



EXAMPLE

FOR SEG OFFICE USE ONLY
SRG Application No. SRG 17-_____

SOCIETY OF ECONOMIC GEOLOGISTS, INC.

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Student Research Grants (SRG) Application – 2017 Part 2 of 3: Application

Applicant Information (please type or print):

Ms. / Mr. Geologist Gerry _____
 Last (Family) First Name Middle Initial

US Citizen? Yes No SEG Student Member ID XXXXXXXX Membership Expires 12/31/XX

Nationality XXXXXX University Country XXXXX

Complete Mailing Address:

House, Number and Street
City, State, ZIP/POSTAL CODE
COUNTRY

Applicant's E-Mail (Required): XXXXXXXX@XXXXX.XXX

Check appropriate year listed below:

M.Sc. Candidate—Year Ph.D. Candidate—Year Other (specify) _____
 1st 2nd 1st 2nd 3rd 4th of 3 yr. 4 yr. program Check applicable year

Expected completion date xx/xx/xx University or institution University X

If a previous SEG grantee: Check here **Attach** a one page report summarizing results obtained for each award received.

List below which award(s), year(s) and amount(s):

Specify funds received from any SEG/SEGF/SEGCF student program; include:
program type: GSF/SRG/SFT/undergrad/Conference Travel Grant, etc. Year awarded and \$ received

Please respond to items 1–6, 8 and 10 in the space provided; extra sheet must be used for item 7 and may be used for item 9.

1. A. Project or Thesis Title: New approaches in understanding layered intrusions: Field based and analytical evidence from the Bushveld and Monchegorsk Complexes

B. Project Supervisor(s) or Thesis Advisor(s): Professor I. Know Geology

2. Concisely and clearly state objectives of the project. Is it a mapping, descriptive or a topical study? Give geographical location and mining district or ore field. If primarily a laboratory study, provide detailed information on research that establishes the geologic context of any samples or other data to be studied.

The project aims to produce the first comprehensive record of the lithostratigraphy and geochemistry of the Early Proterozoic Monchegorsk Complex, Kola Peninsula, Russia. Intrusions of similar age are widespread over the northeastern Fennoscandian Shield, with known occurrences of substantial Ni-Cu-PGE and Fe-Ti-V-Cr mineralization. Mapping and sampling of drill core made available by the Russian collaborators should establish whether the bodies of the Monchegorsk Complex represent dismembered parts of an originally single intrusive complex, which would consti

3. Why is this work important to economic geology: Place project in a regional or disciplinary context. This is the place to convince us that your project should be funded.

The Paleoproterozoic Monchegorsk Complex (MC) is located in the center of the Russian Kola Peninsula comprising several intrusions, i. e. the Monchepluton, South-Sopchinsky, Monchetundra and Chuna-Volchetundra intrusions. The Monchepluton is currently known to contain substantial magmatic chromite, platinum-group element (PGE) and Cu-Ni sulfide mineralization. The other bodies are poorly studied and their petrogenesis as well as their mineralization potential remains unknown.

Due to the remoteness of the field area and the proximity to strategic military installations preventing access, modern academic research on the Russian layered intrusions of the Fennoscandian Shield remains very limited. A comparison between the well-known, mineralized Finnish and the Russian layered intrusions is thus presently difficult. For the first time, this project allows for a modern in depth study of the largest layered complex in the region. Drill core intersecting the bulk of the igneous stratigraphy made available by the Russian collaborators of the Kola Science Center in Apatity provides a unique opportunity to study the architecture and the formation of the layered succession.

Most importantly, the Monchegorsk Complex is the only Fennoscandian intrusion containing a thick dunitic body, termed "Dunite Block", hosting a stratiform chromite deposit enriched in PGE (Sopchezero). The formation of the "Dunite Block" may have important implications for the petrogenesis of the Monchegorsk Complex and possibly all Fennoscandian intrusions in that it allows to constrain the composition of the least evolved parent magma to the intrusions. Furthermore, the complex also hosts crosscutting Ni-rich massive sulfide veins. These steeply dipping veins can be traced over 4 km along strike and attain a thickness of up to 2 m. The vertical extend of these veins may be as large as 400 m. The mineral assemblage comprises mainly pyrrhotite, pentlandite and minor chalcopyrite suggesting a magmatic origin. However, the formation of these sulfide veins remains completely unresolved. Detailed mapping, sampling and in situ S isotopic analysis will result in a better understanding of different mineralization processes and possibly sulfide melt dynamics during crystallization and compaction of layered intrusions.

In summary, this project has the potential to considerably improve our understanding of the largely understudied Monchegorsk Complex with implications for the petrogenesis of layered intrusions in general.

4. Plan of procedure and expected duration of investigation, be specific (How and when do you propose to do it?). Include specifics on location and size of area to be mapped, mapping scale, objective of the field study and other relevant information. If samples or data collected by others are to be part of the proposed study, their provenance should be explained in detail, or the reason for not doing so, should be clearly justified. Is your project part of a larger ongoing research program?

A four-week field session is planned to take place in August/September xxxx. Drill core from the entire stratigraphy will be sampled and important outcrops will be visited and mapped in detail to allow for representative sampling of the sulfide veins. The samples will be sent to University X directly after the field session, so that thin section preparation and whole rock geochemical analysis should be finished by the end of March xxxx. However, samples from the sulfide veins will be prioritized and the in situ S isotopic analysis of the different sulfide minerals will be carried out in late November/December XXXX at the Geological Survey of Finland. In mm/yyyy, Sr isotopic compositions of plagioclase will be analyzed at University X.

5. **Budget**

Itemize your estimate in detail, clearly indicate items funded by a mining company or other sources. (Note: U.S. law prohibits us from granting more funds than requested.)

US\$			
Expense Category	Cost	Other Funding	Amount Requested
Return flight: London - Murmansk	\$750	-	\$750
Accommodation in Monchegorsk (30 nights at \$34/night)	\$1020	-	\$1020
Living Expenses in Monchegorsk (30 days at \$20/day)	\$600	-	\$600
Sample shipping costs Monchegorsk-U X	\$300	-	\$300
Is situ S isotopes using LA-MC-ICP-MS (20 samples; 2 days)	\$2000	-	\$2000
Totals	\$ 4670	\$ -	\$ 4670

Total budget amount (US\$) 4670
Amount requested (US\$) 4670

6. Amount and nature of other available funds, facilities, materials, including support, resources or employment from mining company or operator. This is your opportunity to justify additional funds to supplement those already available to you.

A PhD stipend from University X to the applicant covers all in-house analytical costs including thin section preparation, whole rock geochemical analysis and scanning electron microscopy-based analysis. However, funding for fieldwork is not part of the stipend. The Russian collaborators from the Kola Science Center in Apatity agreed to provide access to drill core and internal reports, a suitable vehicle as well as a co-worker for the field session. Therefore, an essential requirement of the project is currently not funded -that is fieldwork. Moreover, state-of-the-art LA-MC-ICP-MS for in situ S isotope analysis is not available at University X.

7. If you are a student from a Latin American country and are requesting financial support for bona fide non-research expenses to enable or facilitate your attendance at a university in the U.S.A. or Canada, please check here and provide a separate, one-page letter that describes the costs and justifies the request.

8. Brief biographical sketch including educational and work history.

In xx/xxxx (mo/year), I completed my B.Sc. degree in geosciences at An Institute of Technology with a thesis on platinum-group element mineralization in the western Bushveld Complex in collaboration with the German Geological Survey. After an internship at the University Y in another country, where I worked on the ICOP-sponsored project "Peering into Barberton", I finished my M.Sc. degree in economic geology at University Z on a magmatic Ni-Cu-PGE prospect in the Jameson Range, central Australia. Prior to that, I was selected for Anglo American's XXX Student Technical Experience Programme (STEP). I was sent to Perth to support Anglo American's Ni-Cu-PGE exploration in the Australian West Musgrave Province, where I was able to propose and realize the above mentioned M.Sc. thesis. Two publications from the thesis are currently in preparation. Following graduation in xx/xxxx (Mo/Year), I started a PhD at University X with Professor I. Know Geology to further enhance my understanding of magmatic systems focusing on the formation of layered intrusions and sulfide mineralization.

9. Brief bibliography (additional sheet may be used).

(a) List papers which are related to the proposed research:

[list details of your papers here](#)

(b) Your own publications:

[list your publications here](#)

10. Other comments:

_____ Signature of Applicant*	mm/dd/yyyy _____ Date
Gerry Geologist _____ Printed Name of Applicant	
Professor I. Know Geology _____ Printed Name of Thesis Advisor	IKGeology@UniversityX.xxx _____ Advisor's E-mail

[Click for Adobe electronic signature instructions](#)

****Signature required!*** Electronic signatures accepted, however if you do not have or cannot attain one, please print this page, manually sign, then scan/email or fax as a separate page with the electronic version of the application.

Signature of Thesis Advisor on the Appraisal of Applicant (Part 3) verifies research project of the applicant has academic advice and acceptance. The advisor agrees to make reasonable effort to over see proper use of granted funds.

Completed applications must be received *on or before* February 15, 2017 to be considered for review.
See Instructions (Part 1) for submission details.