



# SGA

April 2017  
Number 40

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# News

## Activities of SGA Student Chapters

The main feature of SGA News 40 is a compilation of reports that highlight the activities of six SGA Student Chapters around the world: Barcelona, Prague, Siberia, and Baltic.

### 1. Year 2016 for the Barcelona Student Chapter

Sandra Baurier Aymat, Joan Gutiérrez León

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#### Introduction

2016 undoubtedly became for the Barcelona Student Chapter a year in which movement was a primary factor. It was partially marked by conferences of very diverse topics which comprised those imparted by students (from the faculty of Geology of the University of Barcelona and abroad) and professors from the same faculty. However, whilst moving progressively into the year field related activities became more abundant, the last one being held at the beginnings of December.

#### Conferences

On the first week of February, a geological-engineering student from Dominican Republic captivated us with a short conference entitled Experiences and life lessons from a geological-engineering student in Dominican Republic: the step from university to Barrik-Pueblo Viejo. Albert Joan Belén Manzueta clearly explained both his studying and working experience as a mine-geologist in Barrik-Pueblo Viejo, exemplifying the transition period between students to professional to the younger Chapter members and opening a later debate about the aptitudes required when working in a mining company. On the last week of the same month, a conference

named The Geochemistry of Ni in Lateritic Profiles and its Relationship with the Hosting Minerals was imparted by Josep Roqué Rosell. The former crystallography professor from the Faculty of Geology of the University of Barcelona presented a set of results obtained by means of EMPA,  $\mu$ RAMAN,  $\mu$ XRF and  $\mu$ XAS from oxide type laterites from Cuba and silicate type laterites from Dominican Republic. These results provided the students an explanation to the distribution and accumulation of Ni and the development of laterites from Moa-Bay and Falcondo Ni-laterite deposits as well as a deeper knowledge of the analytical techniques used.

#### 14/05/2016 Sant Julia De Llor I Bonmati Mining District Field Trip (Montseny-Guilleries: Girona)

The past fourteenth of May, ten members of the Barcelona Student Chapter attended to a fieldtrip that took place in Sant Julià de Llor i Bonmatí mining district which was organized together with Didac Navarro Ciurana (past PhD student) and Eloi Guerrero Loran (master student) (Fig.1). Located in the Montseny-Guilleries region, this district had a great importance in the Spanish

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# SGA Quebec 2017: a very special invitation!

Jorge Relvas, SGA President

University of Lisbon (Portugal) – [jrelvas@fc.ul.pt](mailto:jrelvas@fc.ul.pt)

As SGA President, it is my honour and great pleasure to invite you to the 14th SGA Biennial Meeting, which will be held from August 20 to 23, 2017 in Quebec City, Canada.

Over the last 26 years, the SGA Biennial Meetings have attracted a very large and growing number of participants as they are acknowledged by the SGA membership and the global community of ore deposit geologists as the premier platform for the exchange of scientific knowledge on the latest developments and emerging challenges in our field. We fully expect that the 2017 Quebec Meeting will be a great success and further strengthen this path. It will represent a major milestone for SGA, as it will be our first Biennial Meeting in North America.

The meeting brings together academic and government scientists, and industry geologists from all over the world. The motto of the conference – Mineral Resources to Discover – will highlight the added value of integrating results from mineral exploration and ore deposit research. It will consist of several symposia and special sessions on a variety of topics, offering the participants the opportunity to meet and present their research. Everyone is invited to come and actively participate in this gathering, get updated, and enjoy the spectacular venue and social activities that will flavour the event.

The Organizing Committee, led by Georges Beaudoin, has prepared a cutting-edge scientific program and will present an impressive roster of highly respected and internationally renowned speakers to lead it. Aside from the excellent scientific programme, join us also for a unique and memorable set of symposia, special sessions, short courses and workshops that make really special the technical program of this meeting. As a component of the scientific program, field trips are scheduled in different destinations according to specific interests of attendees and will represent an exceptional opportunity for you to visit some of the more important and exciting ore deposits in Canada, in the Southeast Missouri, USA, and in the Guiana Shield, South America. Moreover, participation in



Jorge Relvas, SGA President

SGA Quebec 2017 is for you a splendid occasion to visit Quebec City, one of the most charismatic cities on Earth, renowned for its rich history, stunning architecture, friendly people, and a multi-cultural heritage.

The SGA Educational Fund Committee and the Local Organizing Committee are working hard to raise funds that will provide significant financial support to students and professionals from economically disadvantaged countries. As in all previous SGA Biennial Meetings, a distinctive mark and an important measure of the success of the Quebec meeting will be the extent of student participation.

To know more, visit the conference website at <http://sga2017.ca/>. Make sure you will be part of this unforgettable meeting. We look forward to your participation and welcoming you in Quebec City in August 2017.

## SGA News

No. 40 April 2017

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SWITZERLAND

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<http://www.e-sga.org>

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Items for publication may be sent to:  
SGA News (see address below)  
Manuscripts should be sent by e-mail using Microsoft Word for text and Jpeg or Tiff formats for pictures and figures (the latter must be in grey level tones, not colour!). Please always send a paper copy and indicate the format you are using.

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**SGA NEWS – MAILBOX**

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# From the Editor of SGA News

Massimo Chiaradia

University of Geneva (Switzerland) – Massimo.Chiaradia@unige.ch

After 20 years of editorship of SGA News I have decided that it is time to draw back. Growing tasks and engagements in my professional life prevent me from dedicating the necessary amount of time to the edition of the newsletter.

The idea of associating a newsletter to SGA was born in the mid-90's following a proposal by Lluís Fontboté (University of Geneva). At that time, Lluís asked me if I wanted to join him as co-editor of SGA News and I enthusiastically agreed. Few years later, when Lluís stepped down for similar reasons for which I am now, I remained the "only" editor of the newsletter. I remember that the first 16 editions (8 years) were done on word software and printed in black and white until 2002 (and in 2003 only the banner of the first page in orange color) at the University of Geneva. I was printing the „original“ version of the newsletter on a black and white printer before bringing it to the University press for printing the neces-

sary number of copies to be delivered to all SGA members around the world.

In 2004, when I was at Leeds (U.K.), the newsletter took a professional turn and a new look! Indeed WMXDesign GmbH, based in Heidelberg, Germany, took over the outlook concept and printing of the newsletter, with a completely new coloured look that we designed together.

For me it has been a great experience to be Editor of SGA News. I have come to know many people that have become work colleagues and then real friends and I keep unforgettable souvenirs of Council meetings and field-trips with them.

At the end of 2017, Jochen Kolb (Karlsruhe, Germany) will take over the editorship of SGA News and I warmly congratulate him for this and will do everything to help him in this transition period: welcome Jochen!

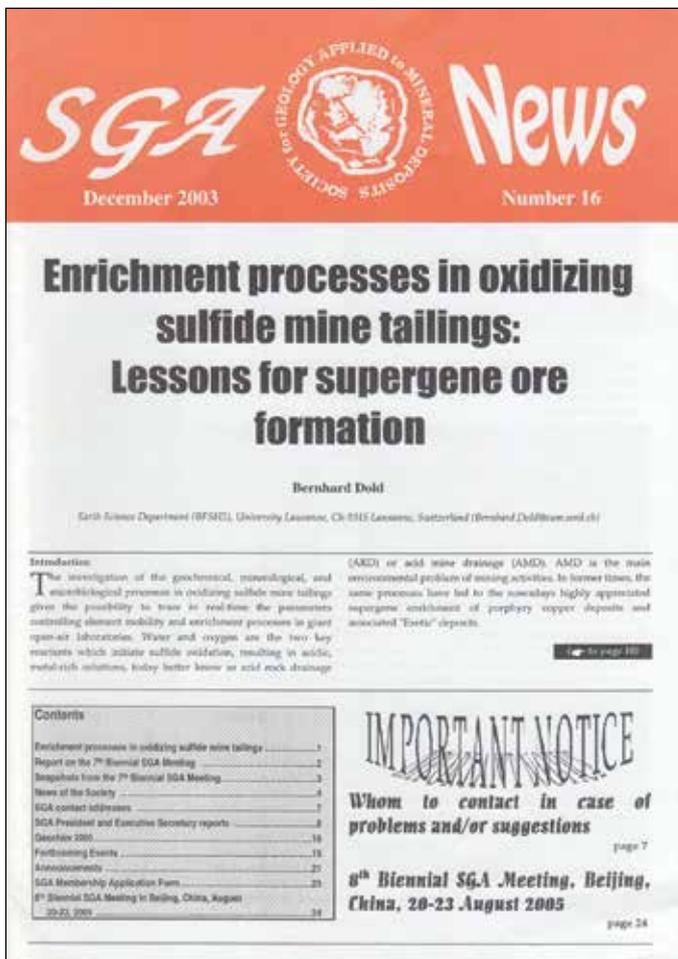
I would like to thank warmly everybody with whom I have collaborated during these 20 years, all former and current



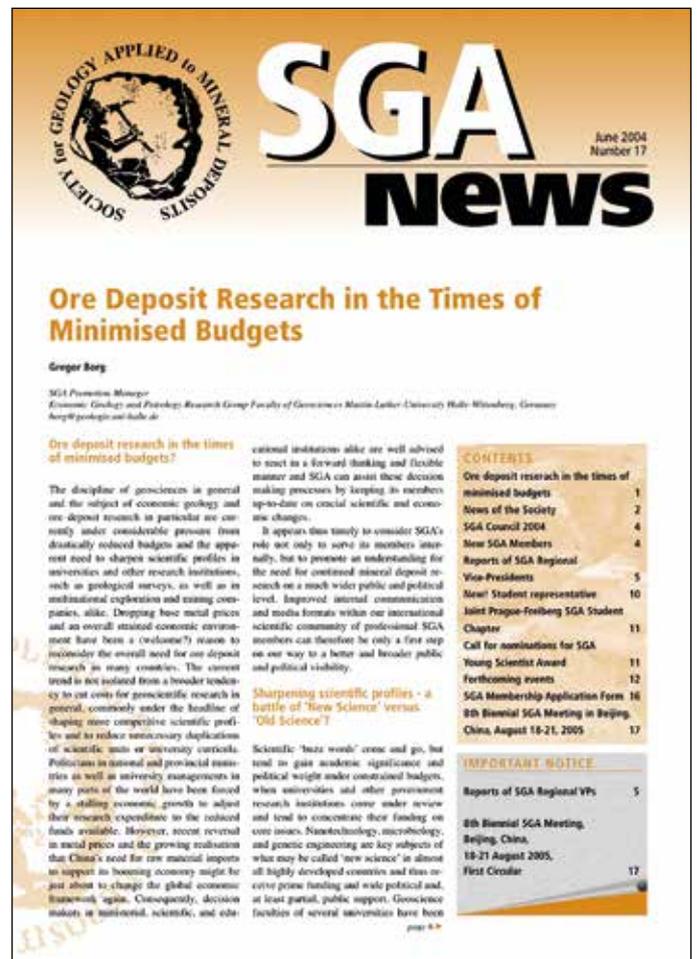
Massimo Chiaradia,  
SGA News Editor

Councillors, Presidents, Secretaries, Treasurers, Treasurer's Secretaries, the people at WMXDesign (in particular Martina and Meike Winkler) and at Springer and all contributors to the newsletter with whom I had continuous exchanges, and I hope I haven't forgotten anyone (!).

Although I am leaving SGA News and the SGA Council I will remain a proud member of the SGA family.



SGA News in December 2003



SGA News in June 2004

# News of the Society

## SGA Ordinary Council Meeting, Brussels, Belgium, November 14, 2016

J. Pašava (SGA Executive Secretary), Czech Geological Survey, Prague,  
jan.pasava@geology.cz

Jorge Relvas (SGA President) welcomed Council Members and thanked Sophie Decree for organization and the Geological Survey of Belgium for hosting the meeting. Then Council approved suggested agenda.

### Roll Call and Apologies

Present: A.S. André-Mayer, D. Banks, G. Beaudoin, S. Decree, K. Kelley, N. Koglin, E. Naumov, J. Pašava, J. Relvas (SGA President), and A. Vymazalová.

Apologies for absence: S. Archibald, M. Bouabdellah, E. Campos, H. Chen, M. Chiaradia, P. Eilu, H. Fan, H. Frimmel, L. Greyling, D. Huston, J. Kolb, P. Ledru, B. Lehmann, D. Moncada, W. Maier, B. Orberger, S. Piercey, A. Piestrzynski, R. Skirrow, J. Slack, S. Roberts.

Guests: A. Buettner (Springer).

### Minutes of previous Council Meeting (August 30, 2016 Sommerset West, Vergelegen Farm, South Africa)

After checking the actions, the Minutes were unanimously approved.

### Reports of officers on Council

- 3.1. Report from President (presented by J. Relvas)
- 3.2. Report from Executive Secretary (presented by J. Pašava)
- 3.3. Report from Treasurer (on behalf of H. Frimmel presented by J. Pašava)
- 3.4. Report from Promotion Manager (on behalf of P. Eilu presented by J. Pašava)
- 3.5. Report from Chief Editor, SGA News
- 3.6. Report from Chief Editors, MD (presented by G. Beaudoin)
- 3.7. Report from Chief Editor SGA Special Publications (on behalf of J. Slack presented by J. Pašava)
- 3.8. Report from the Chief Editor SGA website (presented by N. Koglin)
- 3.9. SGA Educational Fund (presented by K. Kelley)
- 3.10. to 3.16 – Reports from Regional VPs (Asia, Australia/Oceania – on behalf of R. Skirrow presented by J. Pašava, Europe – presented by S. Decree, North Africa and Middle East, Sub-Saharan Africa – on behalf of L. Greyling presented by J. Pašava, North America, South America)

Council was sorry for all missing Reports.

After discussion, Council approved the presented reports with great thanks and the following motions:

J. Relvas to ask M. Chiaradia for the status of SGA News.

J. Pašava to send composition of the SGA Council 2017 to M. Chiaradia, B. Lehmann/G. Beaudoin and N. Koglin to be published in the first 2017 issue of SGA News, MD and at Society website, respectively.

All Council members to help B. Lehmann and G. Beaudoin to identify suitable theme and authors for “milestone papers” for MD.

P. Eilu to continue looking after distribution of SGA promotional items upon request of SGA RVP's and possibly other Council

members organizing SGA major and/or co-sponsored geo-events. Also to find out who of acting SGA RVP's is besides R. Skirrow in need of replacing old “coffin-type” SGA booth and report to the next Council meeting.

J. Slack to continue editorial efforts associated with 4 SGA Special Publications, which are at different stages of preparation and report to next Council Meeting (Isotopes in Mineral Exploration, A Hydrothermal History of the Yilgarn Craton and its Relevance to Gold Exploration, Agromining: Farming for Metals, and Supergene Mineral Deposits).

A. Vymazalová to inform Presidents of SGA Chapters to provide updated list of Chapter members by mid-January 2017. It will be used for the purpose of student-proof for the SGA Treasurer's Office.

N. Koglin/Ch. Linge to check on student-proof documents for rest of student members who are not part of SGA Chapters on individual basis.

N. Koglin to find out from Blueways about a possibility of adding a software application which would enable to upload student membership proof document and possibly filling up membership application form on-line.

N. Koglin to add all volumes of the Proceedings from the SGA 2015 Nancy meeting with table of content and ISBN to website e-shop.

K. Kelley to coordinate editing of a new flyer on SGA EF and jointly with N. Koglin to promote SGA EF via Society website. It's important to show how money was used. E. Naumov offered to translate a letter – request for support to SGA EF into Russian and will provide K. Kelley with links to selected Russian mining companies that should be approached. Similar scenario should be done for China with the help of Huayong Chen if possible.

J. Pašava to inform R. Skirrow that Council decided to go only for SGA keynote speaker's support at the FUTORES II (June 2017, Townsville, Australia). Following a free booth offer from LOC, J. Pašava will find out how many Council members will be present and willing to help in manning the booth and inform R. Skirrow on this.

P. Eilu to get in touch with L. Greyling to get coordinates of two new SGA National Representatives in Ivory Coast and Tanzania to find out which of local/regional geo-events would be worth SGA sponsoring and to what type of SGA promotional materials should be provided for this purpose.

### New Publishing Agreement on MD with Springer (A. Buettner J. Relvas)

After introduction by J. Relvas (SGA President), A. Buettner summarized major highlights of a new Publishing Agreement between SGA and Springer on Society journal Mineralium Deposita. The Agreement, which was signed on behalf of SGA by J. Relvas (SGA President) and K. Kelley (SGA Vice-President) and on behalf of Springer by A. Buettner for 10 years will enable SGA members to buy all Springer publications with 40% discount,

in addition to other benefits. New in this document is an annual budget for SGA promotion. J. Relvas thanked all SGA officers who took an active part in negotiations of this, for SGA such an important Agreement.

Actions: N. Koglin to inform SGA membership on newly approved 40% discount on all Springer publications.

P. Eilu to discuss with A. Buettner details on SGA promotion via Springer booth at the upcoming Goldschmidt 2017 (Paris) conference.

### **New Contract on Springer Briefs (J. Slack, D. Huston, J. Relvas, J. Pašava)**

After introduction by J. Pašava, A. Buettner (Springer) summarized highlights of this document. Springer Briefs is a new Springer series in which SGA can participate via invited editorship of different volumes. Besides flat fee of EUR 250 and five free copies of book, Springer is willing to pay some extra money on published books. The Publishing Agreement was approved by Council and will be signed digitally by J. Relvas (SGA President) and K. Kelley (SGA Vice-President) for SGA and A. Vizcaino for Springer. J. Relvas thanked to all SGA officers who took an active part in preparation of this important document.

Action: N. Koglin to put into section of Actual News (SGA website) information about this contract and encourage SGA membership to consider suggestion and preparation of this kind of publication. The SGA link persons: J. Slack/D. Huston.

### **Constitutional and By-Law changes – update (J. Relvas, K. Kelley, J. Pašava)**

After introduction by J. Relvas, J. Pašava summarized all major changes which were suggested for revision in the present SGA Statutes and By-laws. Council was thankful for this update and after a broad discussion decided that the new versions of both documents (showing original and new paragraphs) will be distributed to Council members for further comments. We aim at having the final version of the Constitutional changes approved at 2017 spring Council Meeting so that it can be sent to ballot to SGA membership and results announced at the SGA GA in Quebec City. A similar scenario is suggested for changes of By-laws, which are intended to be approved in spring 2017 Council meeting (these don't need to go for SGA membership ballot).

Actions: J. Pašava to implement all discussed changes and to distribute new versions of both documents to SGA Council for their additional comments.

### **Final report on SGA 2015 (A.S. André Mayer)**

The Report was presented by A.S. André-Mayer. Council discussed various aspects of the meeting, welcomed info that the SGA 2015 was selected as the best international meeting held in France in 2015 and once more congratulated A.S. André-Mayer and the LOC for this extreme success. However, the Council became seriously concerned about the development of VAT issue related to the final Conference accounting and offered A.S. André-Mayer any assistance which might help to resolve this issue positively.

Actions: A.S. André-Mayer to continue solving VAT issue related to SGA 2015 Meeting and update SGA EC on any progress in this matter.

### **SGA 2017 – update (G. Beaudoin)**

The Report was presented by G. Beaudoin (Chair of the LOC).

After discussion Council approved the presented report with great thanks and the following recommendations:

- to change the title of the Symposium no. 4 to be clear that it will be focused on critical metals or to add a new session on critical metals,
  - to add field trip fees,
  - to include 1 free student participation in every short course and field trip,
  - to add EAG membership conference fee to similar level as SGA membership conference fee,
  - to keep price of Conference Gala Dinner as low as possible (proposed 80-100 EUR),
  - to set up deadlines for student issues so that these could be decided asap – well before April 30, 2017,
  - to plan SGA Council Meeting on Saturday, August 19, 2017 from 9.00 to 15.30,
  - to plan SGA General Assembly on Monday, August 21, 2017 from 11.00 to 12.30,
  - to adapt the title “Closing Ceremony” to Closing Ceremony with Presentation of Student’s Awards,
  - to add info on student’s deadlines to Important dates at website.
- Council approved that Geological Survey of Canada can distribute field trip guidebooks (for field trip leaders who wish to do this) as Open File Reports.

Actions: G. Beaudoin to implement the above recommendations.

### **SGA 2019 – update (A. Boyce)**

No update was provided by LOC.

Actions: J. Pašava to ask A. Boyce to prepare a flyer on SGA 2019 for the distribution at the SGA 2017 Meeting and to submit an update for the next Council meeting.

### **Progress report on membership drive from the last SGA Council Meeting (P. Eilu et al.)**

J. Pašava presented this report on behalf of P. Eilu. The Society had 1214 paying members (to October 19, 2016). During the past five months, we received 90 new members: 13 regular and 77 student members. It is important to attract student members to become regular members and to make regular membership more attractive. After discussion Council approved the report with great thanks and the following motions:

J. Relvas to address all RVPs with a request for their collaboration regarding non-renewing members.

### **Status of development of SGA Student and Young Scientist network (A. Vymazalová)**

The Report was presented by A. Vymazalová. She presented the following documents: i) Guidelines for Chapters, explaining how to create a new Chapter, their benefits and duties, and how the financial contributions from SGA can be used, ii) Application form to create a new SGA Chapter, and iii) Annual Report and Application form for continuing support. Council also approved a maximum budget of 30 000 EUR for student support at the SGA 2017 Meeting. After discussion Council approved the Report and suggested documents with great thanks.

Actions: A. Vymazalová to inform SGA Chapters about approved new documents and to contact H. Frimmel on finding out for how long SGA Chapters must keep receipts for auditing purpose and if suggested budget for promotion (up to 10% of the total budget) is acceptable for the SGA Treasurer’s office.

### Requests for sponsorship

- 14th Freiberg Short Course in Economic Geology (IOCG and IOAD), Freiberg, Germany, December 7 – 10, 2016 – T. Seifert/ J. Gutzmer; originally EUR 2,000 and newly EUR 3,000 approved for SGA student participants.
- BIOGEOMON 2017, August 20–24, 2017 Litomyšl, Czech Republic – up to EUR 1,200 requested for SGA student participation – no financial support approved.
- Ultramafic-Mafic Complexes: Geology. Structure, Ore Potential, Vth International Conference, September 2–6, 2017 Gremyachinsk, lake Baikal, Russia – E.V. Kislov et al. - SGA sponsored – expected request for financial support to SGA student members and/or keynote speakers
- Subduction Related Ore Deposits, September 23–26, 2017 Trabzon, Turkey. I. Uysal et al. – SGA sponsored (keynote speaker and 1,000 EUR for SGA student member support).

Actions: A. Vymazalová to inform T. Seifert on the final approval of EUR 3,000 for student support. J. Pašava to inform M. Novák and I. Uysal about SGA Council decision on their sponsorship requests and to ask I. Uysal for a list of suggested students for support when available.

### Any other business

- SGA Award Committee – update (K. Kelley). Call for nominations to SGA awards was announced at the SGA website. Action: N. Koglin to send an email to SGA membership to remind them on possible nominations for SGA awards. M. Chiradia to publish a call for nominations in the upcoming issue of SGA News.
- Short Course on African Metallogeny – Rwanda (B. Orberger). Progress Report was submitted by P. Mucchez (principal organizers of the five days course on “Granite-associated metals in the Great Lake Area”) and presented by J. Pašava. Council greatly appreciated significant progress in the preparation of this important geo-event and recommended to finalize the Circular and launch a call for participation via SGA website and other means as soon as possible.

Actions: J. Pašava to thank B. Orberger and P. Mucchez and inform them about Council recommendation.

- SGA presence at the IAGOD 2018 Salta, Argentina (J. Pašava et al.). J. Pašava informed Council about invitation to SGA to participate in the IAGOD 2018 Symposium and efforts regarding preparation of proposal for SGA presence in this meeting. After discussion Council recommended to submit for consideration to IAGOD all suggested activities and wait for IAGOD evaluation and reply. Actions: J. Pašava to inform IAGOD President on suggested SGA activities at the IAGOD 2018 (Salta, Argentina).
- Mineral Deposit Images to SGA website (A. Mueller). The proposal for expanding of the SGA “Mineral Deposit Archive” to “Mineral Deposit Images” was presented by J. Pašava on behalf of A. Mueller. Council appreciated efforts associated with getting free server space at the Helmholtz Institute in Freiberg to get cost-free arrangement for the SGA and approved the concept with great thanks. Actions: J. Pašava to inform A. Mueller about acceptance of his proposal.

### Date and place of the next SGA Council meeting

April 3, 2017 Geneva, Switzerland (preceded by a joint dinner on April 2 and followed by 1 day field trip on April 4)

### Informative list of past activities

- XXXIV UNESCO-SEG-SGA Curso Latinoamericano de Metalogenia „El sistema Pórfido (Incluyendo Yacimientos Epitermales) – Yacimientos tipo IOCG - Geología y Metalogenia Andes Centrales“ (Copiapó, Chile, 20–30 April 2016) – F. Tornos (SGA link) – a long-term support of USD 2500 approved via a joint SEG-SGA agreement. Recommendations for future SEG-SGA-UNESCO Latin-American course of Metallogeny by F. Tornos were presented by J. Pašava. Council greatly appreciated feedback from F. Tornos and concluded that more active involvement of Regional VP is desirable for future short courses in different places in SA. The status of SGA National Representatives especially in this region should be very useful for successful SGA promotion and getting new membership in this region. SGA awards should also be more competitive than presently offered. Council thanked F. Tornos for his continuing support and help in promoting SGA in South American Region. Action: J. Pašava to write F. Tornos and inform him on Council decision.

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- GAC-MAC (1–3 June 2016, Whitehorse, Yukon). SGA representative: Steve Piercey, who coordinated SGA booth with Annett Buettner (Springer)
- Ressources Minérales : Du Terrain à l'Expérimentations“ (June 7–9, Toulouse, France) – EUR 1,000 approved for support of 3 SGA speakers and free registration of all SGA student members



J. Relvas (SGA President) holding the new Publishing Agreement on Mineralium Deposita which was signed on behalf of SGA by him and K. Kelley (SGA Vice-President; on left) and A. Buettner for Springer

- 7th International Geochemistry Symposium (May 16–18, 2016 Antalya Side, Turkey) – D. Banks-SGA link.
- The 8th International Siberian Early Career Geoscientists Conference (June 13–24, 2016 Novosibirsk, Russia). SGA link – E. Naumov (request for sponsorship to SGA student members and keynote speakers in preparation)
- Gordon Research Conference (June 19–24, 2016 Switzerland)
- 35th IGC (August 27–September 4, 2016 Cape Town, South Africa) – SGA/SEG session on gold deposits; participation of SGA/ES in IUGS-IGC Council Meeting on behalf of SGA
- 13th International Nickel Symposium (5–9 Sept 2016, Perth-Fremantle). SGA representatives: Wolf Maier – EUR 1000 approved for SGA student members support (info S Barnes)
- 2nd European Mineralogical Conference (September 11–15, 2016 Rimini, Italy) sponsorship of five sessions in the Theme 9 – Mineral deposits and raw materials - 8 grants of EUR 250 or 10 grants of EUR 200 for SGA student members (total sum up to EUR 2,000)
- SEG 2016 Conference (September 25–28, 2016 Turkey) – D. Leach SGA Speaker + free booth (P. Eilu organizing manning the booth) – SGA keynote speaker presence cancelled
- 11th „Ore deposit model and exploration“ workshop in China this November (6–11/November 2016, Guiyang, China)



*Participants of the SGA Ordinary Council Meeting held on November 14, 2016 in Brussels, Belgium. Standing from left: A. Vymazalová (Vice-President for Student Affairs), D. Banks, G. Beaudoin (Chief Editor, MD, North American Office), K. Kelley (Vice-President), J. Relvas (President), A. Buettner (Springer), A.S. André-Mayer, S. Decree (RVP Europe), E. Naumov. Sitting: J. Pašava (Executive Secretary) and N. Koglin (Chief Editor, SGA website)*

### Informative list of future activities

- 14th Freiberg Short Course in Economic Geology (IOCG and IOAD), Freiberg, Germany, December 7 – 10, 2016 – T. Seifert/J. Gutzmer; EUR 2,000 approved for SGA student participants.
- FUTORES II Conference (4–7th June 2017 Townsville, Australia). D. Leach approved as SGA keynote speaker (up to USD 3,000), free booth from LOC
- Ultramafic-Mafic Complexes: Geology. Structure, Ore Potential, Vth International Conference, September 2–6, 2017 Gremyachinsk, lake Baikal, Russia – E.V. Kislov et al. – SGA sponsored – expected request for financial support to SGA student members and/or keynote speakers
- Subduction Related Ore Deposits, September 23–26, 2017 Trabzon, Turkey. I. Uysal et al. – SGA sponsored (keynote speaker and 1,000 EUR for SGA student member support).
- 13th SGA Biennial Meeting, August 20–23, Quebec City, Canada – G. Beaudoin et al.
- RFG 2018 (June 16–21, 2018 Vancouver, Canada) – SGA session proposed. J. Relvas informed Council about a letter from LOC requesting collaboration regarding coordinated e-blasting promotion of the meeting. Council approved proposing a session on critical metals. Action: J. Relvas will contact J. Gutzmer to consider organizing SGA session on critical metals.
- 15th IAGOD Symposium (August 28–31, 2018 Salta, Argentina) – invitation from IAGOD to suggest a mode of SGA presence
- 15th SGA Biennial Meeting (August 2019, Glasgow, Scotland, U.K.) – A. Boyce et al.

**APPLICATIONS** to SGA for meeting sponsorship must be submitted to Jan Pašava, SGA Executive Secretary, on appropriate forms available at the SGA home page on Internet: [www.e-sga.org](http://www.e-sga.org)

Other requests will be not considered.

**Your suggestions and ideas for any topic of interest to SGA are welcome!**

They can be addressed to any Council member or to

**Dr. Jan Pašava**  
SGA Executive Secretary

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## SGA COUNCIL 2016

SOCIETY FOR GEOLOGY APPLIED TO MINERAL DEPOSITS

President	J. Relvas (Portugal)
Vice-President	K. Kelley (USA)
Executive Secretary	J. Pašava (Czech Republic)
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>>> page 1 *Activities of SGA Student Chapters*

mining history, being active during eighteenth, nineteenth and twentieth centuries (until 1972).

The main objective of this fieldtrip was to study the “Puig de Sant Julià” open-pit mine, where F-Ba (Pb-Zn-Cu) mineralisations were extracted. These mineralisations were found in fracture-associated veins, strata-bounded layers and Cambrian to Silurian metasomatic marbles and calc-silicates (Skarns). The minerals forming the host rocks consisted mainly of carbonates, such as calcite and dolomite, though quartz, tremolite-actinolite, diopside and white micas such as phlogopite and/or margarite were also found. Sulfides, such as pyrite, chalcopyrite and galena consisted of the main minerals forming the ore deposits. Malachite, pyrolusite, melanterite and goethite were present too, but as a product of sulfide alteration (supergene). Additionally, some barite veins are found cutting the host rock and ore deposits.

**02/08/2016 – 10/08/2016 Collaborative Expedition Siberia-Barcelona**

During the first weeks of last August 2016 and after intense planning, the Siberian Student Chapter and the Barcelona Student Chapter put a beginning to their collaborative expedition fieldtrip. This consisted on the first collaboration with any other Student Chapters from part of the Barcelona Student Chapter and it could not have gone any better, consisting on a thoroughly planned and amazing week-long fieldtrip throughout Southeastern Siberia composed

by seven members of each Chapter (Fig.2).

During the first days, the students had the opportunity to visit some important ore deposits of Siberia: the Kamenushikoe Cu deposit and the Salairskoe Pb-Zn deposit, located 300km from Novosibirsk in the Salair Ridge (Kemerovo Region), and Sinyuhinskoe Au deposit, located in northeastern Altai (Fig.3). The two types of ore commonly found at Salairskoe Pb-Zn ore field were characterized by massive carbonate-quartz-barite ore and disseminated barite-polymetallic ore whereas in Kamenushikoe Cu deposit ore minerals were represented mainly by pyrite and chalcopyrite. In addition, students had the chance to collect amazing hand samples of azurite, malachite and chrysocolla between others. On the other hand, at Sinyuhinskoe Au deposit, members were provided insights on the skarns of different compositions developed in tuffs and carbonate rocks in the contact zone with the Sinyukha massif, mainly on the wollastonite, garnet-wollastonite and pyroxene-wollastonite skarns associated with sulfide minerals.

When interning into the Altai Mountains, the Siberian Student Chapter excellently guided the Barcelona members to both geological and cultural places (Fig.3) of interest such as a) the largest natural history museum in Siberia; the “Paleopark”, b) the Cambrian – Ordovician Gornoaltaisk formation “Dragon’s teeth”, c) middle Devonian volcanites related to the continental margin in western Altai-Sayan foldbelt activity, d) a bewildering catastrophic glacial megaflood deposit called Inskoy “stone garden”, e) the beautiful confluence of Chuya and Katun’ rivers and its complex

terraces, f) fossil-bearing Silurian limestones belonging to the Gromatukhinskaya series, g) petroglyphs of Turkic peoples (9000–6000 B.C), h) the Kol’ka Snegiryov Monument and j) the well-known Shirlak waterfall and the alluring blue lake near Aktash Village.

Above all, we want to thank the SGA Siberian Student Chapter for their dedication, their guidance and for having provided and shared such joyful and memorable moments with us. We also express our most true gratitude to the SGA for having supported this collaborative expedition from the beginning and for the economic support offered.

**21/09/2016 Welcoming Event**

On day 21st of September, a coffee stand was organized by the Student Chapter members in order to welcome the new academic year. The planned activities encompassed the whole morning and afternoon and included diverse talks, which included final degree project presentations and a report of the experience in Siberia. The first three presentations corresponded to the following final degree projects of three graduated members from 2016: Mineralogía y Geoquímica del Yacimiento de bauxitas Las Mercedes y otros depósitos de la Sierra de Bahoruco, República Dominicana, by Daniel García, Multidisciplinary mineralogical characterization of PGM from the Loma Caribe peridotite, (Dominican Republic), by Sandra Baurier and Geochemical characterization of Late Neogene tephra layers in the Minas de Hellín and Cenajo Basins (SE Spain), by Anna Mireia Rabaza.

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Fig. 1. Group photo at the "Puig de Sant Julià" open-pit mine



Fig.2. Group photo with all members from both Chapters who attended the fieldtrip at Akademgorodok

**02/12/2016 – 03/12/2016 Barcelona Student Chapter's Workshop: Skarn Deposits**

Due to the high rate of participation in the previous activities organized by the Barcelona Student Chapter, we were more than devoted to the organization of our 5th workshop dedicated to skarn deposits, which was held on the 2nd and 3rd of December at the Faculty of Geology of the University of Barcelona. It counted with the total participation of 29 assistants, some of them even coming from the University of Oviedo, Asturias. The aim of this workshop was to provide an approach of these types of deposits regarding: their structure and genesis, their geochemistry, petrology, mineralogy and a review on the diverse techniques used

in their exploration to undergraduate, master and PhD students, as well as for other professionals interested in these typology of deposit.

Morning of day 2nd December consisted of a cycle of conferences in which the followings were imparted: Albert Soler Gil (University of Barcelona) opened the session with an introductory lecture entitled Skarn-type deposits: genetic models in the Iberian Hercynian in which members were enlightened with the different complex processes responsible for the formation of these deposits, their structure, petrochemistry and classification. Proceeding into detail, Abigail Jiménez Franco (PhD student from the Polytechnical University of Catalonia-

EPSEM) explained a particular example of skarn deposit with her lecture entitled The Velardeña (Zn-Pb-Cu) Skarn: new data on the mineralogy, fluid inclusions and isotopic geochemistry. Finally, Lluís Boixet Martí (Country Manager; Minería de Corcoesto S.L – Edgewater Exploration Ltd) treated the assistants to a memorable lecture entitled Prospection of auriferous deposits in the Iberian Peninsula. An example: the Carlés Skarn, Asturias in which members were provided not only with academic information but also with a business-exploration point of view.

In the same afternoon, assistants were invited to a 3-hour practical session imparted by Albert Soler that included hand-sample



Fig. 3. Collage with pictures obtained in different deposits and in cultural sites



Fig. 4. From left to right: presentation of Anna Mireia Rebaza, Sandra Baurier and Daniel Rodriguez

observation of numerous skarn samples and the visualization of the ores of these ones under reflected light microscope (Fig.5). During this session, assistants recognized various mineralogical assemblages of different types of skarns and familiarized with those samples belonging to the deposits visited on the fieldtrip.

The Barcelona Student Chapters one-day fieldtrip, led by Albert Soler, took place on the 3rd of December. It consisted on the observation and study of a few distal and proximal skarns located in the Axial Pyrenees, closely related to the

magmatic intrusions of the late Hercynian orogeny, which included: an idiochase skarn, a hedenbergite skarn, a pyrrhotite skarn and an arsenopyrite skarnoid (Fig.6). Assistants were deeply involved and had great pleasure in listening to all explanations regarding the processes associated to the genesis of each of these deposits and had the opportunity to acquire exceptional hand samples.

We gratefully acknowledge all lecturers: Albert Soler Gil, Abigail Jiménez Franco and Lluís Boixet Martí for their overwhelming speeches. In addition we express

our most true gratitude to the SGA for the economic support offered, which allowed us to develop and carry out successfully all our activities as well as to the Faculty of Geology for their logistic and equipment provided.

We would like to remind that for any more information feel free to consult our Student Chapter checking out our page web: [www.bcn-sga-seg.cat](http://www.bcn-sga-seg.cat).



Fig.5. Students studying diverse skarn hand-samples from the Pyrenees



Fig.6. Collage with pictures taken at the various deposits: a; at the idiochase skarn, b; at the pyrrhotite skarn, c; introducing the geological context, d; at the hedenbergite skarn and e-f; hand-samples from the hedenbergite and idiochase skarn



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## 2. Mineral deposits of Central Slovakia – SGA Student Chapter Prague

Ondrej Kratky

*Faculty of Science, Charles University, 128 43 Praha 2, Czech Republic*

Every year in the October, the SGA Student Chapter Prague organize a bigger excursion to one of the surrounding countries. This year we visited Central Slovakia with its famous gold, silver and base metal mineralization and rich mining history, mainly represented by the world known mining city Banská Štiavnica. Main attraction of this field trip was the underground visit of the active Au-Ag mine Rozália run by the Slovenská banská company. 23 Chapter members took part in this 4-day excursion.

Our field trip started with a long tour from the Prague to Slovakia. First stop, after several hours, was the perlite open pit and processing plant run by the LBK Perlit company. The perlite itself is a product of fast cooling of the rhyolitic magma. In Central Slovakia perlite occurrences are linked to the Central Slovakia Volcanic Field, more accurately to the Banská Štiavnica stratovolcano. This complex also hosts the gold and base metal mineralization, which we visited later. Crude perlite contains up to 5% of water and when heated up to 850–900 C the water vaporizes and perlite expands 5–25 times. This expanded product is then use mainly for the construction purposes for its isolating properties.

Second day started by visiting the Lubietová ore dumps, where we were searching for secondary copper minerals – libethenite, euchroite, malachite and pseudomalachite. This hydrothermal epigenetical vein-type deposit is situated in the Permian sand-

stones, later intensively metamorphosed. Main ore mineral was chalcopyrite, minor tetraedrite. Main gangue mineral was quartz. Upper zones of this deposit (mined in the first era) were characterized by presence of cuprite and pure copper. Historical mining working were focused on copper and iron ores and historic findings revealed that the first mining attempts are from Eneolithic (copper age) era. This long mining period produced very large dumps (mainly in the 16th and 17th century) which are now one of the key characteristics of the Lubietová locality. Our next stop were again the historical dumps after the intensive copper mining activity called Špania Dolina – Piesky (active from the copper age era till the 20th century). Here the deposits were also located in Permian sandstones but unlike from the previous locality, silver as the by product was here produced. Here we were searching for another suite of minerals represented by azurite, malachite, aragonite and celestine. Giant dumps are here literally covered by green and blue color

so collecting samples at this locality was real pleasure.

Third day has started again at the locality with secondary copper minerals similar to the previous two called Farbišče. The only difference here is that mineralization is not bound to the Permian sandstones, but to the Triassic andesites and rhyolites. But the main “feature of interest” was not the malachite but the rare mineral tyrolite, also secondary copper mineral. Then we moved to the historical mining city Banská Štiavnica (inscribed in the UNESCO World Heritage List) located in the Štiavnica Hills which represent the edges of the large caldera (20 km in diameter,) – former Neogene stratovolcano. Deposits in the Banská Štiavnica



*Lubietová dumps. Photo by Jakub Myslivecek*



*Libethenite from the Lubietova dumps. Photo by Jakub Myslivecek*



*Malachite sample from the Špania Dolina. Photo by Jakub Myslivecek*

ore district (connected to the volcanic activity) include: quartz-pyrite high-sulphidation system, magnetite skarn, stockwork/disseminated base metal deposits, porphyry/skarn copper deposits intrusion related gold and vein type epithermal Au-Ag. This deposits are hosted in granodiorites, andesite and caldera-filling sediments. After visiting this spectacular city and surrounding hills we moved to the locality called Banská Belá, where nice specimens of pure quartz crystals can be found.

Last day of the excursion was dedicated to the active Au-Ag mine Rozália. This epithermal deposit is situated in the andesite and is part of the Banská Štiavnica ore district. Sadly, only ten members were allowed to visit this mine due to safety regulations, so we have to (really want to) organize another excursion for the rest of the members. The other half visited the headquarters of the company and had a great lecture here about the geology and history of the mine which was then finished by visit of the nearby historical adit.

Whole excursion was a great success, we had the opportunity to visit many interesting localities and observe very interesting geological features. This trip wouldn't be possible without the help of the SEG Bratislava Chapter and the Dr. Koděra from the Bratislava University. Also we would like to thank to the LBK Perlit company and the Slovenská banská company for letting us visit their workplaces and to Mr. Kaňa for his amazing lecture about the Rozalia mine.



Perlite quarry. Photo by Ondrej Kratky



Underground of the Rozália mine. Photo by Jakub Myslivecek

### 3. Mineral deposits and mineralogical localities connected to Tertiary tectonic processes and volcanism below the Krušné hory/Erzgebirge mountains

Jan Bubal, Ondrej Kratky

Faculty of Science, Charles University, 128 43 Praha 2, Czech Republic

The second field trip of the SGA Student Chapter Prague took place in the region below the Krušné hory/Erzgebirge mountains and was focused on the mineralogical occurrences and mineral deposits connected to the tertiary tectonic processes and volcanism. These processes were result of the Alpine orogeny, during which many older faults were rejuvenated and many new were created. Along these faults the magma extruded, the Erzgebirge area was broken into blocks and later uplifted and basins

were created. All of the visited localities are situated in the tertiary sediments and volcanic products, the only exception was the fluorite deposit Jílové u Děčína, which is situated in the Mesozoic sediments. Six SGA members took part in this two-day excursion (12-13th of November) including Jan Bubal who led the excursion.

First stop on our way from Prague was, on the edge of the tertiary volcanic complex Doubovské hory, the Valeč locality known for its colorless and transparent hyalite

aggregates up to 7cm big. These aggregates can be found in the cavities, cracks and on the surface of the basalts and basaltic tuffs. Next stop was at the Sokolovska basin, where we have visited three localities and had a lecture about the genesis of the whole area. This basin is an area of intensive open pit coal (lignite) mining for 250 years. This elongated basin in the W-E direction with length of 36 km and width of 9 km is tectonically limited from both sides. Some pits located in this basin are still active (Družba

pit) and some are already closed and in the stage of the landscape recultivation processes (Medard-Libík pit). Every year 9 million tons of coal is produced from this area. Only the coal-bearing horizon Antonín located in the Družba pit produces 2 million tons of coal per year. As the by-products claystone, and zeolites are mined. Next stop was the sandstone open pit Erika, where the oldest tertiary basin sediments are well exposed and can tell as lot about genesis of the basin. These clastic sediments are product of rivers and shallow lakes. Eocene flora can be also found at this locality. The last locality of this day was already outside of the Sokolovska basin near the city Rotava on the edge of the granite pluton. It was well exposed effusive body of the alkali-basalt which also nicely illustrates the processes in this area.

The next day we moved from the west part to the east part of the area. First locality was the active open pit Mariánská

skála located in the Ústí nad Labem city where sodalite-natrolite rich phonolite body is excavated. It contains up to 30% of the natrolite in the rock. In the phonolite cavities natrolite needle-like crystals up to 1 cm can be found. Another minerals, which can be found at this locality, include apofyllite (transparent to milky crystals) and calcite of various shapes and colors. The last locality of the whole excursion was the pseudokarst fluorite caves near the Jílové u Děčína town. These caves were found during intensive fluorite mining activity during the whole



*Mariánská skála open pit*

20th century. Fluorite rich caverns developed along W-E, SW-NE tectonic fractures in the silicified sandstones. Hydrothermal solutions then produced massive to semi-massive fluorite mineralization.



*Pseudokarst cavity – Jílové u Děčína*



*Layered fluorite – Jílové u Děčína*

## 4. SGA Siberian Chapter activities in 2016: field trip to Sorsk Cu-Mo-porphyry deposit

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In spring and summer of 2016 SGA Siberian Chapter has organized four field trips to the ore deposits in Novosibirsk region.

The first excursion was organized in early June to visit Sora open pit located in 800 km from Novosibirsk. The Sorsk Cu-

Mo deposit is situated in the Ust-Abakan district of the Republic of Khakasia in western Siberia in 105 km to the northwest from the Khakasia's capital Abakan. The deposit is located at the foot of the eastern slope of the Kuznetsk Alatau. The area

is characterized by mountains of medium height which are sharply but not deeply dissected by short and wide plains and ravines. Giant dumps of waste rock towering over the city are impressive. These dumps are the result of the exploration of the Sorskoe

copper-molybdenum deposit, the largest one in Russia. –This deposit is exploiting as open pit with the average depth of the quarry about 300 meters and total area over 33 square kilometers. The largest in Russia Mining Processing Plant and Ferromolybdenum Plant are situated on the basis of this deposit. These plants carry out a continuous range of works from extraction of ore through its enrichment to production of Ferromolybdenum Alloy. Excursion was led by the Chief geologist Vitaliy Volchenko. Ten SGA members took part in this field trip.

Sorskoe Cu-Mo-porphyry deposit was formed from hydrothermal fluids that associate with voluminous shallow igneous rocks of granite or syenite composition. These fluids alter the upper part of paren-

tal intrusions forming hairline fractures and veins. The main ore minerals of this deposit are molybdenite, chalcopyrite and pyrite. In addition, the secondary malachite, azurite, if very lucky, native copper and silver can be found. Ore minerals are localized in quartz veins or compose nests in potassium feldspar and quartz. Such deposits usually are characterized by giant sizes.

The main purpose of this trip was to study the features of mineralization, structural and textural characteristics of ore distribution at different scales: from micro features in the samples to the macro features in the outcrop. Also a number of samples for personal student collections and possibly for the collection of Novosi-

birsk State University geological museum were found during the trip.

After a short safety briefing our students went to the dumps where they found beautiful samples of quartz veins with molybdenite, chalcopyrite and pyrite and molybdenite nests - evolved rounded bright spots on the background of pink feldspar. The chief geologist Vitaliy Volchenko actively helped in the search for „collectible“ samples, and even found malachite and azurite.

The most excited part of the trip was when the chief geologist allowed students to see how they carry exploration works. He took us to observe explosion on the dump which they make once a day using explosives own production. It allows exploiting more than 24 tons of ore.



Fig 1. Sora dumps and open pit



Fig 2. The sample of quartz vein crossing massive potassium feldspar. Ore minerals are molybdenite, pyrite and chalcopyrite



Fig 3. Split second after explosion at Sora open pit



Fig 4. Group photo of SGA Siberian Chapter members – participants of the field trip



14th Biennial Meeting  
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## 5. The 8th annual Student Baltic Chapter meeting in Finland

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(b) Oulu Mining School, University of Oulu, Finland.

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This year, the traditional annual Student Baltic Chapter Meeting was held in Oulu, Finland. The event was attended by 25 members from SGA Baltic Student Chapter. It started on 16th and ended on 20th of May. The program of the meeting included students' scientific presentations at the Oulu Mining School, University of Oulu, a visit to a mini-pilot concentrator facility, an excursion to an underground Cr-mine in the city of Kemi and the bonanza grade Au-U Rompas prospect in the municipality of Ylitornio.

The meeting started on 16th of May with a hearty welcome given by our friends from Finland. After a registration process, everyone took part in an ice breaker party, where we spend a great time enjoying multicultural meetings and sharing our experiences.

The 17th of May started with some lectures and a students' presentation session at the Oulu Mining School (Fig.1). There were two presentations given by the professors from the University of Oulu and five more made by Finish, Swedish and Polish members of the Student Baltic Chapter. The topics of the presentations covered geological aspects of different mineral deposits in the world, which our Student Baltic Chapter members visited i.e. ore deposits located in Canada, Slovakia or Ukraine. After the presentation session, there was a trip to Automated Concentrator Mini-Pilot Plant (Fig.2). It is a model in a scale of 1:5,000 of the Pyhäsalmi mine. I was a great opportunity for us to enter the environment innovative in

education and research approach in minerals' processing.

On 18th May, we had a chance to visit Kemi Cr-mine (Fig.3). Hosted by an Early Proterozoic (2.44 Ga) layered intrusion, the Kemi stratiform chromite deposit is located at the northeast of Kemi, on the coast of the Gulf of Bothnia. The Kemi chromite mineralization was discovered in 1959 and it was mined in 1968. The mine's current ore reserves are estimated to have a total of 50.1 Mt with an average grade at about 26.0% Cr<sub>2</sub>O<sub>3</sub> and a chrome-iron ratio of 1.6–1.7. Additional mineral resources, which have been estimated to a depth of 1 km, comprise 97.8 Mt (Outokumpu, 2014). The present surface section of the Kemi intrusion is lenticular in shape, about 15 km long in a sou-

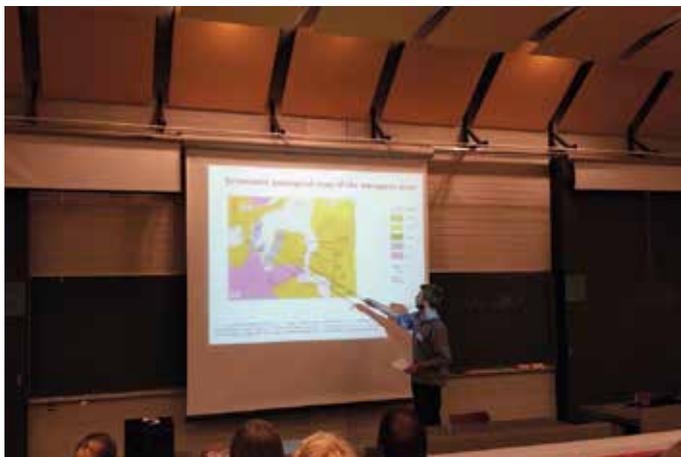


Fig.1 Student presentation session at the Oulu Mining School, University of Oulu



Fig.2 Sightseeing the mini-pilot concentrator facility at the University of Oulu



Fig.3 Visit at Kemi Cr-mine



Fig.4 Prospecting lesson at the Rompas Au-U area

thwest–northeast direction, and 0.2–2 km wide. It was a great experience for all of us to see an active and well-organized chromium mine in Europe. In the afternoon, we departed to Lohijärvi (Rompas Au-U) camping area, where we had an opportunity to commune with genuine Finland nature and to build relationships with people.

Next day, we visited the Paleoproterozoic Peräpohja Belt (2.44–1.88 Ga), which comprised of: metamorphosed supracrustal rock sequence of quartzites, mafic volcanics and volcanoclastics, carbonate rocks, black shales, mica schists and greynackes

intruded by pre- and post-orogenic granites. Northern part of the belt hosts high-grade Rompas Au-U mineralisation. We were guided by a geologist from the Mawson Resources Ltd., company currently doing exploration in the visited area.

The Rompas Au-U mineralisation is hosted by the deformed calcisilicate-carbonate-quartz veins in mafic volcanic rocks, locally containing very high grade of gold (>10,000 g/t Au). The strict spatial association of gold to uraninite and pyrobitumen is observed. The visit was an unusual opportunity to receive more information about

the Au-U veins mineralization. It was an important geological lesson for all of us as well. In the late evening, we came back to Oulu, where on the next day we were provided with some closing words and everyone attended a farewell party.

The SGA Baltic Chapter annual meetings are always an excellent opportunity for participants to improve and exchange their geological experiences and to learn something new. We would like to express our gratitude for all the people involved in organizing the event. Special thanks for SGA for sponsoring the annual meeting.

## 6th edition of the Summer School on Ore Deposits – Ressources Minérales: du terrain à l'expérimentation

Stefano Salvi (for the organizing committee: S. Salvi, D. Beziat, G. Pokrovski, O. Vanderhaeghe, M. van Lichtervelde, G. Giuliani)

Géosciences Environnement Toulouse – OMP, 14, avenue Edouard Belin, 31400 Toulouse, France – stefano.salvi@get.omp.eu

The 6th edition of the Summer School on Ore Deposits, was held in Toulouse, France, June 7–9, 2016. Of educational purpose, this School has been running yearly since 2010, is promoted by the French CNRS, and has a constant scientific committee.

This year, it has been organized at the GET laboratory (Géosciences Environnement Toulouse) of the University of Toulouse, by a team led by Dr. S. Salvi. This edition was entitled: Ressources minérales : du terrain à l'expérimentation, and consisted of two

days of lectures plus two field excursions in the Pyrenees. The meeting was a success, with some 120 participants ranging from MSc and PhD students to researchers and people from the exploration and mining industry, coming from several countries

Speaker	Origin
Anne-Sylvie André-Mayer	(GeoRessources, Nancy)
Elena Bazarkina	(GeoRessources, Nancy)
Marie-Christine Boiron	(GeoRessources, Nancy)
Anastassia Borisova	(GET, Toulouse)
Alan Boyle	(University of Liverpool, Angleterre)
Yannick Branquet	(ISTO, Orléans)
Jean-Christophe Cadot	(Terreal)
Georges Ceuleneer	(GET, Toulouse)
Dominique Chardon	(GET, Toulouse)
Philippe de Parseval*	(GET, Toulouse)
Paolo Garofalo	(Università di Bologna, Italie)
Pierre Gibert	(Auplata)
Thomas Hainschwang	(GEMLAB, Liechtenstein)
Kalin Kouzmanov	(Université de Genève, Suisse)
Robert Linnen	(University of Western Ontario, Canada)
François Martin	(GET, Toulouse/Imerys)
Elena Druguet*	(Universitat de Barcelona, Espagne)
John Miller	(CSIRO, Perth, Australie)
Gleb Pokrovski	(GET, Toulouse)
Marc Poujol	(Géosciences Rennes)
Christian Vallier	(Sudmine)
Marieke van Lichtervelde	(GET, Toulouse)
Guillaume Vic	(BRGM, Orléans)

\* presented during field trips

Table 1. Speakers at the school and their affiliation



Figure 1. The School's sponsors

from four continents. The talks were given by invited speakers of international renown, from both university and professional backgrounds, a complete list of whom is given on Table 1; spoken languages were French and English. The talks are available under the telechargements tab at the school's web site: <http://ecolernte.sciencesconf.org/>.

Financial support to the School was provided by the French CNRS, as well as by the SGA and other institutional and private industrial sponsoring, listed in Figure 1. We are grateful for their help, without which the School would not have been possible.

The first two days of the School were dedicated to oral presentations, the venue being the Concorde amphitheatre at the University of Toulouse, on the Paul Sabatier Campus. A gala dinner was organized for the speakers, preceded by an ice breaker held during the student's poster session on late Tuesday afternoon. The seminars were grouped into a number of small sessions, and covered the aspects of research on ore deposits suggested by the title of the school, i.e., ranging from field based observations and studies, to experimental modelling, passing through recent advances in analytical techniques and their application to the study of mineralized bodies. In addition, representatives of the French exploration industry, which is slowly being revived in

recent years, gave their view of the present state and potential of exploration and mining activity in France. The topics and titles of the talks are listed in Fig. 2.

The two field trips were run in parallel, on the last day. One visited the rare-metal pegmatite field in the Cap de Creus natural park (Catalonia, Spain), the other focused on the geology of the Ariège region of the Pyrenees, and included a visit to the Luzenac talc deposit (Fig. 3). The former was

guided by E. Druguet (University of Barcelona), P. Olivier, and M. van Lichtenvelde (GET), the latter by M. de Saint Blanquat and P. de Parseval (GET). Participants received a guidebook and both field trips were preceded by an introductory talk given by the guides. On average, forty people attended each of the two trips, and feedback was, in both cases, extremely positive.

The aim of the Luzenac field trip was to integrate the formation of the talc-chlorite



Photo 1. Elena Druguet and Philippe Olivier introducing the Cap de Creus geology before the trip. Bob Linnen is sitting in the foreground

<b>Tuesday June 7</b>	
09:00	Welcoming of attendees <b>P. Soler</b> (Head of OMP) <b>M. Grégoire</b> (Head of GET)
Introduction : academic and industrial perspectives	
09:30	<b>F. Martin</b> (GET, Toulouse) <i>The needs of modern industry: natural minerals vs synthetic composites</i>
10:00	<b>J.-C. Cadot</b> (TERRREAL) <i>3D modelling of clay deposits – understanding and exploiting</i>
10:45	<b>C. Vallier</b> (SUDMINE) <i>Challenges in renewing mining activity in France</i>
11:15	<b>P. Gilbert</b> (AUPLATA) <i>Gold deposits in French Guyane: Au-plata industrialises mining activity</i>
11:45	<b>A-S. André-Mayer</b> (Georessources, Nancy) <i>Educational paths in mineral resources</i>
Mineralisations related to felsic intrusions : from field to experiments	
12:15	<b>Y. Branquet</b> (ISTO, Orléans) <i>Magnetite skarns: a review</i>
14:00	<b>R. Linnen</b> (UWO, Canada) <i>Syenite-hosted gold mineralization in the Abitibi belt, Canada</i>
14:45	<b>M. van Lichtenvelde</b> (GET, Toulouse) <i>Understanding tectonic metal-bearing minerals in pegmatites through crystallization experiments</i>
Gold and West Africa	
15:15	<b>J. Miller</b> (CSIRO, Australie) <i>Croton scale deformation and mineral systems - focus on gold</i>
15:45	Pause café 15'
16:15	<b>P. Garofalo</b> (Università di Bologna, Italie) <i>Genetic models of orogenic Au deposits depend on datasets collected at the large and small scales</i>
17:00	<b>D. Chardon</b> (GET, Toulouse) <i>Weathering, regolith and mineral exploration challenges in tropical shields</i>
17:30 - 19:00	Student's poster session

<b>Wednesday June 8</b>	
Analytical developments applied to ore deposits	
09:00	<b>K. Kouzmanov</b> (Université de Genève, Suisse) <i>Which are the "real" ore forming fluids: Fluid inclusions in opaques; methods, applications, limitations and perspectives</i>
09:45	<b>A. Boyle</b> (University of Liverpool, RU) <i>Using electron backscatter diffraction (EBSD) to understand microstructure in mineral deposits</i>
10:30	<b>M.-C. Bolron</b> (Georessources, Nancy) <i>Fluid circulation and mineral concentration: in situ analysis of paleofluids</i>
11:15	<b>M. Poujol</b> (Géosciences, Rennes) <i>Apatite: a new proxy for dating fluid circulation</i>
Experimental approach	
11:45	<b>E. Bazarkina</b> (Georessources, Nancy) <i>Hydrogen, redox and ore-forming processes</i>
12:15	<b>G. Pokrowski</b> (GET, Toulouse) <i>The role of sulfur and carbon in the genesis of hydrothermal ore deposits</i>
The role of mafic rocks	
14:00	<b>G. Ceuleneer / A. Borisova</b> (GET, Toulouse) <i>Genesis of chromitite ore bodies in ophiolites: problems and (possible) solutions</i>
14:45	<b>T. Hainschwang</b> (GEMLAB, Liechtenstein) <i>Natural and artificial origin of colour in gems</i>
Mineral deposits in the Pyrenees?	
15:30	<b>G. Vic</b> (BRGM, Orléans) <i>Ore potential of the Pyrenees</i>
Field trips (Thursday June 9)	
<i>The Cap de Creus rare-metal pegmatites (Spain)</i> E. Druguet, P. Olivier, M. van Lichtenvelde	
<i>The Bessiac-Trimouns traverse: Crustal break, mantle exhumation and origin of the Luzenac talc ore (Ariège)</i> M. de Saint Blanquat, P. de Parseval	

Figure 2. Scientific program

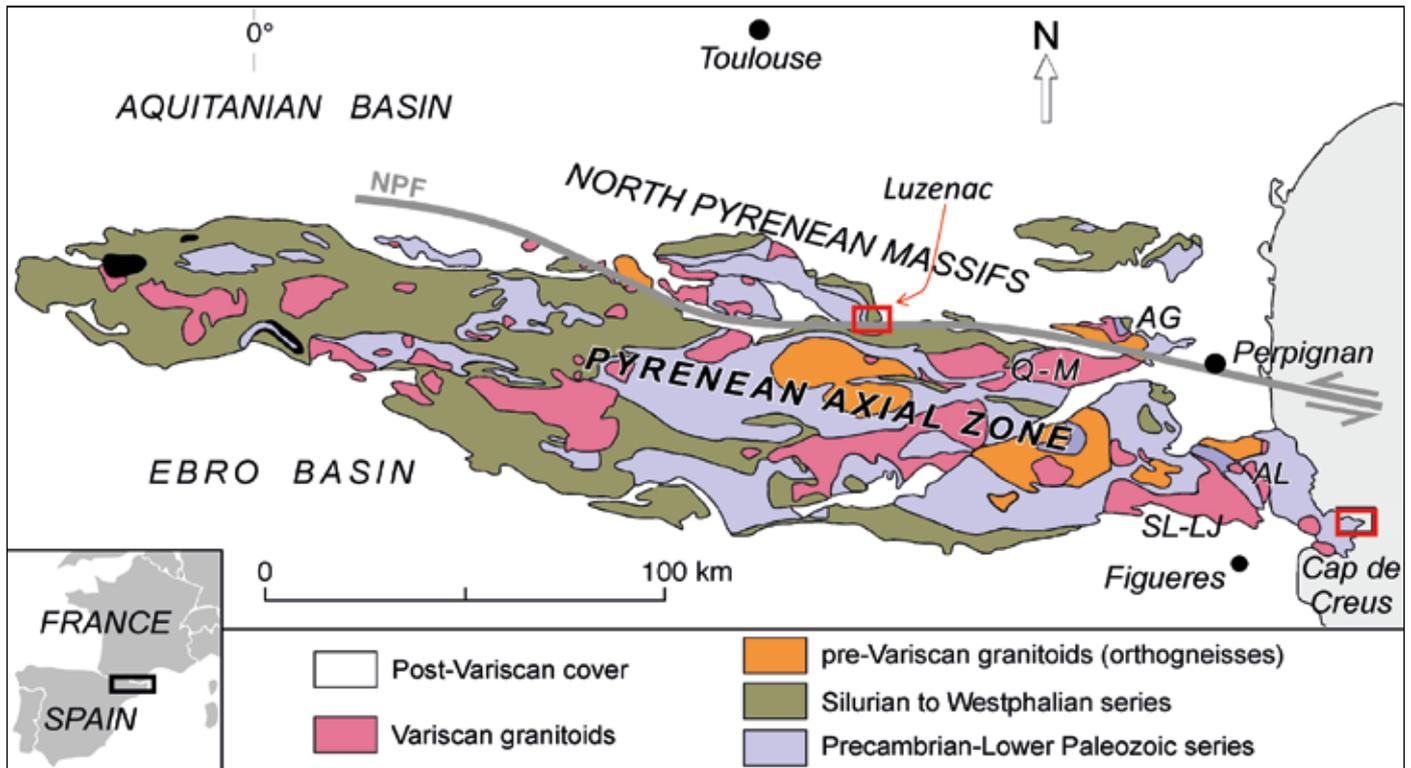


Figure 3. Location of the two field trips in the eastern Pyrenees (modified after Druguet et al., 2014)

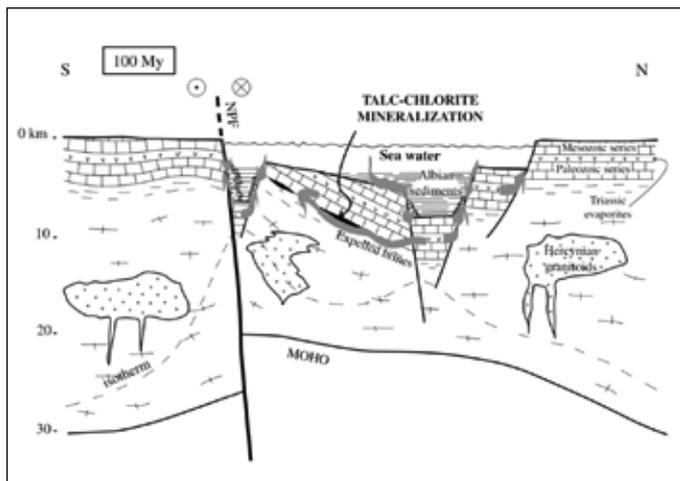


Figure 4. Schematic cross-section illustrating a model of formation for the Luzenac talc deposit (from Boulvais et al., 2006).



Photo 2. During talks, in the main amphitheatre



Photo 3. Lunch on an outcrop of high metamorphic grade rocks, Cap de Creus



Photo 4. Group photo at the Cap de Creus



Photo 5. Stefano Salvi standing on a partially sheared pegmatite vein at Cap de Creus. Paolo Garofalo in upper LHS



Photo 6. Large tourmaline crystals in a pegmatite at Cap de Creus (coin for scale on lower RHS)



Photo 7. Outcrop stop during the Talc de Luzenac trip



Photo 8. John Miller with students in front of the main quarry at the Talc de Luzenac mine

Luzenac deposit to its tectonic-geodynamic context. The mine extracts some 430,000 tonnes of talc annually, with applications ranging from paper, polymers, cosmetics and pharmaceuticals, ceramics, food, fertilizer, wastewater treatment, etc. The deposit of Luzenac, plus a number of related mineral occurrences, occur as veins within Palaeozoic schists that mark the contact between metamorphic basement rocks of the Variscan Saint Barthélémy massif, and the Mesozoic sedimentary carbonate series. Hydrothermal alteration of the different rock types is responsible for the exceptional mineralogical diversity of the deposit (Fig. 4). The positioning of this deposit at the regional scale illustrates the impact of rift opening associated with mantle exhumation on material transfer leading to the deposition of chlorite and talc, during the transition between the Variscan and Alpine orogenic cycles.

The Cap de Creus natural park (Fig. 3) is the eastern termination of the Pyrenees range. This peninsula is mainly formed

by a thick series of metapelite and metagreywackes dated around 560 Ma (Castiñeiras et al., 2008). The Cap de Creus is well known for its exceptional outcrop conditions that allow to observe i) the Hercynian high temperature - low pressure metamorphism that affected the sedimentary series; ii) the three phases of Variscan deformation that occur this area, with particularly spectacular D3 shear bands; iii) the complex network of pegmatite veins associated with the major D2 phase, commonly sheared by D3 (Photo 5) (e.g., Druguet et al., 2001; Alfonso et al., 2008).

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# Field trip to Rudny and Gorniy Altai within the framework of 8th International Siberian Early Career Geoscientists conference (cosponsored by SGA)

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More than one hundred students and young scientists took part at the 8th International Siberian Early Career Geoscientists conference, which was held in Novosibirsk on June, 13–24 meeting, which included wide range of scientific sessions: Magmatism and Metallogeny, Petrology and Geochemistry of Igneous and Metamorphic Rocks, Mineral and Ore Deposits and Economic Geology etc. The conference began with two-day lectures, which were led by world class researchers from Russia, Czech Republic, Norway, and Holland etc. Lectures cover various subjects and attracted interest of early-career geoscientists.

SGA sponsorship was used to cover registration fees for field trips for eight international students and made possible their participation in this meeting. The Organizing committee is grateful to SGA for help in organization.

Two field trips were included in schedule of the conference – the field trip to the Gorniy Altai and field trip to the North-Western Altai.

All the stops of the first field trip were located along the Chuysky trakt – historical Russian highway, running through the Altai Mountains. The geological program of the



Group photo of all participants and organizers of two field trips before the departure

field trip included studying sedimentary, metamorphic and igneous complexes, showing the Early Paleozoic – Mezozoic geological history of the Altai region; visiting gold, polymetallic and mercury deposits; studying geomorphology and the Cenozoic complexes, showing the neotectonics of the Altai Mountains. This field trip was attractive by its wide specialization and famous spectacular landscapes of Altai Mts. Thirty-five participants took part in this five-day long field trip.

During the field trip two ore deposits were visited – Sinyukhinskoe gold and Kyzil-Chin polymetallic deposits.

The Sinyukhinskoe deposit is situated in the northeastern Altai, at the contact of the large (600 km<sup>2</sup>) Sarakoksha pluton and Cambrian volcanosedimentary rocks of the Ust'-Sema Formation. In the contact zone of the Sinyukha massif, skarns of different compositions are developed in horizons of carbonate rocks and tuffs. Wollastonite and garnet-wollastonite varieties are the



Participants of excursion "Mineralogy and Metallogeny of the North-Western Altai"



Participants of excursion "Geology, Magmatism and Metallogeny of Gorniy Altai"

most widespread, and garnet-pyroxene and pyroxene ones are scarcer. Gold mineralization occurs mainly among wollastonite, garnet-wollastonite, and pyroxene-wollastonite skarns and is intimately associated with an assemblage of sulfide minerals. The participants of the excursion were lucky to find great samples of native gold (veins more than 2 cm in length) localized in wollastonite-garnet skarns with bornite mineralization.

The Kyzyl-Chin polymetallic deposit of fluorite-galena-sphalerite mineral type is represented by four ore zones. The ores are dominated by sphalerite and galena and to a lesser extent pyrite, chalcocopyrite, arsenopyrite, marcasite, and argentite. Non-metallic minerals are quartz, fluorite, calcite and barite.

The second field trip was organized to visit the famous ore-bearing region of Altai Mts in which a number of different types of mineralization are occurred. Because of its ore potential and significance, this part of Altai is known as Rudny Altai (translation from Russian is "Ore Altai").

The area of the field trip included visits to the copper-polymetallic and gold mines, as well as pegmatite veins with rare metal mineralization. Also during the trip the Museum of Mining History in Zmeinogorsk, Carving Factory and the Museum of History of Stone-Carving Skill in Kolyvan have been visited.

This excursion had narrow specialization and was focused on the ore geology, so only ten participants took part in this trip. Firstly, participants visited mining company, which exploits two polymetallic deposits – the Stepnoe, which is operated in open way and the Korbalikhinskoe deposit, which is operated by underground mining. Both deposits are located in the volcanic-sedimentary rocks of Medium to Upper Devonian age. The ores compose the lenticular and tabular bodies, clearly stratified into the cross-section of the deposit. The ore-bearing horizon is represented by interbedded carbonaceous siltstones, sandstones, tuffs and tuff sandstones of acid composition. Ores are presented mainly by polymetallic, pyrite-polymetallic and chalcocopyrite-pyrite varieties. Participants had possibility to visit these deposits and

find samples of polymetallic ores in dumps. The pyrite-chalcocopyrite massive ores were found there.

Also the Lazurskoe Au-Ag-Cu-Pb-Zn deposit has been visited. At this deposit oxidized ores with beautiful azurite and malachite crystalline aggregates were observed.

Two deposits associated with granites and its pegmatites were visited as well. One of those was the Ortitovaya vein – granite pegmatites of the Savvushinskoe field.

The Kolyvan W-Cu-Bi deposit pertains to pneumatolytic-hydrothermal-plutonogenic type of the quartz-vein formation and is represented by quartz-muscovite veins with the main ore mineral wolframite. Gangue quartz also contains arsenopyrite, pyrite, scheelite, chalcocopyrite, bismuthite, molybdenite, and Bi sulphosalts.

The pegmatites of the Savvushinskoe field are largely composed of coarse- to giant-grained quartz-plagioclase-K-feldspar with a block structure with REE mineralization. In the east wall of the small open pit the large crystals of orthite and titanite were found by participants of excursion.

## VI Russian young-scientists scientific school

Elena Amplieva

*IGEM RAS, Moscow*

The SGA sponsored VI. Russian young-scientists scientific school «New knowledge in ore-forming processes» was held from 28th of November to 2nd of December 2016 at the Institute of Geology of Ore Deposits, Petrography, Mineralogy and Geochemistry of Russian Academy of Sciences (IGEM RAS), 35, Staromonetny per., Moscow, 119017, Russia.

The program of the school included lectures by world-class researchers and experts in the geology of ore deposits from Russia, Czech Republic and Holland; oral presentations by young geoscientists, students and PhD students; and brief poster presentations. In total 105 people from 4 countries, 22 cities and 36 organizations have taken part in the school. Participants from Russia came from Moscow, St. Petersburg, Tomsk, Novosibirsk, Yekaterinburg, Petropavlovsk-Kamchatsky, Irkutsk, Perm, Syktyvkar, Khabarovsk, Yakutsk, Kyzyl, Rostov-na-Donu, Blagoveshchensk, Arkhangelsk, Dubna, Vladivostok and Miass; Republic of Kazakhstan was represented by researchers from Ust'-Kamenogorsk and Karaganda; also scientists from Azerbaijan (Baku) and

Netherlands took part in the school. In total 7 plenary reports and lectures, 58 oral presentations and 31 posters were presented.

On November 28 within the School the workshop "Computer tomography in geology" was held under the guidance of research scientist of Moscow State University Dr. Dmitriy Korost and research scientist of IGEM RAS Dr. Elena E. Amplieva. Also

on November 28 the excursion to the Ore-Petrographic Museum of IGEM RAS was conducted. During 29th of November and 1st of December 6 scientific sessions with lectures, oral presentations and poster session were held. On 2nd of December the excursion to the Mineralogical Museum of Russian State Geological Prospecting University was organized for participants.



*The excursion to the Ore-Petrographic Museum of IGEM RAS*

The Conference Scientific Committee has selected the Best Student oral and poster presentations based on the high quality and scientific merit of the student's presentations (the award was a book of Publishing house "Paulsen"). The awards were announced at the VI Russian young-

scientists scientific school «New knowledge in ore-forming processes» closing ceremony.

SGA sponsorship was used to partly cover travel expenses for 5 students and for the invited lecturer Dr. Anna Vymazalová. Five students from Perm, St. Peters-

burg, Novosibirsk and Arkhangelsk were granted. The presentation of SGA was performed during the special coffee break, Anna Vymazalová and Evgeniy Naumov supervised the SGA promotion.

The Organizing committee is grateful to SGA for help in organization.



The workshop "Computer tomography in geology"



The informal SGA presentation



The excursion to the Mineralogical Museum of Russian State Geological Prospecting University



Group photo of participants of the VI Russian young-scientists scientific school "New knowledge in ore-forming processes"

see pages 34–36 for more information

14th Biennial Meeting  
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 August 20-23, 2017

SOCIETY for GEOLOGY APPLIED to MINERAL DEPOSITS

Photo: Patrick Mercier-Langevin

# Report of the 11th Ore Deposit and Exploration workshop Guiyang, China, 9–14 November 2016

**Huayong Chen**

*Guangzhou institute of Geochemistry, Chinese Academy of Sciences*

The 11th Ore deposits Models and Exploration Workshop was held in the Institute of Geochemistry, Chinese Academy of Sciences, Guiyang, China, on 9–14 November 2016. This is the first time this well-known workshop was held based in the Chinese major geological research unit.

This workshop was sponsored by Society of Economic Geologists (SEG), Society for Geology Applied to Mineral Deposits (SGA), and Institute of Geochemistry, Chinese Academy of Sciences (IGCAS). IGCAS, the chief organizer, is a key research unit in China majoring in ore-forming process, fluid geochemistry and environment geochemistry. The IGCAS is also a well-known education center for geosciences in China. Professor Ruizhong Hu at IGCAS, Professor Huayong Chen at the Guangzhou Institute of Geochemistry, directed the affairs of the workshop, including laboratory sessions.

Seven economic geologists introduced the metallogenic models of world-class deposits and their applications in the exploration, and demonstrated the typical

samples from variable deposits around the world. Instructors are as follow:

**David Leach:** Senior research geologist at the United States Geological Survey, former chairman of the SGA. He will give a lecture about MVT and Sedex deposits;

**Noel White:** Former chief engineer of the BHP, Honorary Professor of the SEG, professor of the Hefei University of Technology. He gave two lectures about VMS and Fe deposit models and its use in exploration;

**Richard Goldfarb:** Senior research geologist at the United States Geological Survey, former chairman of the SEG. He gave a lecture about gold deposit;

**David Cooke:** Deputy director of the CODES, chair professor of the SEG. He gave a lecture about porphyry deposit;

**Chusi Li:** Professor at the Indiana University. He gave a lecture about magmatic Ni-Cu-PGE sulfide deposit;

**Zhaoshan Chang:** Professor at the James Cook University. He gave a lecture about skarn deposit;

**Huayong Chen:** Professor at the Guangzhou institute of Geochemistry, Chinese Academic of Sciences. He gave a lecture about Iron-oxide Cu-Au (IOCG) deposit.

There were 211 delegates registered for this workshop, they came mainly from China, but also from South Korea and India; over 30 organizations which include universities, research centers and institutes, geological teams and mining companies.

The next workshop will be organized by Professor Huayong Chen ([huayongchen@gig.ac.cn](mailto:huayongchen@gig.ac.cn)), and held in Changsha (Central South University), Hunan Province, China, on 13–17 November 2017.





## 4<sup>th</sup> SGA Short Course on African Metallogeny

### Granite-related ore deposits in the Great Lake Area

organized by

*Society for Geology Applied to Mineral Deposits (SGA)*

in cooperation with

*the Rwanda Natural Resources Authority (RNRA), the University of Leuven (KU Leuven), and the Royal Museum for Central Africa (RMCA)*

supported by

SEG, UNESCO and IUGS

to be held in

*Kigali, Rwanda*

5<sup>th</sup> – 9<sup>th</sup> June 2017

Africa is well endowed with mineral resources and yet much of Africa's minerals riches remain to be discovered. Mining has played a pivotal role in the economy of many African countries with contributions to foreign exchange earnings exceeding 50 % in many instances. There is no doubt that the exploitation of mineral deposits could form a substantial, if not the strongest, platform for a future increase of the African Economy.

The discovery of new ore deposits as well as the economic and sustainable exploitation of known deposits requires interdisciplinary skills and profound insights in the state-of-the-art metallogenic concepts and exploration methodologies.

The aim of the Short Course on African Metallogeny is to train geoscientist in the specific field metallogeny, i.e. practical aspects of the genesis of ore deposits that can be applied in the formulation of future exploration strategies.

## &gt;&gt;&gt; FORTHCOMING EVENTS &lt;&lt;&lt;

**\* marks a new entry****2017****\*March 3–4**

SEG-PDAC Pre-Meeting Course – World-class gold deposits: How do they form and what do we need to know to find them? Toronto, Canada. Contact: [www.segweb.org/events/#17PDACSEG](http://www.segweb.org/events/#17PDACSEG)

**April 23–28**

European Geosciences Union (EGU) General Assembly, Vienna, Austria. Contact: <http://www.egu2017.eu/>

**\*April 24–29**

WACMA1 – The First West African Craton and Margins International Workshop, DAKHLA, Morocco. Contact: <http://www.wacma1.ma>

**\*May 7–10**

X International Congress of Prospectors and Explorers (PROEXPLO) – Lima, Peru. Contact: <http://www.community.geosociety.org/africa2017>

**June 4–7**

FUTORES II (Future Understanding of Tectonics, Ores, Resources, Environment and Sustainability), Townsville, Australia

**\*July 16–21**

XVI ICC International Clay Conference, Granada, Spain. Contact: <http://www.16icc.org/>

**August 4–9**

EMSMD – Magmatism of the Earth and related strategic metal deposits, Miass, Russia. Contact: Victor Zaytsev; e-mail: [alkaline.conference@gmail.com](mailto:alkaline.conference@gmail.com); <http://emsmd.ru/>

**August 13–18**

Goldschmidt Conference, Paris, France. Contact: <http://goldschmidt.info/2017/>

**\*August 14–18**

IAVCEI 2017 Fostering Integrative Studies of Volcanism – Portland, Oregon, USA. Contact: <http://www.iavcei2017.org> for more information.

**August 20–23**

SGA 2017 – 14th Biennial Meeting of Society for Geology Applied to Mineral Deposit, Québec, Canada. Contact: <http://sga2017.ca/>

**\*September 2–6**

Ultramafic-Mafic Complexes: Geology. Structure, Ore Potential, Vth International Conference, Gremyachinsk, Lake Baikal, Russia. Contact: E.V. Kislov, [evg-kislov@yandex.ru](mailto:evg-kislov@yandex.ru)

**\*September 2–9**

18th Annual Conference of International Association for Mathematical Geosciences (IAMG2017), Perth, Australia. Contact: <http://www.iamg2017.com>

**\*September 17–20**

SEG 2017: Ore Deposits of Asia: China and Beyond in Beijing, China. Contact: <http://www.seg2017.org>

**\*September 23–26**

Subduction Related Ore Deposits, Trabzon, Turkey. Contact: I. Uysal, [uysal.ibrahim@gmail.com](mailto:uysal.ibrahim@gmail.com)

**\*September 25–28**

granites2017@benalla, Benalla, Victoria, Australia. Contact: <http://www.benallageology17.com.au>

**October 2–6**

International Earth Science Colloquium on the Aegean Region, IESCA-2017, Izmir, Turkey. Contact: <http://iesca.deu.edu.tr/>

**\*October 22**

IGC-2016 – 35th International Gemmological Conference, Windhoek, Namibia. Contact: <http://www.igc-gemmology.org/>

**October 22–25**

The Geological Society of America (GSA) 2017 Annual Meeting, Seattle, United States. Contact: <http://www.geosociety.org/meetings/>

**\*December 4–8**

American Exploration and Mining Association Meeting, Sparks/Reno, Nevada, USA. Contact: <http://www.miningamerica.org>

**2018****August 13–17**

IMA 2018 – XXII Meeting of the International Mineralogical Association, Melbourne, Victoria, Australia. Contact: <http://www.ima2018.com/>

**November 4–7**

The Geological Society of America (GSA) 2018 Annual Meeting, Indianapolis, United States. Contact: <http://www.geosociety.org/meetings/>

**2019****\*August**

15th SGA Biennial Meeting, Glasgow, Scotland, UK. Contact: A. Boyce, email: [Adrian.Boyce@glasgow.ac.uk](mailto:Adrian.Boyce@glasgow.ac.uk)

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Abstract deadline: 1 April  
Early registration deadline: 13 June

**GOLDSCHMIDT® 2017**  
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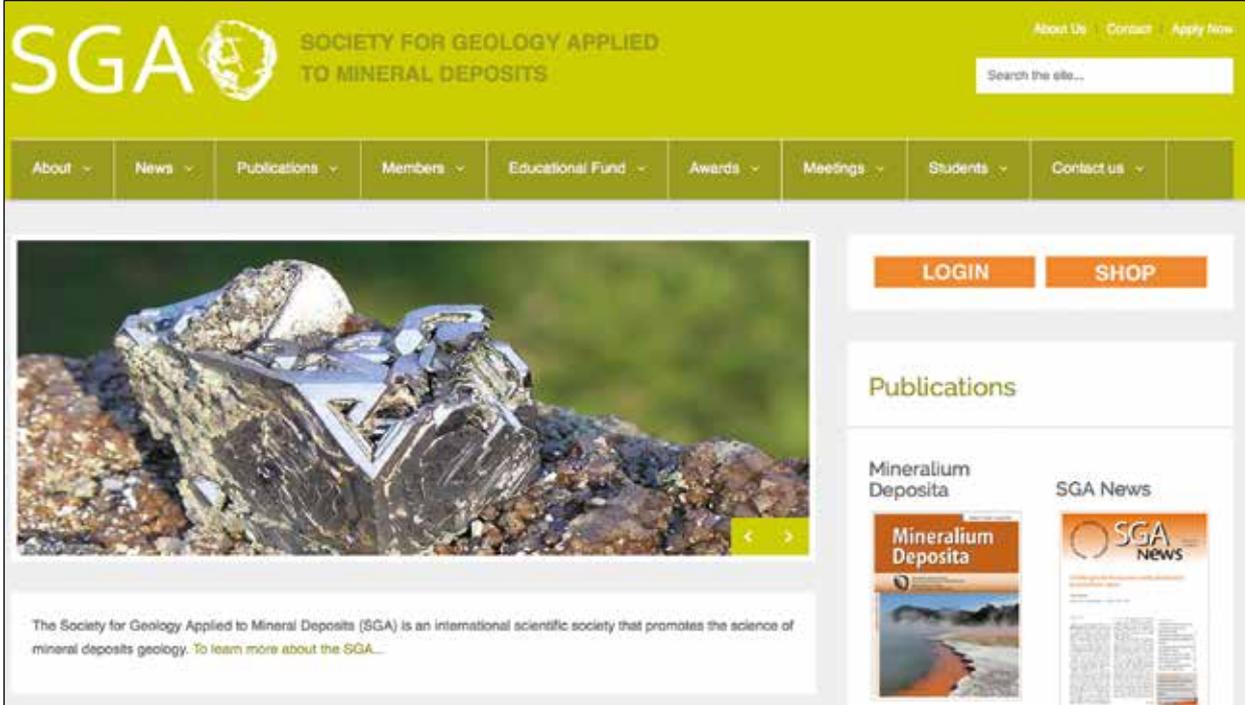
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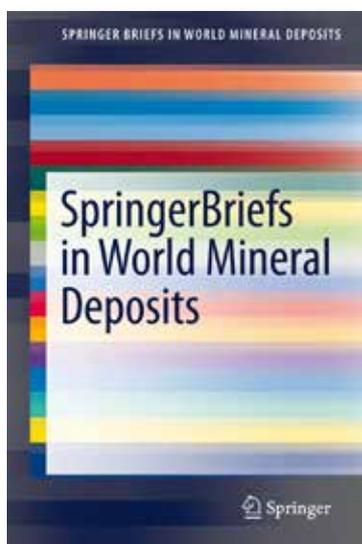
Nikola Koglin , Chief Editor SGA website

*Lehrstuhl für Geodynamik und Geomaterialforschung, Julius-Maximilians-Universität Würzburg, Am Hubland, 7074 Würzburg  
email: nikola.koglin@uni-wuerzburg.de*

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### Recently published:

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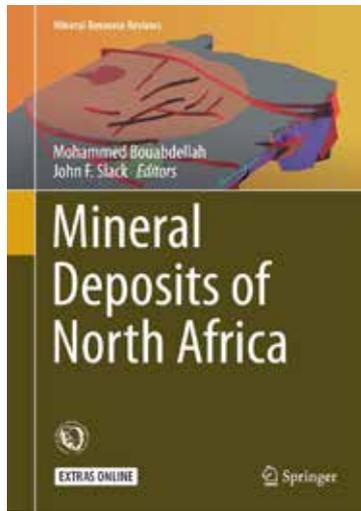
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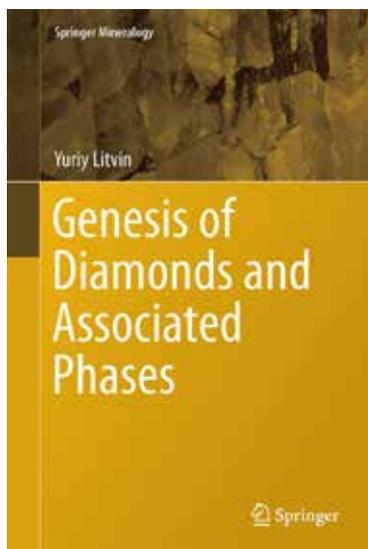
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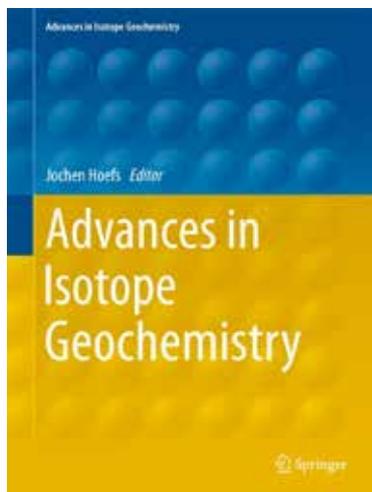
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# MINERAL RESOURCES TO DISCOVER



14th Biennial Meeting  
**SGA Quebec 2017**  
 Quebec City, Canada  
 August 20-23, 2017



Photo: Patrick Mercier-Langevin

## Symposia

- SY01: Gold through time and space
- SY02: Magmatic sulfide and oxide ore deposits in mafic and ultramafic rocks
- SY03: IOCG-IOA ore systems and their magmatic-hydrothermal continuum: A family reunion?
- SY04: Mineral deposits: theory, experiment and nature - a symposium to recognize the work of A.E. Williams-Jones

## Sessions

- S01: Geology, geodynamics and metallogeny of the Rhyacian (2.35 - 2.05 Ga)
- S02: Ore-forming magmatic-hydrothermal processes along active margins
- S03: Exhalative mineral deposits: key controls on the quality (size and/or grade) of deposits and districts
- S04: Uranium deposits: from source to ore
- S05: Iron ore - deposit to global scale processes
- S06: The impact of the supercontinent cycle on ore formation
- S07: Developments of geochronological methods and their application to date ore forming events
- S08: From fertility to footprints: New vectoring tools for mineral exploration
- S09: Geometallurgy: risk reduction through communication, optimization and innovation
- S10: How can government promote exploration success?
- S11: Resources development and perception/acceptability: The role of geosciences
- S12: Gem research: Beautiful windows into earth's interior
- OS01: General session - posters only

## Short courses

- SC1: Recent advances in the genesis of mafic and ultramafic ore systems
- SC2: High technology metals (REE, Nb-Ta, Li)
- SC3: Exploration geophysics - new methods, case studies, modeling
- SC4: Linkages amongst iron-oxide alkali-altered systems: from metasomatism to orogenic metamorphism
- SC5: Detecting the alteration footprint around porphyry
- SC6: Exploration management and targeting with 3D multidisciplinary models
- SC7: Field portable instrumentation

## Field trips

- A-01: Physical volcanology and metallogenesis of the Ni-Cu-PGE deposits in the Cape Smith Belt, Québec, Canada
- A-02: Iron oxide and alkali alteration, skarn and epithermal mineralizing systems of the Grenville Province, Canada
- A-03: Gold mineralization in the Guyana Shield, Guyana and Suriname, South America
- B-01: Geological and historical heritage of Québec fortified city and Montmorency falls park (for geoscientist/student) / Québec fortified city: geological and historical heritage (for all)
- C-01: Precious and base metal deposits of the southern Abitibi greenstone belt, Superior Province, Canada
- C-02: Stratigraphic and metallogenic context of the Sokoman Iron Formation in the Labrador Trough near Schefferville, Québec-Labrador, Canada
- C-03: Geologic setting and iron oxide deposits of the mesoproterozoic St. Francois Mountains, Southeast Missouri, USA

## Important Dates

- >> January 15, 2017: Abstract submission opens  
Registration opens
- >> February 28, 2017: Deadline for SGA Student grant applications  
Deadline for SGA Students free field trip applications
- >> March 15, 2017: Abstract submission closing date
- >> April 15, 2017: Abstract revision notice
- >> April 30, 2017: Final revised abstract
- >> May 15, 2017: Final acceptance
- >> May 31, 2017: Deadline for early field registration
- >> August 19, 2017: Informal cocktail
- >> August 20, 2017: Opening ceremony, Student-Infinity Event
- >> August 21, 2017: SGA General Assembly
- >> August 22, 2017: Gala Dinner, Chateau Frontenac
- >> August 23, 2017: Closing Ceremony



## Registration

	EARLY (\$CAD) (before May 31, 2017)	REGULAR (\$CAD)
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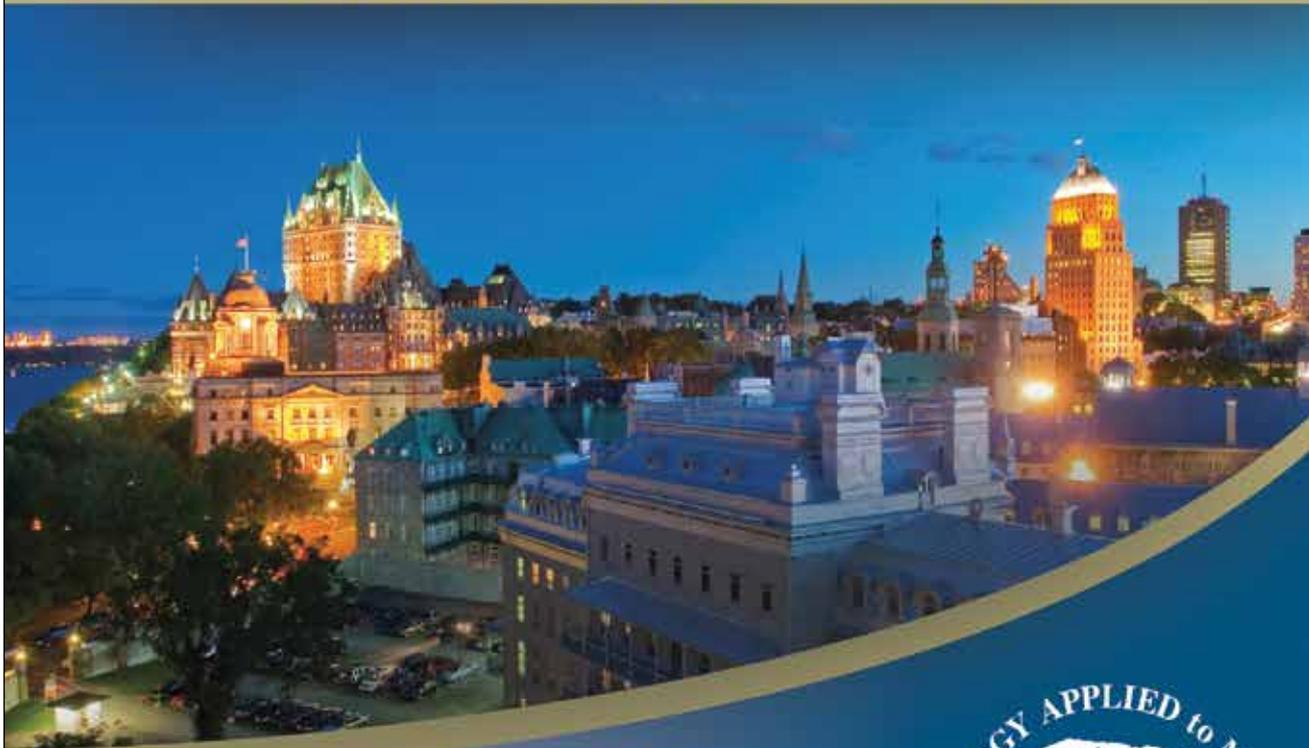
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