

Flotation '19



Provisional Programme
Subject to change
[#Flotation19](#)

Sunday November 10th

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

Monday November 11th

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

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

08.45 *Technical Session 1*
Chairmen: TBA

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

09.15 **Innovations in the beneficiation of "difficult" ores**
D. Chipfunhu (BASF Australia Ltd.), A. Michailovski (BASF SE, Germany), S. Dickie (BASF New Zealand Ltd.) and R. Kamkin (OOO BASF Russia)

09.30 **Unlocking the true value of chemicals in mineral processing**
D.R. Nagaraj, R.S. Farinato, E. Arinaitwe and T. Bhambhani (Solvay Technology Solutions, USA)

09.45 **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)

10.00 **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)

10.15 Coffee, exhibition and poster viewing

- 11.15 **Hydrophobic force in flotation**
A.V. Nguyen (University of Queensland, Australia)
- 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 and S. Luukkanen (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: TBA
- 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 (China University of Mining and Technology (Beijing)) 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 **The rotational motion of flotation particles explored 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 and A.M. Norori-Cormac (Imperial College, UK)
- 15.15 **New approach for flotation process modelling and simulation**
J. Yianatos, P. Vallejos (UTFSM, Chile), R. Grau and A. Yañez (Outotec, Finland)
- 15.30 Coffee
- 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 **Insight into nanobubbles to improve mineral flotation**
Wei Xiao, Yulong Zhao, Juan Yang, Yaxin Ren, Wei Yang (Xi'an University of Architecture and Technology, China)
- 16.45 **Flotation of fine particles using hydrophobized hollow glass microspheres**
 S. Arriagada, C. Acuña and M. Vera (Federico Santa Maria Technical University, Chile)
- 17.00- 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: TBA
- 08.45 **The synergistic interaction between dithiophosphate and frothers at the air-water and sulphide mineral interface**
D. Pienaar, B. McFadzean, and C.T. O'Connor (University of Cape Town, South Africa)
- 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 **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)
- 10.00 **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)
- 10.15 **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)
- 10.30 Coffee, exhibition and poster viewing
- 11.15 **Experimental and computational investigations on L-cysteine as an environmentally-efficient flotation reagent in the selective separation of molybdenite from chalcopyrite**
Zhigang Yina, 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)
- 11.30 **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)
- 11.45 **Sulphidisation and flotation of oxidised copper sulphides**
T. Moimane, Y. Huai and Y. Peng (The University of Queensland, Australia)
- 12.00 **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)
- 12.15 **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)
- 12.30 **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)
- 12.45 Lunch
- 14.00 *Technical Session 4*
Chairmen: TBA
- 14.00 **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)

- 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 Coffee
- 16.15 **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)
- 16.30 **Influence of muscovite on the flotation of pyrite and arsenopyrite**
[E. Avelar](#), C. Evans, K. Runge, S. Brito e Abreu and E. Manlapig (JKMRC, Australia)
- 16.45 **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)
- 18.00 Coaches leave for conference dinner at Kirstenbosch Botanical Gardens

Wednesday November 13th

- 07.30 Registration desk opens. Light breakfast of filled croissants, tea, coffee and fruit juice
- 08.20 Welcome to Applications Symposium
J. Wills (MEI, UK)
- 08.30 *Technical Session 5*
Chairmen: TBA
- 08.30 **Keynote Lecture: Canadian Achievements in Flotation Technology: A Retrospective**
[J.E. Nessel](#) (NesseTech Consulting Services Inc. and Adjunct Professor, McGill University, Canada)
- 09.00 **Optimising your float circuit for changing ore conditions**
S.Morgan (Outotec, Australia) and B. Kgaswane (Outotec, South Africa)
- 09.15 **Evaluation of new flotation circuits design using the USM-FLOTMOD**
[P. Vallejos](#), J. Yianatos (UTFSM, Chile), R. Grau and A. Yañez (Outotec, Finland)
- 09.30 **Low-temperature effects on flotation efficiency- changes in process water quality, reagent regimes and tailings management**
[Y. Ghorbanj](#), C. Zwahlen, J. Rosenkranz, T. Karlkvist, C. Zwahlen (Luleå University of Technology, Sweden) and T. Karlkvist (Boliden Mineral AB, Sweden)
- 09.45 **The same-level arrangement technology of flotation plant: fundamentals and practice**
Ming Zhang, [Liang Cao](#), Zhengchang Shen, Ming Tan and Yihong Yang (BGRIMM Technology Group, China)
- 10.00 Coffee, exhibition and poster viewing
- 10.45 **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)

- 11.00 **Froth states: defining and classifying flotation froth phase phenomena based on visual cues**
E.C. Nienaber, Z.C. Horn, L. Auret (Stone Three Digital, South Africa) and J.W.D. Groenewald (Anglo American Platinum Ltd, South Africa)
- 11.15 **Smart sparging systems – extending the internet of things to column flotation**
M.J. Mankosa, J.H. Welka, R.P. Krahe, J.E. Jukkola and A.T. Weber (Eriez, USA)
- 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. Ferra (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: TBA
- 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)
- 15.00 **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)
- 15.15 **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)
- 15.30 Coffee
- 16.15 **Performance of 630m³ 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)
- 16.30 **Hydrodynamic and metallurgical evaluation of the 680m³ flotation cell in industrial application**
Yihong Yang, Dengfeng Han, Zhengchang Shen and Shuaixing Shi (BGRIMM Technology Group, China)
- 16.45 **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)
- 17.00- 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: TBA
- 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 pyrite depressants in copper flotation**
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: TBA
- 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 **Flotation of spheroidized graphite from spent lithium ion batteries**
 A. Vanderbruggen and M. Rudolph (Helmholtz-Institute Freiberg for Resource Technology, Germany)
- 15.30 Coffee
- 16.00 **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)
- 16.15 **A case study for niobium beneficiation by froth flotation**
 S.S. Ali, M. Aghamirian, J. Liu, T. Grammatikopoulos, C. Gunning (SGS Canada Inc., Canada), P. Pelletier (Mont-Royal, Canada), C. Gibson (Vale Canada Ltd, Canada) and C. Dufresnes (Niobay Metals Inc., Canada)
- 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 and presentation of prizes for best student posters
 J.A. Finch (McGill University, Canada)
- 17.10 Closing Remarks and Invitation to Flotation '21
 A.J. Wills (MEI, UK)
- 17.20 Coffee and Farewell wine function, Vineyard Gardens
 Accompanying guests welcome

POSTERS

Fundamentals Symposium Displayed November 12th-13th

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)

Microscopic mechanism of particle-bubble interactions for enhanced flotation integrated with nanobubbles

A. Sobhy (University of Science and Technology Liaoning, China, and Central Metallurgical Research and Development Institute, Egypt) and D. Tao (University of Science and Technology Liaoning, China)

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. Bıcak (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)

Computational insights into the adsorption mechanism of gallic acid/ pyrogallol/ 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)

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)

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) and M. G. Spangler-Bickell (Nuclear Medicine Unit, IRCCS Ospedale San Raffaele, Italy)

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_nTAB) 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 (Wrocław 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)

Drag coefficient and settling velocity of hydrophobic fine particles

Lijun Wang, Kaixin Zheng, Ziyang Ding, Xiaokang Yan, Haijun Zhang and Chuwen Guo (China University of Mining and Technology, China)

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

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

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

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

The effect of grinding media on the flotation of copper activated marmatite

Wei Chen, Yao Chen, Chonghui Zhang, Xiaozhen Tian, Sen Wang and Xianzhong Bu (Xi'an University of Architecture and Technology, China)

Hydrodynamic characteristics and control methods of the transportation zone in flotation cells

Dengfeng Han, Shuaixing Shi, Ming Tan and Yihong Yang (BGRIMM Technology Group, China)

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)

Reducing negative effects of oxidation on flotation of sulphide ores

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

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)

Evaluating pulp-phase soft sensor metrics for flotation control and monitoring

Z.C. Horn, L. Auret, E. Wolfaardt (Stone Three Digital, South Africa) and C. Steyn (Anglo American Platinum Ltd, South Africa)

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)

Mineralogical quantification of floating and entrained gangue

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)

Beneficiation study on separation of uranium and plumbum minerals from low grade polymetallic ore

Li Guang, Liu Zhi-chao, Li Chun-feng, Ma Jia, Qiang Lu-de and Tang Bao-bin (Beijing Research Institute of Chemical Engineering and Metallurgy, China)

Stirred pulp-mixing in flotation: process characteristics and mechanism

Zhen Li (Xi'an University of Science and Technology, and Ministry of Land and Resources, China), Huaqing Zhang, Chengqian Zhao, Chao Yang, Shanxin Xiong (Xi'an University of Science and Technology, China) and Jiongtian Liu (Chinese National Engineering Research Center of Coal Preparation and Purification, China)

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)

Development of monitoring algorithm of flotation from froth features extracted by machine vision system

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)

Selective flotation of Moroccan sedimentary phosphate ores

M. Derhy, R. Hakkou (Mohammed VI Polytechnic University and Université Cadi Ayyad, Morocco), Y. Taha (Mohammed VI Polytechnic University, Morocco), M. Benzaazoua (Université du Québec en Abitibi-Témiscamingue, Canada) and J. Amalik (Innovation OCP-SA, Morocco)

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)