

Silver, Indium and other Treasures: Biohydro- and Hydrometallurgical Approaches to Win Rare Metals from Ores, Processing Remains and Scrap

Datum | Date

7.–8. Juni 2018 |
June 7–8, 2018

Konferenzort | Venue:

Clemens-Winkler-Bau,
WIN-2258
Leipziger Straße 29

Konferenzsprache |

Conference language
Deutsch/English

Leitung | Scientific supervision

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The colloquium will broach various issues related to the winning of metals, from the availability of rare metals and formation of deposits, via (bio-)leaching of ores and other materials, to the point of metal recovery from the aqueous phase. Since the stability of biological processes is a key issue, the stresses to which the bacteria are exposed will be a topic as well as the use of such stresses to achieve certain results. The colloquium will also be open for other biotechnological processes concerning metals e.g. using siderophores for metal extraction or for bioflotation.

Thursday, 07.06.2018

Process Steps in the Winning of Metals Involving Bioleaching or Chemical Leaching

8.30–9.00 Arrival

9.00–9.15 Welcome

Prof. Dr. Michael Schlömann, Coordinator of Biohydrometallurgical Center Freiberg

9.15–9.35 Theisen-sludge as secondary resource

Prof. Dr. Thorsten Reemtsma

Part 1: Availability

9.35–9.55 The availability of high-tech metals – A comparison between gallium, germanium and indium

Dr. Max Frenzel, Helmholtz Institute Freiberg for Resource Technology

9.55–10:15 How is indium concentrated in mineral deposits? – Insights from EPMA and LA-ICP-MS analyses of metal sulfides, fluid inclusion microthermometry and sulfur isotope geochemistry

Matthias E. Bauer, Prof. Dr. Thomas Seifert, Department of Mineralogy Division of Economic Geology and Petrology, TU Bergakademie Freiberg

10.15–10.45 Coffee Break

Part 2: Bioleaching Processes

10.45–11.15 Utilization and rehabilitation of tailings through bioleaching and metal recovery – the example of Davidschachthalde, Freiberg

Dr. Stefan Dirlich, Processing, Helmholtz Institute Freiberg for Resource Technology

11.15–11.45 Potential and limits of biotechnology in in-situ-mining applications

H. Kalka and H. Märten, Umwelt- und Ingenieurtechnik GmbH Dresden (UIT)

11.45–12.05 Comparison of conditioning methods for enhanced permeability under the purpose of in-situ bioleaching in crystalline rock formations

Ralf Schlüter, Underground Mining, TU Bergakademie Freiberg

12.15–13.45 Lunch Break

13.45–14.05 Bacterial diversity and attachment to minerals in acidic waters of Reiche Zeche

Dr. Götz Haferburg, Nadja Eisen, Environmental Microbiology, TU Bergakademie Freiberg

14.05–14.25 Mineral selective leaching of Theisen-sludge

Sebastian Eisen, Environmental Microbiology, TU Bergakademie Freiberg

14.25–14.45 Extraction of microbial leached silver

Fabian Giebner, Environmental Microbiology, TU Bergakademie Freiberg

14.45–15.15 Bioleaching of electronic scrap

Prof. Dr. Xavier Gamisans, Prof. Dr. Toni Dorado, Eva Benzal, Department of Mining, Industrial and ICT Engineering, UPC Barcelona

15.15–15.45 Coffee Break

Part 3: Winning from Aqueous Phases I

15.45–16.15 Phytomining of strategic elements

Dr. Oliver Wiche, Ringo Schwabe, Biology/Ecology, TU Bergakademie Freiberg

16.15–16.45 Bio-based recovery of metals from primary and secondary resources

Benedikt Hoffmann, BRAIN AG

16.45–17.15 Electrochemical speciation measurements for geochemical modelling of bioleaching solutions

Charlotte Ashworth, Inorganic Chemistry, TU Bergakademie Freiberg

from 17.15 Local evening program

Friday, 08.06.2018

Process Steps in the Winning of Metals Involving Bioleaching or Chemical Leaching

Part 4: Winning from Aqueous Phases II

9.00–9.15 Arrival and Welcome

Prof. Dr. Michael Schlömann, Coordinator of Biohydrometallurgical Center Freiberg

9.15–9.45 Secondary mineral Schwertmannite: From microbial mediated synthesis to marketable products

Dr. Susan Reichel, Dr. Eberhard Janneck, G.E.O.S. Ingenieurgesellschaft mbH Freiberg

9.45–10.15 Sensitive, selective and biodegradable – new biosorbents for metal recovery

Robert Braun, Processing, Helmholtz Institute Freiberg for Resource Technology

10.15–10.45 Coffee Break

10.45–11.05 Membrane separation of indium and germanium – from lab scale to pilot plant

Arite Werner, Institute for Thermal Process Engineering, Environment and Natural Products Process Engineering (ITUN), TU Bergakademie Freiberg

11.05–11.35 Use of Schwertmannite for recovery of metals in Theisen-sludge project

Dr. Mirko Martin, G.E.O.S. Ingenieurgesellschaft mbH Freiberg

11.35–12.05 Theisen-sludge – waste of the past, resource of the future: A hydrometallurgical approach

Toni Helbig, Metallurgy and Recycling, Helmholtz-Zentrum Dresden-Rossendorf

12.15–13.45 Lunch Break

13.45–14.05 Integral winning strategy for high-tech metals from aqueous phases

Radek Vostal, Technical Chemistry, TU Bergakademie Freiberg

14.05–14.25 Siderophore production of selected soil bacteria

Marika Mehnert, Environmental Microbiology, TU Bergakademie Freiberg

14.25–14.45 Siderophores for selective extraction of strategic metals from aqueous solutions

Ringo Schwabe, Biology/Ecology, TU Bergakademie Freiberg

Stresses of Bioleaching Bacteria

14.45–15.05 The effect of sodium chloride on cell viability and respiratory rate of *Sb. thermosulfidooxidans*
Dieu Ngoc Huynh, Environmental Microbiology, TU Bergakademie Freiberg

15.15–15.45 Coffee Break

15.45–16.05 Dissolution of Co-Ni-Arsenides by an acidophilic mixed culture
Fabian Giebner, Environmental Microbiology, TU Bergakademie Freiberg

Attachment and Flotation

16.05–16.25 Screening halophilic bacteria for their potential as pyrite bio-depressants in Cu-Mo bioflotation
Guillermo Luque Consuegra, Processing, Helmholtz-Zentrum-Dresden-Rossendorf

16.25–16.45 Microscopic studies of mineral attached bacteria
Dr. Simone Schopf, Environmental Microbiology, TU Bergakademie Freiberg

16.45–17.05 Selective mineral attachment of iron oxidizing bacteria
Grit Röder, Environmental Microbiology, TU Bergakademie Freiberg