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**Final conference programme**
<span style="color:red">The conference language is English</span>

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**Wednesday 06.09.2023**
*Hotel Das Ebertor, Heerstraße 172, 56154 Boppard*
from 17:30   **Registration and Welcome reception**

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**Thursday 07.09.2023**
*Townhall Boppard (market square), Oberstraße 141, 56154 Boppard*

08:00-08:30 **Registration**

08:30        ***Welcome***
             Bernd Lottermoser, RWTH Aachen University, Germany

08:40        ***Keynotes***

             Anne Johnson, Queen's University, Canada
             *The social licence to operate as a learning outcome in mineral and resource engineering education*

             Claudia Mueller, York University, Canada
             *Reimaging mining education: putting students at the core*

09:40-10:00 ***Theme – Educating mining students for the 21st century***
             <span style="color:red">*Presentations are 10 minutes each, including question and changeover time*</span>

             Hylke Glass, Camborne School of Mines, University of Exeter, UK
             *Minerals engineering: meeting the multidisciplinary challenge*

             Benedikt M. Steiner, Camborne School of Mines, University of Exeter, UK
             *Exploring the link between employer needs, employability and postgraduate module design in a contemporary mining education framework*

10:00-10:30 **Networking break and poster session**

10:30-12:00 ***Theme – Educating mining students for the 21st century***
             <span style="color:red">*Presentations are 10 minutes each, plus question and changeover time*</span>

             Tony Hand, Tallinn University of Technology, Estonia
             *Engineers in the mining industry are not just engineers, they are T-Shape professionals*

             Veiko Karu, Tallinn University of Technology, Estonia
             *Entrepreneurship program for PhD candidates in raw materials sector*

             Karin Robam, Tallinn University of Technology, Estonia
             *Finding raw materials sector technological solutions via full online course: Masters course in circular economy for materials processing*

             Saeed Chehreh Chelgani, Luleå University of Technology, Sweden
             *Swedish School of Mines (Education, Research, and Infrastructure)*

             Behzad Ghodrati, Luleå University of Technology, Sweden
             *Innovative and interactive teaching*

             Boglárka Anna Topa, Ferenc Mádai, Norbert Zajzon, Sibila Borojević Šoštarić, Gabriela Paszkowska, Nils Jansson, University of Miskolc, Hungary, University of Zagreb, Croatia, Wroclaw University of Science and Technology, Poland, Luleå University of Technology, Sweden
             *TIMREX – a new MSc programme in the field of mineral exploration*

             Szymon Łagosz, Central Mining Institute, Poland
             *Creating educational applications that use virtual reality technology – scenarios, training methods, effectiveness studies*

12:00-14:00 **Networking lunch**
             *Bellevue Rheinhotel, Rheinallee 41, 56154 Boppard*

**14:00-15:30** *Theme – Educating mining students for the 21ˢᵗ century*
<span style="color:red">*Presentations are 10 minutes each, plus question and changeover time*</span>

Maria Cristina Vila, Maria de Lurdes Dinis, University of Porto, Portugal
*Mining engineering study cycles at University of Porto – Future expectations based on retrospection of the last twenty years*

Giovanna Antonella Dino, University of Torino, Italy
*Towards sustainable mining: the importance of cooperation projects to boost the training of mining engineers and geologists for the transition to „sustainability"*

Helmut Mischo, Jörg Benndorf, TU Bergakademie Freiberg, Germany
*New geo-engineering and mining programs at TUBAF - We'll mine the future*

Georg Meissner, Helmut Mischo, Md Ariful Islam, TU Bergakademie Freiberg, Germany
*Defining the mining engineering graduate of the future – mining engineering education within the European Union vs. industry demands and challenges*

Mikael Rinne, Nikolaus Sifferlinger, Bernd Lottermoser, Yannick Feldmann, Aalto University, Finland, RWTH Aachen University, Germany, Montanuniversität Leoben, Austria
*European Mining Course (EMC)*

Mateusz Janiszewski, Lauri Uotinen, Mikael Rinne, Aalto University, Finland
*Virtual learning environments for engineering education at Aalto University*

Yannick Feldmann, Bernd Lottermoser, Nikolaus Sifferlinger, Mikael Rinne, RWTH Aachen University, Germany, Aalto University, Finland, Montanuniversität Leoben, Austria
*The TERRA Project – Tertiary Education in Sustainable Resource Extraction*

**15:30-16:00** **Networking break and poster session**

**16:00-16:30** *Panel discussion – Educating mining students for the 21ˢᵗ century*
Anne Johnson, Queen's University, Canada
Claudia Mueller, York University, Canada
Jose Miguel Nieto, University of Huelva, Spain
Nikolaus August Sifferlinger, Montanuniversität Leoben, Austria

**16:30-17:00** *Theme – Opportunities for education collaborations and exchange*
Jan Eggert, EIT Raw Materials
*Skills for the critical raw materials and net zero industry agendas - building a world leading European raw materials academy*

**18:30-22:30** **Rhine River cruise with conference dinner**
Departure 18:30 sharp

**Friday 08.09.2023**
*Townhall Boppard (market square), Oberstraße 141, 56154 Boppard*

08:30-10:00 **Keynotes**

Christian Juncher Jørgensen, Jens Søndergaard, Lis Bach, Kim Gustavson, Janne Fritt-Rasmussen, David Boertmann, Anders Mosbech, Aarhus University, Denmark
*Mining and environmental impacts - considerations from an Arctic perspective*

Carlos Ruiz Cánovas, University of Huelva, Spain
*Perspectives on the potential recovery of critical raw materials from mining and industrial wastes based on case studies*

Jose Miguel Nieto, University of Huelva, Spain
*Acid mine drainage as a potential source of REE. The Iberian Pyrite Belt case study*

10:00-10:30 **Networking break and poster session**

10:30-12:00 ***Theme – Current research activities in mining and related disciplines***
<span style="color:red">*Presentations are 10 minutes each, plus question and changeover time*</span>

Feven Desta, Lucas Landeweerd, Willem Aarens, Mike Buxton, Delft University of Technology, The Netherlands
*Sensor-based multi-level characterization of mine waste: unlocking economic benefits*

Marco Casale, Susanna Mancini, Giovanna Antonella Dino, University of Torino, Italy
*Towards a sustainable transition in extractive activity: a decision support tool to assess, evaluate and promote the reuse and recovery of extractive waste*

Norbert Zajzon, Ferenc Mádai, Boglárka Anna Topa, University of Miskolc, Hungary
*UNEXMIN, UNEXUP and ROBOMINERS: innovative ways for raw materials exploration and resource extraction*

Hakan Basarir, Ozge Akyildiz, Steinar Løve Ellefmo, Norwegian University of Science and Technology, Norway
*Practical implementation of machine learning (ML) in quarry mining operations*

Adeyemi Emman Aladejare, Zongxian Zhang, Toochukwu Ozoji, University of Oulu, Finland
*Novel applications of characteristic impedance in mining engineering*

Rodrigo Serna-Guerrero, Tommi Rinne, Anna Klemettinen, Aalto University, Finland
*Closing the loop of battery raw materials with froth flotation*

Luna Morcillo, Diana Turrión, Alberto Vilagrosa, University of Alicante, Spain
*Restoration actions and techniques for recovering degraded landscapes after mining activity under Mediterranean conditions*

Aurora Torres, Sophus O.S.E. zu Ermgassen, Francisco Ferri-Yanez, Laetitia, M. Navarro, Isabel M.D. Rosa, Fernanda Z. Teixeira, Constanze Wittkopp, Jianguo Liu, University of Alicante, Spain; Université catholique, Belgium; Michigan State University, USA; University of Oxford, UK; University of Kent, UK; Estación, Biológica de Doñana-CSIC, Spain; Bangor University, UK; Universidade Federal do Rio Grande do Sul, Brazil; German Centre for Integrative Biodiversity Research (iDiv), Germany
*Global assessment of the impact of mining construction minerals on biodiversity, policy coverage, and mitigation strategy*

12:00-12:30 ***Theme – Opportunities for teaching and research collaborations***
*Yannick Feldmann, Johannes Emontsbotz, RWTH Aachen University, Germany*

12:30 **Conference close**
*Bernd Lottermoser, RWTH Aachen University, Germany*

13:00-14:00 **Networking lunch**
*Bellevue Rheinhotel, Rheinallee 41, 56154 Boppard*

**List of posters**

*1. Sustainable development goals in the mining industry of the new era*
Emmanouil A. Varouchakis, Konstantinos Komnitsas, Michail Galetakis, Technical University of Crete, Greece

*2. Current state of digital twin implementation in the extractive industry*
Joana Duarte, João Santos Baptista, Universidade do Porto, Portugal

*3. Breaking the mould: Revitalising higher education in geo-resources for a dynamic world*
João Santos Baptista, Joana Duarte, Jacqueline Castelo Branco, Universidade do Porto, Portugal

*4. Corporate Social Responsibility. A quantitative approach for the mining sector*
Marc Bascompta, Lluís Sanmiquel, Carla Vintró, Mohammad Yousefian, Hernán F. Anticoi, Polytechnic University of Catalonia, Spain

*5. Project management practices for developing professional skills in the mining sector*
Natalia Gómez-Marín, Universidad de León, Spain

*6. An evaluation of the feasibility of the use of electrostatic separation for physical soil washing*
Xabier Corres, Diego Baragaño, Juan María Menéndez-Aguado, José R. Gallego, Carlos Sierra
Universidad de Oviedo, Spain, Czech University of Life Sciences Prague, Czech Republic, Escuela Politécnica de Mieres, Spain, University of León, Spain

*7. Geochemistry of the precipitation profile in a passive treatment plant for acid mine drainage*
Ainara Rodrigo, Rafael León, José Miguel Nieto, University of Huelva, Huelva, Spain

*8. Interactive and parametrized exercises in engineering education at Aalto University*
Lauri Uotinen, Mateusz Janiszewski, Mikael Rinne, Aalto University, Finland

*9. Teaching mining engineers with interactive virtual reality scenarios*
Julian Lassen, Nils Schlatter, Yannick Feldmann, Bernd Lottermoser, Jan Bender, RWTH Aachen University, Germany

*10. Realisation of a digital platform for standardised and uniform data management for SMEs in the German quarrying industry*
Julian Lassen, Jonas Müller, Gerrit Hoeborn, Bernd Lottermoser, RWTH Aachen University, Germany / FIR e. V. an der RWTH Aachen, Germany

*11. 3D multi-user hologram tables for future-oriented teaching in mineral resources science and medicine*
Max Weber, Bernd Lottermoser, RWTH Aachen University, Germany

*12. Satellite remote sensing and ground truth data acquisition of European mine waste repositories – SatMine*
Nina Küpper, Jan-Niklas Sander, Bernd Lottermoser, RWTH Aachen University, Germany

*13. Advanced characterisation of graphite ores using computed tomography*
Leonard Krebbers, Bernd Lottermoser, RWTH Aachen University, Germany

*14. On-site screening of mine water chemistry using portable laser-induced breakdown spectroscopy*
Nils Schlatter, Bernd Lottermoser, RWTH Aachen University, Germany

*15. Innovative, digital media in the education of mining engineers*
Nils Schlatter, Johannes Emontsbotz, Maximilian Weber, Yannick Feldmann, Julian Lassen, Johannes Sieger, Alexander Hennig, Bernd Lottermoser, RWTH Aachen University, Germany

*16. Field trials evaluating the potential of biopolymers as dust suppressants on mine soils*
Johannes Sieger, Bernd Lottermoser, Justus Freer, RWTH Aachen University, Germany

*17. Shock wave fragmentation of electric arc furnace slags: observations from CT-scanning*
Theo Steller, Bernd Lottermoser, RWTH Aachen University, Germany