oner, and Osman Parlak*
- P 064 **3-D Modeling Contribution for Producing Near Mine Exploration Targets at Olympias Gold-Rich Polymetallic Carbonate Replacement Deposit, Halkidiki, N. Greece**  
*Theodore Veligrakis and Lazaros Dalampiras*
- P 065\* **Textural and Mineralogical Interpretation at the North of San Vicente**  
*Carlos Joel Rodriguez Vizcarra, Roger Feliciano Pino Quicchca, Ivan Eliud Brañes Vilchez, and David Gerardo Portocarrero Caccya*
- P 066\* **Metallogenetic Sources of the Skarn Cu Polymetallic Deposits in the Southern Bangonghu-Nujiang Metallogenic Belt, Western China: Constraints from S and Pb Isotopes**  
*Denghao Wu, Youye Zheng, Shunbao Gao, and Kan Tian*

- P 067\* **Structural and Fluid Characterization of the Shahumyan Polymetallic Epithermal Vein Deposit, Kapan District, SE Armenia**  
*Dharani Raja Yarra, Craig Hart, and Aleksandar Miskovic*
- P 068\* **What Caused the Formation of the Giant Bingham Canyon Porphyry Cu-Mo-Au Deposit? Insights from Melt Inclusions and Magmatic Sulfides**  
*Daohan Zhang and Andreas Audétat*
- P 069\* **The Geology, Geochemistry, and Comparison of Two Distinct Gold Deposits in West Junggar, Xinjiang, China: Implication for Mechanism of Gold Precipitation**  
*Huichao Zhang and Yongfeng Zhu*
- P 070\* **H-O-S-Pb Isotopic Components of Chagele Pb-Zn Polymetallic Deposit, Tibet, China: Implications for the Genesis and Comparison with Those of Typical Pb-Zn Polymetallic Deposits in the Mid-East Nyainqentanglha Metallogenic Belt**  
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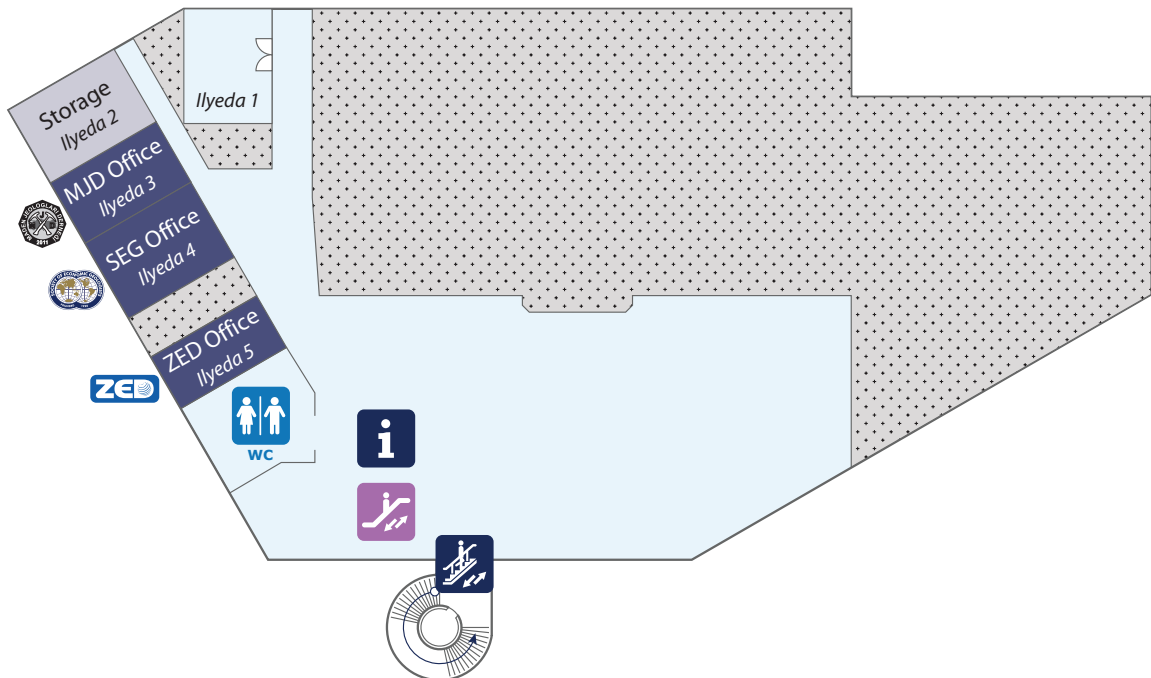
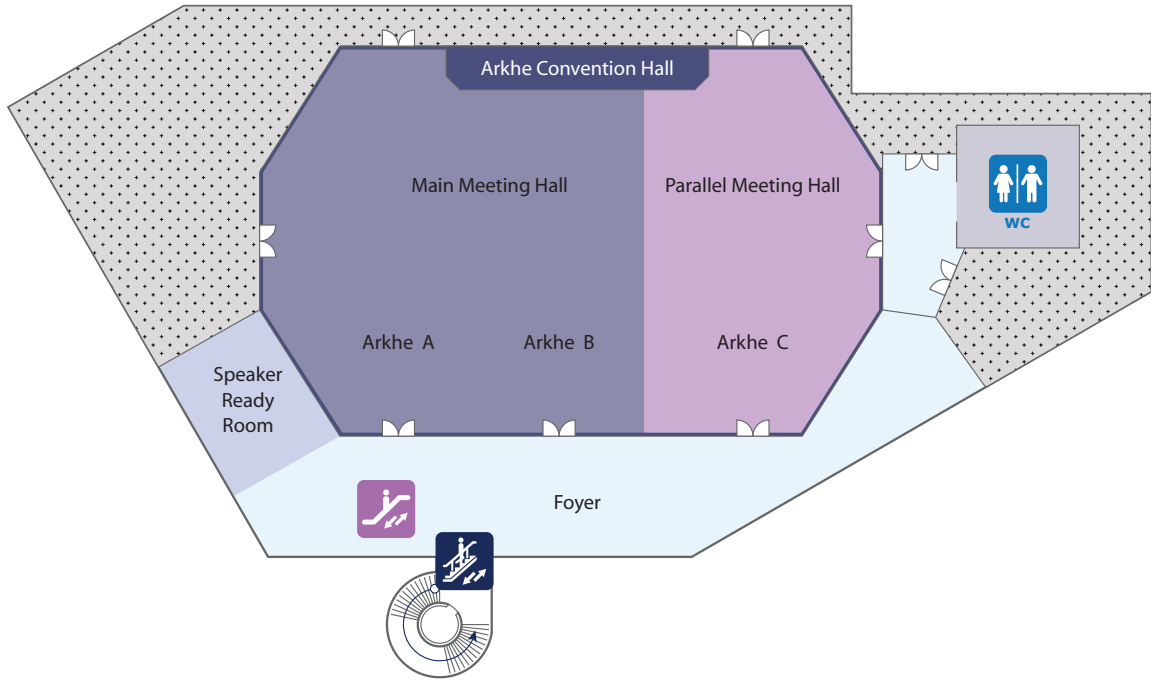
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## Ore Deposits of Asia: China and Beyond

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- Mineral Resources of China
- Giant Deposits of Asia
- New Discoveries in Asia
- Magmatic Ni-Cu-PGE
- Orogenic Au—Tectonic Setting and Genesis
- REE Deposits—Geology, Mineralogy, and Genesis
- Porphyry Provinces of the Western Pacific
- Skarn Deposits—Metal Content and Zonation
- Sediment-hosted Base and Precious Metal Deposits—Genetic Controls on Mineralization
- New Analytical Techniques and Equipment Applied to Ore Deposits
- Ore Deposits of Tibet

### ● Field Trips in China and Beyond:

- Jiaodong Gold Deposits
- Guizhou Carlin-like Deposits
- Yangtze River Fe-Cu-Au Porphyries/Skarns
- Yunnan Metallogeny—Base Metals, Au, and IOCG
- Sn-W of Southeast China
- Jinchuan Ni-Cu-PGE Ores
- Xinjiang Metallogeny
- Porphyry/Epithermal Deposits of NE China
- Other excursions in Japan, Mongolia, Russia, Indonesia, & Kazakhstan

### ● Workshops:

- Exploration and Ore Genesis: Base Metals, Carlin, Orogenic Au, Porphyry, Epithermal, Magmatic Ni-Cu, & VMS Deposits
- Techniques: Fluid Inclusions, LA-ICP-MS, Modern Geochronology, & Mineral Spectroscopy