About the Short Course

In the last decades, worldwide efforts have been conducted to understand acid mine drainage and its abatement. Yet, passive and active treatment methods as well as enhanced natural attenuation are still not fully understood and need further investigations. This short course will introduce mine water geochemistry in addition to treatment methods for contaminated mine water.

During the introduction, the participant will learn basic geochemical mechanisms that can be observed in mines and result in ground or surface water contamination. Simple case studies shall exemplify which environmental impacts are caused by mining and how the hydrogeological and ecological surroundings might be altered and can be limited. Usually, hydrogeologists and non-mining engineers are not familiar with the mining terms. This is also true for the situation underground, especially if it comes to historic mining and to acid mine drainage. Therefore, the first part of the workshop aims to provide a general understanding of the terms and conditions in the mining environment.

To work a mine on a medium or long term basis, the mine workings have to be kept dry. The most important mine pump types will be described and which drainage technologies might be necessary.

After mining ceases, the mine workings are usually flooded. To predict or calculate mine flooding, it is necessary to understand the hydrogeological situation on-site. Several theoretical methods and case studies will be described and discussed along with proper sampling technic.

To develop the most advantageous treatment strategy, the temporal and spatial development of a mine flooding have to be understood. Similarly, it is necessary to understand the chemical development of mine flooding. Based on that data a conceptual model and a treatment option can be planned. The last part of the workshop will give an introduction to mine water treatment.

PHREEQC is a computer program to perform a wide variety of aqueous geochemical calculations. It has capabilities for a.a. speciation and saturation-index calculations, for batch-reaction and one-dimensional transport calculations. In the course, speciation calculations will be performed to show possible mineral equilibria and their evolution during generation of acid mine drainage.

WISA MINE WATER DIVISION

LUT Lappeenranta University of Technology

Preliminary Programme

October 25th 2017

- Introduction
- Historical Background
- Mining Methods
- Technical Aspects
- Water in Mines

October 26th 2017

- Mine Dewatering
- Mine Flooding
- Mine Water Geochemistry
- Flooding Prediction
- Mine Water Treatment

October 27th 2017

- PHREEQC mine water modelling
- Please bring your own laptop with PHREEQC pre-installed. Instructions will be sent to attendees.

Recommended Literature

- Blowes, D. W., Ptacek, C. J., Jambor, J. L., Weisener, C. G., Paktunc, D., Gould, W. D. & Johnson, D. B. (2014): The Geochemistry of Acid Mine Drainage. - In: Turekian, H. D. & Holland, K. K. (eds): Treatise on Geochemistry, 2nd edn. - p. 131-190, Oxford (Elsevier).
- Parkhurst, D. L. & Appelo, C. A. J. (2013): Description of Input and Examples for PHREEQC Version 3 - A Computer Program for Speciation, Batch-Reaction, One-Dimensional Transport, and Inverse Geochemical Calculations. - U.S. Geol. Surv. Tech. Methods, 6(A43):1-497.
- Wolkersdorfer, Ch. (2008): Water Management at Abandoned Flooded Underground Mines - Fundamentals, Tracer Tests, Modelling, Water Treatment. - 466 p., Heidelberg (Springer).
- Younger, P. L., Banwart, S. A. & Hedin, R. S. (2002): Mine Water Hydrology, Pollution, Remediation. 464 p., Dordrecht (Kluwer).

WISA MINE WATER DIVISION

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Sender:

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Title, Name, Given Name

.....
Institution/Company

.....
Street, Nr. / Postbox

.....
City, ZIP-Code

.....
Country

Tshwane University of Technology (TUT)
SARChI Chair for Acid Mine Drainage Managment
Prof. Dr habil. Christian Wolkersdorfer
Private Bag X680
Pretoria, 0001
SOUTH AFRICA

Registration

I hereby register to participate in the short course "From Ground Water to Acid Mine Water".

Please tick the appropriate fields All workshop fees are given in South African Rand	Regular Participants	IMWA & WISA Members	Students
Theory October 25th – 26th 2017	R 4000 ☐	R 3000 ☐	R 1000 ☐
PHREEQC Course October 27th 2017	R 1500 ☐	R 1200 ☐	R 300 ☐

Name, Given Name: .....

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Institution/Company: .....

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Street/PO Box: .....

City, ZIP-Code: .....

Country, State: .....

Telephone: .....

Cell: .....

E-Mail: .....

IMWA or WISA Membership Number: .....

Date: ..... Signature: .....

I agree that my personal data will be used for the planning of this workshop by TUT, LUT and IMWA. Your data will not be shared with third-parties.

LUT Lappeenranta University of Technology

General Information

Correspondence Address
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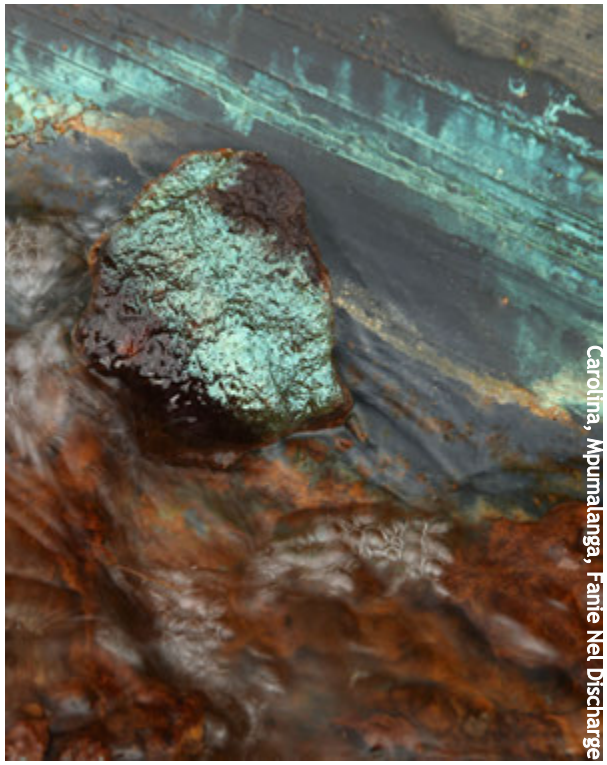
Registration
Registration is requested on the attached registration form or by e-mail until October 4th. With the confirmation of your registration you will receive an invoice and further information.

Participant Cancellation
In the case of participant cancellation full refund will be provided with written notification prior to September 20th, 2017. Cancellation before Octber 15th will result in a 50% handling charge. There will be no refund after October 24th, 2017.

Venue
The workshop will take place in the "137 Murray Guesthouse", Pretoria, South Africa, 137 Murray Street, Brooklyn; www.murray137.co.za

Accomodation
Accommodation and meals are not provided in this short course. Both are the responsibility of the participant. We ask the participants to organise their own accommodation reservations.


Carolina, Mpumalanga, Fanie Nel Discharge

Prof. Dr Christian Wolkersdorfer

From Ground Water to Acid Mine Water

Short Course on Acid Mine Water & Geochemical Modelling

October 25th – 27th 2017

LUT Lappeenranta University of Technology
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