PROGRAMME

24 – 27 September 2017
TU Bergakademie Freiberg/Germany

22nd International Biohydrometallurgy Symposium

www.dechema.de/IBS2017

IN COOPERATION WITH

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22nd IBS is part of the European Biotech Week 2017

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Wolfgang Sand, TU Bergakademie Freiberg/D and Donghua University, Songjiang, Shanghai/CN
Axel Schippers, Bundesanstalt für Geowissenschaften und Rohstoffe, Hannover/D
Michael Schlömann, TU Bergakademie Freiberg/D
Simone Schopf, TU Bergakademie Freiberg/D
Mario Vera Véliz, Universidad Católica de Chile, Santiago/RCH
Sabine Willscher, University Halle-Wittenberg, Halle/D

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Mariekie Gericke, Company Mintek, Randburg/ZA
Nicolas Guillani, Universidad de Chile, Santiago/CHL
Eric Guibal, Ecole des Mines d'Alès, Alès/F
Sue Harrison, University of Cape Town/ZA
David Holmes, Centre for Bioinformatics and Genome Biology, Fundación Ciencias para la Vida, Santiago/CHL
Carlos Jerez, Universidad de Chile, Santiago de Chile/CHL
D. Barrie Johnson, Bangor University, Bangor/UK
Anna Kaksonen, CSIRO, Perth/AUS
Päivi Kinnunen, VTT Technical Research Centre of Finland Ltd, Espoo/FIN
Versiane Albis Leão, Universidad Federal de Ouro Preto/BR
Jianshe Liu, Donghua University, Shanghai/CN
Xueduan Liu, Central South University, Changsa/CN
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Jochen Petersen, University of Cape Town/ZA
Guanzhou Qiu, Central South University, Changsa/CN
Frank Roberto, Newmont Mining Corporation, Englewood, CO/USA
Keiko Sasaki, Kyushu University/J
Wolfgang Sand, TU Bergakademie Freiberg/D and Donghua University, Songjiang, Shanghai/CN
Rosa Elva Riviera Santillan, Universidad Nacional Autónoma de México, México City/MX
Axel Schippers, Bundesanstalt für Geowissenschaften und Rohstoffe, Hannover/D
Michael Schlömann, TU Bergakademie Freiberg/D
Tsuyoshi Sugio, Okayama University/J
Monica Teixeira, Universidade Federal de Ouro Preto/BR
Marios Tsezos, National Technical University of Athens/GR
Jan van Niekerk, Company Biomin, Woodmead/ZA
Tomas Vargas, Department of Chemical Engineering and Biotechnology, Universidad de Chile, Santiago/CHL
Grigory Voilooshnikov, Irkutsk Research Institute of Precious and Rare Metals and Diamonds (IRGREDMET), Irkutsk/RUS
Elizabeth Watkin, Curtin University, Perth/AUS
Sabine Willscher, University Halle-Wittenberg, Halle/D
KEYNOTE LECTURES

HONORARY LECTURE  
Sunday, 24 September 2017

Progress in Biohydrometallurgy over the last thirty years?
P. Norris, University of Exeter/UK

KEYNOTE LECTURES  
Monday, 25 September 2017

Bioleaching in stirred tanks reactors to process Kupferschiefer type of ore: an overview
P. D'Hugues, Bureau de Recherches Géologiques et Minières (BRGM), Orléans/F

Unravelling the complexity of heap bioleaching
J. Petersen, University of Cape Town/ZA

Characterization and localized insight into leaching of sulfide minerals
M. Chen, CSIRO/AU

From knowledge to best practices in bioleaching
C. Demergasso, Universidad Católica del Norte, Antofagasta/CHL

KEYNOTE LECTURES  
Tuesday, 26 September 2017

In-situ characterization and molecular mechanisms evaluation of interfacial interaction between minerals and typical bioleaching microorganisms
J.-L. Xia, Central South University, Changsha/CN

Bioelectrochemical leaching of copper sulfide minerals
M. Ranjbar, Shahid Bahonar University of Kerman/IR

Recent advances in biomining and microbial characterization
A. Kaksonen, CSIRO, Floreat/AUS

Putting subsurface microbes to work; metal recovery and biosynthesis of functional metallic nanoparticles
J. Lloyd, University of Manchester/UK

KEYNOTE LECTURES  
Wednesday, 27 September 2017

Copper heap bioleach microbiology – progress and challenges
F. Roberto, Newmont Mining Corporation, Englewood, CO/USA

Optimizing acidophile biofilm formation for metal sulfide dissolution: The SysMetEx Project
M. Dopson, Linnaeus University, Kalmar/S

PUBLIC EVENING LECTURE  
Wednesday, 27 September 2017

850 years of ore mining in Saxony – lessons (to be) learned
B. Cramer, Sächsisches Oberbergamt, Freiberg/D

Programme as of 10 September 2017. Subject to alterations. Title and authors information as given by the submitter. No proof by DECHEMA.
Monday, 25 September 2017

**Tank Leaching I**

Chairs: P. D'Hugues; A. Schippers; 1 Bureau de Recherches Géologiques et Minières (BRGM), Orléans/F; 1 Bundesanstalt für Geowissenschaften und Rohstoffe, Hannover/D

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>09:00</td>
<td><strong>KEYNOTE LECTURE</strong></td>
</tr>
<tr>
<td></td>
<td>Bioleaching in stirred tanks reactors to process Kupferschiefer type of ore: an overview</td>
</tr>
<tr>
<td></td>
<td>A. Guézennec; C. Joulian; P. D'Hugues; 1 Bureau de Recherches Géologiques et Minières (BRGM), Orléans/F</td>
</tr>
<tr>
<td>09:30</td>
<td>Effect of temperature ramping on stirred tank bioleaching of a copper concentrate</td>
</tr>
<tr>
<td></td>
<td>S. Hedrich; C. Joulian; T. Graupner; A. Schippers; A. Guézennec; 1 Bundesanstalt für Geowissenschaften und Rohstoffe (BGR), Hannover/D; 1 Bureau de Recherches Géologiques et Minières (BRGM), Orléans/F</td>
</tr>
<tr>
<td>09:45</td>
<td>Column bioleaching of a saline, calcareous copper sulfide ore</td>
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<td></td>
<td>E. Pakostova; B. Graill; D.B. Johnson; 1 Bangor University, Bangor/UK</td>
</tr>
<tr>
<td>10:00</td>
<td>Optimization of copper bio leaching operation by moderately thermophilic consortia in Iranian Babak Copper Company (IBCCO)</td>
</tr>
<tr>
<td></td>
<td>Z. Manafi; A. Naghibzadeh; M. Kargar; 1 Iranian Babak Copper Co (IBCCO), Tehran/IR; ² Jahrom Branch, Islamic Azad University, Jahrom, Shiraz/IR</td>
</tr>
<tr>
<td>10:15</td>
<td>Establishment of an iron-oxidizing culture of acidophilic micro-organisms for bioleaching of waste electrical and electronic equipment (WEEE)</td>
</tr>
<tr>
<td></td>
<td>A. Hübner; A. Guézennec; M. Minier; A. Chagnes; 1 Bureau de Recherches Géologiques et Minières (BRGM), Orléans/F; 2 Chimie Paris Tech – CNRS, Paris/F; 3 GeoResources Lab, Université de Lorraine, CNRS, CREGU, Vandoeuvre-lès-Nancy/F</td>
</tr>
<tr>
<td>10:30</td>
<td><strong>Coffee Break</strong></td>
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<tr>
<td>11:00</td>
<td><strong>KEYNOTE LECTURE</strong></td>
</tr>
<tr>
<td></td>
<td>Unravelling the complexity of heap bioleaching</td>
</tr>
<tr>
<td></td>
<td>J. Petersen; 1 University of Cape Town, Rondebosch/ZA</td>
</tr>
<tr>
<td>11:30</td>
<td>Reduction of Iron(III) ions at Elevated Pressure by Acidophilic Microorganisms</td>
</tr>
<tr>
<td></td>
<td>R. Zhang; A. Schippers; 1 Bundesanstalt für Geowissenschaften und Rohstoffe (BGR), Hannover/D</td>
</tr>
<tr>
<td>11:45</td>
<td>The impact of heap self-heating on microbial activity during the bioleaching of low-grade copper sulfide ores</td>
</tr>
<tr>
<td></td>
<td>D. Siyers; D. Collinson; H. Watling; 1 Commonwealth Scientific and Industrial Research Organisation (CSIRO), Perth/AUS</td>
</tr>
<tr>
<td>12:00</td>
<td>Bio-heap Leaching of Primary Copper Sulfide Ore by JGMEC</td>
</tr>
<tr>
<td></td>
<td>T. Shinkawa; T. Kamiya; T. Chida; S. Furukawa; 1 Japan Oil, Gas and Metals National Corporation, Kosaka/J; 2 Japan Oil, Gas and Metals National Corporation, Tokyo/J</td>
</tr>
<tr>
<td>12:15</td>
<td>Nickel bioleaching at elevated pH: research and application</td>
</tr>
<tr>
<td></td>
<td>B. Wu; J. Sun; B. Chen; J. Wen; D. Wang; 1 General Research Institute for Nonferrous Metals, Beijing/CN</td>
</tr>
</tbody>
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**Innovative Methods I**

Chairs: M. Chen; W. Sand; 1 CSIRO Mineral Resources, Clayton/AU; 2 Donghua University, Songjiang, Shanghai/China and TU Freiberg, Freiberg/D

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>12:30</td>
<td>Biodesulfurization of a coarse-grained high sulfur coal in a full-scale packed-bed bioreactor</td>
</tr>
<tr>
<td></td>
<td>A. Doodkanlou Milan; A. Ahmadi; M. Hosseini; 1 Isfahan University of Technology, Isfahan/IR</td>
</tr>
<tr>
<td>12:45</td>
<td><strong>Lunch and Poster Session A</strong></td>
</tr>
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**Heap Leaching**

Chairs: F. Glombitza; J. Petersen; 1G.E.O.S. Ingenieurgesellschaft mbH, Halsbrücke/D; ² University of Cape Town, Rondebosch/ZA

<table>
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<tr>
<th>Time</th>
<th>Session</th>
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<tr>
<td>14:45</td>
<td><strong>KEYNOTE LECTURE</strong></td>
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<tr>
<td></td>
<td>Characterization and localized insight into leaching of sulfide minerals</td>
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<tr>
<td></td>
<td>M. Chen; Y. Yang; 1 CSIRO Mineral Resources, Clayton/AU</td>
</tr>
<tr>
<td>15:15</td>
<td>Method for the recovery of Indium from diluted bioleaching solutions</td>
</tr>
<tr>
<td></td>
<td>R. Vostal; U. Šíngliar; M. Bertau; 1 TU Bergakademie Freiberg, Institut für Technische Chemie, Freiberg/D</td>
</tr>
<tr>
<td>15:30</td>
<td>Changes in Metal Leachability through Stimulation of Iron Reducing Communities within Waste Sludge</td>
</tr>
<tr>
<td></td>
<td>M. Roberts; D. Sapsford; M. Harbolt; A. Weightman; G. Webster; 1 Cardiff University, Cardiff/UK</td>
</tr>
<tr>
<td>15:45</td>
<td>Bioleaching Magnetite and Hematite through Reductive Dissolution in Seawater</td>
</tr>
<tr>
<td></td>
<td>B. Dold; J. Palau; J. Cama; C. Ayora; R. Torres; R. Benajes; J. Urmeneta; 1 Luleå University of Technology, Luleå/S; 2 IDAEA-CSIC, Barcelona/E; 3 Universidad de Barcelona, Barcelona/E</td>
</tr>
<tr>
<td>16:00</td>
<td>Mechanism of silver-catalyzed bioleaching of enargite concentrate</td>
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<tr>
<td></td>
<td>K. Oyama; T. Hirajima; K. Sasaki; H. Miki; N. Okibe; 1 Kyushu University, Fukuoka/J</td>
</tr>
<tr>
<td>16:15</td>
<td><strong>Coffee Break</strong></td>
</tr>
</tbody>
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**Innovative Methods II**

Chairs: C. Demergasso; M. Schliemann; 1 Universidad Católica del Norte, Antofagasta/RCH; ² TU Bergakademie Freiberg, Freiberg/D

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tr>
<td>16:45</td>
<td><strong>KEYNOTE LECTURE</strong></td>
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<tr>
<td></td>
<td>From knowledge to best practices in bioleaching</td>
</tr>
<tr>
<td></td>
<td>C. Demergasso; R. Véliz; P. Galleguillos; S. Marín; M. Acosta; J. Bekios; 1 Universidad Católica del Norte, Antofagasta/RCH</td>
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<tr>
<td>17:15</td>
<td>Investigation of controlled Redox Potential with pyrite during chalcopyrite bioleaching by mixed moderately thermophiles</td>
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<td>X. Huang; J. Wang; H. Zhao; R. Liao; X. Wang; M. Hong; G. Qiu; 1 Central South University, Changsha/CN</td>
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<tr>
<td>17:30</td>
<td>Bioleaching of chalcopyrite with two different metallogenic types: A mineralogical perspective</td>
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<tr>
<td></td>
<td>S. Deng; G. Gu; J. Ji; B. Xu; 1 Central South University, Changsha/CN</td>
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<tr>
<td>17:45</td>
<td>Microbial community composition in mine waste, comparing sites in Cornwall and Western Devon</td>
</tr>
<tr>
<td></td>
<td>T. Shafrid; A. Buckling; C. Bryan; 1 University of Exeter, Penryn/UK; 2 Environment and Sustainability Institute, University of Exeter, Penryn Campus, Penryn/UK</td>
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Monday, 25 September 2017

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<tr>
<th>Time</th>
<th>Session</th>
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<tr>
<td>18:00</td>
<td><strong>23rd IBS 2019 presentation and selection of 24th IBS 2021</strong></td>
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<td>19:00</td>
<td><strong>End of 1st conference day</strong></td>
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Tuesday, 26 September 2017

**Molecular Methods / BioFilms I**

<table>
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<tr>
<th>Time</th>
<th>Session</th>
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<tr>
<td>09:00</td>
<td><strong>KEYNOTE LECTURE</strong></td>
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<tr>
<td></td>
<td>In-situ characterization and molecular mechanisms evaluation of interfacial interaction between minerals and bioleaching microorganisms</td>
</tr>
<tr>
<td></td>
<td>J. Xia; H. Liu; Z. Nie; L. Liu; H. Zhu; L. Wang; Y. Yang; Y. Ma; X. Pan; Y. Zhao; C. Ma; L. Zheng; X. Zhen; L. Zhang; W. Wen; Central South University, Changsha/CN; Chinese Academy of Sciences, Beijing/CN; Chinese Academy of Sciences, Shanghai/CN</td>
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<tr>
<td>09:30</td>
<td>Desferrioxamine-like siderophores produced by Gordonia rubripertincta CWB2</td>
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<td>D. Tischler; R. Schwabe; M. Anke; K. Szymańska; C.H.R. Senges; J.E. Badow; B. Obst; M. Mehnert; O. Wiche; Institute of Biosciences, TU Bergakademie Freiberg/D; Silesian University of Technology, Gliwice/PL; Ruhr University Bochum, Bochum/D</td>
</tr>
<tr>
<td>09:45</td>
<td>Acidithiobacter prosperus, a halophilic acidophile, has unique mechanisms to survive high chloride concentrations at low pH</td>
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<td>E. Watkins; D. Holmes; M. Dopsen; CHIRI Biosciences, Curtin University, Bentley/AUS; Center for Bioinformatics and Genome Biology, Andres Bello University, Santiago/RCH; Centre for Ecology and Evolution in Microbial Model Systems (EEMiS), Linnaeus University, Kalmar/S</td>
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<tr>
<td>10:00</td>
<td>Molecular regulatory network involved in biofilm structure development by Acidithiobacillus thiooxidans includes Pel exopolysaccharide machinery</td>
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<td>M. Díaz; N. Guilian; Department of Biology, Faculty of Sciences, University of Chile, Santiago/RCH; Universidad de Chile - Facultad de Ciencias, Santiago/RCH</td>
</tr>
<tr>
<td>10:15</td>
<td>Genomic Insights into the Evolutionary Mechanisms and Dynamics of Extreme Acidophiles</td>
</tr>
<tr>
<td></td>
<td>C. González; M. Laczanó; P. Tapia; J. Valdés; D. Holmes; Fundacion Ciencia &amp; Vida, Santiago/RCH; Universidad de Chile - Facultad de Ciencias, Santiago/RCH</td>
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<tr>
<td>10:30</td>
<td>Computational analysis of chalcopyrite–attached bacteria, automated cell counting, and quantification of biofilm formation</td>
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<tr>
<td></td>
<td>S. Bellenberg; A. Buetti-Dini; M. Vera; O. Hei; K. Lykov; J. Pivkin; W. Sand; M. Dopsen; Universität Duisburg-Essen, Fakultät für Chemie, Essen/D; CHIRI Biosciences, Curtin University, Bentley/AUS; Institute of Computational Science, Faculty of Informatics, Universita della Svizzera Italiana, Lugano/CH; Pontificia Universidad Católica de Chile, Institute for Biological and Medical Engineering, Schools of Engineering, Biological Sciences and Medicine, Department of Hydraulic and Environmental Engineering, School of Engineering, Santiago/RCH; Universität Duisburg-Essen, Fakultät für Chemie, Biofilm Centre, Essen/D; Centre for Ecology and Evolution in Microbial Model Systems (EEMiS), Linnaeus University, Kalmar/S</td>
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<td>10:45</td>
<td>Coffee Break</td>
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**Metal Recovery**

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<th>Time</th>
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<tr>
<td>11:15</td>
<td><strong>KEYNOTE LECTURE</strong></td>
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<tr>
<td></td>
<td>Bioelectrochemical Leaching of Copper Sulfide Minerals</td>
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<td>M. Ranjar; Shahid Bahonar University of Kerman, Kerman/IR</td>
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<tr>
<td>11:45</td>
<td>Microbial Production of Schwertmannite: Development from Microbial Fundamentals to Marketable Products</td>
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<td>S. Reichel; E. Jannock; D. Burghardt; S. Peiffer; M. Schöllmann; G. Kießig; T. Koch; M. Arnold; J. Laubrich; G.E.O.S. Ingenieurgesellschaft mbH, Halsbrücke/D; TU Dresden, Institut für Grundwassermanagement, Dresden/D; Universität Bayreuth, Lehrstuhl für Hydrologie, Bayreuth/D; TU Freiberg, Institut für Biowissenschaften, Freiberg/D; UBIG mbH, Wünschendorf/D; Lausitz Energie Bergbau AG (LEAG), Cottbus/D; Wismut GmbH, Chemnitz/D</td>
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<tr>
<td>12:00</td>
<td>Rare Earth Elements recovery and sulphate removal from phosphogypsum waste waters with Sulphate Reducing Bacteria</td>
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<td>J. Mäkinen; M. Bomberg; M. Salo; M. Arnold; P. Koukkari; VTT Technical Research Centre of Finland Ltd., Espoo/FIN</td>
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<tr>
<td>12:15</td>
<td>Thermophilic iron-pyrite-oxidizing enrichments from solfataric hot springs in Chilean Altiplano</td>
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<td>F. Remonsellez; Universidad Católica del Norte, Antofagasta/RCH</td>
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<tr>
<td>12:30</td>
<td>The mechanism of precious metals biosorption by different bacteria</td>
</tr>
<tr>
<td></td>
<td>L. Tan; H. Yun; X. Xiu; J. He; H. Wu; G. Qiu; X. Liu; J. Xie; Central South University, Changsha/CN; Chinese Academy of Sciences, Beijing/CN</td>
</tr>
<tr>
<td>12:45</td>
<td>Bio-oxidation Process for Gold Concentrates with a High Arsenic Content using Thermophilic Bacteria</td>
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<td>H. Yang; L. Tong; Z. Jin; Y. Song; W. Sand; Northeastern University, Shenyang/CN; School of Metallurgy, Northeastern University, Shenyang/CN; Aquatische Biotechnologie, Biofilm Centre, Universität Duisburg-Essen, Essen/D</td>
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**Lunch Break and Poster Session B**

<table>
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<tr>
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<tr>
<td>15:00</td>
<td><strong>KEYNOTE LECTURE</strong></td>
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<tr>
<td></td>
<td>Recent advances in biomining and microbial characterisation</td>
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<td>A. Koksonen; N. Boxall; B. Booth; K. Usher; C. Morris; P. Wong; K. Cheng;CSIRO, Floreat/AUS</td>
</tr>
<tr>
<td>15:30</td>
<td>Biogenic iron compounds for hazardous metal remediation</td>
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<td>L. Castro; M. Blázquez; F. González; J. Muñoz; A. Ballester; Universidad Complutense de Madrid, Madrid/E</td>
</tr>
<tr>
<td>15:45</td>
<td>Optimization of Bioscarodite Crystallization for Treatment of As(III)-bearing Wastewaters</td>
</tr>
<tr>
<td></td>
<td>M. Tanaka; T. Hirajima; K. Sasaki; N. Okibe; Kyushu University, Fukuoka/J</td>
</tr>
<tr>
<td>16:00</td>
<td>Biocrystals vs. chemical crystals, all the same?</td>
</tr>
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<td>J. Weima; Wageningen University, Wageningen/NL</td>
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<tr>
<td>16:15</td>
<td>Microbial Recycling of Precious and Rare Metals Sourced from Post-consumer Products</td>
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<td>N. Saitoh; T. Nomura; Y. Konishi; Osaka Prefecture University, Sakai/J</td>
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<tr>
<td>16:30</td>
<td>Coffee Break</td>
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**SCIENTIFIC LECTURE PROGRAMME**

**SCIENTIFIC LECTURE PROGRAMME**
Tuesday, 26 September 2017

Innovative Methods III

Chairs: J. Lloyd¹; A. Schippers²; ¹ University of Manchester/UK; ² Bundesanstalt für Geowissenschaften und Rohstoffe, Hannover/D

17:00 KEYNOTE LECTURE
Putting subsurface microbes to work; metal recovery and biosynthesis of functional metallic nanoparticles
J. Lloyd¹; ¹ University of Manchester/UK

17:30 Reductive dissolution of a lateritic ore containing rare earth elements (REE) using Acidithiobacillus species
I. Nancucho³; D.B. Johnson¹; M. Lopes³; G. Oliveira³; ¹ Facultad de Ingeniería y Tecnología, Universidad San Sebastián, Concepción/RCH; ³ Instituto Tecnológico Vale, Belém, Pará/BR; ³ College of Natural Sciences, Bangor University, Bangor/UK

17:45 Incorporation of indigenous microorganisms increases leaching rates of Rare Earth Elements from Western Australian Monazite
M. Corbett¹; J. Eksteen³; X. Niu⁴; E. Watkin⁴; ¹ CHIRI Biosciences, Curtin University, Perth/AUS; ³ Western Australian School of Mines, Curtin University, Perth/AUS; ⁴ Curtin Water Quality Research Centre, Curtin University, Perth/AUS; ³ Curtin University, Bentley/AUS

18:00 The Mechanism of In and Ge Occurrence in Sphalerite Crystal and the Influence on Properties: a DFT (Density Function Theory) Simulation
L. Tong¹; H. Yang¹; J. Xu¹; P. Xu¹; C. Li¹; ¹ Northeastern University, Shenyang/CN

18:15 End of 2nd conference day

19:30 Conference Dinner at Tivoli Concert Hall, Freiberg (end 23:00)

Wednesday, 27 September 2017

Tank Leaching II

Chairs: F. Roberto¹; S. Hedin²; ¹ Newmont Mining Corporation, Englewood/USA; ² Bundesanstalt für Geowissenschaften und Rohstoffe (BGR), Hannover/D

09:00 KEYNOTE LECTURE
Copper Heap Bioleach Microbiology – Progress and Challenges
F. Roberto¹; ¹ Newmont Mining Corporation, Englewood/USA

09:30 Bioleaching of Valuable Components from Pyrometallurgical Final Slags
P. Georgiev¹; I. Spasova¹; V. Groudev²; M. Nicolova³; A. Lazarova³; M. Iliev³; R. Ilieva³; S. Groudev¹; ¹ University of Mining and Geology, Sofia/BG; ³ University of Sofia, Sofia/BG

09:45 Bioleaching of supegene porphyry copper ores from Sungai Max Gorontalo of Indonesia by an iron- and sulfur oxidizing mixotrophic bacterium
S. Chaerun¹; F. Putri¹; M. Mubarok¹; W. Minwall¹; Z. Ichlas¹; ¹ Institut Teknologi Bandung, Bandung/Ri

10:00 Comparison of reductive and oxidative bioleaching of jasorite waste for valuable metals recovery
J. Mäkinen¹; M. Salo¹; H. Hassinen¹; P. Kinnunen¹; ¹ VTT Technical Research Centre of Finland Ltd., Espoo/FIN; ¹ Tampere University of Technology, Tampere/FIN

10:15 Feasibility of metal extraction from waste metallurgical slags of Acidithiobacillus thiooxidans
A. Potysy³; P. Lens³; J. van de Vossenberg¹; E. Rene³; M. Grybos³; G. Guibaud³; J. Kierczak³; E. van Hullebusch¹; ¹ University of Wroclaw, Wroclaw/PL; ³ UNESCO-IHE Institute for Water Education, Delft/NL; ³ University of Wroclaw, Wroclaw/PL

10:30 Production Development of Olimpiadinsky Gold Processing Plant through BIONORD® Technology Processing
A. Belyi¹; D. Chernov¹; N. Solopova¹; ¹ JSC “Polyus”, Krasnoyarsk/RUS

10:45 Coffee Break

Biosorption / Bioremediation II

Chairs: K. Pollmann¹; S. Willscher¹; ¹ Helmholtz-Zentrum Dresden-Rossendorf, Dresden/D; ² University Halle-Wittenberg, Halle/D

11:15 Phage display – a new tool for the recovery of valuable metals from primary and secondary resources
S. Matys¹; F. Lederer¹; N. Schönberger¹; R. Braun¹; F. Lehmann¹; K. Flemming¹; S. Bachmann¹; S. Curtis¹; R. MacGillivray¹; K. Pollmann¹; ¹ Helmholtz-Zentrum Dresden-Rossendorf, Dresden/D; ¹ TU Bergakademie Freiberg, Freiberg/D; ¹ University of British Columbia/Norman B. Keevil Institute of Mining Engineering, Vancouver/CDN; ¹ University of British Columbia/Centre for Blood Research, Vancouver/CDN

11:30 Recycling of Florescent Phosphor Powder Y2O3: Eu by Bioleaching by Means of Acidithiobacillus ferroxoxids
R. Auerbach¹; K. Bokelmann¹; S. Ratering¹; R. Stauber¹; S. Schnell¹; J. Zimmermann¹; ¹ Fraunhofer Projectgroup IWKS of Fraunhofer ISC, Hanau/D; ² Fraunhofer Projectgroup IWKS of Fraunhofer ISC, Alzenau/D; ³ Justus-Liebig University Giessen, Giessen/D
Scientific Lecture Programme

Wednesday, 27 September 2017

11:45  Integrated Sulfate Reduction and Biosorption Process for the Treatment of Mine Drainages
  D. Cotoras; C. Hurtado; P. Viedma; 1 Universidad de Chile, Santiago/RCH

12:00  The use of algal biomass to sustain sulfidogenic bioreactors for remediating acidic metal-rich waste waters
  A. Santos; D.B. Johnson, 1 Bangor University, Bangor/UK

12:15  Detoxification of Heap after Gold Leaching Using Biodegradation
  M. Belkova; S. Petrov; A. Chikin; G. Voiloshnikov; N. Belkova; 1 Irkutsk Research Institute of Precious and Rare Metals and Diamonds JSC, Irkutsk/RUS; ² Limnological Institute SB RAS, Irkutsk/RUS

12:30  Analysis of Microbial Communities associated with Bioremediation Systems for Thiocyanate-laden Mine Water Effluents
  R. Huddy; F. Kadhinga; R. Kantor; S. Rahman; S. Harrison; J. Banfield; 1 University of Cape Town, Cape Town/ZA; 2 University of California, Berkeley/USA

12:45  pH and Soil Additive–Depending Uptake of Various Metals and Metalloids by Helianthus tuberosus from a Uranium Containing Test Field Site
  L. Jablonski, ¹ S. Willscher, S. Willscher; J. Wittig, D. Kuehn; 1 Dresden/D; 2 University Halle-Wittenberg, Halle/D

13:00  Lunch Break and Poster Session C

Molecular Methods / Biofilms II

15:00  KEYNOTE LECTURE
  Optimizing Acidophile Biofilm Formation for Metal Sulfide Dissolution: The SysMetEx Project
  M. Dopson; W. Sand; P. Wilmes; I. Pikvín; A. Poetsch; K. Kubista; 1 Linnaeus University, Kalmar/S; ² University of Duisburg Essen, Essen/D; ³ University of Luxembourg/L; 4 Università della Svizzera Italiana, Lugano/CH; 5 Ruhr University Bochum/D; 6 TATAA BIOCENTER AB, Gothenburg/S

15:30  Leptospirillum ferriphilum – Genome, Transcriptome, and Proteome of a Biomining Model Species
  M. Heroíl; S. Christel; S. Bellenberg; A. Poetsch; A. Buetti-Din; I. Pikvín; W. Sand; P. Wilmes; M. Dopson; 1 University of Luxembourg, Esch-sur-Alzette/L; ² Linnaeus University, Kalmar/S; ³ Università deltitulo della Svizzera Italiana, Lugano/CH; 4 Ruhr University Bochum, Bochum/D; 5 Institute of Computational Science, Faculty of Informatics, Università della Svizzera Italiana, Lugano/CH; 6 TU Bergakademie Freiberg, Freiberg/D

15:45  Mineral Specific Biofilm Formation of Acidibacillus ferrooxidans Hüttæ
  S. Schopp; 1 TU Bergakademie Freiberg, Freiberg/D

16:00  Comparative genomics of iron oxidizing acidophiles of the Acidiferrobacteraceae family
  F. Isotta; 1 Povarová; A. Moya-Beltrán; S. Bellenberg; C. Thyssen; W. Sand; H. Nuñez; D. Holmes; R. Quatrini; M. Vera; 1 Fundación Ciencia & Vida, Santiago/RCH; 2 Fundación Ciencia & Vida - Universidad Andrés Bello, Santiago/RCH; 3 Universidad Duisburg-Essen, Essen/D; 4 Pontificia Universidad Católica de Chile, Santiago/RCH

16:15  Proteins Binding to Immobilized Rusticyanin Detected by Affinity Chromatography
  J. Kucerà; O. Janiček; J. Smolík; M. Mándl; 1 Masaryk University, Brno/CZ

16:30  Coffee Break

Scientific Lecture Programme

Wednesday, 27 September 2017

Molecular Methods / Biofilms III

17:00  Inhibition kinetics of iron oxidation by Leptospirillum ferriphilum in the presence of thiocyanate in bioremediated cyanidation tailings waste water
  C. Edward; S. Harrison, 1 University of Cape Town, Cape Town/ZA

17:15  The Mondo Minerals Nickel Sulfide Bioreach Project: From Test Work to early Plant Operation
  M. Gericke; J. Neale; J. Seppälä; A. Laukka; P. van Aswegen; S. Barnett; 1 Mintek, Randburg/ZA; 2 Mondo Minerals B.V., Kajaani/FIN; 3 P Met. Consulting cc, Johannesburg/ZA; 4 Consultant, Isle of Wight/UK

17:30  Closing Remarks & Poster Awards
  S. Hedrich, Bundesanstalt für Geowissenschaften und Rohstoffe (BGR), Hannover/D; W. Sand, Donghua University, Songjiang, Shanghai/CN and TU Freiberg, Freiberg/D

17:45  Short Break

18:00  PUBLIC EVENING LECTURE
  850 years of ore mining in Saxony – lessons (to be) learned
  B. Cramer, Sächsisches Oberbergamt, Freiberg/D

18:45  End of the conference
| P 001 | On the immobilization of desferrioxamine like siderophores for selective metal binding M. Anke¹; K. Szymańska²; R. Schwab³; O. Wiche⁴; D. Tischler¹; ¹ TU Bergakademie Freiberg, Freiberg/D; ² Silesian University of Technology, Glowne/PL |
| P 002 | Gallium mobilization in soil by bacterial metallophores R. Schwab³; B. Obst¹; M. Mehnert¹; D. Tischler¹; O. Wiche⁴; ¹ TU Bergakademie Freiberg, Freiberg/D |
| P 003 | Attachment of Acidithiobacillus ferrooxidans and bioleaching of chalcopyrite under influence of organic substances associated with copper solvent extraction X. Liu¹; H. Zhang²; H. Wu²; ¹ Shanghai Institute of Technology, Shanghai/CN |
| P 004 | A comparison of three bioprocessing approaches applied to a cobalt-containing laterite ore S. Smith¹; B. Grahl¹; D.B. Johnson¹; ¹ Bangor University, Bangor/UK |
| P 005 | Optimization of bioleaching of waste printed circuit boards using Aspergillus niger F. Faraj¹; R. Golmohammazadeh¹; F. Rashchi¹; ¹ University of Tehran, Tehran/IR |
| P 006 | Optimization of Ni, Cu and Zn Recoveries in Bioleaching of Electronic Scraps M. Mostafavi¹; F. Rashchi¹; S. Belkizadeh-Noel¹; N. Mostoufi¹; ¹ University of Tehran, Kish International Campus, Kish/IR; ² University of Tehran, Tehran/IR |
| P 007 | Revisiting the chromeazurol S assay for various metal ions M. Mehnert¹; R. Schwabe¹; S. Vater¹; T. Heine¹; G. Retamal¹; G. Levicán¹; M. Schlömann¹; D. Tischler¹; ¹ TU Bergakademie Freiberg, Freiberg/D; ² Universidad de Santiago de Chile, Santiago/RCH |
| P 008 | Rapid removal of zinc from circum-neutral pH waste waters using a novel low pH biosulfidogenic reactor R. Holanda⁴; D.B. Johnson¹; ¹ Bangor University, Bangor/UK |
| P 009 | Electrochemical process engineering in biohydrometallurgical metal recovery from mineral sulfides C. Tamme¹; A. Schippers²; ¹ Bundesanstalt für Geowissenschaften und Rohstoffe (BGR), Hannover/D |
| P 010 | Adsorption of Chromium (VI) and Desorption as Chromium (III) from the Aqueous Chromium (VI) Solution Using Persimmon Gel T. Tsuruta¹; T. Hatano¹; I. Hachinohe Institute of Technology, Hachinohe/J |
| P 011 | Siderophore purification via immobilized metal affinity chromatography T. Heine¹; M. Mehnert¹; R. Schwabe¹; D. Tischler¹; ¹ TU Bergakademie Freiberg, Freiberg/D |
| P 012 | Thermochelin, a hydroxamate siderophore from Thermospermum aggregatum DSM 44070 T. Heine¹; M. Mehnert¹; R. Schwabe¹; D. Tischler¹; ¹ TU Bergakademie Freiberg, Freiberg/D |
| P 013 | Extremophilic Bioreduction of Elemental Sulfur for Recovery of Valuable Metals A. Hidalgo¹; J. Weijma¹; J. Sanchez-Andreu¹; C. Buismann¹; ¹ Wageningen University, Wageningen/NL |
| P 014 | Approaches to eliminate bacteria introduced during active bioleaching from the deep subsurface H. Ballerstedt¹; A. Schippers²; P. Pakostova³; D.B. Johnson¹; ¹ Federal Institute for Geosciences and Natural Resources (BGR), Hannover/D; ² University of Bangor, Bangor/UK |
| P 015 | Bioleaching of copper slag material A. Schippers²; ¹ Federal Institute for Geosciences and Natural Resources (BGR), Hannover/D |
| P 016 | Electrochemical impedance spectroscopy studies of bioleaching involving iron (II) ions D. Bevilacqua¹; F. Arena-Delfino¹; A. Benedetti¹; ¹ Institute of Chemistry, Sao Paulo State University, Araquara/BR |

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| P 017 | Evaluation of substrate consumption kinetics in different support materials for biotrickling filters aiming biogas desulfurization L. Hidalgo¹; J. Santos¹; A. Sarti²; S. Tayar¹; M. Palmieri¹; D. Bevilacqua¹; ¹ Institute of Chemistry, Sao Paulo State University, Araquara/BR |
| P 018 | Biotechnical selenate removal in inverse fluidized bed reactor K. Cheng¹; M. Ginge¹; A. Kaksonen¹; ¹ CSIRO, Floreat/AUS |
| P 019 | Pilot scale bioleaching of metals from pyritic ashes E. Vestolat¹; J. Mäkinen¹; T. Korhonen¹; R. Netola¹; A. Kaksonen¹; ¹ Talis Consultants, Leeduerville/AUS; ² VTT Technical Research Centre of Finland, Espoo/FIN; ³ Geological Survey of Finland, Outokumpu/FIN; ⁴ CSIRO, Floreat/AUS |
| P 020 | Monitoring of biofilm development on surfaces using an electrochemical method O. Fysun¹; ¹ Robert Bosch GmbH, Waiblingen/D |
| P 021 | Screening of important variables of organic acids degradation by Phanerochaete chrysosporum using Plackett-Burman design in refractory arsenic-bearing and carbonaceous gold ores O. Liu¹; H. Yang¹; L. Tong¹; J. Peng¹; ¹ Shanghai Polytechnic University, Shanghai, China, Shanghai/CH; ² School of Metallurgy, Northeastern University, Shenyang/CN |
| P 022 | Bioleaching of chalcopyrite-borne mixed ores in the presence of mixed culture H. Zhao¹; X. Huang¹; R. Liao¹; Y. Zhang¹; J. Wang¹; W. Qin¹; G. Qiu¹; ¹ Central South University, Changsha/CH |
| P 023 | Manganese Removal from Metal Refinery Wastewater using Mn(II)-oxidizing Bacteria S. Kitanukit¹; K. Takeda²; S. Asano¹; N. Okibe¹; ¹ Kyushu University, Fukuoka/J; ² Sumitomo Metal Mining Co., Ltd, Ehime/J |
| P 024 | Investigating the microbial colonization and leaching of an arsenic mine tailing using a mixed mesophilic culture E. Ngoma¹; K. Shaikt¹; D. Borja¹; M. Smart¹; J. Park¹; H. Kim¹; J. Petersen¹; ¹ University of Cape Town, Cape Town/ZA; ² Chonbuk National University, Jeonju/ROK; ³ Mine Reclamation Corporation, Wonju-si/ROK; ⁴ University of Cape Town, Rondebosch/ZA |
| P 025 | Microbiological As(III) oxidation and immobilization as scorodite at moderate temperatures Y. Era¹; T. Hirajma¹; K. Sasaki¹; N. Okibe¹; ¹ Kyushu University, Fukuoka-shi/J |
| P 026 | Microbial community analysis inside a biooxidation heap for gold recovery in Equador C. Asplauz¹; P. Aguirre Chamba¹; S. Hidrich¹; A. Schippers¹; ¹ Orenas S.A., Guayaquil/EC; ² Universidad Técnica Particular de Loja (UTPL), Loja/EC; ³ Federal Institute for Geosciences and Natural Resources (BGR), Hannover/D |
| P 027 | Explore bioleaching technique to recover valuable metals from mobile phones E. Benza Monte¹; M. Solé¹; C. Lao-Luque¹; E. Benzal Montes¹; ¹ Universidad Politécnica de Catalunya, Mataró/E |
| P 028 | Investigation of the flotation interface with spectroscopic reflection techniques T. Firkala¹; F. Lederer¹; K. Pollmann¹; M. Rudolph¹; ¹ Helmholtz-Zentrum Dresden-Rossendorf, Dresden/D |
| P 029 | The surface chemistry characterization during bioleaching and biooxidation S. Ghassa¹; H. Abdollahi¹; M. Gharabaghi¹; S. Chhehrz Chegani¹; M. Jafari¹; ¹ University of Tehran/IR; ² University of Michigan/USA |
The effect of co-culture microorganisms with different ferrous- and sulfur-oxidizers on...

Potential Bioleaching Effects in In-situ Recovery Applications

Effect of air on microbial community and tailing wastewater remediation in reducing bacteria remediation process

Investigation of the bioleaching of REE from fluorescent phosphor with Yarrowia lipolytica

Evolution of compositions and contents of capsule and slime EPS for adaptation to and action of energy substrates and heavy metals by typical bioleaching microorganisms

Differential expression of sulfur activation relevant genes of typical bioleaching microorganisms

Evolution of compositions and contents of capsule and slime EPSs for adaptation to and action...

Pyrite Oxidation by Moderately Thermophilic Microorganisms

The decreasing and whereabouts of iron ions in the pure culture process of extremely acidophilic microorganism

Addition of surfactant to improve the microbial treatment of a sulfur-spent catalyst

Molecular response of the acidophilic iron oxidizer “Ferrovum” sp. JA12 to the exposure to elevated concentrations of ferrous iron

The responses of microbial community and zinc leaching efficiency to temperature in sphalerite bioleaching system

The use of heap bioleaching as a pre-treatment for platinum group metal leaching

Effect of galactose on EPS production and attachment of...

Resistance of Moderately Thermophilic Acidophilic Microorganisms to Ferric Iron Ions

Pyrite Oxidation by Moderately Thermophilic Microorganisms

Biogenic hydrogen sulphide for cyanide regeneration in solutions during cupriferous gold ore processing

Examining the effects of typical reagents for sulfide flotation on bio-oxidation activity of Ferrooxidans microorganisms

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Biogenic hydrogen sulphide for cyanide regeneration in solutions during cupriferous gold ore processing
**P 062** Metagenome-derived draft genome sequence of *Acidithiobacillus ferrooxidans* (clone RV1) from an abandoned gold tailing in Neuquén, Argentina

R. Ulloa1; F. Isotta1; A. Moya-Beltrán1; H. Nuñez1; P. Covarrubias1; R. Quatrini1; A. Giaveno1; ¹Universidad Nacional del Comahue - PROBIEN (CONICET), Neuquén/RA; ¹Fundación Ciencia & Vida, Santiago de Chile/RCH; ¹Fundación Ciencia & Vida - Universidad Andres Bello, Santiago de Chile/RCH

**P 063** EPS Characterization of a Cell Wall-Lacking Archaea *Ferroplasma Acidiphilum*

R. Zhang1; V. Blanchard1; T. Neu1; M. Vera1; W. Sand1; ¹Bundesanstalt für Geowissenschaften und Rohstoffe (BGR), Hannover/D; ¹Charité Medical University, Berlin/D; ¹Helmholtz Centre for Environmental Research-UFZ, Magdeburg/D; ¹Pontificia Universidad Católica de Chile, Chile, Institute for Biological and Medical Engineering, Schools of Engineering, Biological Sciences and Medicine, Department of Hydraulic and Environmental Engineering, School of Engineering, Santiago/RCH; ¹TU Bergakademie Freiberg/Donghua University, Freiberg/D

**P 064** Immobilization of Arsenic by a thermoadciphilic mixed culture with pyrite as energy source

S. Vega1; J. Weimja1; ¹Wageningen University, Wageningen/NL

**P 065** Biobleaching of a nickel-cobalt sulfide flotation concentrate

H. Yang1; L. Tong1; H. Yang1; S. Zhao1; X. Wang1; ¹Northeastern University, Shenyang/China

**P 066** pH dictates the relative toxicities of cationic metals and anions (other than sulfate) to acidophilic bacteria

C. Falagan1; D.B. Johnson1; ¹Bangor University, Menai Bridge/UK; ²Bangor University, Bangor/UK

**P 067** Biooxidation of a refractory gold ore: implications of whole-ore heap biooxidation

B. Chen1; J. Sun1; H. Shang1; B. Wu1; J. Wen1; ¹National Engineering Laboratory of Biohydrometallurgy, General Research Institute for Nonferrous Metals, Beijing/China

**P 068** Type IV secretion systems diversity in the *Acidithiobacillus* genus

R. Flores-Klos1; A. Moya-Beltrán1; N. Harold1; R. Quatrini1; ¹Fundación Ciencia & Vida, Santiago/RCH; ¹Fundación Ciencia & Vida - Universidad Andres Bello, Santiago/RCH

**P 069** Biological production of copper concentrate from flotation tailings and low grade ore

I. Nancucho1; ¹Universidad San Sebastián, Concepción/RCH

**P 070** Abiotic leaching of chalcopyrite in sulfuric acid solution

S. Joe1; C. Inoue1; T. Kamiya1; T. Chida1; ¹Tohoku University, Sendai/J; ²Japan Oil, Gas and Metals National Corporation, Tokyo/J
An XRD, XPS and XANES study on the bioleaching of arsenopyrite with or without pyrite
Y. Yang1; W. Liu2; C. Wang3; M. Chen4; 1 Commonwealth Scientific and Industrial Research Organisation (CSIRO), Clayton/AUS; 2 Zijin Mining Group Co. Ltd, Xiamen/CN

Process and cost improved agitator solutions for bioleaching reactors
J. Jung1; W. Keller2; 1 EKATO RMT, Schopfheim/D

Preliminary study on in-situ realtime quantitation of target bacteria on the principle of flow cytometry
S.Y. Khaing1; Y. Sugai1; G. Murakami2; K. Sasaki3; 1 Kyushu University, Fukuoka/J

Intensification of Arsenic Mobilization by Combination of Bio-chemical Leaching with EDTA in the Soil and Sediment Bioremediation
I. Styriaková1; D. Styriaková1; A. Bekényiová1; I. Styriak1; Š. Štyriak1; 1 Institute of Geotechnics SAS, Košice/SK

Microbial dissolution of iron surface coatings in industrial minerals
J. Štyriak1; I. Styriaková1; I. Styriak1; D. Styriaková1; 1 Slovak Academy of Sciences, Institute of Geotechnics, Košice/SK

Utilizing of bioceramic filters in As removal from bioleachates
A. Bekényiová1; Z. Danková1; I. Styriaková1; D. Styriaková1; 1 Slovak Academy of Sciences, Institute of Geotechnics, Košice/SK

Bio Degradation of Thiocyanate and Cyanide in CIL leaching wastes's liquid phase
A. Bely1; A. Teleutov1; A. Revenko1; N. Solopova1; V. Sekachev1; A. Malashonok1; G. Krasilnikov1; 1ISC "Polyus", Krasnoyarsk/RUS

Microbial Population of Industrial Bioleach Reactors
A. Bulagev1; A. Bely1; A. Panyushkina1; N. Solopova1; T. Pivovarova1; 1 Vinogradsky Institute of Microbiology, Moscow/RUS; 1ISC “Polyus”, Krasnoyarsk/RUS

Cytometry
S.Y. Khaing1; G. Murakami1; K. Sasaki1; 1 Kyushu University, Fukuoka/J
SOCIAL PROGRAMME / COURSES / EXCURSIONS

SOCIAL PROGRAMME

Sunday, 24 September 2017

Welcome reception
Meet old friends and new colleagues at the welcome reception after the opening and the honorary talk, from 18:15 to around 20:00 at the conference venue “Alte Mensa”.

Tuesday, 26 September 2017

Conference Dinner
Enjoy the conference dinner at the impressive historical Tivoli concert hall, indulge in a buffet with regional specialities, savour local wines and beers and join in when a traditional miners’ band intones the historical “Steigerlied”.

The social programme is kindly supported by Newmont Mining Corporation, Greenwood Village, CO/USA.

EDUCATIONAL COURSES AND EXCURSIONS

In the context of the IBS 2017, educational courses and excursions will be offered:

Taught Course “Strategic Metal Recovery”
11 – 22 September 2017 at TU Freiberg (two-weeks course)

Taught Course “Bioremediation of Mining Sites”
23 September 2017 in Dresden

EXCURSION A
Visit of the underground in-situ bioleaching site for indium and zinc in the mine Reiche Zeche, Freiberg
28 and 29 September 2017

EXCURSION B
Open lignite mine Welzow & Dresden
28 – 29 September 2017

EXCURSION C
Mine Water Treatment Plants Schlema/Alberoda and Pöhla and Mine “Zinnkammern Pöhla e.V.”
28 September 2017

For detailed information please go to www.dechema.de/IBS2017 or contact the conference organiser.

GENERAL INFORMATION

VENUE
TU Bergakademie Freiberg
Technische Universität Bergakademie Freiberg
Alte Mensa
Peterstr. 5
09599 Freiberg
Internet: http://tu-freiberg.de

ORGANISER
DECHEMA e.V.
Theodor-Heuss-Allee 25
60486 Frankfurt am Main
Germany
www.dechema.de

CONTACT
Andrea Köhl
Phone: +49 (0)69 7564-235
Fax: +49 (0)69 7564-441
e-Mail: koehl@dechema.de

Please find all information at www.dechema.de/IBS2017, the conference website will be updated frequently.