

# International Symposium on Flotation



## Program



**MULTIMINE**

APPROCHES MULTI-ÉCHELLES POUR LA SÉPARATION DES MINÉRAUX

## Monday – April 27<sup>th</sup>

08:45 – 9:15 *Welcome of attendees, coffee*

09:15 – 9:45 *Conference opening*

09:45 – 10:05 **Jean-Marc Montel, Université de Lorraine, France**  
**A Brief History of Mining Activities in Lorraine**

### *Flotation Experiments Session*

10:05 – 10:35 **Pshem Kowalczyk, NTNU, Norway**  
**Frothers in Flotation: What We Know, What We Measure, and Why Choice Is Still Empirical**

10:35 – 11:00 *Coffee Break*

11:00 – 11:20 **Sascha Heitkam, Dresden University of Technology, Germany**  
Stereo photogrammetry for non-invasive froth height monitoring in flotation processes

11:20 – 11:40 **Huu-Duong Hoang, Maelgwyn Mineral Services, Germany & UK**  
Enhanced Recovery of Fine and Ultrafine Particles from Copper and Gold Tailings Using Pneumatic Imhoflot Cells

11:40 – 12:00 **Hammad Farooq, NTNU, Norway**  
Selective flotation of graphite from black mass via solvent-based PVDF removal to tune surface chemistry

12:00 – 12:20 **Luis Cisternas, Universidad de Antofagasta, Chile**  
Design and Optimisation of Lithium mineral concentration Circuits through Simulation and Global Sensitivity Analysis

12:20 – 14:00 *Lunch*

14:00 – 14:30 **Juliette Lainé, ArcelorMittal Global R&D, France**  
**From Lab to Circuit: Optimizing Iron Ore Flotation via Kaolinite Floc-Flotation**

14:30 – 14:50 **Gabriella Lorena Costa Correa, Université de Lorraine, France**  
Hematite and quartz coagulation study for floc-flotation applications using coagulants in iron ore ultrafine fractions

14:50 – 15:10 **Elenice Maria Schons Silva, Federal University of Catalão, Brazil**  
Flotation of a Sulphide Gold Ore With High Amounts of Fine Particles

- 15:10 – 15:30**     **Ebuka Chukwuma, McGill University, Canada**  
Investigating the role of Orfom® D8 in the Depression of Chalcopyrite in its Separation from Molybdenite – application to water types
- 15:30 – 16:00**     **Coffee Break and poster installation**
- 16:00 – 16:20**     **Romina Murga Moraga, Universidad de Talca, Chile**  
Evaluation of the use of cellulose-base nanoparticles as a collector in the flotation of copper sulphides in the presence of montmorillonite
- 16:20 – 17:10**     **Flash oral presentations (5 min each to introduce the corresponding poster)**
- P1- Kathy Bru, BRGM, Orléans, France**  
Impact of water recycling on the flotation of lithium ores
- P2- Arda Temizkalb, HZDR, Germany**  
Application of ultrasonication as pre-treatment prior to and process intensification during froth flotation of black mass from spent lithium-ion batteries
- P3- Nzuma Chiedza Thelma, NTNU, Norway**  
Xylolipid as a green reagent for graphite flotation from Lithium-Ion Battery Black Mass
- P4- Slabov Vladislav, NTNU, Norway**  
Froth flotation of dolomite and epidote rich iron ore
- P5- Alexander Pöplow,**  
Comparative Study on the Flotation Behavior of Lithium-Ion and Sodium-Ion Battery Anode Materials
- P6- Erraihani Kaoutar, UM6P, Morocco**  
Selective reverse flotation for sustainable francolite recovery from phosphate tailings
- P7- Hilmi Hasnaa, Cadi Ayyad University, Morocco**  
Bio-Collector from Moroccan Biomass for Flotation of Low-Grade Phosphate
- P8- Amelia Nieto, Université de Lorraine, France**  
Combining flotation with dielectrophoretic filtration for enhanced black mass beneficiation
- P9- Arda Temizkalb, HZDR, Germany,** Predicting the flotation behaviour of black mass components from spent lithium-ion batteries via particle-based modelling
- 17:15 – 18:00**     *Poster session (see full list at the end of the program)*
- 18:00 – 20:30**     *Poster session continued & Welcome Cocktail*

## Tuesday – April 28<sup>th</sup>

### Hydrodynamics of flotation

- 08:30 – 09:00** *Welcome of attendees*
- 09:00 – 09:30** **Kristian Water, McGill University, Canada**  
**Gas dispersion: Past, Present and Future**
- 09:30 – 09:50** **Till Zürner, HZDR, Germany**  
Evolution of local bubble characteristics in a pressurised pneumatic flotation cell
- 09:50 – 10:10** **Jeffrey Opoku, McGill University, Canada**  
Visualizing Oxygen Transfer and Wake Dynamics Around Single Bubbles in Frother-Modified Systems
- 10:10 – 10:30** **Mark Lepage, McGill University, Canada**  
Shaping flotation bank kinetics using gas dispersion: a modelling approach
- 10:30 – 11:00** *Coffee Break*
- 11:00 – 11:20** **Jan Zawala, Jerzy Haber Inst. of Cat. and Surf. Chemistry, Poland**  
Kinetics of air bubble attachment to hydrophobic solid surfaces – experiment and modelling
- 11:20 – 11:40** **Lucas Pereira, HZDR, Germany**  
Distinguishing the contribution of true flotation and entrainment on the recovery of individual particles of a complex ore
- 11:40 – 12:00** **Zhou Ruoqian, HZDR, Germany**  
Investigation of Turbulence Characteristics and Bubble Breakup in Colliding-Jets Using LES-VOF Simulations
- 12:00 – 12:20** **Berivan Tunç, Metso Finland Oy, Finland**  
The Role of Blast Tube Residence Time in Optimizing Concorde Cell™ Flotation Performance
- 12:20 – 14:00** *Lunch*
- 14:00 – 14:30** **Pablo Brito-Parada, Imperial College of London, UK**  
**Going with the flow – from flotation hydrodynamics to enhanced performance**
- 14:30 – 14:50** **Mathilde Perrin, CEA Liten, France**  
Comprehensive study of black mass flotation to improve selectivity

- 14:50 – 15:10** **Saeed Chelgani**, *Luleå University of Technology, Sweden*  
MAGFLO as a sustainable approach for the flotation recycling of black mass
- 15:10 – 15:30** **Sayed Janishar Anzooa**, *Université de Lorraine, France*  
3D Characterization of Bubble-Particle Clusters using Micro-CT
- 15:30 – 18:00** *Visit of the UL mineral processing & pilot plant facilities STEVAL*

## **Wednesday – April 29<sup>th</sup>**

### **Surface Chemistry of Flotation**

- 08:30 – 09:00** *Welcome of attendees*
- 09:00 – 09:30** **Yann Foucaud**, *Université de Lorraine, Nancy, France*  
**Gaining understanding in surface chemistry of froth flotation: when modelling meets experiments**
- 09:30 – 09:50** **Rubén Soria Martínez**, *Université de Lorraine, France*  
Stepwise Self-Assembly monolayer of Sodium Oleate on (111) Fluorite: Insights from Molecular Dynamics Simulations
- 09:50 – 10:10** **Ali Asimi Neisiani**, *University of São Paulo, Brazil*  
Propyl Gallate as a Green Collector for Fluorite-Calcite Flotation: A DFT Study of Selective Adsorption Mechanisms
- 10:10 – 10:30** **Helmi Fairuz Kalahari**, *McGill University, Canada*  
Surface Chemistry Investigation of Disodium Carboxymethyl Trithiocarbonate (Orfom D8) in Chalcopyrite-Molybdenite Flotation: Depressing Behaviour and Adsorption Mechanism
- 10:30 – 11:00** *Coffee Break*
- 11:00 – 11:20** **Sana Abbas**, *Sultan Moulay Slimane University, Morocco*  
Modelling Interfacial Interactions for Enhanced Fine Particle Flotation
- 11:20 – 11:40** **Espoir Murhula**, *Queen's University, Canada*  
Flowsheet Development and Selective Flotation of Lithium Minerals from the Moose II Pegmatite, Northwest Territories
- 11:40 - 12:00** **Anass Oulakhir**, *UM6P, Morocco*  
Bio-based innovations in mineral processing: sustainable reagents for phosphate enrichment by flotation process

**12:00 – 12:20** **Agata Wiertel-Pochopien, J. H. Inst. of Cat. and Surf. Chem., Poland**  
Stability of wetting films in the presence of polymeric particles as flotation collectors

**12:20 – 14:00** *Lunch*

**14:00 – 14:30** **Belinda McFadzean, University of Cape Town, RSA**  
**Thermochemical Insights into Flotation Surface Processes**

**14:30 – 14:50** **Christopher Bacchieri, Université de Lorraine, France**  
Assessment of collector efficiency for phosphate flotation: from technical solution to adsorption mechanism

**14:50 – 15:10** **Jean Wilfried Hounfodji, Université de Lorraine, France**  
Theoretical and experimental investigation of calcium ions adsorption on quartz surfaces

**15:10 – 15:30** **Amal Abbou, UM6P, Morocco & Université de Lorraine, France**  
Cationic Quartz Flotation in Ion-Rich Media: Effects of Water Chemistry and Mitigation Strategies

**15:30 – 16:00** *Coffee Break*

**16:00 – 16:20** **Justin Paris, McGill University, Canada**  
Sustainable Flotation of Sulphide Ores by Cashew Nutshell Liquid

**16:20 – 16:40** **Yesica Botero, Université de Lorraine, France**  
Investigating the oxidation mechanisms of collector-activated pyrite through advanced surface analysis techniques and computational modelling

**16:40 – 17:00** **Petra Berin-Costain, Queen's University, Canada**  
Pyrochlore flotation with benzohydroxamic acid: Strategies for reducing collector dosage with response surface methodology

**17:00 – 17:20** **Fatima Baila, Ibn Zohr University, Morocco**  
Experimental and multivariate investigation into the enhancement and selective recovery of mica minerals by flotation

**19:30** **GALA DINER**

# Thursday – April 30<sup>th</sup>

## Flotation of iron ore

- 09:00 – 09:30** *Welcome of attendees*
- 09:30 – 10:00** **Josué Mesquita, ArcelorMittal Global R&D, France**  
**A Century of Bubbles: The Historical Evolution of Iron Ore Flotation**
- 10:00 – 10:20** **Lev Filippov, Université de Lorraine, France**  
Improved flotation of complex iron ore minerals using mixed cationic collectors with reduced starch dosage
- 10:20 – 10:40** **Nubia Bottosso, ArcelorMittal Global R&D, France**  
Flowsheet Optimization for Premium Magnetite Concentrates Targeting DRI Production
- 10:40 – 11:10** *Coffee Break*
- 11:10 – 11:30** **André Carlos Silva, Federal University of Catalão, Brazil**  
Iron Ore Flotation Test In a Bench Scale Pneumatic Flotation Ce
- 11:30 – 11:50** **Anatole Bordey, Université de Lorraine, France**  
Organo-silane compounds as novel collectors for selective quartz flotation in iron ore beneficiation
- 11:50 – 12:00** *Conference closure*
- 12:00 – 13:40** *Lunch*
- 13:40 – 17:00** *Discovery of Nancy*

# LIST OF POSTERS

**P1- Kathy Bru**, *BRGM, Orléans, France*

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**P9- Arda Temizkalb**, *HZDR, Germany*, Predicting the flotation behaviour of black mass components from spent lithium-ion batteries via particle-based modelling

**P10- Luis Cisternas**, *Universidad de Antofagasta, Chile*

Surface De-collecting and Deactivation of Pyrite: A Strategic Approach for Sustainable Tailings Desulfurization

**P11- Chloé Korbel**, *ArcelorMittal Global R&D, France*,

pH-Dependent Spectroscopic Analysis of Lepidolite Surface Characteristics

**P12- Abir Boublia**, *Université de Lorraine, France*

Interfacial Water Structure and Etheramine Adsorption on Hematite: Insights from Molecular Dynamics Simulations