4th SGA Short Course on African Metallogeny

Granite-related ore deposits in the Great Lake Area

organized by

Society for Geology Applied to Mineral Deposits (SGA)

in cooperation with

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

supported by

SEG, UNESCO and IUGS

to be held in
Kigali, Rwanda

5th – 9th June 2017

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

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

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

With great pleasure we announce here the fourth of these metallogeny courses, which is being organized by the Society for Geology Applied to Mineral Deposits (SGA), in collaboration with the Rwanda Natural Resources Authority (RNRA), the University of Leuven and (KU Leuven) and the Royal Museum for Central Africa (RMCA) supported by UNESCO, IUGS and SEG. Following the three successful courses organized in Burkina Faso, Zambia and Morocco, this course will take place in Kigali, Rwanda from 5th to 9th June 2017.

The course will comprise five days of training with lectures, practical exercises and field excursions. The lectures will take place in Kigali and are integrated in a two-day conference on the metallogeny of the Great Lake area.

The two days lectures include:

- an introduction to the geology of the Great Lakes Area
- the mode of occurrence, genesis, economic significance of granite-associated ore deposits.
- the mineral potential and mining legislation of Rwanda.
- specific commodities, such as niobium, tantalum, tin and tungsten.

The three-day field trips and practical exercises will be held at:

- the Gatumba-Gitarama area characterized by regional zoned pegmatites culminating in Nb-Ta-Sn mineralization,
- the Nyakabingo W quartz vein deposit
- the Nb-Ta-Sn pegmatites and Sn quartz veins of the Musha-Ntunga area.

Venue

The five-day short course will be held in Kigali and field locations in Rwanda.

Number of participants

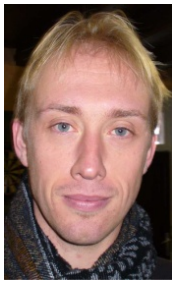
A maximum of 45 participants is set for logistic reasons and in order to ensure maximum benefit for each participant. It is expected that participants from industry (c. 25) cross-subsidize participants from economically disadvantaged institution and students.

Costs

The course fee for individuals who are SGA members is 450 Euro per person for the five-day workshop (550 Euro for non-members). The course fee includes the five-day workshop, lectures, the field trips, course material and light meals during the field trips. Costs for travel to and from Kigali, accommodation, breakfast and dinner are not included; this applies also to the field trips. The course fee for company staff is Euro 700 per person. Subsidies will be made available to students according to the available budget. Subsidies will be distributed following completion of a pre-registration form and application for financial support.

CONTACT*: Prof. Dr. Philippe Muchez (philippe.muchez@kuleuven.be)*

The **presenters** have a broad experience and profound experience in the geology, metallogenesis or mining of the Great Lake Area.



***Stijn Dewaele*:** Stijn was researcher at the Department of Geology and Mineralogy of the Royal Museum for Central Africa (Tervuren, Belgium) and since the 1st of October 2016 he is professor of Applied Geology at the University of Ghent (Belgium). Since more than 15 years he has been carried out research on the formation conditions of the Sn-Nb-Ta-W-Au and Cu-Co-Fe mineralization in Central Africa (DRCongo, Rwanda, Burundi, Uganda, and Zambia). The focus of his research is the structural, mineralogical and geochemical study of mineralization to determine the formation conditions and to reconstruct the geodynamic setting during mineralization.

Niels Hulsbosch: Niels is a postdoctoral researcher at the Ore Geology and Geofluids research unit of the University of Leuven in Belgium. His doctoral research (2013-2016) has focused on the geochemical evolution of the granite-related Nb-Ta-Sn-W pegmatite- and hydrothermal vein-type deposits of the Central African Karagwe-Ankole orogenic belt.

Philippe Muchez: Philippe is professor at the University of Leuven in Belgium and head of the Ore Geology and Geofluids research unit. He carried out post-doctoral research at the University of Liverpool and at the Vrije Universiteit Amsterdam. His recent research focuses on the metallogenesis of granite-related Nb-Ta-Sn-W mineralization, and sediment-hosted Zn-Pb and Cu-Co deposits. For more ten years his research is active in Central Africa.

Topics related to geophysics, certification of minerals in the Great Lake area, investment opportunities in Rwandan mining and mining legislation are presented by representatives of the RNRA.

Course content

Granite-related ore deposits are typically associated with orogenic to post-orogenic, generally reduced felsic magmatism, that formed inboard of convergent margins. Deposits that constitute the granite-related mineral system include rare metal granite-type and skarn-type, Ta-Nb-Li-Be pegmatite-type, Sn-W-Mo hydrothermal vein-type and greisen-type, and intrusion-related gold deposits. Many of these deposits contain critical commodities which are vital to current technologies upon which society depends. Consequently, granite-related ore systems have been one of the major targets of the mineral exploration industry. Key controls on ore deposit formation include magma sourcing, magma differentiation, element distribution, immiscibility processes, ore element solubility and redox conditions.

This short course will review the primary geological, geochemical and structural controls on the location and formation conditions of rare-metal granite-related ore deposits. Lectures will introduce specific topics on the regional geology of the Great Lakes area, geodynamic models for the region, controls on the occurrence of Nb-Ta-Sn-W deposits, lithogeochemistry, geophysics, mineralogy and metasomatism of granite-related ore deposits and associated host rocks, minerals certification, fluid and melt inclusions in the analysis of granite-related ore systems, radiogenic and stable isotope geochemistry, ore element distribution between melt-fluid-minerals, and case studies of a variety of granite-related ore deposits in the Great Lakes area.

Given that the Karagwe-Ankole Belt of Central Africa, spanning Rwanda, Burundi, SW Uganda and NW Tanzania, is a world-class granite-related ore province hosting numerous rare-metal ore deposits mineralized in tantalum, niobium, tungsten and tin, this will be the key focus region of the workshop. More specific, the Rwandan part of the Karagwe-Ankole Belt will be reviewed which is rich in Nb-Ta-Sn pegmatite, Sn greisen and W-Sn hydrothermal quartz vein deposits which are part of one composite metallogenic system that operated at ~980 ± 20 Ma.

This workshop will visit the type-localities of granite-related deposits in the Karagwe-Ankole Belt as they occur in Rwanda, i.e. the Gatumba deposits mineralized in tin and tantalum in lithium–caesium–tantalum (LCT) pegmatite dykes, the Nyakabingo deposit mineralized in tungsten in hydrothermal quartz veins hosted by black shales and the Musha-Ntunga deposits mineralized in tin and tantalum in LCT pegmatites and associated quartz veins. However, material will also be introduced for other granite-related ore deposits in the Karagwe-Ankole Belt and Great Lakes area including the world-class tin, tantalum and spodumene mineralized giant LCT pegmatite dyke of Manono-Kitotolo (Katanga, DR Congo) and the Rutongo Sn quartz vein district of central Rwanda, which forms one of the largest tin districts of the Central Africa region.

It is anticipated that participants in the course will gain practical knowledge of the geology and evolution of the Great Lakes area and its contained mineral deposits, petrological and geochemical conditions that contributed to the formation and distribution of ores in the different granite-related ore deposits, the reconstruction of the geodynamic setting during mineralization, certification of minerals in the Great Lake Area, and mining investment and legislative aspects in Rwanda.

The following key sessions are currently planned; some of them will be supplemented where appropriate by practical exercises and presentations from exploration companies:

1. Regional geology and geodynamic evolution of the Karagwe Ankole Belt and the Great Lake area.
2. Sedimentology and basin evolution of the Karagwe Ankole Belt
3. Structural and lithological control on the occurrence of Nb-Ta-Sn-W deposits

4. Geochemistry, origin and prospection of Nb-Ta-Sn pegmatite-type and greisen-type deposits
5. Geochemistry, origin and prospection of Sn-W quartz vein deposits
6. Application of geophysics in the prospection of Nb-Ta-Sn-W deposits in the Karagwe Ankole Belt
7. Certification of minerals in the Great Lake Area
8. Investment opportunities in Rwandan mining
9. The Rwandan mining legislation

Registration Form for Individuals

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Title:
First name:
Surname:
Company name
Company address:
Country:
Contact Tel.:
e-mail:

For SGA members:

☐ Registration fee for workshop incl. field trip…….. Euro 450.00

For non-members

☐ Registration fee for workshop incl. field trip…….. Euro 550.00

I am an academic without sufficient funds or a student and apply for a subsidy (see separate form – application for subsidy) ……. YES ____

NO ____

E-mail this form to philippe.muchez@kuleuven.be not later than 1st March 2017.

On confirmation of your places, we will ask you to transfer the registration fee to the following bank account:
Name of the bank: Credit Suisse
Address: Postfach 500, CH-8070 Zuerich, SWITZERLAND
Account holder: SGA
IBAN (International bank account number): CH4604835181963192000
BIC (Bank identification code): CRESCHZZ80A

Registration Form for Companies

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Company name
Company address:
Country:
Company Tel.:
Administrative e-mail contact:

Attendee's Name 1:
Attendee's Name 2:
Attendee's Name 3:
Attendee's Name 4:

Registration fee for workshop incl. field trip..... Euro 700.00
Grand Total ..... Euro _____

E-mail this form to philippe.muchez@kuleuven.be not later than 1st March 2017.

On confirmation of your places, we will ask you to transfer the registration fee to the following bank account:
Name of the bank: Credit Suisse
Address: Postfach 500, CH-8070 Zuerich, SWITZERLAND
Account holder: SGA
IBAN (International bank account number): CH4604835181963192000
BIC (Bank identification code): CRESCHZZ80A