Student Chapter Annual Report Cover Page

Submission Deadline: September 30th
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Month/Year Reported: From ___________________________(mm/yyyy) – To _______________________________(mm/yyyy)

STUDENT CHAPTER:
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Logo:

Facebook:

Twitter:

Instagram:

LinkedIn:

YouTube:

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E-mail shehaidong17@mails.ucas.ac.cn

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Sponsoring Institution or Company(name):
2018-2019 Annual Report of IGGCAS SEG Student Chapter

Kelong Yu   09/30/2019
Chinese Academy of Sciences Institute of Geology and Geophysics | No. 19
Beitucheng Western Road, Chaoyang District, 100029 Beijing, P.R.China
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Introduction

During the 2018-2019 academic year, the Institute of Geology and Geophysics, Chinese Academy of Sciences (IGGCAS) SEG Student Chapter continued to represent, inspire, and support the economic geology students at the Institute of Geology and Geophysics. This report documents the details of our activities over the past academic year, and we wish the new SEG Student Chapter well in starting off another glorious year for economic geology students at IGGCAS.

Student Chapter Committee

IGGCAS-SEG Student Chapter Committee for the 2018-2019 academic year:
Kelong Yu(President)
Zhiguo Dong(Vice President)
Haidong She(Secretary)
Linru Fang(Treasurer)

Student Members List

Our student chapter was founded in Jan, 2010, starting with 23 student memberships majoring economic geology and exploration. Every year there will be students graduated from our institute, at the same time, some students started their master or PhD studies and successfully applied for IGGCAS student chapter member of SEG. Now, there are 28 student members during 2018-2019. All the Student Chapter members are listed as follows:

Table 1. List of members’ names

<table>
<thead>
<tr>
<th>*Kelong Yu</th>
<th>*Zhiguo Dong</th>
<th>*Haidong She</th>
<th>*Linru Fang</th>
<th>*Changtong He</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Lei Niu</td>
<td>*Hongtao Li</td>
<td>*Xuehai Wang</td>
<td>*Shuangliang Liu</td>
<td>*Zheming Zhang</td>
</tr>
<tr>
<td>*Ri Han</td>
<td>*Hongwei Peng</td>
<td>*Haoxuan Feng</td>
<td>*Kaixuan Hui</td>
<td>*Thiri Ye Htut</td>
</tr>
<tr>
<td>*Yang Bai</td>
<td>*Chao Zhao</td>
<td>*Le Wang</td>
<td>*Xinyu Zou</td>
<td>*Shiqiang Su</td>
</tr>
<tr>
<td>*Yongwen Zhang</td>
<td>*Huanlong Hu</td>
<td>Sushmita Bhandari</td>
<td>*Ruizhe Shi</td>
<td>*Mingcai Xie</td>
</tr>
<tr>
<td>*Gaizhong Liang</td>
<td>*Xia Liu</td>
<td>*Yiting Zhu</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. Meetings, Lectures

Researcher in CAS Key Lab. of Mineral Resources of IGGCAS including some SEG fellows irregularly invited some economic geologists around the world to have some short-time academic communications and give some lectures.

1.1 Yan Wang

On the invitation of Prof. Kezhang Qin from CAS Key Lab. Of Mineral Resources in IGGCAS, Prof. Yan Wang from Guangzhou Institute of Geochemistry, Chinese Academy of Sciences came to our institute to make academic communication on May 22th, 2019.

Prof. Yan Wang is an international outstanding researcher on magmatic metallogenesis of mafic-ultramafic rocks. On May 22th, 2019, Prof. Yan Wang made a presentations in the topic of “Discussion on the genesis of Panzhihua-type vanadium-titanium magnetite deposit: study on the structure and composition of mineral micro-areas” in the 400 meeting room at the No.6 Geosience building of IGGCAS. During the lecture, by showing the studies about Intergranular reaction and non-reactive structure of Panzhihua-type vanadium-titanium magnetite and compositional ring of main crystalline mineral, Prof. Yan Wang presented that the immiscibility of Fe-rich and Si-rich magma is prevalent in this type of deposit. Furthermore, the existence of Fe-rich and Si-rich components was further confirmed by the high-temperature homogenization test of the melt inclusins of apatite in the MZb zone of light-colored gabbro in the Panzhihua deposit- Based on the experimental petrology simulation of the existence of non-contamination of Si-rich and Fe-rich magma, the comprehensive and meticulous use of mineralogical work demonstrates the existence of the immiscibility and provides a solid and powerful theoretical support.

After the presentation, the attendees of IGGCAS-SEG student chapter raised many questions about the potential of Panzhihua vanadium-titanium magnetite for the exproation for copper-nickel sulfide deposits and related experiment, and had a heated discussion with Prof. Yan Wang. Other attendees are Prof. Kezhang Qin (SEG Fellow), Prof. Hongrui Fan (SGA Fellow), Prof. Ping Shen, Associate Prof. Mingjian Cao, Prof. Junxing Zhao and other graduate students, post-doctoral researchers from IGGCAS, totally over 40 attendees.
1.2 Jinzhang Zhang

On the invitation of Prof. Kezhang Qin from CAS Key Lab. Of Mineral Resources in IGGCAS, Senior engineer Jinzhang Zhang, general manager of geological prospecting department of Zijin Mining Group Ltd., came to our institute on May 22th, 2019 and gave an academic report entitled "Development and Resource Strategy of Zijin Mining Industry".

Senior engineer Jinzhang Zhang’s presentation mainly include development strategy, resource strategy, overseas geological prospecting work, market-oriented geological prospecting and green mining development of Zijin Mining Company. He comprehensively introduced the development history and the contribution of geological exploration to the development of Zijin Group.

The symposium was presided over by Prof. Xiaofeng Li and Associate Prof. Guangming Li. Prof. Kezhang Qin, Prof. Chunming Han, Prof. Baolin Zhang, Associate Prof. Mingjian Cao, Associate Prof. Dongmei Tang and IGGCAS-SEG students, totally over 40 people participated in the academic activity. Attendees are very interested in the development strategy and green minning. Senior engineer Jinzhang Zhang communicated a lot with attendees on these topics.
2. Field Trips

Location: Shuangjianzishan Ag-Pb-Zn-Sn-Cu Epithermal deposit,
Chifeng, Inner Mongolia, China

Time: 201.8.22-2019.8.28

2.1 Introduction

In August 2019, we spent a week visiting Shuangjianzishan Super-large Ag-Pb-Zn-Sn-Cu Epithermal deposit, with a group of 4 students from three universities. The Shuangjianzishan Ag-Pb-Zn-Sn-Cu Epithermal deposit is located in Chifeng, Inner Mongolia, China. The SEG student chapter was awarded $1000 USD through the Stewart-Wallace fund, further financial support was supported by the National Key R&D Program of China (2017YFC0601306).
2.2 Participants

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kaixuan Hui</td>
<td>PhD student, IGGCAS</td>
</tr>
<tr>
<td>Ruizhe Shi</td>
<td>MSc student, IGGCAS</td>
</tr>
<tr>
<td>Mingchun Chai</td>
<td>PhD student, China University of Geosciences (Wuhan)</td>
</tr>
<tr>
<td>Xiaolin Wu</td>
<td>MSc student, Fuzhou University</td>
</tr>
<tr>
<td>Zhiyuan Li</td>
<td>Chifeng Yubang Mining co. LTD</td>
</tr>
<tr>
<td>Zhiping Yin</td>
<td>Chifeng Yubang Mining co. LTD</td>
</tr>
</tbody>
</table>

Field trip group in the Shuangjianzishan underground mine. Photo by Zhiyuan Li.

2.3 Geologic setting

The southern segment of the Great Hinggan Range Metallogenic Belt in Inner Mongolia, NE China lies in the easternmost segment of the Central Asian Orogenic Belt (Fig.1). Many newly discovered large and super-large Ag-Pb-Zn±Sn±Mo±Cu deposits have made this region become the most important Ag-Pb-Zn polymetallic metallogenic belt in northern China, such as Shuangjianzishan Ag-Pb-Zn deposit (Liu et al., 2016), Weilasituo Ag-Pb-Zn-Sn deposit (Liu et al., 2016), Baiyinchagan Sn-Cu-Pb-Zn-Ag deposit (Yao et al., 2017), Fuxingtun Ag-Pb-Zn deposit (Chang, 2018) and so on.
Fig. 1. (A) Tectonic scheme of the Central Asian orogenic belt. (B) Geologic map of the Great Hinggan Range (GHR) in northeast China showing the distribution of the Mesozoic granites and volcanic rocks. (C) Geologic map of the southern Great Hinggan Range showing the locations and timing of major ore deposits (Zhai et al., 2017).

The super-large Shuangjianzishan Ag-Pb-Zn epithermal deposit (12900t@129g/t Ag, 4Mt@1.2% Pb-Zn) is the largest silver deposit in China (Wang et al., 2019). Drilling have revealed multi-phase granitic intrusions with Mo mineralization adjacent to Ag-Sn-Cu and Ag-Pb-Zn veins in the Shuangjianzishan ore district. What’s more, one of the dominant Ag-bearing minerals is canfieldite (Ag₈SnS₆) (Zhai et al. 2018). Canfieldite is a rare silver-bearing sulfosalts mineral and always occurs in the Sn-Ag deposit, like Cerro Rico de Potosi, the world’s largest silver orefield. This system offers an excellent opportunity to discuss about the temporal and genetic relationship between magmatic hydrothermal Sn ± Cu ±Mo and Ag-Pb-Zn system.
2.4 Porphyry Mo Mineralization

Porphyry Mo Mineralization is commonly centered over, around, and on the top of the granitic porphyry, granitic dykes (Fig.5). Hydrothermal alteration is characterized by an assemblage comprising quartz, sericite, K-feldspar, calcite. The ore minerals are molybdenite, pyrite, as well as minor sphalerite. The Mo mineralization occur as veins, stock works, and veinlets in altered granitic porphyry, granite and shale (Fig.6).
2.5 Vein-type Ag-Sn-Cu Mineralization

Drilling revealed several Ag-Sn-Cu vein orebodies between the porphyry Mo mineralization and Ag-Pb-Zn Veins. They are hosted by Permian shale, slate and Jurassic volcanic rocks. They are mainly controlled by NW-striking faults. The ore minerals are chalcopyrite, sphalerite, galena, pyrite and arsenopyrite (Fig.7). Hydrothermal alteration minerals include quartz, calcite, sericite and chlorite (Fig.8).

2.6 Vein-type Ag-Pb-Zn Mineralization

These veins are also hosted by Permian shale, slate and Jurassic volcanic rocks. The vein commonly strike NW and NE, the NE veins cut across the NW veins. The main ore minerals
are sphalerite, galena and widespread visible silver minerals, like native silver (Fig.9), argentite (Fig.10) and pyrargyrite. Hydrothermal alteration is dominantly characterized by an assemblage of quartz, calcite, illite, dickite, chlorite, and sericite. The bladed quartz is well developed (Fig.11).

Figure 9. Native silver

Figure 10. Argentite

Figure 11 Typical Ag-Pb-Zn vein, bladed quartz.

References

Chang, S.Q., 2018. Geological Characteristics and Prospecting Signs of the Fuxingtun Ag-Pb-Zn Polymetallic Ore Deposit in Inner Mongolia, China University of Geosciences(Beijing)


3. Organization & Participation in Conferences

This year, The 14th National Conference on Minerals Deposits was held in Shijiazhuang, Hebei Province in middle October. Our students also submitted abstracts to this conference.

**Conference:** The 14th National Conference on Minerals Deposits  
**Date:** October 19-22, 2018  
**Location:** Shijiazhuang, Hebei Province  
**Conference Paper (Attendee from IGGCAS-SEG Student Chapter):**  
Zhiguo Dong: The geologic characteristics and major ore-controlling factors of Mu-Maerkantu manganese deposits in Western Kunlun

4. Other Activities

Our chapter always encourage members to apply for the Graduate Student Fellowship Program and Student Research Grant. During the last year, we have made a great breakthrough in this field. The M.Sc. student Ruizhe Shi and Liu Xia from our chapter have got the 2020 SEG Foundation Graduate Student Fellowship.

<table>
<thead>
<tr>
<th>Grant recipient</th>
<th>Project name</th>
<th>Dollar amount</th>
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<tbody>
<tr>
<td>Ruizhe Shi</td>
<td>Graduate Student Fellowship Program</td>
<td>$5000</td>
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<tr>
<td>Liu Xia</td>
<td>Graduate Student Fellowship Program</td>
<td>$7500</td>
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5. Future Plans

In near future, the IGGCAS-SEG Student Chapter committee and all the student members plan to:

1) Apply 2020 Round II Chapter Stewart R. Wallace Student Chapter Funding. Contact with mining companies and builds a collaborative relationship between our institutes and mining companies, raise the fund for members’ research or fieldtrips.

2) Invite famous economic geologists to China to give lecture, and communicate the latest research results.

3) Encourage student members to attend international and domestic conferences, workshops, and short courses.

4) Hold the student academic symposium to spark inspiration and promote
academic communication between chapter members.
<table>
<thead>
<tr>
<th>Items</th>
<th>Costs (Transferred in exchange rate at application)</th>
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<td><strong>Transportation</strong></td>
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<tr>
<td>Round trip air ticket from Beijing to Chifeng</td>
<td>$140</td>
</tr>
<tr>
<td>Car rental</td>
<td>$100 per day (one car, including $20 fuel costs per day, total 7 days at Chifeng,)</td>
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<td>Sum of transportation (three students)</td>
<td>$140<em>3+$100</em>7=$1120</td>
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<tr>
<td><strong>Accommodation</strong></td>
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<tr>
<td>Hotel</td>
<td>30 $/room (2 standard double rooms, 6 nights at Chifeng)</td>
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Xiaolin Wu pay for his own Air ticket.