

## Flotation '19



[#Flotation19](#)

### Sunday November 10th

16.30-18.00 Registration and wine reception, with hot and cold canapés (accompanying persons welcome)

### Monday November 11th

08.00 Registration desk opens. Light breakfast of filled croissants, tea, coffee and fruit juice

08.50 Fundamentals Symposium opening remarks and presentation of MEI Award  
B.A. Wills (MEI, UK)

#### 09.15 *Technical Session 1*

Chairmen: Y. Ghorbani (Luleå University of Technology, Sweden) and M. Rudolph (Helmholtz Institute Freiberg for Resource Technology, Germany)

09.15 **Keynote Lecture: The scientific legacy of Joseph Kitchener- its impact in flotation and colloid science**  
J. Ralston (University of South Australia, Australia)

#### 09.45 **Unlocking the true value of chemicals in mineral processing**

D.R. Nagaraj, R.S. Farinato, E. Arinaitwe and T. Bhambhani (Solvay Technology Solutions, USA)

#### 10.00 **Direct measurement of interaction force between solid surface and air bubble: relationship between interaction force and contact angle**

K. You, K. Kim, S. Han, and S. Kwon (Korea Institute of Geoscience and Mineral Resources, (Republic of Korea)

10.15 **A novel flotation recovery model that includes CFD-computed turbulence intensity on particle-bubble collision efficiency**  
A. Wang, S. Mitra, M.M. Hoque and G. Evans (The University of Newcastle, Australia)

10.30 Coffee, exhibition and poster viewing

#### 11.30 **Mobile versus immobile bubble surfaces: a micro PIV study**

M. Eftekhari, K. Schwarzenberger (Institute of Fluid Dynamics, Germany), S. Heitkam (TU Dresden, Germany), A. Javadi (Institute of Fluid Dynamics, Germany and University of Tehran, Iran) and K. Eckert (Institute of Fluid Dynamics and TU Dresden, Germany)

- 11.45 **Effects of frothers and the flow pattern of air supply on bubble size in a flotation column with diffused aeration**  
Hangil Park, Chun Yong Ng and Liguang Wang (The University of Queensland, Australia)
- 12.00 **Mineralogical and surface chemical characterization of flotation feed and products after wet and dry grinding**  
M. Peltoniemi, R. Kallio, A. Tanhua, S. Luukkanen and P. Perämäki (University of Oulu, Finland)
- 12.15 **The effect of lattice impurities on the electronic structure and surface adsorption of sphalerite : a DFT study**  
Ye Chen, Jianhua Chen, Yuqiong Li and Cuihua Zhao (Guangxi University, China)
- 12.30 **Studies of bubble approach effects on coalescence as a function of frother type and concentration**  
N. Schreithofer, Z. Javor and K. Heiskanen (Aalto University, Finland)
- 12.45 Lunch
- 14.00 *Technical Session 2*  
Chairmen: K. Heiskanen (Outotec, Finland) and A. Morrison (JKMRC, Australia)
- 14.00 **Study on surface characteristics and flotation mechanism of pitchblende and uraninite**  
L. Chun-feng, Liu Zhi-chao, Li Guang, Ma Jia, Qiang Lu-de and Tang Bao-bin (Beijing Research Institute of Chemical Engineering and Metallurgy, China)
- 14.15 **Attachment and detachment interactions between bubble and hematite/quartz particle**  
Li Zhuang and Zhijun Zhang (China University of Mining and Technology, China)
- 14.30 **Influence of microturbulence on the bubble-particle interaction investigated with Positron Emission Particle Tracking (PEPT)**  
A.-E. Sommer, K. Ortmann, T. Richter (Institute of Fluid Dynamics, Germany), M. Van Heerden, T. Leadbeater, K. Cole (University of Cape Town, South Africa), S. Heitkam (TU Dresden, Germany), P. Brito-Parada (Imperial College, UK) and K. Eckert (Institute of Fluid Dynamics and TU Dresden, Germany)
- 14.45 **Pulp-froth interface phenomena investigated with Positron Emission Particle Tracking (PEPT)**  
A. Norori-McCormac (University College London, UK), P.R. Brito-Parada, K. Hadler, J.J. Cilliers (Imperial College, UK) and K. Cole (University of Cape Town, South Africa)
- 15.00 **Particle flow dynamics and turbulence measured with positron emission particle tracking (PEPT)**  
K. Cole (University of Cape Town, South Africa and Imperial College, UK), P.R. Brito-Parada, J.J. Cilliers, K. Hadler (Imperial College, UK)
- 15.15 Coffee
- 16.00 **New approach for flotation process modelling and simulation**  
J. Yianatos, P. Vallejos (UTFSM, Chile), R. Grau and A. Yañez (Outotec, Finland)
- 16.15 **Flotation of fine quartz using microbubbles**  
I. Filippova, S. Farrokhpay, L. Filippov (University of Lorraine, France) and N. Rulyov (TurboflotServices, Ukraine)
- 16.30 **Flotation of fine particles using hydrophobized hollow glass microspheres**  
S. Arriagada , C. Acuña and M. Vera (Federico Santa Maria Technical University, Chile)
- 16.45- Sundowner in Vineyard Gardens  
18.00 Accompanying guests welcome

## Tuesday November 12th

- 08.00 Registration desk opens. Light breakfast of filled croissants, tea, coffee and fruit juice
- 08.45 *Technical Session 3*  
Chairmen: S. Farrokhpay (University of Lorraine, France) and C.T. O'Connor (University of Cape Town, South Africa)
- 08.45 **The interactions of thiol collectors with frothers on pyrite, quartz, and chalcocite**  
D. Pienaar, B. McFadzean, C.T. O'Connor (University of Cape Town, South Africa) and N. Schreithofer (Aalto University, Finland)
- 09.00 **Investigations on the working mechanism of the nitrile based sulfide collector Tecflote**  
E. Schach, M. Rudolph (Helmholtz Institute Freiberg for Resource Technology, Germany) and A. Lewis (Nouryon Surface Chemistry, Sweden)

- 09.15 **Cationic collector conformations onto oxide mineral interface: role of pH, ionic strength and ion valence**  
S.K. Solongo, A. Gomez-Flores, J. You, H. Kim (Conbuk National University, South Korea) and G.W. Heyes (CSIRO Mineral Division, Australia)
- 09.30 **5-(butylthio)-1,3,4-thiadiazole-2-thiol used as the selective collector for improved flotation separation of galena and sphalerite from pyrite**  
Wanjia Zhang, Jian Cao, Wei Sun, Yuehua Hu and Zhiyong Gao (Central South University, China)
- 09.45 **A study on froth flotation of sphalerite using amphiphilic cellulose and frother mixture as froth stabilization agents**  
T. Nuorivaara and R. Serna-Guerrero (Aalto University, Finland)
- 10.00 **Assessing the combined effect of water temperature and complex water matrices on xanthate adsorption on chalcopyrite and pentlandite**  
N.P Mhonde, N. Schreithofer, M.Mäkela (Aalto University, Finland) and K.C. Corin (University of Cape Town, South Africa)
- 10.15 **Floatability study of hematite, magnetite, chamosite, diopside and epidote with amine type collectors**  
C.H. Veloso (Université de Lorraine and ArcelorMittal Global Research & Development, France), L. Senez, A.C. Araujo (ArcelorMittal Global Research and Development, France) and L.O. Filippov (Université de Lorraine, France)
- 10.30 Coffee, exhibition and poster viewing
- 11.15 **Potential role of colloidal silica as a calcite depressant in scheelite flotation**  
N. Kupka, B. Babel and M. Rudolph (Helmholtz Institute Freiberg for Resource Technology, Germany)
- 11.30 **Computational insights into the adsorption mechanism of gallic acid/ pyrogalllic acid/tannic acid on calcium-bearing mineral surfaces**  
Jianyong He, Wei Sun, Shangyong Lin Yuehua Hu (Central South University, China), Chenyang Zhang, Chenhu Zhang (Central South University and Hunan Research Institute for Nonferrous Metals, China) and Guoqiang Wang (Nanjing University, China)
- 11.45 **Orfom® D8 depression of chalcopyrite during trial runs of Cu-Mo bulk concentrates**  
S. Timbillah, R. LaDouceur, D. Laney, A. Das, and C. A. Young (Montana Technological University, USA)
- 12.00 **Sulphidisation and flotation of oxidised copper sulphides**  
T. Moimane, Y. Huai and Y. Peng (The University of Queensland, Australia)
- 12.15 **Effect of hydrogen peroxide on the separation of copper sulfide minerals and arsenic-bearing copper minerals using flotation**  
G.P.W. Suyantara, T. Hirajima, H. Miki, K. Sasaki (Kyushu University, Japan), S. Kuroiwa and Y. Aoki (Sumitomo Metal Mining Co. Ltd, Japan)
- 12.30 **Flotation behaviour of malachite from calcite and quartz with chelating collector and its adsorption mechanism**  
X.R. Zhang, Y.G. Zhua, L. Han, L. Lu and C.B. Li (BGRIMM Technology Group, China)
- 12.45 Lunch
- 14.00 *Technical Session 4*  
Chairmen: N. Schreithofer (Aalto University, Finland) and P. Brito-Parada (Imperial College, UK)
- 14.00 **Fundamental and flotation techniques assessing the effect of water quality on bubble-particle attachment of chalcopyrite and galena**  
L.L. October, K.C. Corin, M.S. Manono, J.G. Wiese (University of Cape Town, South Africa) and N. Schreithofer (Aalto University, Finland)
- 14.15 **Effect of ion exchange in copper flotation in the presence of bentonite when using saline water**  
Siyu Song, Guohua Gu and Yanhong Wang (Central South University, China)
- 14.30 **Effect of seawater on bubble interactions with chalcopyrite and molybdenite surfaces**  
G.P.W. Suyantara, T. Hirajima, H. Miki, K. Sasaki (Kyushu University, Japan), S. Kuroiwa and Y. Aoki (Sumitomo Metal Mining Co., Ltd., Japan)
- 14.45 **Biodepression of copper-activated pyrite with *Acidithiobacillus ferrooxidans* in seawater flotation**  
F. San Martín (Universidad Técnica Federico Santa María, Chile), W. Kracht, I. Valles (Universidad Técnica Federico Santa María and Universidad de Chile) and T. Vargas (Universidad de Chile, Chile)
- 15.00 **Investigating the effect of particle properties on iron ore flotation using X-ray Micro Tomography**  
M. Safari, D. Deglon (University of Cape Town, South Africa), S. Nadimi (Newcastle University, UK), L.L Filho (University of São Paulo, Brazil) and T. Souza (Vale Institute of Technology, Brazil)

- 15.15 **Electrochemical detection of thiosulfate in the presence of sulfate ion using stainless steel electrode modified by gold**  
Z. Ertekin, K. Pekmez, M. Can and Z. Ekmekçi (Hacettepe University, Turkey)
- 15.30 **A novel method for analysing the floatability of quartz with renewable hexyl-amine cellulose nanocrystals using an automated contact timer apparatus**  
R. Hartmann and R. Serna-Guerrero (Aalto University, Finland)
- 15.45 **Hydrophobic behavior of fluorite surface at alkaline solution and the application in flotation**  
Ruolin Wang, Yuehua Hu, Haisheng Han, Wei Sun, Zhao Wei, Honghu Tang, Jianjun Wang (Central South University, China), A.V Nguyen (University of Queensland, Australia) and Zhizhong Shi (Hu Nan Shizhuyuan Non-ferrous Metal Limited Liability Corporation, China)
- 16.00 Coffee
- 18.00 Coaches leave for conference dinner at Kirstenbosch Botanical Gardens

### Wednesday November 13th

- 07.45 Registration desk opens. Light breakfast of filled croissants, tea, coffee and fruit juice
- 08.35 Welcome to Applications Symposium  
J. Wills (MEI, UK)
- 08.45 *Technical Session 5*  
Chairmen: R. Kuyvenhoven (Sustainable Minerals Institute, Chile) and Q. Dehaine (Geological Survey of Finland, Finland)
- 08.45 **Keynote Lecture: Canadian achievements in flotation technology: a retrospective**  
J.E. Nesset (NesseTech Consulting Services Inc. and Adjunct Professor, McGill University, Canada)
- 09.15 **Optimising your float circuit for changing ore conditions**  
S.Morgan (Outotec, Australia) and B. Kgaswane (Outotec, South Africa)
- 09.30 **Evaluation of new flotation circuits design using a novel approach**  
P. Vallejos, J. Yianatos (UTFSM, Chile), R. Grau and A. Yañez (Outotec, Finland)
- 09.45 **Low-temperature effects on flotation efficiency- changes in process water quality, reagent regimes and tailings management**  
Y. Ghorbani, P.I. Guntoro, C. Zwahlen, J. Rosenkranz, T. Karlkvist, (Luleå University of Technology, Sweden) and N.-J. Bolin (Boliden Mineral AB, Sweden)
- 10.00 Coffee, exhibition and poster viewing
- 10.45 **The same-level arrangement technology of flotation plant: fundamentals and practice**  
Ming Zhang, Liang Cao, Zhengchang Shen, Ming Tan, Yihong Yang (BGRIMM Technology Group, China) and R. Melville (Roytec, South Africa)
- 11.00 **Effect of particle size and shape in ore flotation**  
R. Farinato, D.R. Nagaraj (Solvay, USA), T. Bhambhani (Solvay and Columbia University, USA) and P. Somasundaran (Columbia University, USA)
- 11.15 **Flotation froth state classification and monitoring for industrial processes**  
E.C. Nienaber, Z.C. Horn, A.L Haasbroek, L. Auret (Stone Three Digital, South Africa) and J.W.D. Groenewald (Anglo American Platinum Ltd, South Africa)
- 11.30 **Applying digitalization and artificial intelligence concepts in minerals processing – next level towards increased productivity**  
T. Bertsch (Festo AG & Co. KG, Germany)
- 11.45 **Rougher flotation cell pulp level control to increase recovery**  
M. Ferrá (REXA Inc. USA)
- 12.00 **Real-time flotation monitoring with time-gated Raman spectroscopy**  
B. Heilala, M. Mikkonen and M. Tenhunen (Timegate Instruments Oy, Finland)
- 12.15 **Effects of mechanical cell height on flotation response- a pilot scale study**  
L. Malm, S.C. Chelgani, A. Sand and J. Rosenkranz (Luleå University of Technology, Sweden)

- 12.30 **Is there a maximum size for an efficient flotation cell?**  
S.J. Neethling and P.R. Brito-Parada (Imperial College, UK)
- 12.45 Lunch
- 14.00 *Technical Session 6*  
 Chairmen: Zhiyong Gao (Central South University, China) and K. Cole (University of Cape Town, South Africa)
- 14.00 **Developing a semi-empirical model of the HydroFloat™ Cell: part 1: a hindered settling classification model**  
 K. Demir, W.J. Whiten, A. Morrison, K. Runge, C. Evans (JKMRC, Australia) and J. Kohmuench (Eriez Manufacturing Company, USA)
- 14.15 **The hydrodynamics of a fluidised bed flotation device using positron emission particle tracking**  
A.J. Morrison (University of Queensland, Australia), M. van Heerden (University of Cape Town, South Africa) and J. Sweet (Anglo American plc, South Africa)
- 14.30 **Froth recovery in a two-product flotation device**  
G.J. Jameson and C. Emer (University of Newcastle, Australia)
- 14.45 **The impact of a hydrodynamic cavitation device on the flotation of PGM fines**  
V. Ross (Mintek, South Africa) and A. Singh (GoldOre Pty Ltd, South Africa)
- 15.00 **Mineral separation at high throughput using a new Reflux Flotation Cell pilot skid**  
J.E. Dickinson, K. Galvin (University of Newcastle, Australia), B. Dabrowski, L. Christodoulou and D. Lelinski (FLSmidth, USA)
- 15.15 Coffee
- 16.00 **Performance of 630m<sup>3</sup> TankCell® at Buenavista del Cobre Cu-Mo concentrator**  
J. Suhonen, R. Grau, A. Yañez, T. Miettinen (Outotec, Finland), A. Tapia (Buenavista del Cobre, Grupo México, Mexico) and T. Mattsson (Outotec, Canada)
- 16.15 **Hydrodynamic and metallurgical evaluation of the 680m<sup>3</sup> flotation cell in industrial application**  
Yihong Yang, Dengfeng Han, Zhengchang Shen and Shuaixing Shi (BGRIMM Technology Group, China)
- 16.30 **Development and evaluation of the FLSmidth newWEMCO™ flotation mechanism**  
 M. Walker, B. Sadler, J. Downey L.F. Echeverri, I. Coltrin, L. Christodoulou, D. Stevens and D. Lelinski (FLSmidth, USA)
- 16.45- Sundowner in exhibition area  
 18.00 Accompanying guests welcome

#### Thursday November 14th

- 08.15 Registration desk opens. Light breakfast of filled croissants, tea, coffee and fruit juice
- 09.00 *Technical Session 7*  
 Chairmen: J. Yianatos (UTFSM, Chile) and P. Amelunxen (Hudbay Minerals, Canada)
- 09.00 **Contact-demonstrated improvements in gold and base metal flotation performance using a Jameson Cell**  
V. Lawson and A. Price (Glencore Technology, Australia)
- 09.15 **Industrial application of the high-intensity StackCell flotation technology**  
 J.N. Kohmuench, H. Thanasekaran, N-S. Yap and A. Weber (Eriez, USA)
- 09.30 **Improved PGM flotation in a pneumo-mechanical cell**  
V. Ross (Mintek, South Africa)
- 09.45 **Froth stability and flotation performance: the effect of impeller design modifications**  
D. Mesa and P. Brito-Parada (Imperial College, UK)
- 10.00 **Investigating the effect of physical parameters on iron ore flotation in mechanical flotation cells**  
M. Safari, D. Deglon (University of Cape Town, South Africa), F.S. Hoseinian (University of Technology, Iran), L.L. Filho (University of São Paulo and Institute of Technology Vale, Brazil) and T. Souza (Institute of Technology Vale, Brazil)
- 10.15 **Selective recovery of copper and zinc sulphides in the presence of pyrrhotite and hard process water**  
 D. Aguilar (CIDT Peñoles, Mexico), J.J. Frausto (Metso Minerals, Canada), L. Méndez (Minera Sabinas, Mexico), D. Castruita and J. Arguijo (CIDT Peñoles, Mexico)

- 10.30 Coffee
- 11.15 **The impact of grinding chemistry on sulphide and oxide copper mineral flotation at Lubumbe Mine, Zambia**  
A. Mhone (ZCCM Investments Holdings Plc, Zambia), C.J. Greet (Magotteaux Australia Pty Ltd, Australia) and A. Bauristhene (Magotteaux (Pty) Ltd, South Africa)
- 11.30 **The reduction the negative effects of aluminosilicate minerals on copper and gold flotation by a new process route**  
W.J. Rodrigues, W. Silva, V. Rhodes, P. Gonzaga, L. Mahlangu and S. Engelbrecht (Clariant Southern Africa (Pty) Ltd, South Africa)
- 11.45 **A comparison of native starch, oxidized starch and CMC as copper-activated pyrite depressants**  
B. Fletcher, W. Chimonyo and Y. Peng (The University of Queensland, Australia)
- 12.00 **Challenges and opportunities for cobalt recovery at copper plants**  
R. Kuyvenhoven (Sustainable Minerals Institute, Chile) and B. Townley (Universidad de Chile, Chile)
- 12.15 **Processing of a complex carbonated-rich Cu-Co mixed ore via reverse flotation**  
Q. Dehaine (Camborne School of Mines, UK and Geological Survey of Finland, Finland), L.O. Filippov, I.V. Filippova (Université de Lorraine, France) and H.J. Glass (Camborne School of Mines, UK)
- 12.30 **Analysis of the rougher-scavenger bank using Tecflote™ S11 at Boliden Aitik, Sweden**  
A. Lewis, M. Svensson (Nouryon, Sweden), N.-J. Bolin, L. Malm (Boliden Mines, Sweden) and O. Lima (Nouryon, Brazil)
- 12.45 Lunch
- 14.00 *Technical Session 8*  
Chairmen: J. Finch (McGill University, Canada) and V. Ross (Mintek, South Africa)
- 14.00 **Investigation of the impacts of various aspects of water quality on performance at Sentinel in the improvement process of its water management system**  
I. Muzinda and N. Schreithofer (Aalto University, Finland)
- 14.15 **Impact of aqueous species and fine colloidal matter in process water on flotation performance at Rio Tinto Kennecott's Copperton Concentrator**  
T. Bhambhani, G. Castillo, D.R. Nagaraj, R.S. Farinato (Solvay Mining Solutions, USA), J. Moyo and C. McClung (Rio Tinto Kennecott, USA)
- 14.30 **Pyrite flotation: is it stockpile oxidation or oxidation of fresh particle surfaces during plant processing that has a greater impact?**  
S. Xu, W. Skinner (University of South Australia, Australia), M. Zanin (University of South Australia and MZ Minerals, Australia) and S. Brito e Abreu (JKMRC, Australia)
- 14.45 **Impact of flotation hydrodynamic factors on the recovery of silver and lead at Minera Fresnillo**  
J.J. Anes (Flottec LLC, Canada), J.O. Godínez, M.L. Franco (Flottec México, Mexico) and A. Tolentino (Minera Fresnillo, Mexico)
- 15.00 **Intensification of the flotation separation of potash ore using ultrasound treatment**  
L.O. Filippov, I.V. Filippov (Université de Lorraine, France and National University of Science and Technology, Russia), T.P. Lyubimova (Institute of Continuous Media Mechanics and Perm State University, Russia) and O.O. Fattalov (Perm State University, Russia)
- 15.15 Coffee
- 15.45 **Flotation of spheroidized graphite from spent lithium ion batteries**  
A. Vanderbruggen and M. Rudolph (Helmholtz-Institute Freiberg for Resource Technology, Germany)
- 16.00 **Novel flotation reagents for the beneficiation of spodumene**  
D. Chipfunhu (BASF, Australia), A. Michailovski (BASF SE, Germany) and S. Dickie (BASF, New Zealand)
- 16.15 **Recovery of apatite from mine tailings by froth flotation**  
R. Jolsterå, E. Niva, E. Öberg, E. Widetun, K. Taavoniku and V. Töyrä (Loussavaara-Kiirunavaara AB, Sweden)
- 16.30 **Parasite flotation from carbonatite REE-ore**  
R.G. Merker (Merker Mineral Processing, Germany), T. Heinig, A. Balinski, R. Möckel (Helmholtz Institute Freiberg, Germany) and P. Quang Van (Hanoi University of Mining and Geology, Vietnam)
- 16.45 Conference summary  
J.A. Finch (McGill University, Canada)

17.00 Closing Remarks and Invitation to Flotation '21. Presentation of Glencore and Magotteaux Prizes  
A.J. Wills (MEI, UK)

17.10 Farewell wine function, Vineyard Gardens  
Accompanying guests welcome

## POSTERS

**Fundamentals Symposium**  
Displayed November 11th-12th

### **The behaviour of surfactant- and solid-stabilized emulsions for mineral flotation- a critical review**

Liang Cao, Xumeng Chen and Yongjun Peng (The University of Queensland, Australia)

### **Effects of froth properties on dewatering of flotation products**

Na Zhang, Xumeng Chen and Yongjun Peng (The University of Queensland, Australia)

### **The critical degree of bornite surface oxidation in flotation**

T. Moimane, Y. Huai and Y. Peng (The University of Queensland, Australia)

### **Starch chemical modification in selectively depressing graphite in flotation**

W. Chimonyo, B. Fletcher and Y. Peng (University of Queensland, Australia)

### **Lead adsorption on copper sulphides and the relevance to its contamination in copper concentrates**

T. Hamilton and Y. Peng (University of Queensland, Australia)

### **Neutron radiography of the froth zone in a flotation cell**

S. Heitkam (TU Dresden, Germany), J. Sygusch, M. Rudolph (Helmholtz Institute Freiberg for Resource Technology, Germany), T. Lappan, S. Eckert (Institute of Fluid Dynamics, Germany), P. Trtik, D. Mannes (Paul Scherrer Institut, Laboratory for Neutron Scattering and Imaging, Switzerland) and K. Eckert (TU Dresden and Institute of Fluid Dynamics, Germany)

### **Alternative activator for sphalerite flotation**

E. Cakir and O. Bicak (Hacettepe University, Turkey)

### **The effect of surface coverage on the rising behaviour of particle-laden bubbles**

P.R. Brito-Parada, P. Wang, J.J. Cilliers and S.J. Neethling (Imperial College, UK)

### **Experimental and computational investigations on L-cysteine as an environmentally-efficient flotation reagent in the selective separation of molybdenite from chalcopyrite**

Zhigang Yin, Zhijie Xu, Jianyong He, Chenhu Zhang, Qingjun Guan, Shangyong Lin, Xiangsheng Lai, Wei Sun, Yuehua Hu (Central South University, China), Chenyang Zhang (Central South University and Hunan Research Institute for Nonferrous Metals, China), Jingxiang Zou and Daixiong Chen (Nanjing University, China)

### **Selective separation of fluorite from calcic minerals using cymoxanil derivatives**

Wanjia Zhang, Jian Cao, Wei Sun, Yuehua Hu and Zhiyong Gao (Central South University, China)

### **Floatability of micaceous minerals and apatite using pataua palm tree oil**

J.A.E. de Carvalho, A.B. Henriques, P.R.G. Brandão, R.Z.L. Cançado, P.S. Oliveira and G.R. da Silva (University of Minas Gerais, Brazil)

### **Synergy between cationic alkyltrimethylammonium bromides (C<sub>n</sub>TAB) and nonionic n-octanol surfactants in foamability and floatability of quartz**

A. Wiertel-Pochopien, J. Zawala (Polish Academy of Sciences, Poland), E. Larsen and P.B. Kowalczyk (Norwegian University of Science and Technology, Norway)

### **Influence of solid particle properties on froth stability**

M. Kruszelnicki, I. Polowczyk (Wroclaw University of Science and Technology, Poland) and P.B. Kowalczyk (Norwegian University of Science and Technology, Norway)

### **The effect of structure features of oxidized starches on the depression of chalcopyrite and graphite**

W. Chimonyo, B. Fletcher and Y. Peng (The University of Queensland, Australia)

### **The emulsification of oily collector by flotation frothers in fresh water and saline water**

Liang Cao, Xumeng Chen and Yongjun Peng (The University of Queensland, Australia)

**A contribution to the implication of crystallographic orientation of cassiterite crystals on surface properties in flotation**

Haosheng Wu and M. Rudolph (Helmholtz Institute Freiberg for Resource Technology, Germany)

**Study on the effect of sulfide mineral spatial structure on its floatability by ligand field theory**

Jianhua Chen (Guangxi University, China)

**On the use of an automated contact timer apparatus for the quantitative assessment of wettability for microparticles**

R. Serna-Guerrero and R. Hartmann (Aalto University, Finland)

**The particle size effect in low rank coal reverse flotation**

Yonggai Li and Jianzhong Chen (China University of Mining and Technology, China)

**The effect of various monovalent and divalent ions on the behaviour of gangue during the flotation of a sulfidic PGM bearing ore**

M. Manono, K. Corin and J. Wiese (University of Cape Town, South Africa)

**Bubble-particle interactions of flotation in an agitated tank: CFD simulations with DLVO and XDLVO**

A. Gomez-Flores, S.K. Solongo, J. You, H. Kim (Conbuk National University, South Korea) and G.W. Heyes (CSIRO Mineral Division, Australia)

**Sodium carbonate/sodium silicate depressing system in flotation: a multi-scale approach**

Y. Foucaud, I.V. Filippova, L.O. Filippov, S. Lebègue and M. Badawi (Université de Lorraine, France)

**Interpreting the shape of the flotation rate distribution from size-by-size kinetic tests**

L. Vinnett (McGill University, Canada, and Universidad Técnica Federico Santa María, Chile), C. Marion and K.E. Waters (McGill University, Canada)

**A physico-chemical study into selective flotation of wollastonite from silicates**

N. Buthelezi and K.E. Waters (McGill University, Canada)

**Reducing negative effects of oxidation on flotation of sulphide ores**

S. Ozcelik and Z. Ekmekci (Hacettepe University, Turkey)

**Positron emission tomography (PET) measurements of liquid content in a laboratory flotation vessel**

K. Cole, M. Mahlangu, S. Peterson, M.R. van Heerden (University of Cape Town, South Africa), M.G. Spangler-Bickell (Nuclear Medicine Unity, Italy), P.R. Brito-Parada, J.J. Cilliers (Imperial College, UK), A.J. Morrison (JKMRC, Australia) and A.M. Norori-McCormac (University College London, UK)

**Applications Symposium**

Displayed November 13th-14th

**Direct detection of the pulp-froth interface using the ultrasound transit time technique**

T. Richter, S.Heitkam and K. Eckert (TU Dresden, Germany)

**Cyanide-free flotation route to process the complex sulphide ores of Tellerhäuser deposit (Saxony, Germany)**

I.V.Filippova, H.A. Blanco and L.O. Filippov (Université de Lorraine, France)

**Testing a new collector for cassiterite flotation**

I. Bremerstein (UVR-FIA GmbH, Germany) and C. Rudolph (Zschimmer & Schwarz GmbH & Co KG, Germany)

**An improved bubble load measurement device and its innovative application**

Dengfeng Han, Liang Cao, Ming Zhang and Zhengchang Shen (BGRIMM Technology Group, China)

**The interaction of grinding media and collector in pyrite flotation at alkaline pH**

Yufan Mu, Yupu Cheng and Yongjun Peng (The University of Queensland, Australia)

**Maximizing recovery and grade with increased throughput using a single stage of flotation**

M.J. Cole, K.P. Galvin and J.E. Dickinson (University of Newcastle, Australia)

**Comparison of online and offline pulp sensor metrics in an industrial setting**

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**Simulation of flotation plant performance under varying process water composition**

B. Michaux, M. Rudolph and M. Reuter (Helmholtz Institute Freiberg for Resource Technology, Germany)

**The impact of microbial load on the flotation response of a PGM bearing ore**

M. Smart, S.T. Harrison and K. Corin (University of Cape Town, South Africa)



**Ore dissolution test protocol for estimating water quality changes in minerals processing plants– towards closed water circulation**

L.L. Thi, N. Schreithofer and O. Dahl (Aalto University, Finland)

**Evaluation of the undeslimed flotation feed for the iron ore industry**

N.P. Lima (Vale S.A., Brazil) and B. McFadzean (University of Cape Town, South Africa)

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B. McFadzean, M. Becker (University of Cape Town, South Africa) and J. Sweet (Anglo American, South Africa)

**Use of oscillatory air supply to improve column flotation of coking coal in highly saline water in the absence of collector and frother**

Junyu Wang, Hangil Park, Chun Yong Ng and Liguang Wang (The University of Queensland, Australia)

**Characterization of a stockpiled sulphide copper ore and evaluation of its metallurgical response**

L. Tavares, L. Gois, D. Couto and A. Avelar (Vale, Center of Mineral Development, Brazil)

**Measuring the vertical water content profile of lab scale two-phase flotation froths using conductivity**

M.R. Lepage, L. Visconti, and K.E. Waters (McGill University, Canada)

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K.H. Kim, G.H. Kim, K.S. You (Korea Institute of Geoscience and Mineral Resources, Korea) and Y.H. Ko (Chung-Nam National University, Korea)

**Improving recovery of iron using column flotation of iron ore slimes**

E. Matiolo, H. Couto, H., A.S. Freitas, R.N. Almeida (CETEM/MCTIC, Brazil), N. Lima and K. Silva (VALE, Brazil)

**Analyzing the effect of different frothers on gas dispersion in a cavitation sparger using electrical resistance tomography**

P. Holdsworth, R. LaDouceur and C. Young (Montana Technological University, USA)

**A comparison of fatty acid collectors for spodumene flotation**

C. Marion, R. Li, J. Paris, R. Langlois, N. van Noord, O. Kökkılıç, K. Waters (McGill University, Canada) and J. Quinn (Jarret Quinn Consulting Inc., Canada)