Towards the end of March, having already been cooped up in the home office for a few weeks, a surprising realization dawned on us about those departmental seminars we tend to skip and complain about — we actually quite missed them. Fuelled with the kind of enthusiasm that is exclusive to the hopelessly naïve, we set about to replace those cancelled seminars with an online alternative. The name ‘Ore Deposits Hub’ was chosen after narrowly dodging a few disastrous suggestions from the author and within a few days, we had a concept, time slots, some high-profile speakers and a racy but functional website — which is actually more than can be said for quite a few physical conferences!

Our general concept is simple: free, open talks and discussion on ore deposit geoscience hosted weekly in an online ‘meeting room’. We send the meeting details out via our mailing list and people can tune in to a ~45 minute talk. Afterwards, we discuss the topic for as long as we like, from the comfort of anywhere our WiFi reaches. This open-ended discussion would be impossible in a physical setting, and it is one of the greatest advantages of the platform. However, some of the emergent strengths of our online format are more far-reaching (literally). We are delivering cutting-edge research into the living rooms of people who, for whatever reason, expense, care responsibilities, time, disability etc., could not normally attend international conferences. Likewise, we built a platform on which these brilliant geologists can share their work with an international audience.

We have now hosted 29 talks, consistently getting 100–250 people tuning in, and by the time you read this, we will have exceeded 4500 email subscribers. For the most part, we reached this stage by piggybacking on the fame and competence of our early speakers: Simon Jowitt, John Thompson, Ali Sholeh, Steve Barnes and Dave Lentz (there, we’re doing it again), to whom we owe our unending gratitude. This has all been made easier by our now far-less racy and far-more functional website, developed by Aaron Hantsche, Alannah Brett and myself and paid for by the SGA, IAGOD, and SEG.

Thankfully, with eight team members to run the show, we now have a moment to reflect on where we might be going in the post-pandemic future. Online meetings are quick to organize, almost free, basically carbon-neutral and accessible to all. However, if being locked down has taught us anything, it is that face-to-face catch-up and discussion are incredibly important — life happens at greater than 1024 kb/s! Online platforms cannot replace that experience, but can act as an accessible, parallel or integrated platform to physical meetings. We hope to work together with the SGA and other community sponsors to create a permanent cross-society platform for this newly prevalent avenue of science communication, and we look forward to seeing a 1024 kb/s version of yourself in a meeting soon!

Ore Deposits Hub is an online open platform for talks and discussions on Ore deposit Geoscience. The Hub is currently run by Aaron Hantsche, Alannah Brett, Tom Belgrano, Marion Grosjean, Wren Bruce, Chris Voisey, Jamie Kelly and Neil Fernandez, and is jointly sponsored by the SGA, SEG and IAGOD. For more details, including a schedule of talks and the sign-up form, check our website at https://oredepositshub.com/
The SGA Ordinary Council Meeting was planned to be held in Warsaw, Poland on March 31, 2020. Due to the unfortunate COVID-19 situation, the meeting had to be cancelled and postponed to October 2020. Great thanks are due to Prof. Stanislav Mikušík from the Polish Geological Institute and his team for their efforts related to the preparation of the meeting in Poland during this difficult time.

Instead, the SGA management decided to ask the SGA Executive Secretary to address SGA Council members via email with a revised agenda and relevant supporting documents. Council members were asked on March 30, 2020 to go through the agenda and attached items and provide the Executive Secretary with brief response (for/against with a one-two sentence explanation for proposals) by Monday, April 6, 2020. David Huston (SGA President) suggested that the other items not covered by the present agenda can be handled by the initiators with help from the Executive as needed.

Based on responses by Council members to the recent SGA e-Council Meeting (March 30), here is a summary of results:

1. Minutes of previous Council Meeting (August 26, 2019 (Glasgow, Scotland) – approved.
2. Determining successful bid for SGA2023 – after a tight vote on two very high quality bids, the Council decided that the 17th SGA Biennial Meeting will be held in Zürich, Switzerland in August 2023 (official letter from SGA President to both bidding teams sent).
3. Report from SGA2021 – noted – suggested creation of a new category for retired members at SGA2021 – newly put to a vote and approved.
4. Determining if the Mt. Isa field conference should be postponed until July 2021 – approved postponement to July 2021.
5. Springer Nature issue/Membership fee – a mild increase in the membership fees at this stage until a better prediction can be made about the extent and kind of activities SGA can offer in COVID19 times.
8. Status of development of SGA Student and Young Scientist network – approved providing budgets to all chapters that submitted their reports and new chapters, and hold the payment for chapter, which did not provide any reports. SGA Vice President for Student Affairs to inform individual chapters.
9. Coordination between SGA2021 and SGA Educational Fund for soliciting support – noted and recommended that fundraising should be coordinated between Tony Christie and his team and one SGA Council representative (D. Huston/D. Banks).
10. SGA Sub-committee on New Initiatives – confirmed for an initial period of 1 year; a clear Terms of Reference document needed. D. Banks to continue in identifying Sub-committee members.
11. The 26th Short Course on African Metallurgy on “Energy transition metals” (November 23-27, 2020 Windhoek, Namibia) – B. Orberger et al. - noted - important to make a decision if the course will be organized by July 1, 2020.
13. SGA Ordinary Council Meeting - 12-15 October 2020, Warsaw, Poland - approved.

Like most other organisations around the world, SGA has been wrestling with how we deal with Coronavirus (COVID19). The pandemic, which became a major problem for the world earlier this year, has forced significant changes upon the society. The first effect was that the biannual Council meeting scheduled for April was held digitally and included e-mail responses to a series of issues and then some discussions via video conferencing. It is possible (likely) that future Council meetings will be held in this manner at least until the COVID19 pandemic recedes.

The COVID19 pandemic has also affected (or has potential to affect) some of the Society’s other activities. The inaugural SGA field conference in Mount Isa, Australia, which was scheduled for this month, had been postponed until July 2022. Although the 7th SGA-IUGS-SEG-UNESCO Short Course on African Metallurgy is currently scheduled to occur on 23rd - 27th November 2020 in Windhoek, Namibia, the organisers are keeping a watching brief on the development of COVID19 in Africa to make sure that the conference can be held safely. The 16th Biennial Conference on Precambrian Geology and Metallogeny (May 25 to 29, 2020 in San Ignacio de Velasco, Bolivia) – M. Biste et al.- approved postponement to May 2021.

In this manner at least until the COVID19 pandemic recedes.

The SGA Ordinary Council Meeting was planned to be held in Warsaw, Poland on March 31, 2020. Due to the unfortunate COVID-19 situation, the meeting had to be cancelled and postponed to October 2020. Great thanks are due to Prof. Stanislav Mikušík from the Polish Geological Institute and his team for their efforts related to the preparation of the meeting in Poland during this difficult time.

Instead, the SGA management decided to ask the SGA Executive Secretary to address SGA Council members via email with a revised agenda and relevant supporting documents. Council members were asked on March 30, 2020 to go through the agenda and attached items and provide the Executive Secretary with brief response (for/against with a one-two sentence explanation for proposals) by Monday, April 6, 2020. David Huston (SGA President) suggested that the other items not covered by the present agenda can be handled by the initiators with help from the Executive as needed.

Based on responses by Council members to the recent SGA e-Council Meeting (March 30), here is a summary of results:

1. Minutes of previous Council Meeting (August 26, 2019 (Glasgow, Scotland) – approved.
2. Determining successful bid for SGA2023 – after a tight vote on two very high quality bids, the Council decided that the 17th SGA Biennial Meeting will be held in Zürich, Switzerland in August 2023 (official letter from SGA President to both bidding teams sent).
3. Report from SGA2021 – noted – suggested creation of a new category for retired members at SGA2021 – newly put to a vote and approved.
4. Determining if the Mt. Isa field conference should be postponed until July 2021 – approved postponement to July 2021.
5. Springer Nature issue/Membership fee – a mild increase in the membership fees at this stage until a better prediction can be made about the extent and kind of activities SGA can offer in COVID19 times.
8. Status of development of SGA Student and Young Scientist network – approved providing budgets to all chapters that submitted their reports and new chapters, and hold the payment for chapter, which did not provide any reports. SGA Vice President for Student Affairs to inform individual chapters.
9. Coordination between SGA2021 and SGA Educational Fund for soliciting support – noted and recommended that fundraising should be coordinated between Tony Christie and his team and one SGA Council representative (D. Huston/D. Banks).
10. SGA Sub-committee on New Initiatives – confirmed for an initial period of 1 year; a clear Terms of Reference document needed. D. Banks to continue in identifying Sub-committee members.
11. The 26th Short Course on African Metallurgy on “Energy transition metals” (November 23-27, 2020 Windhoek, Namibia) – B. Orberger et al. - noted - important to make a decision if the course will be organized by July 1, 2020.
13. SGA Ordinary Council Meeting - 12-15 October 2020, Warsaw, Poland - approved.

On a more positive note, Mineralium Deposita, the Society’s flagship publication has the two-year impact factor of 4.323 in 2019 which is significantly higher than that of 3.397 for 2018. Congratulations to our co-Chief Editors Georges Beaudoin and Bernd Lehmann and all of the Associate Editors who have ensured the quality of this journal, which is reflected in the impact factor.

In addition, SGA, along with SEG and IAGOD, are financially supporting the Ore Deposits Hub (https://oredeposithub.com), which is a student-based organisation promoting ore deposit science and collaboration between academia, government and industry. The SGA Council recommends that our membership attend the weekly digital seminars – registration is simple. Thanks to Tom Belgrano and Alannah Brett for founding this initiative, the SGA is proud to support.

Finally, I would like to thank the outgoing council members, particularly ex-Presidents Karen Kelley and Jorgez Rlyvas, who have both made long-term contributions to SGA. At present, there are a number of challenges that our society is facing. We will ensure that our society continues to provide services to our members in a safe and timely manner.

David Huston
President
Mineralium Deposita: 2019 bibliometric data
Georges Beaudoin1 and Bernd Lehmann2 (Editors-in-Chief)

Mineralium Deposita is the official journal of the SGA. The 2019 bibliometric data indicates the journal is doing well, with its highest 2-year Impact Factor (IF) ever at 4.32. The IF compares the number of citations for a reference year to the number of citable items of the two previous years. Since introduction of the IF in 1997, Mineralium Deposita has shown a steady increase of this metric (Figure 1). Mineralium Deposita has an IF higher than its competitor journals. Similarly, the 5-year IF shows an increasing trend with the highest value in the field of economic geology (Figure 2). Other metrics show similarly high values for Mineralium Deposita. The journal publishes about 65-70 citable items per year, a steady number. As a reflection of the high IF and other metrics, the journal is highly regarded by the community, and attracts an increasing number of submissions (284 in 2019), which necessarily results in a high rate of rejection (>2/3). We are continuously looking for high quality papers from around the world to maintain and increase Mineralium Deposita’s status as the premier journal in the field. We thank the authors for their excellent research, the many referees and members of the Editorial Board for their insights steering submissions through the peer-review process.

Fig. 1: The 2-year Impact Factor of Mineralium Deposita (MD), Economic Geology (EG) and Ore Geology Reviews since 1997.

Fig. 2: The 5-year Impact Factor of Mineralium Deposita (MD), Economic Geology (EG) and Ore Geology Reviews since 1997.

### Reports from the SGA Student Chapters

<table>
<thead>
<tr>
<th>SGA chapter</th>
<th>President</th>
<th>E-mail</th>
<th>Website/Facebook/Twitter</th>
<th>Chapter e-mail</th>
<th>Foundation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prague</td>
<td>Štěpán Jaroměřský</td>
<td><a href="mailto:jaromers@natur.cuni.cz">jaromers@natur.cuni.cz</a></td>
<td><a href="http://sga.cuni.cz/">http://sga.cuni.cz/</a></td>
<td>chapter_prague <a href="mailto:inser-group@natur.cuni.cz">inser-group@natur.cuni.cz</a></td>
<td>2002</td>
</tr>
<tr>
<td>Baltic</td>
<td>Krzysztof Foltyn</td>
<td><a href="mailto:krzyfoltyn@gmail.com">krzyfoltyn@gmail.com</a></td>
<td><a href="http://www.sga.agh.edu.pl/">www.sga.agh.edu.pl/</a></td>
<td><a href="mailto:SiberianChapter@yandex.ru">SiberianChapter@yandex.ru</a></td>
<td>2009</td>
</tr>
<tr>
<td>Siberia</td>
<td>Anna Deyatiyara</td>
<td><a href="mailto:anna13502@gmail.com">anna13502@gmail.com</a></td>
<td><a href="http://www.sib-sga.com">www.sib-sga.com</a></td>
<td><a href="mailto:sga.nancy@gmail.com">sga.nancy@gmail.com</a></td>
<td>2011</td>
</tr>
<tr>
<td>Barcelona</td>
<td>Malena Cazorla</td>
<td><a href="mailto:malecima.97@gmail.com">malecima.97@gmail.com</a></td>
<td><a href="http://www.bcn-sga-seg.cat/index.php">www.bcn-sga-seg.cat/index.php</a></td>
<td><a href="mailto:sga.universidadlasamericanas@gmail.com">sga.universidadlasamericanas@gmail.com</a></td>
<td>2012</td>
</tr>
<tr>
<td>Colombia-Bucaramanga</td>
<td>Juan Pablo Jaimes Bermudez</td>
<td><a href="mailto:juanjaimesb21@gmail.com">juanjaimesb21@gmail.com</a></td>
<td><a href="http://www.facebook.com/capitulosgauis/">www.facebook.com/capitulosgauis/</a></td>
<td><a href="mailto:sga.universidadlasamericanas@gmail.com">sga.universidadlasamericanas@gmail.com</a></td>
<td>2012</td>
</tr>
<tr>
<td>Nancy</td>
<td>Margarita Mel fou</td>
<td><a href="mailto:margarita.melfou7@etu.univ-lorraine.fr">margarita.melfou7@etu.univ-lorraine.fr</a></td>
<td>sganancy.wordpress.com</td>
<td><a href="mailto:sga.universidadlasamericanas@gmail.com">sga.universidadlasamericanas@gmail.com</a></td>
<td>2013</td>
</tr>
<tr>
<td>Peru</td>
<td>Silvana Janeth Stiperich Santillán</td>
<td><a href="mailto:stiperich.s@pscp.pe">stiperich.s@pscp.pe</a></td>
<td><a href="http://www.facebook.com/SGAPeruStudent-Chapter/">www.facebook.com/SGAPeruStudent-Chapter/</a></td>
<td><a href="mailto:sga.universidadlasamericanas@gmail.com">sga.universidadlasamericanas@gmail.com</a></td>
<td>2013</td>
</tr>
<tr>
<td>Colombia-Bogota</td>
<td>Juan Pablo Jaimes Bermudez</td>
<td><a href="mailto:juanjaimesb21@gmail.com">juanjaimesb21@gmail.com</a></td>
<td><a href="http://www.sga.ug.edu.co">www.sga.ug.edu.co</a></td>
<td><a href="mailto:sga.universidadlasamericanas@gmail.com">sga.universidadlasamericanas@gmail.com</a></td>
<td>2015</td>
</tr>
<tr>
<td>Morocco</td>
<td>Said Ilmen</td>
<td><a href="mailto:said.ilmen@edn.ucma">said.ilmen@edn.ucma</a></td>
<td><a href="http://www.facebook.com/SGA-Moroccan-Student-Chapter">www.facebook.com/SGA-Moroccan-Student-Chapter</a></td>
<td><a href="mailto:sgachapter.marakech@gmail.com">sgachapter.marakech@gmail.com</a></td>
<td>2015</td>
</tr>
<tr>
<td>Laval</td>
<td>Emile Boily-Auclair</td>
<td><a href="mailto:Emile.boily-auclair@ete-inrs.ca">Emile.boily-auclair@ete-inrs.ca</a></td>
<td><a href="http://segulaval.ca">http://segulaval.ca</a></td>
<td></td>
<td>2016</td>
</tr>
<tr>
<td>Western Cape</td>
<td>Jorgina Aku-shika</td>
<td><a href="mailto:jorginakaushika@gmail.com">jorginakaushika@gmail.com</a></td>
<td></td>
<td></td>
<td>2017</td>
</tr>
<tr>
<td>North-West Russia</td>
<td>Evgenyi Eremenko</td>
<td><a href="mailto:st013196@student.spb.edu.ru">st013196@student.spb.edu.ru</a></td>
<td><a href="https://nw-sga.com">https://nw-sga.com</a></td>
<td></td>
<td>2017</td>
</tr>
<tr>
<td>Turkey</td>
<td>Fatih Özbas</td>
<td><a href="mailto:faith.ozbas@istanbul.edu.tr">faith.ozbas@istanbul.edu.tr</a></td>
<td><a href="http://www.pau.edu.tr/sgatrstudent">www.pau.edu.tr/sgatrstudent</a></td>
<td></td>
<td>2017</td>
</tr>
<tr>
<td>Black Forest-Alpine</td>
<td>Alannah Brett</td>
<td><a href="mailto:alannah.brett@geo.unibe.ch">alannah.brett@geo.unibe.ch</a></td>
<td>bfa2sga.wordpress.com</td>
<td></td>
<td>2017</td>
</tr>
</tbody>
</table>

1 Université Laval, Avenue de la Médecine, Québec, QC Canada, G1V0A6, georges.beaudoin@ugl.ulaval.ca
2 Technical University of Clausthal, Adolph-Roemer-Str. 2A, 38678 Clausthal-Zellerfeld, Germany, lehmann@min.tu-clausthal.de
Last fall, the SGA Baltic Student Chapter at Luleå University of Technology (LTU) organized a collaborative, guest speaker-oriented workshop with a unique theme: Scandinavian exploration geology applied to younger terrains. While geologists are trained in the fundamental principle of uniformitarianism: “the present is the key to the past,” the Baltic Student Chapter invited students, researchers, and professionals to a workshop on how exploration geology in older and tectonically more complex terrains could be beneficial to exploring in younger terrains. In order to gather presenters from a variety of fields and perspectives, the SGA Baltic Student Chapter welcomed two external speakers and two in-house speakers to present on the theme including Dr. Stefan Luth from the Swedish Geological Survey (SGU), Marcello Imaña, chief consultant of Scandic Peruana Minerals, Assoc. Prof. Dr. Tobias Bauer and Senior Lecturer Dr. Nils Jansson of LTU.

Open for Application
The SGA Mobility Grant

Get ready for SGA networking! Do you know about a SGA member who runs a laboratory that could answer open questions of your research? Then the SGA Mobility Grant can help to bring you together! The SGA Mobility Grant offers an opportunity for regular SGA members to apply for money to travel to a facility with SGA background.

Applicants have to be in good standing for at least 3 continuous years (i.e. paid up membership fees; up to 2 years of student membership count) and apply by sending their request following a template to the SGA Mobility Grant coordinator (thomas.aigl-sperger@ltu.se).

The application template is available at https://e-sga.org/home/.

Learning and sharing! That’s the spirit of the SGA Mobility Grant.
from LKAB, Boliden, Agnico Eagle, Björk- 
dalsgruvan, EMX Royalty Corp., SGU and 
researchers in academia and students from a 
variety of levels.

The workshop was given in a four-part 
lecture series covering a range of topics and 
included engaging discussion sessions. Dr. Nils Jansson discussed the need of syn-
thesizing models tailored for understanding 
ore deposits within specific districts. He 
used case studies of stratabound limestone-
skarn-associated Zn-Pb-Ag-Cu (SVALS) 
and stratabound ash-siltstone-hosted Zn-Pb-
Ag (SAS) deposits in the Bergsagen dis-
trict as examples of how the application of 
deposit-scale geochemical, structural and 
mineralogical data can be used to modify 
general ore genetic models into explicit 
one. Dr. Tobias Bauer gave a synthesis of 
the tectonic history of the Fennoscandian 
Shield and drew comparisons to modern 
analogues such as the South Aegean Arc 
and the Papuan Fold Belt. He spoke about 
how understanding the tectonics of the 
region can lead to advanced mineral explo-
ration. Dr. Stefan Luth presented ongoing
work using core-scanning technologies and illustrated the utilization of 3D mod-
elling applications in Scandinavia, Bulgaria 
and Greece. Marcello Imaña finished the 
workshop by discussing the role of carbon-
ates in both old and young terrains and the 
geochemical interplay carbonates have in 
forming ore deposits. In addition to the 
lecture series, Dr. Laura Lauer, specialist 
from the LKAB exploration department, 
gave a presentation about LKAB’s geology 
department and their ongoing exploration 
activities in Kiruna, Gällivare and Svar-
pavaara in Northern Sweden. The lectures 
were punctuated with student-industry net-
working opportunities including enjoying a 
traditional Swedish fika (coffee and cakes; 
Figure 1), as well as an after-workshop 
mingle session. The SGA Baltic Student 
Chapter at LTU are grateful for our spon-
sors, speakers and for all the people who 
participated in this event (Figure 2)!

1st SGA Brazilian Student Chapter 
Workshop: gold mineralisation in the 
Ouro Preto region

Frederico Guimarães1; Júlia Pimenta2; Alexandre Raphael Cabral1,3

1 Centro de Desenvolvimento da Tecnologia Nuclear (CDTN), Belo Horizonte, MG, 31270-901, Brazil. 
2 Departamento de Geologia (Depgeo), Universidade Federal de Ouro Preto (UFOP), Campus Morro do Cruzeiro s/n, Ouro Preto, MG, 35400-000, Brazil. 
3 Centro de Pesquisas Professor Manuel Teixeira da Corte, Instituto de Geociências, Universidade Federal de Minas 
Gerais (UFMG), Belo Horizonte, MG, 31270-901, Brazil. sgabrazilianstudentchapter@gmail.com

The Quadrilátero Ferrífero of Minas Gerais, Brazil, is a famous, 
world-class mineral province. On its inaugural workshop, the SGA 
Brazilian Student Chapter focused on the gold mineralisation in the 
historically most important gold-mining centre of the Quadrilátero 
Ferrífero: Ouro Preto. The workshop took place on September 9-12, 
2019, in Ouro Preto, amid its colonial houses of baroque architec-
ture and narrow streets, a scenario built on hills sustained by rocks 
of the Minas Supergroup. Numerous underground workings, cur-
cently inaccessible, are distributed over the hilly landscape. Some 
of them have become tourist attractions.

The Workshop was sponsored by SGA and AngloGold Ashanti 
and held at the School of Mines of the Universidade Federal de 
Ouro Preto (UFOP). This is the most traditional School of Mines in 
Brazil. The event gathered 30 participants, from undergraduate stu-
dents of geology to mine geologists. The event was a good opportu-
nity to present the SGA Brazilian Student Chapter to the geological 
community. The workshop was divided into three parts: lectures, 
field trips and a short course of underground mapping (Figure 1), 
distributed over a four-day schedule. The theoretical part consisted 
of one day of lectures given by experts from academy and industry, 
sharing insights about mapping techniques, regional geology of the 
Quadrilátero Ferrífero and styles of gold mineralisation in the Ouro 
Preto region. Lectures were interspersed with coffee breaks, when 
participants could interact with the lecturers and the organization.

The field trips were guided by two professors, Alexandre Raphael 
Cabral, from Universidade Federal de Minas Gerais and Maximil-
iano Martins, from UFOP. They conducted a two-day excursion to 
localities in and around Ouro Preto (Figure 2), from outcrop and adit 
goldology to gold panning (Figure 3).

The highlight of the workshop was the short course of under-
ground mapping, which combined a theoretical introduction with two 
days of four-hour practice of underground mapping. We had the 
privilege of counting on the 20-year expertise of Drígenes Vial 
(Alkimines), who voluntarily taught the course (Figures 1, 4), the 
practical part took place at the historical Veloso mine, currently a 
tourist attraction in Ouro Preto.
The Industrial University of Santander SGA-UIS Student Chapter, formed by 32 student members from different levels, carried out all the activities proposed for 2019. The activities included different lectures, geological meetings, courses and field trips.

Regular meetings
Throughout the year, lectures and meetings were developed by students of the last semester. These were developed twice per week and were about general topics like basic geology and specific and complex topics like configuration and development of the Colombian mineral deposits. Initially, these activities were planned for first semester students; nevertheless, students of different semesters joined and, with their help and interest, multiple topics were debated in the mineral deposits area.

Geological modelling fundamentals applied to exploratory projects course
A two-day theoretical-practical course was conducted, carried out by Ariana Montoya, M.Sc. The topics were the stages of an exploratory project, quality assurance and quality control (QA/QC), data bases and building a geological model using real data.

Fig. 1: Meeting run by Juan Pablo Jaimes, ninth semester student.

Fig. 2: Field-trip participants contemplating historical open-cast remains and the Itacolomi peak in the background.

Fig. 3: Participants and mosquitoes at work: gold panning and bloodsucking, respectively.

Fig. 4: Practice of underground mapping at Veloso.

Fig. 2: All the SGA-UIS chapter members that were part of the modelling course.

Geofair
This activity was inside a bigger event called U18, organized by the Industrial University of Santander (UIS). During the Geofair, all the active geological chapters of the Industrial University of Santander, including the SGA-UIS, worked together to bring geology to the society. A few regional schools were invited and students from other faculties and departments attended too. There were talks, meetings, games and activities with the aim of teaching students the importance of geology in our daily life. The SGA-UIS chapter participated with a stand of different minerals and rocks in order to explain the formation processes of each sample and their importance in the society.
Regional field trip – Minesa
The SGA – UIS Student Chapter made a field trip to the mining project called “Soto Norte”, which is still in its exploration stage and which is owned by the company called Minesa. We had the opportunity to see samples from the deposit and their mineralogical, textural and structural characteristics and were explained how it formed and how it will be mined. Two field trips were carried out and each of them lasted one day.

Regional field trip – Umplá
The SGA-UIS chapter made a field trip to a small town called Umplá, located approximately two hours away by car from Bucaramanga. The main purpose of this activity was to identify fluorspar veins that have been artistically mined for over 30 years. Additionally, we treated topics related to igneous and metamorphic petrology, given the fact that these fluorspar veins were emplaced in granite and paragneiss, and talked about other minerals being mined, to a lesser extent, for industrial purposes such as vermiculite, muscovite and K-feldspar.

Introduction to rock deformation mechanisms course
A one-day theoretical-practical course was conducted and carried out by Leonardo Palmeira, M.Sc. The treated topics were the characteristics of each deformation mechanism, the relation between deformation, temperature and minerals, and deformation in gneisses from the Guiana Shield in Brazil. We also had the opportunity to take the treated topics into action and identify the mechanisms in thin sections.

Science school fair
During this science school fair, the SGA-UIS Student Chapter worked together to bring geology to high school students from the Colegio Integrado Nuestra Señora del Divino Amor. Students from the 9th, 10th and 11th grades were invited with the aim of teaching them the importance of geology and the relation between deformation, temperature and minerals, and mineralization.

The annual field trip of the SGA Nancy Student Chapter took place from the 16th to 21st February 2020. Six student members (5 MSc students and 1 PhD student) accompanied by the Assistant Professor Jean Cauriz (GeoRessources laboratory, University of Lorraine, France), visited various Precambrian, Paleozoic and Mesozoic base metals, PGE and phosphate deposits in central and south Morocco. The group had the chance to interact with two mining companies, the Managem group and the OCP (“Office Chérifien des Phosphates”) group and to be guided by the Assistant Professor Jean Cauriz.

The deposit contains 10 Mt @ 5.3 wt % Zn, 2 wt % Pb and 0.3 wt % Cu (Marcoux et al. 2008). With a depth of >1 kilometer, Draa Star is the deepest mine in North Africa. Mineralization is dated at 331.7 ± 7.9 Ma (Ar-Ar in hydrothermal sericite) and is related to a submarine volcano submarine volcano episode. A pyrrhotite-sphalerite-chalcopyrite-galena assemblage forms most of the ore (Macha et al. 2008). The latter is a NW-SE anticline composed of serpentinite, gabbro, basalt, dykes and arc-type volcanic rocks. The Bou Azzer Cu-Co-Cr district and related Co-Ni-Fe-Ag (±Au±Ag) occurrences are located at the center of the inlier and are mostly hosted by a Precambrian ophiolitic sequence.

A world-class outcrop of the ophiolitic sequence was observed. It is a 100-m-long section that represents a cross-section through the mantle to the oceanic crust. The intrusion age of the gabbro is estimated at 697 ± 8 Ma (U-Pb in zircons; El Hadi et al., 2010). Cu occurrences were observed in the mafic rocks. We stood on the
discontinuity and observed the mafic dykes that crosscut the gabbros (Figure 2) close to an old inactive Co-Ni artisanal mining operation with skutterudite, arsenopyrite and gerdardiffite (Figure 3).

We headed to the Bleida Cu mine on Wednesday, February 19, 320 km SE of Marrakesh. Somifier, a daughter company of Managem, operates the mine. After the traditional safety induction, the exploration supervisor, Mr. Bajdi, presented the local geological framework, the ongoing exploration projects and the plans for pit extension. Besides, we have been told about the ore processing procedures. The mine is located in the upper part of the Bou Azzer ophiolitic sequence at the core of the inlier. The host rocks comprise metamorphosed and deformed mafic to intermediate rocks. The Cu mineralization is mainly associated with the deformed secondary quartz veins. The main ore mineral is chalcopyrite and the hydrothermal alteration is dominated by silicification and sericitization. Under the guidance of the mine geologists, we visited the open pit and discussed the regional geology and the ore-bearing structures (Figure 4). The road back to Marrakesh took us through the High Atlas mountains and key geological outcrops were explained thoroughly by Prof. Wafic.

The last day started at the Mohammed VI Technical University in Ben Guerir, where we met Prof. Youssef Daafi. The university is in direct cooperation with the OCP group and manages the Bleida Cu massive sulphide deposit, Morocco. Ore Geology Reviews 33:280-306.

The traditional autumn fieldtrip of the SGA Student Chapter Prague was this year dedicated to the various deposits (heritage stones, metal and non-metal mineral deposits) on the Czech side of the Krušné hory Mts. (Erzgebirge). During 24 – 27 October 2019, fifteen members attended the course (Figure 1). The Krušné hory Mts. are situated in the NW of the Bohemian Massif and belong to the Saxothuringian zone of the Variscan orogen. Ore deposits are hosted in the Neoproterozoic and Lower Paleozoic volcanoclastic sediments and intrusive sequences, which are metamorphosed to phyllite, para- and orthogneiss and migmatite. This nappe complex is shaped into an anticlinorium, with its axis oriented in a NE-SW direction. The Variscan post-collisional igneous activity is characterized by the emplacement of large granite plutons, silicic dykes and rhyolites. The silicic magmatic activity produced highly fractionated, Li-Sn-F-rich magmas and their associated hydrothermal systems. Additional hydrothermal and ore-forming stages are related to brittle deformation in the foreland of the Alpine Orogen. The Erzgebirge domain has been richly endowed in iron, base metals, tin-tungsten, molybdenum, silver, bismuth-cobalt-nickel-uranium, hematite-quartz and fluorspar deposits.

Day 1. Krupka polymetallic deposit

On the first day, we visited the famous historical Krupka mining district where Mo, Sn, W, Cu, etc. were extracted. Since medieval ages, heavy minerals from placers were extracted and afterwards quartz-rich hydrothermal veins were mined. Right after a geological and historical introduction, we started to explore nearby dumps. The whole mining district (also called Knottl) consists mainly of orthogneisses. The deposit is rich in quartz and aplite veins. The main ore body lies in the central part of the mining district in albite-zinnwaldite granite. The body consists of gneiss with diverse assemblages, forming minerals such as molybdenite, zinnwaldite, malachite, azurite and casseriterite. Fortunately, we were able to find and examine the majority of the mentioned minerals. However, larger and unfortunately too-heavy-to-handle samples often show interesting relationship between minerals in hydrothermal veins, e.g. zinnwaldite situated on the vein selvage and molybdenite in quartz matrix or complex breccia structures (e.g. fluorite on feldspar cracks; numerous guess fragments in the vein).

Day 2. Mýtiny hematite and Horní Halže silica specimens

On the second day, we proceeded to the area close to the German-Czech border to explore hydrothermal iron ore and silica varieties. The Mýtiny dumps are known for world-class samples of botryoidal hematite and endohedral crystals developed in quartz-rich veins (Figure 2). On the stops nearby Horní Halže, we found specimens of a rare variety of agate, the so called ‘lightning agate’ and amphibolite aggregates.

Day 3. Horní Blatná pyrolusite and Svornost mine in Jáchymov

In the morning, we visited the Horní Blatná region. We managed to explore numerous dumps scattered on the hill’s slope, finding nicely developed pyrolusite aggregates and even rare, fully

References


Fig. 1: Participants of the fieldtrip. Photo by Lukáš Vavřík.

Fig. 2: Gabbro crosscut by mafic dykes in the Bou Azzer district.

Fig. 3: Remnants of artisanal mining in Bou Azzer.

Fig. 4: The group with the exploration department of Somifier company and Prof. Wafic at the Bleida open pit.
developed crystals. Afterwards, we were friendly welcomed in Jáchymov (Figure 3) by the Svornost mine employees. The ancient mining town Jáchymov is situated 14 km north-east of karlovy Vary (Carlsbad), in which we visited the facility responsible for pumping the water used for medical treatment. High Ca-content in the water directly influences the work of the facility. Pipes are regularly blocked by newly formed aragonite and must be replaced every month. After the excursion, we had the opportunity to admire a great diversity of stone used in the city’s architecture including the Mariánské Lázně serpentinite and the Krkonoše porphyritic granite. Afterwards, we visited a famous locality close to the Loket castle. At this site, large samples of orthoclase twins are found. An important fact to mention is that a feldspar twinning law is called ‘the Carlsbad twinning’. Soil around the granite outcrops is rich in orthoclase, which is selectively eroded after this specific locality - the Carlsbad twinning. Soil around the granite outcrops is rich in orthoclase, which is selectively eroded from local granite. We would like to thank the SGA for kind support and we appreciate help from our sponsors Vitana, a.s. and Severočeské doly a.s.

At the end of 2019, the SGA Student Chapter Prague organized a student conference focused on geochemistry and mineral deposits. This conference was held at the Faculty of Science of Charles University in Prague the 7-9 November. The conference informally launched on Thursday evening during an ice-breaker party, traditionally held (as other events) at Chlupáč’s Museum of Earth History. The first day was in the spirit of mineral deposits; the morning session started with a keynote lecture given by Dr. Karel Breiner, CSc. called: Genetic model of the world-class Li deposit Cínovec. The afternoon session started with another keynote lecture given by the chairman (it was a short-notice substitution, because of illness of the original speaker) called: Uranium sandstone deposits of Madagascar. Student contributions focused mainly on ore deposits, mineralogy and trace elements. Because this was the first year of the conference and because of the lack of worthy mineral deposits in the vicinity of the Czech capital, we decided to organize a short excursion to the recently founded Radiogenic and Stable Isotope Research Laboratory (established in 2015), each participant has chance to join one of the two groups during a lunch break. After the last contribution of the day, the social part of conference continued with a guided tour starting at faculty doorstep, cruising to the city centre, pointing out classic sights as well as hidden gems, from gothic to functionalism style. The most persistent students ended up in a cozy downtown pub and enjoyed the rest of the night.

The second day focused mainly on geochemistry, and the morning session started with a keynote lecture given by Dr. Jan Borovička, PhD, titled: Arsenic in geomycological studies. The last keynote speaker Dr. Tomáš Navrátil, PhD presented: Deciphering atmospheric releases of mercury from ore mining and processing operations. Shortly after a lunch break, the afternoon programme continued with a poster session. Each poster presenter had the chance to shortly introduced his poster during a “Two minutes of fame” oral block. After the last refreshment break, the conference reached its final moments and the best oral and poster presenters were awarded (winners are listed below), and the conference was successfully closed. The conference gathered 26 contributors from 12 countries and brought an interesting overview over eastern and southern European ore deposits as well as some interesting works from the African continent. For further information, you can visit the conference website (www.gmd-conf.com) where you can download abstracts. For those who are interested, you are welcome to join the next conference which will be held at Prague in the fall of 2021.
In November 2019, the SGA Student Chapter Prague organized its fifth excursion focused on heritage stones of the Bohemian Massif. Throughout our two-day field trip, 13 participants (two from Portugal) visited several geologically important localities in central, western and southern parts of the Czech Republic.

Tetín

Our excursion started in a historical town called Tetín, which is not so far from Prague. This city has a unique history and culture heritage. The oldest archeological findings are ca. 200 000 years old. Tetín belongs to the Barrandien unit and is formed out of biotetric lower-Devonian high sulphidation deposit, Serbia.

The organizing committee would like to sincerely thank the Faculty of Science of the Charles University in Prague for providing lecture rooms, but also the Czech Geological Survey, VWR International s.r.o., Hanna Instruments Czech s.r.o. and Přírodovědci.cz for financial and material support.

Best oral presentation in mineral deposits section: Miloš Velojíč - Trace elements in different veins by LA-ICP-MS in Chukaru Peki high sulhhydration deposit, Serbia.

Best oral presentation in geochemistry section: Štěpánka Keboňová - Zirconium suitability for normalization procedure in estimating soil contamination in treated wastewater discharge vicinity.

Best poster: Iva Jarkovič - Geochemistry of the Vršnik Cu miner-alization, the Buchim deposit, Republic of North Macedonia.

SGA Student Chapter Prague traditional fieldtrip “Heritage stones of the Czech Republic” vol. V

Marek Tuhy1* and Michal Curda1,2

1 Faculty of Science, Charles University, 128 43 Prague 2, Czech Republic
2 Czech Geological Survey, 118 21 Prague 1, Czech Republic

Fig. 1. Field trip participants in Plešovice granulite quarry.

Fig. 2. Excursion at Radiogenic and Stable Isotope Research Laboratory. Photo by Václav Štěpánek.

Fig. 3: Future winner of best oral presentation in geochemistry in action. Photo by Václav Štěpánek.

Fig. 4: Last moments of conference and spectators are still concentrated. Photo by Václav Štěpánek.

References


Acknowledgement

Kind financial support from both, the SGA and the Czech National Geological Committee (ČN-KIGCP, 637 – Heritage Stone Designation) is gratefully acknowledged.
SGA Ural Student Chapter mineralogical and geological trip to the Southern Urals

Daria Kiseleva¹, Evgeny Shagalov¹,²

¹ A.N. Zavaritsky Institute of Geology and Geochemistry, Ural Branch of Russian Academy of Sciences, Ekaterinburg, Russia
² Ural State Mining University, Ekaterinburg, Russia

The first field trip of the SGA Ural Student Chapter was held the 30th of May – 1st of June, 2019 after the 10th Anniversary Geosciences Conference for Young Scientists “Minerals: Structure, Properties, Methods of Investigation”, which was hosted by the Institute of Geology and Geochemistry, Ural Branch of Russian Academy of Sciences in Ekaterinburg, Russia. The field trip was attended by 20 students and young scientists. It included a visit to a large number of genesis-specific deposits, the Ilmenogorsky-Vishnevogorsky alkaline complex (IVC) and the Kusa-Kopan stratified intrusion of the Bashkir mega-anticlinorium, Southern Urals.

The geological part of the field trip began with a visit to the “5th verst” corundum deposit in the area of Kasli town (N 55°53’53”, E 60°41’26”). Corundum in anorthosites is rarely found worldwide and is rarely of gem-quality. Blue sapphires in kyshtymites (corundum anorthosites) of the “5th verst” deposit are located at the western flank of the Vishnevogorsky nepheline syenite (miaskite)-carbonatite alkaline complex of the Southern Urals with unique REE-mineralisation (Nedosekova et al., 2009). The kyshtymites are the unique corundum-blue sapphire-bearing variety of anorthosites of debatable geological origin found in the Ilmenogorsky-Vishnevogorsky complex (IVC). Their mineral association includes corundum-sapphire, plagioclase (An61–93), muscovite, clinohlore and clinozoisite. Zircon, churhellite-(Y), monazite-(Ce) and apatite group minerals are found as accessory phases and moreover, churhellite-(Y) and zircon are also identified as syngenetic solid inclusions within the sapphires (Filina et al., 2019). The “5th verst” deposit was discovered by A.P. Karpinsky in 1883. Three kyshtymite veins were discovered during exploration. Corundum was used mainly as an abrasive material, however, some of the grains were of gem-quality, not exceeding 1 carat (Filina et al., 2019). The exploration of the deposit was prosecuted until the 1930s and, currently, the occurrence is almost exhausted.
Besides the “3rd versio” deposit, there are some more blue sapphire mineralisation points within the IVC, e.g. in the metasomatisms of meta-ultramafic host rocks on the territory of the Ilmen State Reserve (Miaso), where sapphire can be found in the micasites of Mine No. 418 (N 55°10’42.4″, E 60°17’33.0″) (Sorokin et al., 2019, Figure 2).

The granitoid pegmatite veins cut the Ilmenogorsky alkaline massif in Mine No. 242 on the territory of the Ilmen State Reserve. They contain aquamarine and topaz. The participants were rewarded for complicated access to a site with graphic (Hebraic) granite samples from the graphic part of the vein, and small crystals of blue beryl (Figure 3).

The ancient complexes of the Bashkir mega-antiformium can be seen from the Black Mountain (“Chernaya Skala”) observation point (N 55°16’712″, E 59°42’444″) of the world-famous Taganay National Park (Figure 4), where quartzites creep into amphibolites in the circumtaxitic strata along the “living” fault. The Taganay National Park with the total area of about 586 square kilometres was established in 1991, with its south-western border reaching down to the outskirts of Zlatoust and being a part of Zlatoust mining district. Acquaintance with the early history of the Urals continued at the Ural’s largest Kusa-Kopan stratified intrusion, revealing one of the riftogenic fragments of the territorial development (Fershtater et al., 2001). The formation of the Middle Riphean (~ 1380 Ma) gabbro-granitoid intrusions in the Bashkir mega-antiformium is confined to a series of deep riftogenic faults. In the largest and eastern of them (Zyuratkul fault), the layered masses of gabbroids are situated (from the south to the north – Matkalovy, Kopanovsky, Mishvedevsky and Kasinskiy), which formed at different depth. In the north, the formation of the Kusinsky massif occurred under the conditions of the abyssal facies at pressures of 6-8 kbar and more. The discrete masses of gabbroids are assumed merged at depth into a huge ultramafic-mafic layered massif with the colossal reserves of titanomagnetite and chrome ores (Aleksiev et al., 1992).

Skarn mineral associations of the Southern Ural mines, recognised for an amazing variety of minerals, were a constant object of attention for mineralogists since old times (the very first Akhmatovsky massif was studied in 1811). All the mines are located in the skarnised carbonate xenoliths along the western contact of massifs of the Kasinsky-Kopanovsky complex with Lower Riphean strata. The famous Zelentsovskaya mine (N 55°20’16″, E 59°42’22″) is located on the territory of the Kusa deposit (Figure 5). It was first mentioned due to the discovery of large (up to 1 m) epidote and was discovered in 1929 during exploration for titanomagnetite. The geologic section of the Kusa titanomagnetite-ilmenite massif is represented by feldspar amphibolites, in which two steeply dipping veins of titanomagnetite are observed. During geological exploration, the following minerals were described: tremolite, diopside (columnar grains of green colour), garnets (pink-red and honey-yellow), epidote (pistachio-green prismatic grains with developed head), magnetite (often in large octahedra), spinel, chlorite, ferroolivine, vesuvianite, titanite, hornblende, apatite (sometimes short-columnar grains), calcite (white and blue) and tourmaline (blue crystals). In 1998, V.M. Gekimyants found a new mineral in the skarns of the Zelentsovskaya mine, hydroxychlorตกchrome. Clinochlorite, epidote and garnet samples were collected from the Zelentsovskaya mine by the participants of the field trip.

The field trip ended with a visit to the alkaline pegmatites of the “Shpat” mine (Figure 6) at the Kurochkin Log site located in the middle of the Vishnevsky Mountains range (N 55°57’34.5″, E 60°37’39.7″) and the quarries with carbonatite veins of the Vishnevogorsky deposit, where rare-metal mineralisation is found. The “Shpat” mine consists of two quarries with vertical walls located one above the other with walls composed of coarse nepheline-cancrinite-feldspar, which are currently flooded. The lower quarry is particularly unusual due to a passage of 15-20 metres long represented by a horizontal adit driven through the rock. Mining for ceramic raw materials began here in 1929-1932 and lasted until 1944. Two large sublateral tilting pegmatite lenses at a distance of ~ 45 m from one another are localised in miskatics, across the strike of submeridional banding. The large veins of uraninite-aurite (up to 10-50 cm) and cancrite monomoblocks (up to 20-80 cm) co-crystallised together with nepheline and potassium feldspar are characteristic of these veins. Pyroxene crystals are (100)-twins and often have syntactic growths of biotite in the marginal zones previously explained by pyroxene biotisation. Large nepheline blocks are heterogeneous in colour – grey, greenish-grey, violet-red, yellowish-red due to the simultaneous exsolution phenomena with the release of microplatelets of hematite, magnetite, biotite and uraninite. The host leucocratic biotite miskatics contain a lot of calcite and cancrite, sometimes analcime. Accessory minerals are magnetite, ilmenite, titanite, zircon and rarely pyrochlore. Calcite, biotite-calcite and biotite veins with titanite, fluorapatite, zircon are developed subconcordantly with banding in miskatics. Calcite-biotite submeridional secant veins are also observed in pegmatites, which contain small (up to 1 cm) unusually rich in faceting crystals of ilmenite. Pyrochlores and zircons were collected in the quarries with carbonate veins of the Vishnevogorsky deposits with rare-metal mineralisation.

We thank Dr. Andrey Nikandrov for a guided tour across the Natural Science Museum of the Ilmen State Reserve and Mikhail Rasomakhin and Dr. Evgeny Makaginov for providing access and a guided tour to the mines of Ilmen State Reserve.

References


David Lowell, one of the greatest mineral explorers of the 20th century, died in Tucson, Arizona, in May 2020 at the age of 92. Lowell personally discovered more copper than probably any man in history and he always did it his way, innovatively, largely on his own, adventurous, and fighting both the elements and bureaucracy. In short, the opposite of what most managers in the mining industry would accept today.

Lowell became fascinated with mines at the age of 7 accompanying his father who ran a number of small mines in southern Arizona and abroad. He studied mining engineering at the University of Arizona where he got a BS in 1949 and a Professional engineer degree in 1959, with a break at Stanford University for a MSc in geology in 1957. He became an independent consultant in 1961 and in 1965 discovered his first copper ore deposits for Newmont, Kalamazoo and Vekol Hills in Arizona, where no copper mineralization was visible at surface. Field observation, particularly mapping and drillcore logging from this work led to the definition of the now classic Lowell-Guibert porphyry copper model which was published in 1970 (Lateral and vertical alteration-mineralization zoning in porphyry ore deposits, Economic Geology 65: 373-408), a standard reference paper for exploration geologists worldwide.

Lowell then contributed to copper porphyry discoveries in many countries. However, his main exploration ground became Chile and Peru. He discovered La Escondida and the Zaldivar/Escondida Norte satellite deposits in 1981, where five prior exploration companies had failed to recognize the extreme supergene leaching (and concomitant high-grade enrichment below); and none had drilled a hole before Lowell came along! He also discovered the Leonore copper deposit in 1983, which was acquired by Copper Mountain for US$110 million.

In short, the opposite of what most managers in the mining industry would accept today. Lowell personally discovered more copper than probably any man in history and he always did it his way, innovatively, largely on his own, adventurous, and fighting both the elements and bureaucracy. In short, the opposite of what most managers in the mining industry would accept today.

Lowell then contributed to copper porphyry discoveries in many countries. However, his main exploration ground became Chile and Peru. He discovered La Escondida and the Zaldivar/Escondida Norte satellite deposits in 1981, where five prior exploration companies had failed to recognize the extreme supergene leaching (and concomitant high-grade enrichment below); and none had drilled a hole before Lowell came along! He also discovered the Leonore copper deposit in 1983, which was acquired by Copper Mountain for US$110 million.

In short, the opposite of what most managers in the mining industry would accept today.

Few geoscientists have left as great an impact on their field of study as Anthony J. (Tony) Naldrett, who died on June 21 this year, two days short of his 87th birthday. Tony was, indisputably, the father of magmatic sulfide research and one of the giants of modern economic geology.

Tony was born in London in June 1933 and grew up in rural southern England. He was a keen rower at school and subsequently at Trinity Hall, Cambridge, where he studied as an undergraduate. He qualified as a pilot in the RAF during his training for the Royal Air Force (RAF). During his training for the Royal Air Force (RAF), he qualified as a pilot in 1965, discovered his first copper ore deposits for Newmont, Kalamazoo and Vekol Hills in Arizona, where no copper mineralization was visible at surface. Field observation, particularly mapping and drillcore logging from this work led to the definition of the now classic Lowell-Guibert porphyry copper model which was published in 1970 (Lateral and vertical alteration-mineralization zoning in porphyry ore deposits, Economic Geology 65: 373-408), a standard reference paper for exploration geologists worldwide. Lowell then contributed to copper porphyry discoveries in many countries. However, his main exploration ground became Chile and Peru. He discovered La Escondida and the Zaldivar/Escondida Norte satellite deposits in 1981, where five prior exploration companies had failed to recognize the extreme supergene leaching (and concomitant high-grade enrichment below); and none had drilled a hole before Lowell came along! He also discovered the Leonore copper deposit in 1983, which was acquired by Copper Mountain for US$110 million.

In short, the opposite of what most managers in the mining industry would accept today.
it driven initially by PhD student Eric Hoffman in Tony’s lab and subsequently applied widely to rocks and ores.

The second long-running initiative stemmed from Tony’s recognition, ground-breaking at the time, that conventional magmatic Ni-Cu sulfide ores and stratiform “ Reef-style” PGE deposits in layered intrusions, such as the Merensky Reef, were part of a continuum and could be reconciled by a spectrum of similar processes. This line of work began with a sabbatical visit with Prof. Gerhard von Gruenewaldt at the Bushveld Research Institute in Pretoria and continued almost until Tony’s death with a long series of visits, collaborations and landmark papers on the Bushveld Complex and its ore deposits. Along the way, Tony and his students worked at one time or other on almost all of the world’s major sulfide Ni-Cu and PGE deposits, notably including Voicey’s Bay, the komatiite-hosted deposits of Western Australia, the Dulluth Complex deposits of the Mid-Continent Rift, Jinchuan in China, Raglan, Thompson and of course, his beloved Sudbury. Much of this accumulated data and wisdom found its way into his “life’s” work book (Naldrett, 2004), published by Springer, which was actually originally commissioned as a Russian-language volume translated by Valeriy Fedorenko and published in St. Petersburg. This fat volume (the English language version, that is) sits permanently on my desk, and no doubt on many others. Tony “retired” in 1998, but continued a prolific research career for another twenty years, particularly in association with Judith Kinnaird and co-workers at Wits University, only slowing down in the last few years of his life. His last major land mark contribution was a series of papers on the PGE-rich chromitites of the Bushveld Complex (Naldrett et al., 2011).

This brief account of Tony’s research career leaves out a great deal about the man. He was the essence of the English gentleman scientist, full of charm, curiosity and love of life. Many a conference was enlivened by his always polite, always probing and insightful questions. None of his students forgot the time, they spent in the field with him, both on the rocks and off. His undergraduate field trips were legendary, leading many students to discover the delights not only of geology but also the camaraderie of fieldwork. He was a tireless advocate for the welfare of his students, with an unerring eye for the heart of a scientific problem and an excellent judge of the art of supervision, when and when not to micromanage. One of the skills that we all learned was to focus on the important questions and not to be side-tracked by unimportant details. He was an outstanding and dedicated teacher, continuing to teach undergraduate classes at the University of Toronto for years after his retirement. The graduate courses in ore deposit geology and geochemistry that he, Steve Scott and Ed Spooner taught were revelatory; I doubt there has been a day in my professional career that I haven’t drawn on something, I learned in one of those classes. He was a generous contributor to his profession, serving as President of the Society of Economic Geologists, the Geological Society of America and the International Mineralogical Association among others. His many medals and awards include the Duncan Derry Medal of the Geological Association of Canada, the Penrose Gold Medal of the SSG and the Had- don Forrester King Medal of the Australian Academy of Sciences. He was made University Professor at the University of Toronto in 1984 (fewer than ~2% of University of Toronto Profs. are granted this honour). A full list can be found at https://en.wikipedia.org/wiki/Anthony_J._Naldrett.

Tony left an indelible legacy for his science and on all who were lucky enough to work or study with him. Many of us in the economic geology profession owe our careers to him. Tony is survived by his three daughters, Arne, Jennifer and Penelope, his two grandchildren and many grateful students, friends and colleagues who will never forget him.


Flemming and colleagues (1984) (fewer than ~2% of University of Toronto Profs. are granted this honour). A full list can be found at https://en.wikipedia.org/wiki/Anthony_J._Naldrett. Tony left an indelible legacy for his science and on all who were lucky enough to work or study with him. Many of us in the economic geology profession owe our careers to him. Tony is survived by his three daughters, Arne, Jennifer and Penelope, his two grandchildren and many grateful students, friends and colleagues who will never forget him.
Isotopes and the Natural Environment

Series: Springer Textbooks in Earth Sciences, Geography and Environment

- Serves as the first basic book on isotopes for natural sciences
- Covers all relevant and important information on isotopes in one book
- Includes practical exercises with solutions and online data files
- Is applicable to a wide range of natural environmental disciplines and is clear, straightforward, and easy to use and follow

This book provides straightforward and practical information on isotopes applied to a variety of natural sciences. It covers the basics of isotopes and includes detailed examples from a range of natural sciences: ecology, biology, human health, environment and climate, geography, and geology, highlighting their applicability in these fields. It is a must-read for all advanced-undergraduate and graduate students working with isotopes, regardless of the area, and is a very useful one-stop resource for scientists studying in isotope research.

Iron Geochemistry: An Isotopic Perspective

Series: Advances in Isotope Geochemistry

- Provides a comprehensive review of one of the most studied "non-traditional" stable isotope systems
- Covers analytical methods, isotope fractionation factors, high- and low-temperature systems, and biological processes
- Contains numerous new color diagrams and an extensive reference list

This book provides a comprehensive summary of research to date on the field of stable iron isotope geochemistry. Since research began in this field 20-years ago, the field has grown to become one of the major research fields in "non-traditional" stable isotope geochemistry. This book reviews all aspects of the field, from low-temperature to high-temperature processes, biological processes, and cosmochronological processes. It provides a detailed history and state-of-the-art summary about analytical methods to determine Fe-isotope ratios and discusses analytical and sample prospects.
Guide to authors for the SGA News

Jochen Kolb; chief editor SGA News
Institute of Applied Geosciences, Karlsruhe Institute of Technology, Adenauerring 20b, 76131, Karlsruhe, Germany; editor-sga-news@e-sga.org

Iain Pitcairn , Chief Editor SGA website
Department of Geological Sciences, Stockholm University, Stockholm, Sweden

Word file and submit the figures separately, captions. Present the latter at the end of the document. Do not include figures or tables and their captions. All contributions need to be formatted as such. When submitting a text, do not use field functions, tab stops or other text formatting commands for indents, or the space bar. Do not use extra lines between paragraphs; do not use the shift key for capitalizing a whole word. Do not use the shift key for emphasis, use the format tools of Word instead. Do not use field functions, tab stops or other text formatting commands for indents, or the space bar. Do not use extra lines between paragraphs; do not use the shift key for capitalizing a whole word. Do not use the shift key for emphasis, use the format tools of Word instead. Do not use field functions, tab stops or other text formatting commands for indents, or the space bar. Do not use extra lines between paragraphs; do not use the shift key for capitalizing a whole word. Do not use the shift key for emphasis, use the format tools of Word instead.

There are three types of submission: (1) regular article; (2) reports of SGA student chapters; and (3) reports related to SGA. Regular articles should present scientific studies of the geology, mineralogy and geochemistry of mineral deposits or other topics related to mineral deposits. Reports of SGA student chapters should represent detailed description of activities. They must be reviewed by the scientific supervisor of the respective chapter prior to submission. Make sure that the field reports include the exact location (coordinates if available) of each station described. There is no restriction to the length of a contribution, but it should be concise and informative. All figures should be informative and of good quality. The language of SGA News is British English and all contributions need to be formatted as such. When submitting a text, do not include figures or tables and their captions. Present the latter at the end of the Word file and submit the figures separately, instead.

Make sure that the field reports include the exact location (coordinates if available) of each station described. There is no restriction to the length of a contribution, but it should be concise and informative. All figures should be informative and of good quality. The language of SGA News is British English and all contributions need to be formatted as such. When submitting a text, do not include figures or tables and their captions. Present the latter at the end of the Word file and submit the figures separately, instead.

Figures need to be submitted as separate files in jpg-format at a resolution of 300 dpi. They need to be formatted to fit the column format of SGA News: (1) 4 cm wide or (2) 8.3 cm wide for the 3-column part and 6.1 cm wide for the 2-column part. Make sure that the figures are of good quality.

Manuscripts need to be submitted in Word. Use a normal, plain font (10-point Times New Roman) for text. Format the text as little as possible. Titles and affiliations are to be concise and informative title; (2) the name(s) of the author(s); (3) the affiliation(s) and address(es) of the author(s); and (4) the e-mail address of the corresponding author.

Text formatting
Manuscripts need to be submitted in Word. Use a normal, plain font (10-point Times New Roman) for text. Format the text as little as possible. Titles and affiliations are to be concise and informative title; (2) the name(s) of the author(s); (3) the affiliation(s) and address(es) of the author(s); and (4) the e-mail address of the corresponding author.

Figures and Tables
All figures and tables are to be numbered using Arabic numerals. They should always be cited in text in consecutive numerical order. The format in the text is “(Figure 1; Table 1)”. For table and figure captions use “Fig. 1: xxxxx.” and “Tab. 1: xxxxx.”

References
SGA News uses the style that is also used in Mineralium Deposita. Check https://www.springer.com/earth-sciences+and+geography/geology/journal/126?detailsPage=pltci_1060362 for further information.

The SGA website http://www.e-sga.org

Iain Pitcairn, Chief Editor SGA website
Department of Geological Sciences, Stockholm University, Stockholm, Sweden
email: iain.pitcairn@geo.su.se

Applications to SGA for meeting sponsorship must be submitted to Jan Pašava, SGA Executive Secretary. Please contact Jan Pašava for forms and further information.

Ideas and suggestions for SGA-sponsored activities are welcome and should be addressed to Jan Pašava or any other member of the Council (see e-sga.org for list of members).

Dr. Jan Pašava
SGA Executive Secretary
Czech Geological Survey
Tel.: +420 2 5108 5506
Klárov 131/3
Fax: +420 2 518 18 748
CZ-118 21 Prague 1
Czech Republic
e-mail: jan.pasava@geology.cz

SGA News uses the style that is also used in Mineralium Deposita. Check https://www.springer.com/earth-sciences+and+geography/geology/journal/126?detailsPage=pltci_1060362 for further information.

Figures and Tables
All figures and tables are to be numbered using Arabic numerals. They should always be cited in text in consecutive numerical order. The format in the text is “(Figure 1; Table 1)”. For table and figure captions use “Fig. 1: xxxxx.” and “Tab. 1: xxxxx.”

Figures need to be submitted as separate files in jpg-format at a resolution of 300 dpi. They need to be formatted to fit the column format of SGA News: (1) 4 cm wide or (2) 8.3 cm wide for the 3-column part and 6.1 cm wide for the 2-column part. Make sure that the figures are of good quality.
### SGA News

Celebrating 55th SGA Anniversary

---

**APPLICATION FORM FOR NEW MEMBERS**

I would like to become a member of the Society for Geology Applied to Mineral Deposits and to receive my personal access to Mineralium Deposita. Membership fees will be due after acceptance of the membership application.

- Note that incomplete forms and those that are not legible will NOT be processed!

<table>
<thead>
<tr>
<th>Last name*</th>
<th>First name*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td></td>
</tr>
<tr>
<td>Postal address*</td>
<td></td>
</tr>
<tr>
<td>Phone</td>
<td></td>
</tr>
<tr>
<td>e-mail*</td>
<td></td>
</tr>
</tbody>
</table>

#### Select your Membership Dues*

- 75.00 EUR Regular Member (Printed copy + online access Mineralium Deposita and SGA News)
- 60.00 EUR Regular Member (Online access only Mineralium Deposita and SGA News)
- 10.00 EUR Student Member (Online access only Mineralium Deposita and SGA News, certificate required)
- 60.00 EUR Student Member (Printed copy + online access Mineralium Deposita and SGA News, certificate required)
- 60.00 EUR Senior Member (Printed copy + online access Mineralium Deposita and SGA News, after retirement, certificate required)
- 300.00 EUR Corporate Member (includes 3 printed copies of Mineralium Deposita) (for industry only, no academic)

Applications until September 30th will be processed for the current year. From October 1st membership starts with the following year.

#### Donation for the SGA Educational Fund

- I want to donate ________ EUR to the SGA Educational Fund and
- agree that my (or company) name as donor will be published in SGA media/conferences
- wish to remain anonymous

* mandatory fields

---

If my application is approved, I authorize the "Society for Geology Applied to Mineral Deposits" to charge the above amount (please tick) to the given credit card:

<table>
<thead>
<tr>
<th>VISA</th>
<th>MASTERCARD/EUROCARD</th>
</tr>
</thead>
</table>

Card Holder* ____________________________ Expiry date (MM/YY)* __________

Card No* __________ 3-digit security code* __________

Signature* ____________________________ Place and date: ____________________

(If you do not intend to pay by credit card, please make a note here and an invoice will be issued after acceptance of your application)

**Send the membership application form to:**
Dr. Jan Pašáva, SGA Executive Secretary, Czech Geological Survey, Klárov 131/3, CZ-118 21 Praha 1, CZECH REPUBLIC Phone: ++(420)-2-51085506, Fax: ++(420)-2-51818748, e-mail: secretary@e-sga.org

Please note that bank charges will not be covered by SGA.

Version June 2018