

XXVIII International Mineral Processing Congress (IMPC 2016)

Quebec City, Canada
11-15 September 2016

Volume 1 of 9

ISBN: 978-1-5108-5938-8

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2016) by Canadian Institute of Mining Metallurgy & Petroleum (CIM)
All rights reserved.

Printed by Curran Associates, Inc. (2018)

For permission requests, please contact Canadian Institute of Mining Metallurgy & Petroleum (CIM)
at the address below.

Canadian Institute of Mining Metallurgy & Petroleum (CIM)
Suite 1250
3500 de Maisonneuve Blvd. W.
Westmount, QC H3T 3C1
Canada

Phone: (514) 939-2710
Fax: (514) 939-2714

cim@cim.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

VOLUME 1

INNOVATIONS AND BREAKTHROUGHS IN MINERAL PROCESSING THAT HAVE SHAPED THE EXISTING MINING INDUSTRY	1
<i>B. Gorain</i>	
FAST ANALYSIS OF WASHABILITY PARAMETERS FOR PROCESS CONTROL.....	46
<i>H. Wurst, J. Bachmann, C. Bachmann, M. Cipold</i>	
BEHAVIOR OF IRON AT THE AMBATOVY NICKEL OPERATION IN MADAGASCAR.....	56
<i>M. Collins, B. Haugrud, E. Mcconaghy, G. Smith</i>	
THE BEHAVIOUR OF IRON IN THE HIGH PRESSURE ACID LEACH PROCESS	70
<i>M. Tanaka, T. Oishi, G. Ohara, T. Kitazaki</i>	
ARSENIC REMOVAL BY CONTROLLED BIOLOGICAL IRON OXIDATION REACTIONS	80
<i>P. Contreras, H. Dijkman, S. Vega, I. Sanchez-Andrea, J. Weijma, C. Buisman</i>	
REMOVAL OF ARSENIC AND DISSOLUTION OF COPPER FROM ARSENIC BEARING COPPER ORE BY HIGH PRESSURE OXIDATIVE LEACHING	90
<i>A. Shibayama, B. Altansukh, R. Oinuma, K. Haga</i>	
FORMATION OF SCHWERTMANNITE-LIKE AND SCORODITE-LIKE COATINGS ON PYRITE AND ITS IMPLICATIONS IN ACID MINE DRAINAGE CONTROL.....	101
<i>C. Tabelin, R. Corpuz, S. Veerawattananun, M. Ito, N. Hiroyoshi, T. Igarashi</i>	
IMMOBILIZATION OF ARSENATE IN SOILS BY THE ADDITION OF MAGNESIUM OXIDE: AN EXPERIMENTAL AND MODELING INVESTIGATION	113
<i>T. Suzuki, F. Nakahara, T. Kawamoto, M. Niniae</i>	
SEQUENTIAL ACID LEACHING OF NICKEL LATERITES WITH IRON PRECIPITATION.....	121
<i>D. White, J. Gillaspie</i>	
IRON BEHAVIOR IN NICKEL LATERITE INVERSE LEACHING PROCESS.....	136
<i>K. Jiang, H. Wang, S. Liu, K. Xie, L. Su</i>	
A NEW METHOD TO RECOVER PGM FROM COMPLEX FEED STREAMS	149
<i>D. Kim, S. Wang, J. Baker, J. Lucht, N. Bhath, S. Colley</i>	
AN ALKALINE GLYCINE-BASED PROCESS FOR COPPER RECOVERY AND IRON REJECTION FROM CHALCOPYRITE.....	158
<i>J. Eksteen, E. Oraby, B. Tanda</i>	
PYRITE'S CRUCIAL ROLE IN COBRE LAS CRUCES ATMOSPHERIC LEACHING PROCESS	168
<i>C. Frias, E. Delgado, J. Blanco, J. Gotor</i>	
RECENT OPERATION AND IMPROVEMENTS OF THE HEMATITE PROCESS AT AKITA ZINC COMPANY, LIMITED	179
<i>M. Kanno, A. Horiuchi, T. Aichi, S. Sato</i>	
COBALT REMOVAL FROM ZINC SULFATE SOLUTION BY CU-SB ACTIVATED.....	191
<i>J. Lu, D. Dreisinger, G. Houlachi</i>	
PROCESS FOR THE PRECIPITATION OF PURE JAROSITE	202
<i>B. Saxon, M. Lahtinen, T. Ritasalo, M. Latva-Kokko</i>	
THE OPTIMIZATION OF AN INDUSTRIAL AMMONIUM JAROSITE PRODUCTION CIRCUIT	212
<i>C. Anderson, C. Fleuriault, L. Twidwell</i>	
AN ENVIRONMENTAL FRIENDLY PROCESS FOR THE FULL RECOVERY OF ZINC AND OTHER VALUABLE METALS FROM ROASTED ZINC CONCENTRATES	226
<i>F. Tamargo</i>	
NEW HYDROMETALLURGICAL PROCESS FOR THE RECOVERY OF ZINC AND IRON FROM EAF DUST AS ZINC SULPHATE AND IRON PIGMENT.....	234
<i>T. Boiselle, C. Gielen, J. Bier, P. Henry</i>	
IRON IN ARSENIC REMOVAL - FROM TRADITIONAL ARSENIC PRECIPITATION TO NOVEL ELECTROCHEMICAL PROCESSES	243
<i>M. Martikainen, T. Van Der Meer, N. Isomaki, A. Makinen, M. Arvola</i>	
CONTINUOUS COUNTERCURRENT ION EXCHANGE (CCIX) USED IN HYDROMETALLURGY - THE INFLUENCE OF IRON	252
<i>F. Rochette, Y. De Busscher</i>	
THE TRANSFORMATION OF TWO-LINE FERRIHYDRITE INTO CRYSTALLINE PRODUCTS: INFLUENCE OF THE MEDIA (SULFATE VS. NITRATE)	259
<i>D. Zhang, S. Wang, Y. Jia</i>	

EFFECT OF SYNTHESIS CONDITIONS ON PARTICLE SHAPE OF SCORODITE.....	269
<i>E. Shibata, T. Nakamura</i>	
QUANTITATIVE MODELING OF A NEUTRALIZATION AND CO-PRECIPITATION PROCESS WITH FERRIHYDITE FOR THE SIMULTANEOUS REMOVAL OF AS(V) AND HG(II)	279
<i>T. Kato, T. Uchida, M. Yagisawa, S. Hobo, C. Tokoro</i>	
THE EVOLUTION OF IRON CONTROL AT RUSTENBURG BASE METAL REFINERS	289
<i>L. Bryson, C. Biley</i>	
THE PRESSURE IRON REMOVAL SECTION AT RUSTENBURG BASE METALS REFINERS	300
<i>C. Biley</i>	
CHEMICAL MODELLING OF THE $\text{Fe}_2(\text{SO}_4)_3\text{-FeSO}_4\text{-H}_2\text{SO}_4\text{-H}_2\text{O}$ SYSTEM	312
<i>C. Biley, J. Steyl</i>	
THE FLOTATION BEHAVIORS OF SEVERAL ANIONIC COLLECTORS ON MAGNESITE	328
<i>C. Liu, D. Dong</i>	
ACID RECOVERY IN THE STEEL AND METALLURGICAL INDUSTRY PROCESS CHARACTERISTICS AND FUEL SAVING OPTIONS	339
<i>F. Baerhold, S. Mitterecker</i>	
EVALUATION OF IRON(II) OXIDATION REACTIONS IN CHLORIDE LEACH SOLUTIONS	352
<i>C. Dorfling, S. Masambi, S. Bradshaw</i>	
ANDRITZ METALS SPRAY-ROAST ACID REGENERATION PILOT PLANT	361
<i>T. Hofbauer, F. Baerhold, S. Mitterecker</i>	
IRON CHEMISTRY IN LATERITIC SAPROLITE LEACHING WITH CONCENTRATED MAGNESIUM CHLORIDE BRINES	367
<i>D. Duffy, M. Carlos, V. Papangelakis, B. Davis</i>	
IRON BLEED IN THE MABOUMINE PROCESS	379
<i>P. Ribagnac, B. Courtaud, J.-M. Lambert, V. Weigel</i>	
AN INITIAL INVESTIGATION INTO THE EFFECT OF FE (III) CONCENTRATION ON THE PRODUCT CHARACTERISTICS OF FE (III) OXYHYDROXIDE PRECIPITATES DURING LIME PRECIPITATION.....	389
<i>C. Mangunda, J. Petersen, A. Lewis</i>	
MINERALOGICAL CONTROL OF THE FORM OF FERRIC/FERROUS PRECIPITATES FOR EFFECTIVE TREATMENT OF ACID MINE DRAINAGE	400
<i>C. Tokoro, Y. Mitani, T. Kato, A. Mamun</i>	
TESTING AND APPLICATION OF IRON PRECIPITATION AS GOETHITE (FeOOH) USING A STRONG AIR FLOW	410
<i>X.-Z. Dai, P. Zeng, Y.-X. Li, M.-Y. Huang, M.-Y. Yang, G.-M. Chen, G.-F. Li, H.-L. Wang</i>	
IRON SEPARATION FROM IRON BEARING POLYMETAL CHLORIDE SOLUTIONS BY MEANS OF HYDROLYSIS AND CRYSTALLIZATION	420
<i>B. Nowak, M. Oesterreicher, R. Stastny, H. Weissenbaeck</i>	
HYDROLYSIS FOR IRON CONTROL AND ACID REGENERATION IN CHLORIDE HYDROMETALLURGY CIRCUITS	436
<i>M. Dry, G. Harris</i>	
THE SOLVENT EXTRACTION OF IRON FROM A CHLORIDE LEACH SOLUTION CONTAINING PRECIOUS, RARE AND BASE METALS.....	449
<i>D. Dreisinger, N. Verbaan, R. Molnar</i>	
REMOVAL OF IRON FROM SIMULATED COPPER LEACH SOLUTION USING A HYDROXY- OXIME CHELATING RESIN	459
<i>Y. Zhang, Q. Liu, L. Li</i>	
IRON MANAGEMENT IN ELECTROWINNING PROCESSES	471
<i>Q. Ricoux, A. Maihatchi, F. Goettmann</i>	
IRON CONTROL STRATEGIES IN PRESSURE HYDROMETALLURGY	482
<i>R. McDonald, D. Robinson</i>	
IRON HYDROLYSIS IN THE DIRECT NICKEL PROCESS.....	500
<i>F. McCarthy, R. McDonald, G. Woodbridge, G. Brock, D. Robinson</i>	
PLANT DESIGN - THE HUMAN FACTOR.....	521
<i>T. Lipiec</i>	
IRON AS A LIMITING FACTOR IN THE DIRECT LEACHING OF WAEZ OXIDES.....	522
<i>J. Antrekowitsch, S. Steinlechner</i>	
EVALUATING THE EFFECT OF SEEDING ON ZINC RECOVERY THROUGH THE ZINCOR IRON REMOVAL CIRCUIT	531
<i>D. Taggart, J. Petersen</i>	

THE INFLUENCE OF JAROSITE GENERATION ON THE INDIUM LEACH RATE DURING A LEACHING PROCESS OF SECONDARY ZINC OXIDE	542
<i>G.-M. Chen, M.-Y. Huang, P. Zeng, M.-Y. Yang, G.-F. Li, Z.-H. Zhou, Q.-Y. Wang</i>	
FAST PB PROCESS: PLATING LEAD AT 10,000 A/M2	550
<i>M. Maccagni, J. Nielsen</i>	
THE EFFECT OF IRON REMOVAL FROM RAFFINATE ON THE COPPER BIOLEACHING PROCESS.....	555
<i>B. Nazari, H. Hani, E. Jorjani, A. Ghahremaninezhad, Z. Manafi, F. Hasani, A. Riahi</i>	
THE VALUE OF GOOD SAMPLING AND THE EFFECTS ON NET SMELTER RETURNS	564
<i>D. Brand</i>	
EVALUATION OF SAMPLING IN GEOMETALLURGICAL PROGRAMS THROUGH SYNTHETIC DEPOSIT MODEL	576
<i>V. Lishchuk, P. Lamborg, C. Lund</i>	
USE OF RADIOACTIVE TRACERS TO SUPPORT MASS BALANCES IN SECONDARY GRINDING CIRCUITS	587
<i>L. Vinnett, T. Ledezma, F. Contreras, F. Diaz</i>	

VOLUME 2

THE IMPORTANCE OF SAMPLING IN RESOURCE DEFINITION, PROCESS CONTROL, METALLURGICAL ACCOUNTING AND SALES OF MINERAL PRODUCTS	597
<i>R. Holmes</i>	
SAMPLING FOR METALLURGICAL TEST: HOW THE TEST RESULTS CAN BE USED TO ESTIMATE THEIR CONFIDENCE LEVEL	612
<i>S. Brochot</i>	
MANAGING THE REPRODUCIBILITY LEVEL OF REPORTED METAL RECOVERIES.....	623
<i>L. Lachance, D. Leroux</i>	
IMPROVING ORE QUALITY IN MINE TO MILL USING THROUGH-CONVEYOR REAL TIME ELEMENTAL ANALYSIS.....	633
<i>H. Kurth</i>	
AN INTEGRATED LIBERATION-LEACH MODEL (ILLM) TO EVALUATE GOLD LIBERATION AND ITS IMPACTS ON GRAVITY RECOVERY AND LEACHING	643
<i>A. Bax, T. McGrath, J. Eksteen, W. Staunton, E. Oraby, G. Wardell-Johnson</i>	
ELECTRODEPOSITION AND ELECTROLESS PLATING OF ALLOYS: A CASE OF COMBINATION OF THE TWO TECHNIQUES	654
<i>N. Dadvand, G. Kipouros</i>	
CORROSION STUDIES FOR CARBON STEEL PIPELINE API 5LX70 EXPOSED TO SEA WATER AT HIGH FLUID VELOCITIES.....	660
<i>G. Leinenweber, L. Caceres, P. Bustamante</i>	
RECURRING FAILURES OF ROD MILL LINER BOLTS, ANALYSIS AND SOLUTIONS.....	669
<i>W. Pascheto, P. Fleming</i>	
GEOMETALLURGICAL CHARACTERIZATION OF DRILL CORE TEXTURAL PATTERNS: A CASE STUDY FROM THE MONT-WRIGHT IRON ORE DEPOSIT	679
<i>L. Perez-Barnuevo, S. Levesque, D. Michaud, C. Bazin, H. Longuepee</i>	
A TEXTURE-BASED MODEL OF MINERAL LIBERATION	689
<i>M. Andrusiewicz, C. Evans, R. Mariano, R. Morrison, E. Wightman</i>	
APPLICATIONS OF AUTOMATED QUANTITATIVE MINERALOGY IN GEOMETALLURGY, EXAMPLES FROM AMGMATIC NI-(CU) DEPOSITS	700
<i>T. Grammatikopoulos, N. Hoffmann, M. Sciortino, S. Downing, C. Gunning</i>	
BUBBLE SURFACE AREA FLUX AND PERFORMANCE IN LABORATORY FLOTATION TESTING	713
<i>C. Gomez, J. Mesias, J. Alvarez</i>	
DEVELOPMENT AND CALIBRATION OF A RECONCILIATED MINERALOGY METHOD BASED ON MULTITECHNIQUE ANALYSES: APPLICATION TO ACID MINE DRAINAGE PREDICTION.....	724
<i>R. Mermillod-Blondin, M. Benzaazoua, H. Bouzahzah, D. Leroux</i>	
USE OF VIRTUAL FRACTIONS FOR MLA OF Y-BEARING REE ORES.....	735
<i>R. Merker, T. Leißner, B. Schulz</i>	
DOMINATING MECHANISMS OF THE SURFACE MODIFICATION OF NATURAL SULFIDES FOLLOWING TREATMENT BY HIGH-POWER ELECTROMAGNETIC PULSES	747
<i>V. Chanturiya, I. Bunin, M. Ryazantseva</i>	

SHAPE CHARACTERISATION: CAN DIFFERENT DEVICES PRODUCE COMPARABLE DATA FOR PARTICULATE SAMPLES?	755
<i>L. Little, M. Becker, J. Wiese, G. Yorath, A. Mainza, I. Tonzevic</i>	
THE ROLE OF SULFATE SALTS IN MITIGATING THE DELETERIOUS EFFECT OF BENTONITE IN COPPER FLOTATION	767
<i>Y. Wang, Y. Peng, R. Lauten</i>	
ON-STREAM MEASURING OF MINERAL CONCENTRATIONS IN SLURRIES USING LIBS RESULTS	775
<i>N. Khajehzadeh, O. Haavisto, L. Koresaar</i>	
PARTICLE DAMAGE AND EXPOSURE ANALYSIS OF MICROWAVE TREATED ORES FOR BIO-HEAP LEACHING	785
<i>E. Charikinya, S. Bradshaw</i>	
SILICATES – A NEW CHALLENGE FOR MINERAL PROCESSING FOR LKAB IN KIRUNA, SWEDEN	797
<i>K. Niiranen, A. Boehm</i>	
NOVEL GOLD DEPORTMENT TECHNIQUE - APPLICATIONS FOR COMPLEX COPPER-GOLD AND REFRactory GOLD ORES	806
<i>A. Chattopadhyay, S. Dimov, B. Hart, B. Gorain</i>	
HEMATITE AND GOETHITE INCLUSIONS IN LOW-GRADE DOLOMitic BANDED IRON FORMATIONS: PHYSICAL PARAMETER EVALUATION TO OPTIMIZE ORE BENEFICIATION	820
<i>B. Orberger, C. Wagner, A. Tudry, B. Baptiste, R. Wirth, R. Morgan, S. Miska</i>	
MINERALOGICAL TOOLS FOR ORE CHARACTERIZATION – KEY DATA AT ALL STEPS OF IRON ORE CONCENTRATION	831
<i>S. Levesque, F. Couet, L. Perez-Bamuevo, C. Hennessey</i>	
GEOMETALLURGICAL MODELLING OF LOW-GRADE ITABIRITE IRON ORES FROM THE IRON QUADRANGLE, BRAZIL	844
<i>R. Martino, A. Araujo, M. Barbosa, S. Gaydardzhiev</i>	
EFFECT OF GRINDING METHOD ON MORPHOLOGY OF IRON ORE CONCENTRATE	854
<i>A. Abazarpoor, R. Hejazi, M. Saghaeian, V. Sheikhzadeh</i>	
ASSESSING MINERALOGICAL INDICATORS FOR ORE HARDNESS	864
<i>E. Wightman, C. Evans</i>	
QUANTITATIVE ESTIMATION OF MINERALS IN IRON ORES USING CHEMICAL ASSAYS AND THERMO-GRAVIMETRY ANALYSIS DATA	872
<i>V. Tammishetti, S. Subramanian, D. Kumar, B. Rai, Pradip</i>	
2D VERSUS 3D LIBERATION ANALYSIS TO CHARACTERIZE INTERGROWTH IN LD SLAGS	883
<i>A. Boehm, K. Niiranen</i>	
INFLUENCE OF COMPOSITIONAL, TEXTURAL, ELECTRICAL AND ELECTROCHEMICAL PROPERTIES OF NATURAL PYRITE IN CU-ZN SULFIDE ORES ON ITS FLOTATION PROPERTIES	894
<i>E. Chanturiya</i>	
FINE PARTICLE, LIQUID AND BUBBLE SIZE DISTRIBUTION MEASUREMENT IN LIQUIDS	903
<i>T. Fujita, G. Dodibba, J. Ponou, A. Shibayama, A. Otsuki</i>	
BULK COMMODITY CHARACTERISATION FOR TRANSPORTABLE MOISTURE LIMIT DETERMINATION	912
<i>R. Holmes, K. Williams, T. Honeyands, R. Orense, A. Roberts, M. Pender, D. McCallum, T. Krull</i>	
STUDY ON SURFACTANTS FOR PASSIVATION OF NATURALLY OCCURRING CARBONACEOUS MATTER IN GOLD BEARING ORES	928
<i>S. Dimov, B. Hart</i>	
QUANTITATIVE MINERALOGY FOR IMPROVED MODELLING OF SHAKING TABLES	939
<i>R. Fitzpatrick, Y. Ghorbani, P. Hegarty, G. Rollinson</i>	
MODELING OF REALISTIC MICROSTRUCTURES AS KEY FACTOR FOR COMMINUTION SIMULATIONS	958
<i>M. Klichowicz, H. Lieberwirth</i>	
INVESTIGATION OF MINERAL LIBERATION BY TRANSGRANULAR AND INTERGRANULAR FRACTURE AFTER MILLING	968
<i>T. Leißner, H. Duong, M. Rudolph, T. Heinig, K. Bachmann, J. Gutzmer, H. Schubert, U. Peuker</i>	
INVESTIGATION OF ROLLER PRESSURE AND SHEAR STRESS IN THE HPGR USING DEM	978
<i>J. Quist, M. Evertsson</i>	

PARTICLE-BASED SIMULATION TO INVESTIGATE COMMINUTION OF E-WASTE FOR EFFECTIVE RECYCLING PROCESS	991
<i>Y. Tsunazawa, S. Fukui, C. Tokoro, S. Owada</i>	
UNDERSTANDING SINGLE PARTICLE BREAKAGE EVENT TO EVALUATE THE EFFECT OF APPLIED STRAIN RATE	1002
<i>F. Saeidi, M. Yahyaei, M. Powell, L. Tavares</i>	
STUDY ON NEW TECHNOLOGY FOR REFRACTORY MULTI-METALLIC PYROCHLORE FROM AFRICA	1015
<i>Z. Zhang, Y. Tang, H. Hu, T. Dong, W. Huang, J. Yang</i>	
THE GMSC GUIDELINE FOR DETERMINING THE BOND EFFICIENCY OF INDUSTRIAL GRINDING CIRCUITS	1025
<i>R. Mcivor</i>	
APPLYING ENERGY BENCHMARKING METHODOLOGIES TO QUANTIFY IMPROVEMENTS IN ENERGY PERFORMANCE OF AN SABC CIRCUIT DUE TO TRANSFER SIZE OPTIMIZATION	1043
<i>D. Gong, S. Nadolski, B. Klein, C. Sun, T. Sun, J. Kou</i>	
THE CMIC / CANMETMINES COMMINUTION ENERGY RECOVERY POTENTIAL INITIATIVE - THE AGNICO EAGLE GOLDEX DIVISION CASE.....	1053
<i>J. Bouchard, G. Leblanc, Y. Germain, M. Levesque, N. Tremblay, B. Legare, B. Dallaire, P. Radziszewski</i>	
SYNCHRONIZED BYPASS DRIVE SYSTEM FOR GRINDING MILLS	1064
<i>M. Perrucci, A. Mellek, M. Pischtschan</i>	
KVA VERSUS KW IN COMMINUTION CIRCUITS	1076
<i>I. Druce, R. Kalra, M. Patel</i>	
AN UPDATED DATA SET FOR SAG MILL POWER MODEL CALIBRATION	1088
<i>A. Doll</i>	
CALIBRATION OF A DYNAMIC MODEL FOR AN INDUSTRIAL COMMINUTION CIRCUIT	1099
<i>B. Legare, J. Bouchard, A. Clapperton, E. Poulin, J. Rojas-Montes</i>	
A MECHANISTIC MODEL OF AXIAL CHARGE SEGREGATION IN ROTATING DRUMS	1112
<i>I. Govender, E. Ahmed</i>	
A GENERIC DYNAMIC MODEL INCORPORATING A 4D APPEARANCE FUNCTION FOR TUMBLING MILLS	1124
<i>P. Yu, W. Xie, L. Liu, N. Weerasekara, B. Bonfils, M. Powell</i>	
USING NON-CONTACT ACOUSTICS MEASUREMENT TO VIEW INSIDE A TUMBLING MILL	1136
<i>R. Pax</i>	
INVESTIGATION OF LINER SHAPE EFFECTS ON LOAD MOVEMENT IN TUMBLING MILLS BY DISCRETE ELEMENT METHOD (DEM) - THE SARCHESHMEH COPPER COMPLEX AND GOL-E-GOHAR IRON ORE COMPANY SAG MILL CASES	1149
<i>Z. Bibak, E. Nematollahi, A. Ghasemi, M. Moghaddam, S. Banisi</i>	
DESIGNING NEW FEED AND DISCHARGE END LINERS FOR DRY AG MILLS AT THE GOL-E-GOHAR IRON ORE CONCENTRATION PLANT	1160
<i>A. Hasankhoei, M. Maleki-Moghaddam, A. Haji-Zadeh, S. Banisi</i>	
DEBOTTLENECKING THE PRIMARY GRINDING CIRCUIT OF THE NUNAVIK NICKEL PROJECT	1177
<i>N. Singh, R. Beaudoin, M. Lebeuf, C. Farsangi, A. Dumais</i>	
LARGE SINGLE LINE GRINDING CIRCUITS AT THE HIGHEST AVAILABILITY	1184
<i>D. Andreo, G. Barthold, C. Horstmann</i>	
THE INDUSTRIAL WAY TO MAKE PRODUCT COST CALCULATIONS IN CRUSHING & SCREENING	1196
<i>P. Hedvall, J.-E. Stahl</i>	
COMMINUTION CIRCUIT DESIGN CONSIDERATIONS	1205
<i>G. Lane, B. Foggiatto, R. Braun, M. Bueno, P. Staples, S. Rivard</i>	
DESIGN, COMMISSIONING, START-UP AND PERFORMANCE OF VALE'S LONG HARBOUR STIRRED MEDIA DETRITOR ULTRAFINE GRINDING CIRCUIT	1216
<i>R. Gillespie, J. Quinn, A. Walters, A. Moore, P. Radziszewski</i>	
ONLINE MONITORING OF THE RHEOLOGICAL PROPERTIES OF STIRRED MEDIA MILLED SUSPENSION BY A TUBE RHEOMETER	1229
<i>J. Faitli, K. Bohaes, G. Mucsi</i>	
STIRRED MEDIA DETRITOR PERFORMANCE ASSESSMENT IN THE UG2 PLATINUM ORE REGRIND	1242
<i>C. Ndimande, A. Mainza, M. Lissso, C. Ntsele, L. Arlow</i>	
THE IMPORTANCE OF MINERALOGY ON REGRIND ENERGY CONSUMPTION	1253
<i>D. Rahal, M. Escobedo, S. Ortiz</i>	

EFFECT OF MINERAL TYPE ON SPECIFIC ENERGY, EFFECTIVE ENERGY AND SPECIFIC BREAKAGE ENERGY IN A STIRRED MILL	1265
<i>R. Roufail, B. Klein</i>	
SUPER-FINE CRUSHING – PIVOTAL COMMINUTION TECHNOLOGY FROM IMP TECHNOLOGIES PTY. LTD.....	1276
<i>C. Kelsey, J. Kelly</i>	
INTRODUCING EHPCC TO INTERNATIONAL MINERAL PROCESSING COMMUNITY	1288
<i>L. Roper, M. Daniel</i>	
DESIGN OF NEW TYPE INERTIA VIBRATING CRUSHER	1298
<i>C. Bang, X. Xiao'ou, Z. Feng</i>	
HIGH VOLTAGE ELECTRIC PULSE ENERGY IN COMMINUTING – CASE STUDY ON SANDVIK'S MITTERSILE TUNGSTEN ORE, AUSTRIA	1304
<i>H. Manouchehri, A. Weh</i>	
HIGH PRESSURE GRINDING ROLLS MODELLING WITH POPULATION BALANCE MODELS APPLIED TO TANTALUM ORE	1315
<i>E. Guasch, H. Anticoi, S. Hamid, J. Oliva, P. Alfonso</i>	

VOLUME 3

PISTON PRESS CALIBRATION AND DATABASE FOR HPGR SIZING	1326
<i>M. McClintock, B. Klein</i>	
DEVELOPMENT OF HPGR CIRCUIT BASED ON THE OPERATING PARAMETERS AND MATERIAL CHARACTERISTICS	1337
<i>P. Ghobadi</i>	
ECONOMIC AND OPERATIONAL ASSESSMENT OF A NON-CONVENTIONAL HPGR CIRCUIT	1350
<i>P. Rosario, J. Drozdak, W. Tse</i>	
THE CONTRIBUTION OF THE CLASSIFIERS TO COMMINUTION AND SEPARATION PROCESSING IN MINERAL PROCESSING	1366
<i>A. Mainza</i>	
MINE TO MILL APPROACH TO OPTIMIZE POWER CONSUMPTION IN A PROCESS PLANT OPERATION BY MODELLING AND SIMULATION	1377
<i>J. Torrealba-Vargas, R. Esteban, D. Roy, D. Runnels</i>	
THE EFFECT OF KEY OPERATING CONDITIONS ON GRINDING MEDIA CONSUMPTION IN SEMIAUTOGENOUS MILLS	1387
<i>L. Rivera, J. Sepulveda</i>	
IN SITU IMAGE ANALYSIS OF BATCH SETTLING OF FLOCCULATED MINERALS WITH PHYSICAL-STATISTICAL FEATURE EXTRACTION METHOD	1398
<i>M. Maciver, M. Pawlik</i>	
LOW ENERGY ANODE DEVELOPMENTS IN ZINC ELECTROWINNING	1408
<i>T. Robinson, H. Aaltonen, M. Morimitsu, T. Zhang</i>	
A CAPILLARY FLOW MODEL FOR FILTRATION	1415
<i>L. Pan, K. Huang, R.-H. Yoon</i>	
EFFECT OF PARTICLE MORPHOLOGY ON COAGULATION OF SILICA	1428
<i>A. Hassanzadeh, E. Tanisali, B. Hassas, F. Karakas, M. Celik</i>	
HYDROPHOBIC-HYDROPHILIC SEPARATION (HHS) PROCESS FOR SIMULTANEOUS RECOVERY AND DEWATERING OF FINE PARTICLES	1438
<i>R.-H. Yoon, N. Gupta, B. Li, G. Luttrell, R. Bratton, J. Reyher, S. Suboleski</i>	
A NOVEL METHOD FOR DEWATERING OF IRON ORE TAILINGS BASED ON SEPARATION OF FINE AND COARSE FRACTIONS	1450
<i>H. Abedini, M. Zare, A. Dehghani, R. Hejazi, M. Saghaian, V. Sheikhzadeh</i>	
MODIFYING THE DESIGN OF DRYING CHAMBER FLIGHTS OF THE GOL-E-GOHAR PELLETIZING PLANT BALL MILL	1459
<i>A. Ghasemi, A. Hasankhoei, G. Parsapour, S. Banisi</i>	
CHEMICALLY ENHANCED FILTRATION AND DEWATERING EFFECT OF FINE COAL SLURRY ON PARTICLE CHARACTERISTICS	1470
<i>D. Bhadouriya, S. Singh, A. Suman</i>	
EVALUATION AND RHEOLOGICAL STABILIZATION OF SUSPENSIONS OF KAOLIN	1476
<i>G. Aguilera, V. Estrada</i>	

EFFECT OF ORE TYPE AND OPERATING VARIABLES ON HIGH RATE THICKENER PERFORMANCE AT TATA STEEL.....	1484
<i>V. Shukla, P. Singh, D. Chakraborty</i>	
NUCLEATION OVERPOTENTIAL AND THE ROLE OF NUCLEATION EARLY AND LATE IN A DEPOSITION CYCLE	1493
<i>P. Adcock, R. Fraser</i>	
OPTIMIZATION OF INDUSTRIAL COPPER ELECTROWINNING SOLUTIONS.....	1508
<i>C. Anderson</i>	
SIMULATION OF THE FLUID DYNAMICS AND COPPER DISTRIBUTION IN AN OPERATING COPPER ELECTROWINNING CELL.....	1514
<i>M. Schwarz, M. Leahy</i>	
HYDRODYNAMIC ASSESSMENT OF FULL-SCALE COPPER ELECTROWINNING CELL	1526
<i>K. Mohanarangam, W. Yang, R. Rajasingam</i>	
THE EFFECT OF ANODE COMPOSITION ON ELECTROREFINED STARTER SHEET DUCTILITY AND ELECTROLYTE COMPOSITION.....	1537
<i>P. Laforest, M. Moats</i>	
MICROSTRUCTURAL INVESTIGATION OF AN AS-CAST AND REMELTED Ti-AL INTERMETALLIC ALLOY PRODUCED BY ALUMINOTHERMIC REDUCTION	1547
<i>S. Bagherpour, A. Farkoosh, J.-P. Fortin, M. Pekguleryuz</i>	
DEVELOPMENT OF PERMANENT STAINLESS STEEL CATHODES IN CHINA.....	1559
<i>C. Zhang, J. Wu</i>	
OXIDATION OF MANGANOUS AND CHLORIDE IONS ON MIXED METAL OXIDE ANODES.....	1570
<i>A. Luyima, M. Moats</i>	
THE EFFECTS OF COATING SPEED AND SUBSTRATE ON CATALYTIC TITANIUM ANODES	1578
<i>P. Bagri, M. Moats</i>	
ELECTROCHEMICAL STUDIES OF THE PERFORMANCE OF DIFFERENT MESH ANODES DURING AND AFTER ZINC ELECTROWINNING	1588
<i>W. Zhang, M. Robichaud, E. Ghali, G. Houlachi</i>	
CHARACTERIZATION OF LIFETIMES AND MODE OF DEACTIVATION OF DIMENSIONALLY STABLE ANODES IN CURRENT REVERSE APPLICATIONS	1600
<i>F. Elnathan, M. Moats</i>	
COMPARISON OF GRINDING CHARACTERISTICS IN A HIGH-PRESSURE GRINDING ROLLER (HPGR) AND A CONE CRUSHER (CC).....	1611
<i>L. Liu, C. Jincheng, L. Liang, L. Wenjun</i>	
ELECTROLYTIC Ti POWDER PRODUCTION FROM ORE SOURCES	1622
<i>J. Withers, R. Loutfy</i>	
THE ADVANTAGES OF THE NEMASKA ELECTROMEMBRANE PROCESS TO DIRECTLY PRODUCE LITHIUM HYDROXIDE	1629
<i>J.-F. Magnan</i>	
A NEW ELECTROLYTE FOR COPPER AND SILVER REFINING?	1631
<i>M. Stelter, H. Bombach, J. Baumbach</i>	
ROYAL CANADIAN MINT SILVER ELECTROREFINING BLEED TREATMENT	1639
<i>V. Aprahamian, M. Tangen, G. Harris, C. White</i>	
DETAIL FLOW FIELD AND PERFORMANCE ANALYSIS OF INCLINED HYDROCYCLONES BY CFD AND EXPERIMENTS	1650
<i>T. Vakamalla, N. Mangadoddy</i>	
DEVELOPMENT OF A STABLE MnO₂ PROTECTIVE LAYER ON LEAD-BASED ELECTROWINNING ANODES	1662
<i>M. Mohammadi, M. Mahon, A. Alfantazi</i>	
ELECTROCHEMISTRY AND MINERAL DISSOLUTION	1674
<i>F. Habashi, A. Bas</i>	
KINETICS OF FERRIC-FERROUS REDUCTION-OXIDATION REACTIONS ON THE PYRITE SURFACES	1684
<i>L. Li, A. Ghahremaninezhad</i>	
ELECTROCHEMICAL STUDY OF GOLD CYANIDATION IN THE PRESENCE OF ROASTED GOLD ORE AND ITS ASSOCIATED OXIDE MINERALS	1694
<i>A. Bas, E. Ghali, Y. Choi</i>	
EFFECT OF ORGANIC COMPOUNDS ON NICKEL ELECTROWINNING	1705
<i>N. Freire, D. Majuste, V. Ciminelli</i>	
THE EFFECTS OF GLUE AND THIOUREA ON THE ELECTRODEPOSITION OF BISMUTH AND COPPER FROM ACIDIC SULFATE SOLUTIONS	1715
<i>W. Jin, M. Moats</i>	

LEACHING CONCENTRATES WITHOUT LEACHING IRON.....	1725
<i>M. Maccagni, J. Nielsen</i>	
HIGH CURRENT DENSITY OPERATION AT LOS BRONCES ELECTROWINNING PLANT	1730
<i>G. Zarate</i>	
HYDRODYNAMIC STUDY OF MULTI-PHASE FLOW OF COLUMN FLOTATION USING ELECTRICAL RESISTANCE TOMOGRAPHY COUPLED WITH PRESSURE TRANSDUCERS	1738
<i>B. Vadlakonda, N. Mangadoddy</i>	
FULL DEPOSIT NICKEL ELECTROWINNING AT RUSTENBURG BASE METAL REFINERS.....	1749
<i>J. Hagemann, J. Ndlovu, L. Nelson, L. Bryson, M. Gilmore, K. Hines, B. Peyper, R. Varty, T. Sepoloane</i>	
SIMULTANEOUS EW OF COPPER AND IRON USING MEMBRANE TECHNOLOGY.....	1762
<i>A. Das, F. Dakubo, C. Young</i>	
DEVELOPMENT OF A WATER QUALITY AND STABILITY INDEX FOR DC CASTING PROCESS.....	1774
<i>J. Colbert, G. Doyer, A. Larouche, G. Girard</i>	
SELEN-IX™: ION EXCHANGE AND ELECTROCHEMISTRY AT WORK TO COST EFFECTIVELY REMOVE SELENIUM FROM MINE IMPACTED WATERS TO ULTRA-LOW CONCENTRATIONS.....	1780
<i>F. Mohammadi, P. Littlejohn, D. Kratochvil</i>	
DESIGN AND R&D PROGRESS OF CHINA'S LARGEST UNDERGROUND NONFERROUS MINE - PULANG COPPER MINE	1795
<i>Z. Wei</i>	
ELECTROLYTIC RECOVERY OF METALLIC IRON AND CHLORINE GAS FROM CHLORIDE WASTE.....	1807
<i>S. Lefebvre, G. Hudon, D. Filippou, Y. Pepin</i>	
INVESTIGATION OF ZINC DEPOSIT CONTAMINATION BY LEAD DURING ELECTROWINNING EMPLOYING ELECTROCHEMICAL NOISE MEASUREMENTS.....	1818
<i>F. Safizadeh, C. Su, E. Ghali, G. Houlachi</i>	
THE EFFECT OF LEAD IMPURITY IN PRESENCE OF MANGANESE ADDITION ON ZINC ELECTROWINNING.....	1829
<i>C. Su, N. Sorour, W. Zhang, E. Ghali, G. Houlachi</i>	
EVALUATION OF OVERFLOW CLARITY BY NUMERICAL MODELING OF THE SETTLING ZONE IN GRAVITY CLASSIFIERS.....	1839
<i>D. Boudeville, G. Simard, A. Leclerc, A Boivin</i>	
ADVANCED MANUFACTURING OF A356 NANOCOMPOSITES ASSISTED BY ULTRASONIC AND ELECTROMAGNETIC PROCESSING	1847
<i>L. Nastac, D. Zhang, Y. Xuan</i>	
ELECTRODEPOSITION AND CHARACTERIZATION OF FE-MO-P COATINGS AS ELECTROCATALYSTS FOR HYDROGEN EVOLUTION DURING CHLORATE PRODUCTION.....	1854
<i>F. Safizadeh, N. Sorour, G. Houlachi, E. Ghali</i>	
R&D AND APPLICATION OF HUATE® RCG&DDC MS JCTN	1865
<i>S. Wang, Z. Wang, F. Liu, Y. Li, L. Zhang, Q. Xin</i>	
ELECTROPHORETIC DEPOSITION APPLIED TO FABRICATION OF LITHIUM-ION BATTERY ELECTRODES.....	1876
<i>M. Uceda, N. Beneckohal, G. Demopoulos</i>	
BREAKING OUT THE SILOS: TOWARDS SUSTAINABLE SOCIETY - ART, ENGINEERING AND DECISION MAKING PERSPECTIVES.....	1884
<i>N. Pajunen, R. Makikoskela</i>	
COMMISSIONING OF A BROWNFIELD CDS PLANT: VICTORIES AND PITFALLS	1893
<i>N. Romani, R. Provost, J. Milot</i>	
MICRO-STRUCTURED IRON (III)-HYDROXIDE AGGLOMERATES WITH HIGH POROSITY AS ADSORBENT	1909
<i>P. Ay, C. Glaser, F. Logsch, S. Narra, B. Gemende, A. Gerbeth, T. Riedel, N. Pausch, M. Leiker, B. Bade, R. Heiduschke</i>	
A TECHNO-ECONOMIC EVALUATION OF THE USE OF SEAWATER FOR COPPER FLOTATION	1919
<i>N. Haque, J. Cho, L. Smith, H. Aral, W. Bruckard</i>	
THE EXTRACTIVE METALLURGY OF AGROMINED NICKEL	1929
<i>J. Vaughan, W. Hawker, J. Chen, A. Van Der Ent</i>	
ESTIMATING THE ENERGY RECOVERY POTENTIAL OF NEWMONT'S CARLIN MINE DRY GRINDING CIRCUIT	1936
<i>P. Radziszewski, M. McGlynn, A. Giblett</i>	

ENERGY EFFICIENCY OPPORTUNITIES IN MINING, MINERALS PROCESSING AND REFINING - A HOLISTIC OVERVIEW	1949
<i>J. Franke</i>	
AGROMINING FOR NICKEL: A COMPLETE CHAIN THAT OPTIMIZES ECOSYSTEM SERVICES RENDERED BY ULTRAMAFIC LANDSCAPES	1961
<i>G. Echevarria, A. Baker, A. Bani, E. Benizri, A. Van Der Ent, V. Houzelot, P. Kidd, B. Laubie, J. Morel, M. Pons, M. Simonnot, X. Zhang</i>	
RECENT ADVANCES IN DEVELOPING TROPICAL NICKEL AGROMINING.....	1967
<i>A. Van Der Ent, G. Echevarria, P. Erskine</i>	
IS NICKEL DRIVING THE BACTERIAL COMMUNITY DIVERSITY IN THE RHIZOSPHERE OF HYPERACCUMULATOR PLANTS?	1973
<i>S. Lopez, E. Benizri, J. Morel, G. Echevarria, S. Piutti, J. Vallance</i>	
AGROMINING: PRODUCING NI SALTS FROM THE BIOMASS OF HYPERACCUMULATOR PLANTS	1983
<i>M. Simonnot, B. Laubie, X. Zhang, V. Houzelot, F. Ferrari, J. Rodrigues, M. Pons, A. Bani, G. Echevarria, J. Morel</i>	
PHYTOMINING OF NI FROM MINERALIZED OR CONTAMINATED SOILS AVAILABLE TO INDUSTRY	1989
<i>R. Chaney</i>	
STUDIES ON THE BIOREMEDIATION OF CHROMIUM USING A BACTERIAL STRAIN ISOLATED FROM A CHROMITE MINE	1998
<i>D. Prabhakaran, Y. Sivry, J. Riotte, S. Subramanian</i>	
PREDICTING AND PREVENTING SPREADING OF FINES IN SUBMARINE TAILINGS DISPOSAL	2009
<i>K. Sandvik, E. Larsen</i>	
RESIDUES FROM LEAD, ZINC AND COPPER INDUSTRY AND THEIR POSSIBLE CONTRIBUTION TO THE SUPPLY OF SELECTED MINOR ELEMENTS.....	2019
<i>S. Steinlechner, J. Antrekowitsch</i>	
DESIGN OF SO₂/O₂ CYANIDE DESTRUCTION CIRCUITS: THE CRITICAL FACTORS AND CHALLENGES	2027
<i>N. Yap, N. Katsikaros, B. Adaszynski</i>	
DEVELOPMENT OF AN ELECTROCHEMICALMICROBIAL SENSOR FOR ANALYTICAL DETERMINATION OF PB(II) IONS IN AQUEOUS SOLUTION.....	2039
<i>S. Vimalnath, S. Subramanian, S. Sampath, R. Kumar, C. Schwandt</i>	

VOLUME 4

APPLICATION OF THE UNFC-2009 TO METALS' PRODUCTION WASTE.....	2051
<i>R. Villas-Boas, M. Panayotova, V. Panayotov</i>	
CHALLENGES AND A POSSIBLE SOLUTION FOR THE RECYCLING OF TANTALUM FROM WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT	2062
<i>F. Roemer, T. Elver, D. Goldman</i>	
RECYCLING OF METAL-COATED PLASTIC-PARTS FROM END-OF-LIFE-VEHICLES WITH BIOTECHNOLOGICAL METHODS.....	2072
<i>J. Markowski, P. Ay, F. Logsch, H. Pempel</i>	
PROCESS DEVELOPMENT FOR THE RECOVERY OF CRITICAL MATERIALS FROM ELECTRONIC WASTE	2080
<i>T. Lister, L. Diaz, G. Clark, P. Keller</i>	
RECOVERY OF PLATINUM GROUP METALS USING PEROVSKITE-TYPE OXIDE	2091
<i>K. Nagai, H. Kumakura, M. Makijuchi, T. Kikuchi, T. Nagai</i>	
RECYCLING OF PRINTED CIRCUIT BOARDS (PCB): EXTRACTION OF METALLIC AND NONMETALLIC FRACTIONS BY A COMBINATION OF PHYSICAL AND CHEMICAL PROCESSES	2098
<i>S. Al-Thyabat, A. Ghrair</i>	
THE SART PROCESS: KILLING THE SACRED COWS.....	2107
<i>C. Fleming, M. Melashvili</i>	
USING SYNERGY BETWEEN CYANIDE, OXYGEN, AND LEAD NITRATE TO IMPROVE EXTRACTION AND REDUCE OPEX / CAPEX IN THE PROCESSING OF SULPHIDE-BEARING GOLD ORES	2121
<i>G. Deschenes</i>	

CHARACTERISATION AND MODELLING OF THE BEHAVIOUR OF GOLD-SILVER COMPETITIVE CO-ADSORPTION IN CIL/CIP CIRCUITS	2132
<i>A. Bax, K. Barbetti, W. Staunton, J. Avraamides, J. Eksteen</i>	
ASSESSMENT OF OZONE-PRE-TREATMENT OF SULFIDE BEARING GOLD ORES TO PREVENT THE IMPACT OF CYANICIDES	2142
<i>B. Levasseur, M. Drapeau, C. Bolduc, M. Epiney, C. Olsen, C. Gagnon</i>	
EVALUATION OF CRYSTAL GROWTH INHIBITORS TO REDUCE ENCAPSULATION OF GOLD IN LEACH SLURRIES	2153
<i>R. Lauten, G. Kluck</i>	
SELECTIVE REMOVAL OF MERCURY FROM GOLD MINING	2161
<i>S. Colley, J. Stevens</i>	
RECOVERY GOLD FROM REFRactory OLD SULFIDE TAILINGS USING HEAP BIO-OXIDATION.....	2169
<i>G. Sedelnikova, N. Ibragimova, D. Kim</i>	
ECONOMIC EVALUATION OF BIOOXIDATION OF GOLD ORES.....	2179
<i>J. Lee</i>	
PIONEERS IN HYDROMETALLURGY	2187
<i>F. Habashi</i>	
HIGH PURITY ALUMINA FROM GREENLAND	2197
<i>J. Goode, J. Tuer, J. Cambon</i>	
NIOBium AND TANTALUM CHEMISTRY: A BRIEF OVERVIEW AND RECENT HIGHLIGHTS.....	2208
<i>G. Deblonde, S. Belair, V. Weigel, G. Cote, A. Chagnes</i>	
PRECIPITATION OF SELENIUM, TELLURIUM, AND PLATINUM GROUP METALS FROM COPPER SULPHATE LEACH SOLUTIONS	2217
<i>C. Dorfling, J. Du Plessis</i>	
CONTROL OF UNDESIRABLE URANIUM LEACHING IN A PRIMARY MINERAL PROCESSING CIRCUIT	2227
<i>S. Humphrey, T. Byrne, J. Gogal, M. Davoodi, D. Kao</i>	
EXTRACTION, SEPARATION AND RECOVERY OF THORIUM FROM KOREAN MONOZITE ORE LEACH LIQUORS	2237
<i>J. Kumar, K.-W. Chung, H.-S. Yoon, J.-Y. Lee</i>	
EXPERIMENTAL INVESTIGATION OF IMPROVING BORON REACTIVITY IN REDUCTION OF BORON-BEARING IRON CONCENTRATE	2248
<i>Y. Han, J. Yu, Z. Zhang, Y. Li, P. Gao, J. Liu, Y. Sun, W. Li</i>	
A STUDY OF THE REACTION MECHANISMS FOR THE IRON SEGREGATION PROCESS	2257
<i>P. Kerr, Q. Liu, T. Etsell</i>	
A COMPARATIVE ANALYSIS OF BINDERS FOR IRON ORE PELLETIZATION	2269
<i>J. Halt, Y. Zhou, S. Kawatra</i>	
REACTION KINETICS OF IRON OXIDES IN OK TEDI MAGNETITE SKARN ORE	2278
<i>M. Kama, K. Gena</i>	
TESTING OF PYROMAG™ FOR ENERGY EFFICIENT HOT MAGNETIC SEPARATION.....	2292
<i>R. Jain, M. Pirie, I. Sherrell</i>	
THERMAL-MECHANICAL FEA MODELING OF FURNACE HEARTH REFRACTORY FOR DESIGN AND CAMPAIGN LIFE IMPROVEMENT	2303
<i>K. Chomyn, C. Van Der Woude, H. Ghorbani, P. Zangeneh, R. Veenstra, C. Walker</i>	
THE RECOVERY OF PRECIOUS METALS AND PLATINUM GROUP METALS FROM MINE ORES AND TAILINGS USING PLASMA SMELTING TECHNOLOGY	2313
<i>T. Johnson, D. Deegan, D. Martin, G. Holcroft</i>	
THE EFFECTS OF NOZZLE GEOMETRY ON FLUID FLOWS IN ROUND AND SQUARE BILLET CASTING MOLDS.....	2324
<i>M. Aboutalebi, M. Isaac, R. Guthrie</i>	
TREATMENT OF AS-CONTAINING FLUE DUST OF COPPER FLASH SMELTER	2334
<i>J. Guentner, M. Wrobel, A. Charitos, J. Hammerschmidt, D. Nurgaliyeva</i>	
PROCESSING THE ARSENIC RICH MMH COPPER CONCENTRATE INTO A HIGH QUALITY CALCINE BY FLUIDIZED BED ROASTING	2344
<i>L. Hedstrom, A. Holmstrom, J. Hammerschmidt, A. Charitos, C. Mattich</i>	
RESIDUES FROM THE ZINC INDUSTRY – A POTENTIAL FUTURE RESOURCE FOR SILVER AND INDIUM	2354
<i>S. Wegscheider, S. Steinlechner</i>	
EVALUATION OF THE U.N. SELF-HEATING TEST FOR SULPHIDES	2363
<i>S. Moon, J. Finch, F. Rosenblum, J. Nessel, K. Waters</i>	

HYDROMETALLURGICAL PROCESSING OF OLD FLOTATION TAILINGS	2376
<i>A. Bulaev, V. Melamud</i>	
USE OF THE ATTAINABLE REGION METHOD TO OPTIMISE A MILLING AND LEACHING PROCESS	2382
<i>N. Hlabangana, G. Danha, D. Hildebrandt, D. Glasser</i>	
SOLVENT EXTRACTION PLANT MODIFICATIONS AT ANGLOAMERICAN COPPER	2399
<i>G. Zarate, M. Torres</i>	
THE APPLICATION OF POLYSIL® COAGULANTS TO REDUCE CRUD FORMATION BY CONTROLLING COLLOIDAL SILICA	2409
<i>S. Hearn, A. Smethurst, S. Boskovic</i>	
SELECTIVE REMOVAL OF COPPER FROM ACID MINE DRAINAGE	2420
<i>S. Colley, L. Hutton</i>	
A DESIGN OF EXPERIMENTS INVESTIGATING PREDISPersed SOLVENT EXTRACTION OF NICKEL IONS FROM DILUTE SOLUTIONS USING FRACTIONAL FACTORIAL DESIGN	2427
<i>A. Molaei, K. Waters</i>	
THE USE OF OXYGEN INSTEAD OF AIR IN BIOLEACHING OPERATIONS AT MEDIUM TEMPERATURE	2438
<i>A. Guezennec, A. Archane, D. Ibarra, J. Jacob, P. D'hughes</i>	
INVESTIGATION OF INTERMEDIATE SPECIES AND ELECTROCHEMICAL DISSOLUTION OF CHALCOPYRITE IN THE PRESENCE OF SULFUR AND IRON OXIDIZING MICROORGANISMS	2446
<i>H. Zhao, J. Wang, R. Liao, M. Hu, W. Qin, G. Qiu</i>	
THE ROLE OF BACTERIA AND THE ADDITION OF PYRITE DURING LEACHING OF CO(111) FROM HETEROGENITE	2460
<i>L. Zeka, S. Gayardzhiev, J. Frenay, I. Ndala</i>	
COMBINED TECHNOLOGY OF OXIDIZED NICKEL ORE PROCESSING	2470
<i>V. Luganov, I. Motovilov, T. Chepushtanova, G. Guseynova</i>	
RECOVERY OF ZINC, MANGANESE AND LEAD FROM PYROMETALLURGICAL SLUDGE BY HYDROMETALLURGICAL PROCESSING	2481
<i>M.-O. Simonnot, J. Mocellin, G. Mercier, J.-F. Blais, P. Charbonnier, J.-L. Morel</i>	
DEFINING THE OPERATING CONDITIONS OF THE ATTRITION-LEACHING PROCESS USING THERMODYNAMIC PROCESS MODELLING	2490
<i>L. Cassayre, F. Bourgeois, C. Julcour-Lebigue, I. Benhamed, J. Diouani, K. Nahdi</i>	
LINKING FLOTATION METALLURGICAL PERFORMANCE TO BUBBLE SIZE	2502
<i>J. Hernandez-Aguilar</i>	
GAS HOLDUP ESTIMATION USING MAXWELL EQUATION IN FLOTATION SYSTEMS: REVISITED	2517
<i>M. Maldonado, A. Pinto, L. Magne, C. Gomez, J. Finch</i>	
ENHANCING GOLD RECOVERY FROM NEVADA DOUBLE REFRACTORY GOLD ORES USING A NOVEL DUAL BUBBLE GENERATOR	2527
<i>J. Huang, H. Li, Q. Liu, Z. Xu, J. Masliyah, J. Jiang, B. Gorain</i>	
THE EFFECT OF CARBONATE IONS ON THE ELECTROKINETIC PROPERTIES OF BASTANSITE, MONAZITE AND DOLOMITE	2536
<i>E. Espiritu, G. Da Silva, K. Waters</i>	
THE RELATIONSHIP BETWEEN HYDRODYNAMIC VARIABLES AND THE KINETIC CONSTANT IN LABORATORY SCALE FLOTATION COLUMN	2544
<i>A. Vazirizadeh, J. Bouchard, R. Villar</i>	
QUANTIFYING SOLIDIFICATION PATH IN RAPID SOLIDIFICATION USING 3D MEASUREMENTS	2555
<i>H. Henein</i>	
SPATIAL VARIATIONS OF PULP PROPERTIES IN FLOTATION - IMPLICATIONS FOR OPTIMIZING CELL DESIGN AND PERFORMANCE	2556
<i>L. Malm, A. Sand, J. Rosenkranz, N.-J. Bolin</i>	
A NOVEL FRAMEWORK FOR MODELLING FLOTATION COLUMN HYDRODYNAMICS	2567
<i>P. Brito-Parada, G. Bhutani, J. Cilliers</i>	
FINITE ELEMENT ANALYSIS OF SHEAR ANGLE ON DEFORMATION BEHAVIOR OF AL-MG-SI ALLOY IN CONSTRAINED GROOVE PRESSING	2577
<i>F. Rahimi, B. Sadeghi, S. Bakhshivash, M. Haghshenas</i>	
THE EFFECT OF ENERGY ON THE FLOTATION OF A PLATINUM ORE IN A PILOT-SCALE OSCILLATING GRID FLOTATION CELL	2586
<i>M. Safari, M. Harris, D. Deglon</i>	

A COST PENALTY ASSOCIATED WITH FERROCYANIDE IN GOLD PROCESSING USING CYANIDE	2596
<i>C. Fleming, M. Melashvili, R. Jackman</i>	
SELECTIVE LEACHING OF GOLD FROM AN OXIDIZED COPPER-GOLD ORE BY STAGE CYANIDE ADDITION: EXPERIMENTAL STUDY AND INDUSTRIAL APPLICATION	2606
<i>Z. Hu, B. Song, C. Wang, T. Wang, P. Li</i>	
FLOTATION OF FINE PARTICLES – IS IT THE QUESTION OF POWER INPUT AND BUBBLE SIZE WITHIN THE CELL?	2615
<i>H. Manouchehri, S. Farrokhpay</i>	
SIGNIFICANCE OF EXPOSED GRAIN SURFACE AREA IN COARSE PARTICLE FLOTATION OF LOW-GRADE GOLD ORE WITH THE HYDROFLOAT™ TECHNOLOGY	2627
<i>J. Miller, C. Lin, Y. Wang, M. Mankosa, J. Kohmuench, G. Luttrell</i>	
HYDRODYNAMICS ANALYSIS OF A 680 M³ MECHANICAL AGITATED FLOTATION CELL BASED ON NUMERICAL SIMULATION	2637
<i>S. Zhengchang, C. Dong, Z. Ming, D. Ganguo</i>	
EFFECT OF FROTHER TYPE ON FOAM STRUCTURE	2646
<i>D. Mesa, W. Kracht, G. Diaz</i>	
COPPER OXIDE FLOTATION USING THE COMBINED COLLECTORS OF BENZOHYDROXAMIC ACID AND BUTYL XANTHATE	2654
<i>D. Chen, J. Xiao, C. He, X. Li</i>	
THE EFFECT OF FROTH BUBBLE SIZE DISTRIBUTION ON FLOTATION PERFORMANCE IN A SEMI-BATCH LAB CELL	2664
<i>C. Bhondayi, M. Moys, E. Tshibwabwa</i>	
THE EFFECT OF PARTICLE SIZE ON FROTH STABILITIES OF DIFFERENT ORES	2674
<i>B. Mcfadzean, I. Achaye, J. Wiese, T. Chidzanira, M. Harris</i>	
PREDICTING BUBBLE COARSENING IN FLOTATION FROTH: EFFECT OF PARTICLE SIZE AND HYDROPHOBICITY	2685
<i>S. Park, W. Shim, K. Huang, R.-H. Yoon</i>	
DYNAMIC CHARACTERIZATION OF GAS DISPERSION AND FROTH DISCHARGE VELOCITY IN A TWO-PHASE FLOTATION CELL	2697
<i>J. Yianatos, L. Vinnett, I. Panire, F. Ruiz</i>	
IMPROVING FLOTATION RECOVERY OF OXIDE COPPER MINERALS	2708
<i>T. Bhamhani, D. Nagaraj, O. Yavuzkan</i>	
EFFECT OF WATER CHEMISTRY ON THE FLOTATION OF COLORED IMPURITIES FROM FELDSPAR	2720
<i>L. Moore, Y. Xiong, A. Gorken, G. Wang</i>	
HIGH TEMPERATURE ELECTROWINNING ANODES	2731
<i>M. Burr, A. Mirza, T. Ellis, L. Webb, J. Gagnon</i>	
THE IMPLEMENTATION PROCESSING PLANT MODIFICATIONS AT CORMIDOM, CERRO DE MAIMON, PERILYA	2740
<i>J. Ruiz, J. Lizardo, C. Umpig, F. Ccuno, E. Pengel, R. Cunningham</i>	
MODIFICATION OF THE SARCHESHMEH COPPER COMPLEX FLOTATION CIRCUIT IN RESPONSE TO A REDUCTION IN FEED GRADE	2751
<i>G. Parsapour, S. Tafvizi, E. Arghavani, A. Akbari, S. Banisi</i>	
RECOVERY OF VALUES FROM A PORPHYRY COPPER TAILINGS STREAM	2758
<i>M. Mankosa, J. Kohmuench, L. Christodoulou, G. Luttrell</i>	
DE-SLIMING OF PENALTY U-BEARING PARTICLES IN THE RECLEANER FEED OF A COPPER CONCENTRATOR	2768
<i>J. Lem, W. Skinner, M. Zanin</i>	

VOLUME 5

IMPROVING FINE SULPHIDE MINERAL RECOVERY AT THE RED DOG OPERATION	2775
<i>B. Lacouture, B. Wilson, J. Oliver, B. Lumsden</i>	
TEAMWORK, PREPARATION, EXECUTION AND FOLLOWUP: RECIPE FOR SUCCESSFUL COMMISIONING OF THE EAGLE NI-CU OPERATION	2785
<i>D. Stacey, H. Staton, G. Marrs, T. Deng, M. Kelvin, L. Kormos</i>	
OPTIMISING CHEMICAL COST IN FINE COAL FLOTATION AT BHELATAND COAL PREPARATION PLANT	2796
<i>S. Singh, A. Bhatnagar, M. Sinha, S. Ranjan, P. Garg, R. Kar, M. Ahmad</i>	

THE AMBS FLOTATION PROCESS FOR COPPER AND COPPER-GOLD ORES: BENCH TO PLANT APPLICATIONS.....	2805
<i>B. Gorain, J. Jiang, J. Mitchell, P. Kondos</i>	
THE INFLUENCE OF GRINDING CHEMISTRY ON CHALCOPYRITE/PYRITE SELECTIVITY FOR PORPHYRY COPPER ORES	2819
<i>C. Greet, J. Kinal, G. Small</i>	
EFFECT OF USING DIFFERENT GRINDING MEDIA ON THE FLOTATION OF A BASE METAL SULPHIDE AND UG2 ORE CONTAINING PLATINUM GROUP MINERALS	2829
<i>Z. Song, K. Corin, J. Wiese, C. O'connor</i>	
DEPRESSION OF PYRITE BY METABISULFITE AND SULFITE IONS IN SEAWATER AND FRESH WATER.....	2841
<i>L. Uriel, S. Castro, L. Gutierrez, J. Laskowski</i>	
BIODEPRESSION OF PYRITE IN SEAWATER FLOTATION	2852
<i>F. San Martin, W. Kracht, T. Vargas</i>	
INVESTIGATING FROTH STABILITY AND ENTRAINMENT: A COMPARATIVE STUDY OF IONIC STRENGTH AND DEPRESSANT DOSAGE	2860
<i>M. Manono, K. Corin, J. Wiese</i>	
REJECTION OF URANIUM FROM A COPPER GOLD ORE BY FLOTATION	2875
<i>M. Xu, J. Dong, F. Ford</i>	
TREATMENT OF ONCE REJECTED MATERIAL – INVESTIGATING THE RECOVERY OF CASSITERITE FROM TAILINGS DISPOSALS USING DIFFERENT FLOTATION METHODS.....	2885
<i>T. Leistner, C. Mampel, M. Embrechts, T. Leissner, R. Mockel, U. Peuker, M. Rudolph</i>	
DESULFURIZATION OF COARSE HEMO-ILMENITE ORE	2894
<i>L. Huang, C. Gagnon, D. Chen, P. Nadeau, Y. Zhang</i>	
INCORPORATING LIBERATION INFORMATION IN FLOTATION MODELS.....	2907
<i>G. Subasinghe, J. Zhang, R. Dunne</i>	
INVESTIGATION OF SURFACE PROPERTIES AND FLOATABILITY OF CdTe SEMICONDUCTOR FOR THE SAKE OF RECYCLING OF OBSOLETE SOLAR ELEMENTS	2917
<i>L. Bokanyi, S. Szabo, J. Paulovics</i>	
HYDROPHOBIC NANO-ASPERITIES OF ROUGH PARTICLES IN CONTROL OF ENERGY BARRIER DURING FLOTATION	2926
<i>J. Drelich</i>	
THE FIRST-PRINCIPLES STUDY OF QUARTZ (100) SURFACE ADSORBED BY HYDROXYLCALCIUM.....	2934
<i>Y. Shang, Y. Xie, X. Zhang, Y. Zhu, L. Han, C. Sun, Y. Zhang</i>	
EFFECT OF Fe IONS PRODUCED DURING MILD STEEL MILLING ON FLOATABILITY OF DIFFERENT ORES	2942
<i>Z. Song, K. Corin, J. Wiese, C. O'connor, J. Liu, F. He, M. Zhang</i>	
MECHANISM OF FINE DISPERSED MINERAL FORMATION ON THE SURFACE OF DIAMONDS AND THEIR REMOVAL BY WATER SYSTEM ELECTROLYSIS PRODUCTS	2952
<i>V. Chanturiya, G. Dvoychenkova, O. Kovalchuk</i>	
AN AFM STUDY OF THE ADSORPTION OF ETHYL XANTHATE ON COPPER SULFIDES.....	2963
<i>J. Zhang, W. Zhang</i>	
WETTING FILMS IN FLOTATION	2974
<i>L. Pan, R.-H. Yoon</i>	
EFFECTS OF VARIABILITY IN GRINDING MEDIA AND BALL SIZE ON PULP CHEMISTRY.....	2975
<i>L. Xia, Z. Chen, B. Hart, J. Nigim</i>	
A STUDY ON THE PROPERTIES OF FOAMS PRODUCED WITH CELLULOSE-BASED MOLECULES WITH AN OUTLOOK ON FLOTATION	2983
<i>T. Nuorivaara, R. Serna-Guerrero</i>	
COMPARATIVE STUDY OF THE ACTIVITY FEATURES OF DIALKYLDITHIOPHOSPHATES AND REAGENTS WITH THIOAMIDE GROUP WHEN SEPARATING MINERALS WITH COPPER, ARSENIC	2999
<i>V. Ryaboy, E. Shepetia, V. Kretov, I. Ryaboy</i>	
A REVIEW OF FLOTATION COLLECTORS: FROM FUNDAMENTALS TO PRACTICE	3010
<i>G. Liu, J. Xiao, X. Yang, H. Zhong</i>	
FLOTATION OF ZINC OXIDE MINERALS WITH POTASSIUM LAURYL PHOSPHATE	3026
<i>X. Wang, J. Miller, Z. Wang, S. Jian, T. Song, Y. Liang</i>	
FLOTATION SEPARATION OF QUARTZ FROM HEMATITE USING BIS (2-HYDROXYETHYL) DODECYLAMINE AS COLLECTOR	3038
<i>W. Liu, D. Wei, B. Cui, Z. Guan, B. Wang, P. Fang, S. Gao</i>	

FORECASTING PERSPECTIVE REAGENTS FOR FLOTATION ON THE SCREENING BASIS OF CHEMICAL COMPOUNDS	3047
<i>P. Solozhenkin, L. Solozhenkin, O. Ibragimova</i>	
IMPROVEMENT OF CALCIUM MINERAL SEPARATION CONTRAST USING THE MIXTURES OF ANIONIC AND NONIONIC REAGENTS.....	3058
<i>L. Filippov, Z. Lafhai, I. Filippova, V. Severov</i>	
MECHANISM OF SPHALERITE DEPRESSION IN AN OPEN CU/ZN FLOTATION SEPARATION CIRCUIT	3069
<i>L. Xia, B. Hart, M. Furlotte, G. Gingras, C. Olsen</i>	
THE USE OF OXIDISING AGENTS FOR CONTROL OF ELECTROCHEMICAL POTENTIAL IN FLOTATION	3081
<i>W. Chimonyo, J. Wiese, K. Corin, M. Tadie, C. O'connor</i>	
INFLUENCE OF DESORBED SPECIES OF XANTHATES AND DIALKYLDITHIOPHOSPHATES ON THEIR COLLECTING ABILITY	3093
<i>S. Kondratyev, V. Ryaboy</i>	
INFLUENCE OF NONPOLAR GROUP STRUCTURE ON COLLECTING PROPERTY OF TWO HYDROXAMIC ACID TO HEMIMORPHITE.....	3102
<i>C. Han, D. Wei, Y. Shen, P. Fang, S. Zhou</i>	
INFLUENCE OF SELECTED FROTHERS ON PRE-FLOTATION OF THE KUPFERSCHIEFER ORE	3112
<i>M. Duchnowska, A. Bakalarz, A. Luszczkiewicz, J. Drzymala, P. Kowalcuk, A. Konieczny, W. Pawlos</i>	
NEW REAGENT MODES FOR FLOTATION RECOVERY OF GOLD FROM REFRACTORY ORES USING HERBAL EXTRACTS	3119
<i>T. Matveeva, V. Chanturiya, T. Ivanova, N. Gromova</i>	
PHYSICOCHEMICAL PROPERTIES OF AMINATED BUTYL-NANOCRYSTALS IN CORRELATION TO THE FLOTATION RESPONSE OF QUARTZ	3130
<i>R. Hartmann, M. Rudolph, O. Laitinen, J. Sirvio, H. Liimatainen, M. Illikainen</i>	
SELECTIVITY AND POWER OF POLY(PROPYLENE GLYCOL) AND POLY(ETHYLENE GLYCOL) ALKYL ETHERS FROTHERS IN COPPER ORE FLOTATION.....	3139
<i>P. Kowalcuk, J. Drzymala</i>	
DENSITY FUNCTIONAL THEORY SIMULATION STUDY ON THE HYDROXYLATED HEMATITE SURFACES: UNDERSTANDING ITS REACTIVITY	3147
<i>V. Jain, B. Rai, Pradip, U. Waghmare</i>	
A DFT STUDY OF COLLECTOR ADSORPTION ON THE SULPHIDE MINERAL SURFACE IN THE PRESENCE OF WATER MOLECULES	3155
<i>J. Chen, X. Long, Y. Chen, Z. Xu, Q. Liu</i>	
FLOTATION OF SILVER FROM COPPER ORE AFTER MILLING IN THE PRESENCE OF GRINDING MEDIA OF DIFFERENT COMPOSITIONS	3165
<i>A. Bakalarz, M. Duchnowska, J. Drzymala, A. Luszczkiewicz, P. Kowalcuk, A. Konieczny, W. Pawlos</i>	
MAGNETIC SEEDING FLOTATION FOR FINE COAL AND PYRITE PARTICLES	3175
<i>X. Wu, T. Yue, L. Dai, L. Yi, R. Wang</i>	
NEW TECHNIQUE FOR FLOTATION OF POTASH ORES WITH A HIGH CONTENT OF WATER-INSOLUBLE IMPURITIES.....	3187
<i>S. Titkov, N. Panteleeva, A. Bondareva, S. Aliferova, E. Afonina</i>	
PROCESS MINERALOGY BASED ON MINERAL LIBERATION ANALYSER (MLA) AND PHOSPHORUS RECOVERY FOR A FINE PHOSPHATE TAILING	3197
<i>Q. Zhang, J. Ye, X. Li, W. Cheng, S. Mao, Y. Qiu, Z. Liu</i>	
MDS ANALYSIS OF FILM STABILITY AND BUBBLE ATTACHMENT AT SELECTED MINERAL SURFACES	3207
<i>J. Jin, J. Miller</i>	
A CRITICAL OVERVIEW OF INTERACTIONS OF DITHIOPHOSPHINATES WITH BASE METAL SULFIDES AND PRECIOUS METALS	3221
<i>N. Tercero, D. Nagaraj, R. Farinato</i>	
EFFECT OF METAL CATIONS ON THE RUTILE FLOTATION USING STYRYL PHOSPHORIC ACID AS A COLLECTOR.....	3235
<i>W. Xiao, J. Wang, W. Qin, P. Cao, L. Tao, L. Shen, G. Qiu</i>	
WETTABILITY MEASUREMENTS IN THE SELECTION OF EXTENDER OILS FOR POTASH ORE FLOTATION.....	3244
<i>L. Barroilhet, J. Laskowski, A. Atrafi</i>	
FACTORS INFLUENCING AL(III) ADSORPTION ONTO SILICATE CLAY MINERALS	3258
<i>W. Chai, Y. Huang, H. Han, J. Liu</i>	

FORMATION OF H₂O₂ BY METAL SULFIDES AND ITS EFFECT IN SULFIDE MINERAL FLOTATION	3267
<i>A. Javadi, K. Rao</i>	
PROBING THE INTERFACE AND INTERPHASE REGION OF MOLYBDENITE EDGE AND FACE IN ORE FLOTATION PULPS: EFFECT OF Mg²⁺ IONS AND THEIR HYDROLYSIS PRODUCTS	3279
<i>D. Nagaraj, R. Farinato, N. Tercero</i>	
RELATING ENTHALPIES OF ADSORPTION OF THIOL COLLECTORS AND COLLECTOR MIXTURES ON BASE METAL SULFIDE MINERALS TO THEIR FLOATABILITY	3288
<i>J. Taguta, C. O'connor, B. Mcfadzean</i>	
SPECTROSCOPIC STUDY OF MIXED COLLECTOR ADSORPTION ON PYRITE TO ENHANCE REFRACTORY GOLD ORE BENEFICIATION BY FLOTATION	3298
<i>A. Otsuki, Y. Zhao</i>	
COMMINUTION ENERGY EFFICIENCY – UNDERSTANDING THE NEXT STEPS.....	3307
<i>L. Nordell, B. Porter, A. Potapor</i>	
AN INVESTIGATION INTO THE RELATIONSHIP BETWEEN EXCESS GIBBS ENERGY AND THE ROLE OF SURFACTANTS IN FROTH FLOTATION.....	3329
<i>C. O'connor, M. Harris</i>	
AN INTEGRATED FORMULATION FOR PARTICLE-BUBBLE DETACHMENT	3339
<i>M. Schwarz</i>	
EFFECT OF KEROSENE ON BUBBLE INTERACTION WITH MOLYBDENITE AND CHALCOPYRITE IN MGCL₂ SOLUTION	3350
<i>G. Suyantara, T. Hirajima, A. Elmahdy, H. Miki, K. Sasaki</i>	
FORCES AND THE YOUNG RELATIONSHIP IN THE BUBBLE-SPHERICAL PARTICLE-LIQUID SYSTEM	3360
<i>J. Drzymala, P. Kowalcuk</i>	
MAIN FACTORS AFFECTING THE SIZE OF HYDROGEN AND OXYGEN BUBBLES PRODUCED IN THE ELECTROFLOTATION PROCESS.....	3367
<i>R. Rojas, M. Torem, A. Merma, J. Puelles, H. Couto</i>	
PREDICTION OF THE CRITICAL RUPTURE THICKNESS OF FOAM FILMS FORMED FROM SALINE WATER IN THE PRESENCE OF FLOTATION FROTHERS.....	3377
<i>L. Wang</i>	
THE ROLE OF BUBBLE INTERFACIAL PROPERTIES IN THE DETACHMENT OF PARTICLES DURING BUBBLE COALESCENCE	3388
<i>G. Bournival, J. Tavares, S. Ata, E. Wanless</i>	
EXPERIMENTS ON THE DETACHMENT OF PARTICLES FROM BUBBLES IN A ROTATING TURBULENT FIELD	3398
<i>G. Wang, G. Evans, G. Jameson</i>	
TUNING FOAMABILITY AND FOAM STABILITY USING TEMPERATURE-RESPONSIVE POLY(N-ISOPROPYLACRYLAMIDE)	3408
<i>M. Jackman, Z. Xu, Q. Liu</i>	
FROTHER STRUCTURE-PROPERTY RELATIONSHIP: EFFECT OF POLYPROPYLENE GLYCOL ALKYL ETHERS ON BUBBLE RISE VELOCITY.....	3413
<i>Y. Tan, W. Zhang, J. Finch</i>	
DEPRESSION OF PYRITE IN THE FLOTATION OF CHALCOPYRITE USING BIOPOLYMER DEPRESSANTS.....	3421
<i>Y. Mu, Y. Peng, R. Lauten</i>	
INVESTIGATION OF THE POSSIBILITY OF USING ACOUSTIC TECHNIQUE TO DETERMINE BUBBLE SIZE IN AN INCLINED CELL	3432
<i>P. Chu, R. Li, R. Pax, J. Finch</i>	
FLOTATION SEPARATION OF MUSCOVITE FROM QUARTZ USING MIXED ANIONIC/CATIONIC COLLECTORS	3441
<i>L. Wang, W. Sun, Y. Hu, R. Liu, P. Chen, Z. Gao</i>	
NEW FORMULATIONS FOR REVERSE FLOTATION OF PHOSPHATE FROM SEDIMENTARY ORES	3450
<i>M. Svensson, A. Klingberg, N. Schwarzmayr</i>	
THE EFFECT OF CLAY TREATMENT OF COPPER OXIDE ORE FOR ENHANCED FLOTATION EFFICIENCY	3458
<i>A. Gomez-Flores, J. Choi, S. Park, G. Hong, J. Lee, H. Kim</i>	
INFLUENCE OF LOW IRON INPUTS ON IMPURITY CO-PRECIPITATION IN TECK'S IRON REMOVAL PROCESSES AT TRAIL OPERATIONS	3466
<i>M. Heximer, B. Neufeld, D. Reynolds, S. Roach, W. Van Luven</i>	

COMPARISON OF SELECTIVE FLOTATION OF CHALCOPYRITE AND MOLYBDENITE	3474
<i>T. Hirajima, H. Matsuoka, H. Miki, G. Suyantara, A. Elmahdy, K. Sasaki</i>	
INTERACTIVE VISUALISATION OF A BASE METAL CONCENTRATOR.....	3485
<i>S. Ata</i>	

VOLUME 6

LIGHT WEIGHTING THE AUTOMOTIVE INDUSTRY THE ROAD TO 2025 CAFE.....	3492
<i>G. Cole</i>	
RESEARCH ON MINERAL PROCESSING TECHNOLOGY AND PRODUCTION ADJUSTMENT FOR SEYRIGITE ORE	3508
<i>X. Zhou, G. Fu, L. Deng, T. Guan, Y. Chen</i>	
SIMULATION OF DROP-WEIGHT IMPACT ON WOVEN COMPOSITE LAMINATES.....	3517
<i>J. Levesque, P. Gagnon, P. Vachon-Joannette, A. Gakwaya</i>	
THE USE OF SPIRAL SEPARATORS FOR IRON ORES CONCENTRATION	3526
<i>S. Prokopev, M. Bolotin, M. Shulgina, Y. Prokopev</i>	
FINITE ELEMENT ANALYSIS OF SERRATED CHIP FORMATION IN MACHINING OF 7075-T651 ALUMINUM ALLOY	3533
<i>W. Jomaa, O. Mechri, J. Levesque, V. Songmene, P. Bocher, A. Gakwaya</i>	
HOT FORGING PROCESS SIMULATION FOR AEROSPACE ALUMINIUM ALLOY USING A MODIFIED JOHNSON-COOK EQUATION	3545
<i>K. Ba, J. Levesque, M. Guillot, A. Gakwaya</i>	
BENEFICIATION OF INDUSTRIAL MINERALS USING A TRIBO-ELECTRIC BELT SEPARATOR	3557
<i>F. Hrach, K. Flynn, P. Miranda</i>	
EFFECTS OF MINOR ALLOYING ELEMENTS ON MICROSTRUCTURE AND CREEP PROPERTIES OF 8XXX ALUMINUM CONDUCTOR ALLOYS.....	3567
<i>L. Pan, K. Liu, F. Breton, X.-G. Chen</i>	
OPERATION RESULTS AND FUTURE TRENDS OF FILTRATION TECHNOLOGY IN MINERAL PROCESSING	3575
<i>J. Palmer</i>	
STABILISATION OF MERCURY DURING BAYER PROCESS DIGESTION	3588
<i>C. Staun, J. Vaughan, H. Morrison</i>	
DEVELOPMENT OF ADVANCED TITANIUM ALLOYS FOR AEROSPACE, MEDICAL AND AUTOMOTIVE APPLICATIONS	3600
<i>C. Siemers, F. Brunke, K. Saksl, J. Kiese, M. Kohnke, F. Haase, M. Schleminger, P. Eschenbacher, J. Furste, D. Wolter, H. Sibum</i>	
INVESTMENT CASTING SHELLING SYSTEM FOR MEDICAL ALLOYS AND APPLICATIONS.....	3612
<i>G. Morin, G. Marin, J. Carignan, M. Parr</i>	
STUDIES OF COMPOSITIONAL AND CORROSION PROPERTIES OF NANOSTRUCTURED SUPERHYDROPHOBIC THIN FILMS ON ALUMINUM SUBSTRATES	3620
<i>Y. Huang, D. Sarkar, X.-G. Chen</i>	
AN AQUEOUS PARTICLE SENSOR (APS) FOR MICRO-BUBBLE DETECTION IN A FOUR-STRAND, FULL-SCALE, WATER MODEL TUNDISH	3627
<i>X. Cao, S. Chang, C. Hsin, L. Calzado, M. Isac, R. Guthrie</i>	
APPLICATION OF HUATE® NEW STYLE FORCED-OIL COOLING VERTICAL RING WHIS IN BENEFICIATION	3639
<i>Z. Wang, F. Liu, H. Jia, B. Wang</i>	
DEVELOPMENT AND INDUSTRIAL APPLICATION OF NANO STEEL MAGNETIC LINER.....	3650
<i>M. Wei, J. Wu, Q. Duan, W. Wu, C. Wang, Z. Davaanyam, L. Zhou</i>	
ENVIRONMENTALLY BENIGN BIO-LEACHING EXTRACTION OF RARE EARTH ELEMENTS FROM NON-CONVENTIONAL RESOURCES	3657
<i>P. Somasundaran, S. Hussien, P. Patra, H. El Shall</i>	
EFFECT OF SILICON CONTENT AND SOLUTIONIZING TEMPERATURE ON THE MECHANICAL PROPERTIES IN A SAND MOLDED ALUMINUM 206 CASTING	3666
<i>F. Chiesa, D. Levasseur, J. Carignan, B. Duchesne</i>	
ELECTRODEPOSITION OF COBALT METAL: EFFECT OF SODIUM OCTYL SULPHATE	3676
<i>P. Patnaik, S. Padhy, B. Tripathy, R. Paramguru</i>	
SCORODITE IN THE CESL PROCESS FOR COPPER-ARSENIC CONCENTRATES	3686
<i>K. Mayhew, H. Salomon-De-Friedberg, A. Lossin</i>	

MITIGATION OF PLATING RESIDUE THROUGH CONTROL OF ANODE PITTING DURING NICKEL ELECTRODEPOSITION	3696
<i>B. Barlow, I. Burgess</i>	
EFFECT OF HEAT TREATMENT ON STRESS CORROSION CRACKING RESISTANCE OF A206 ALUMINUM ALLOY	3702
<i>S. Amira, B. Duchesne, G. Morin, F. Chiesa</i>	
GRAIN REFINEMENT OF TIAL CASTINGS BY ISOMORPHIC SELF INOCULATION	3717
<i>J. Kennedy, J. Zollinger, D. Daloz, B. Rouat, E. Bouzy</i>	
SEPARATION OF ELECTRODE FOILS FROM LI-ION TRACTION BATTERIES	3727
<i>L. Wuschke, H.-G. Jackel</i>	
ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY (EIS) STUDIES OF SELF-ASSEMBLED MONOLAYERS (SAM) ON ALUMINUM SUBSTRATES	3740
<i>J. Xiong, D. Sarkar, X.-G. Chen</i>	
EFFICIENT MANAGEMENT OF POT ENERGY CONSUMPTION FOR ALUMINUM PRODUCTION IN ALCOA	3748
<i>G. Proulx, C. Kato</i>	
ENVIRONMENTAL CHALLENGES OF ALUMINIUM PROCESSING WASTE AND SIMULTANEOUS UTILIZATION OF WASTE FOR SUSTAINABLE FUTURE	3758
<i>J. Ahn, T. Thriveni</i>	
A SHORT REVIEW ON THE APPLICATIONS OF THE SUPERHYDROPHOBIC COATINGS ON METALS	3768
<i>J. Brassard, D. Sarkar, J. Perron</i>	
A BRIEF OVERVIEW OF MINERAL AND METALLURGICAL PROCESSING OF MARINE ORES	3779
<i>A. Ehsani</i>	
INTENSIFICATION OF CHEMICAL AND ELECTROCHEMICAL LEACHING OF REFRACTORY GOLD ORES	3790
<i>A. Samusev, V. Minenko</i>	
METHODS TO REDUCE THE ENVIRONMENTAL HAZARDS OF MINING AND PROCESSING OF MINERALS IN THE ARCTIC REGIONS	3801
<i>V. Masloboev, D. Makarov, A. Baklanov, P. Amosov, S. Seleznev</i>	
THE EFFECT OF HEAT TREATMENT ON CHALCOPYRITE – MOLYBDENITE MAGNETIC SEPARATION	3812
<i>A. Elmahdy, M. Farahat, T. Hirajima</i>	
MAGNETIC SEPARATION OF FINE GANGUE MINERALS FROM MAGNESITE AS HYDROPHOBIC CO-AGGLOMERATES	3824
<i>G. Bimpilas, G. Anastassakis</i>	
RESEARCH ON THE SEPARATING FEATURES OF A PERMANENT MAGNETIC DRUM SEPARATOR DESIGNED WITH STRONG SPECIFIC MAGNETIC FORCE AND OPEN MAGNETIC SYSTEM	3834
<i>S. Liu, Y. Zhou, X. Li, C. Cao</i>	
BENEFICIATION OF LOW GRADE MANGANESE ORE BY JIGGING IN A SPECIALLY DESIGNED ORE DRESSING UNIT	3843
<i>M. Rousseau, S. Blancher, R. Contessotto, T. Wallmach</i>	
PROCESS ORIENTED CHARACTERIZATION OF OOLITIC IRON CONCENTRATE DURING DEPHOSPHORISATION BY ROASTING AND LEACHING	3852
<i>K. Ionkov, O. Gomes, R. Neumann, S. Gaydardzhie, A. Araujo</i>	
FINE IRON PARTICLE RECOVERY USING THE REFLUX CLASSIFIER: ASSESSMENT OF THE TECHNOLOGY AT PILOT AND LAB-SCALE	3863
<i>D. Amariei, S. Levesque, C. Hennessey</i>	
OBSERVATION OF WASH WATER EFFECT ON PARTICLE MOTION IN A SPIRAL CONCENTRATOR BY POSITRON EMISSION PARTICLE TRACKING	3881
<i>D. Boucher, J. Sovechles, Z. Deng, R. Langlois, T. Leadbeater, K. Waters</i>	
RECOVERY OF IRON ORE ULTRA-FINES FROM TAILINGS BY USING WET HIGH INTENSITY MAGNETIC SEPARATION - JONES ® WHIMS	3893
<i>M. Steinberg, Y. Wong</i>	
INFLUENCE OF FEED MOISTURE ON THE EFFICIENCY OF DYNAMIC AIR CLASSIFIERS	3903
<i>G. Kretschmar, T. Mutze, F. Van Der Meer</i>	
OPTIMISATION OF PROCESS PARAMETERS OF SPIRAL CONCENTRATOR FOR BENEFICIATION OF IRON ORE STACKED SLIMES FROM KIRANDUL, CHATTISGARH, INDIA	3914
<i>P. Agrawal, S. Bacchuwar, G. Rao, S. Sharma</i>	

BULK POLYMETALLIC AUTOGENOUS HEAVY MEDIA CONCENTRATION: A WORKABLE METHOD FOR REDUCING FLOTATION CIRCUIT PLANT SIZE	3924
<i>J. Ramirez</i>	
MEASURING GRADE-RECOVERY AND PARTITION CURVES OF DENSE MINERALS BY BATCH FRACTIONATION IN A LABORATORY-SCALE REFLUXTM CLASSIFIER.....	3934
<i>D. Hunter, S. Iveson, K. Galvin</i>	
AMENABILITY OF GOLD ORES TO COARSE PARTICLE GANGUE REJECTION (PRECONCENTRATION) PROCESSES.....	3943
<i>T. McGrath, G. Wardell-Johnson, A. Bax, J. Eksteen</i>	
INDUSTRIAL APPLICATION OF EFFICIENT MODULAR DRY DENSE MEDIUM FLUIDIZED BED ON COAL PREPARATION	3953
<i>Y. Zhao, B. Zhang, C. Duan, Z. Luo, L. Dong, C. Zhou</i>	
CONSTRUCTION OF A GEOMETALLURGICAL MODEL, HOW IT SHOULD INTERACT WITH THE PLANT MODEL AND THE IMPORTANCE OF FINAL RECONCILIATION	3963
<i>F. Soto, J. Pizarro, R. Kuyvenhoven, O. Rojas</i>	
TECHNO-ECONOMIC EVALUATION OF BULK ORE SORTING FOR COPPER ORE AT THE PANAUAST PHU KHAM OPERATION	3973
<i>W. Valery, K. Duffy, P. Holtham, A. Reple, P. Walker, P. Rosario</i>	
BENCH SCALE X-RAY FLUORESCENCE SORTING OF LOW GRADE COPPER ORES	3984
<i>L. Tong, T. Cebeci, B. Klein, B. Khoshaba, A. Bamber</i>	
EFFECT OF MINERALOGY ON THE SENSOR-BASED SORTING OF A LOW GRADE COPPER ORE USING HIGH FREQUENCY ELECTROMAGNETIC TECHNOLOGY	3995
<i>L. Tong, H. Yan, B. Klein, B. Khoshaba, A. Bamber</i>	
TECHNO-ECONOMIC ASPECT OF ORE SORTING – IS SORTING A MISSING PART IN MINING INDUSTRY? A CASE STUDY AT SANDVIK'S MITTERSILL TUNGSTEN MINE.....	4006
<i>H. Manouchehri, A. Mosser, F. Gaul</i>	
SENSOR-BASED SORTING PROJECT DEVELOPMENT AND SEMI-MOBILE PROCESSING FOR HARD ROCK METAL ORES	4017
<i>C. Robben, S. Noelte, K.-E. Ranman, M. Rantamaki, A. Takala</i>	
EFFICIENT SCALE UP OF SENSOR BASED SORTING SYSTEMS	4028
<i>J. Kolacz</i>	
REGRESSION ANALYSIS OF XRF AND ELECTROMAGNETIC SENSOR RESPONSES FOR IMPROVED SORTING OF A GOLD ORE	4038
<i>A. Cebeci, L. Tong, B. Klein</i>	
DETECTABILITY OF RARE EARTH OXIDES BY DUAL-ENERGY X-RAY TRANSMISSION IMAGING FOR SENSOR-BASED SORTING	4054
<i>K. Neubert, H. Woltruba</i>	
SENSOR-BASED SORTING OF SPENT REFRACTORY BRICKS	4064
<i>H. Knapp, L. Horckmans, F. Bouillot, C. Fricke-Begemann, S. Connemann, J. Makowe, A. Duastel, A. Stark</i>	
PRE-CONCENTRATION OF VALUABLE MINERALS IN NICKEL LATERITE ORES VIA SELECTIVE AGGREGATION.....	4072
<i>S. Farrokhpay, L. Filippov</i>	
OPTIMIZING FEEDING AND SCREENING EQUIPMENT WITH MEANS OF ANSYS SIMULATION AND 3D SOLID WORKS SOFTWARE.....	4081
<i>M. Gerards, R. Arulnesan, A. Wellendorf</i>	
IMPROVING THE PROCESS OF BLENDING CONSISTENT AND PREDICTABLE FEED IN THE NICKEL SMELTING PROCESS USING PGNAA TECHNOLOGY	4090
<i>A. Montera, M. Loken</i>	
AN ENVIRONMENTALLY FRIENDLY PROCESSING FLOWSHEET FOR THE BENEFICIATION OF LOW-GRADE WOLFRAMITE WITH HIGH ARSENIC	4098
<i>D. Lu, Y. Wang, T. Jiang, W. Sun, Y. Hu</i>	
EFFECT OF PARTICLE SIZE ON DRY HIGH INTENSITY MAGNETIC SEPARATION OF ILMENITE FINES	4108
<i>S. Tripathy, N. Suresh, Y. Murthy, V. Singh</i>	
DETERMINANTS FOR PROCESSING AND INDUSTRIAL APPLICATIONS OF CHALCEDONITE DEPENDING ON ITS DIFFERENT PROPERTIES	4122
<i>Z. Nasiemiec, D. Saramak</i>	
ULTRAFAST RECOVERY OF HYDROPHOBIC PARTICLES USING A NOVEL HYDROPHOBIC BINDER MEDIUM	4133
<i>K. Galvin, T. Ernst, K. Van Netten</i>	
PERFORMANCE IMPROVEMENT STUDIES IN A CHROME ORE BENEFICIATION PLANT.....	4143
<i>Y. Murthy, S. Tripathy, P. Satija, A. Ranjan</i>	

PRODUCTION PERFORMANCE OPTIMIZATION - SIGNIFICANT PRODUCTION GAIN WITH LIMITED INVESTMENT	4149
<i>E.-M. Proulx, P. Mageau-Beland, M.-C. Patoine</i>	
WHY PROJECTS FAIL – AN OVERVIEW ON OPERATIONAL READINESS	4159
<i>C. Ciriello, A. Khan, W. Oliveira</i>	
GOLDCORP ELEONORE - THE FIRST YEAR OF MILL OPERATION	4169
<i>J.-F. Lepage, S. Parent, S. Glover</i>	
INCREASE OF PRODUCTIVITY IN A MAGNESITE FLOTATION OPERATION BY MEANS OF SELECTIVE MILLING	4179
<i>M. Moraes, P. Bonadia, A. Yovanovic, C. Matos</i>	
SPLIT-FEED CIRCUIT DESIGN FOR PRIMARY SULFIDE RECOVERY	4188
<i>M. Mankosa, J. Kohmuench, G. Luttrell, J. Herbst, A. Noble</i>	
GUYANA GOLDFIELDS FLAGSHIP AURORA PROJECT – ROAD TO SUCCESS	4199
<i>J. Errey, A. Petrovic, K. Haase</i>	
LARGER TONNAGES, LARGER CRUSHERS?	4211
<i>K. Boyd, I. Orford</i>	

VOLUME 7

COMMINUTION AND METALLURGICAL TESTWORK PROGRAM APPROACH FOR SUCCESSFUL PROJECT DESIGN	4226
<i>J. Torrealba-Vargas, S. Girgin, R. Esteban, D. Runnels</i>	
EFFECT OF ORE HARDNESS AND ITS VARIANCE ON SAG MILL CIRCUIT DESIGN TONNAGE	4237
<i>I. Orford, T. Lipiec</i>	
RETROFIT TO AGRUM'S SPECIAL STANDARD SURGE BIN IMPROVES RELIABILITY, SAFETY, & LIFE CYCLE COST	4253
<i>T. Holmes, S. Davison</i>	
FLOWSCHEET DEVELOPMENT AND INTEGRATED PILOT PLANT TESTING FOR A PYROCHLORE BEARING CARBONATITE ORE	4266
<i>C. Gibson, M. Aghamirian, T. Macneil, B. Ingram, S. Kelebek</i>	
METAL RECOVERY FROM PYROMETALLURGICAL SLAGS: COPPER MATTE SMELTING PROCESSES	4277
<i>M. Oliazadeh, S. Goodman, F. Azgomi, S. Mostaghel</i>	
REMOVING IMPURITIES FROM IRON ORES: METHODS AND INDUSTRIAL CASES	4290
<i>M. Oliazadeh, A. Vazirizadeh</i>	
FEASIBILITY STUDY OF THE PELLET FEED PRODUCTION FROM THE CONCENTRATE IN THE 4TH CONCENTRATION PLANT AT GOLGOHAR MINING AND INDUSTRIAL COMPANY	4303
<i>A. Sam, J. Jafari, A. Saravari</i>	
DESIGNING OF THE GRINDING AND CLASSIFICATION SYSTEMS FOR INCREASING THE CONCENTRATE IRON GRADE IN 4TH PRODUCTION PLANT AT GOLGOHAR MINING AND INDUSTRIAL COMPANY	4310
<i>J. Jafari, A. Sam</i>	
COUPLING DYNAMIC DATA RECONCILIATION WITH MODEL PREDICTIVE CONTROL FOR REAL-TIME OPTIMIZATION OF A FLOTATION PLANT SIMULATOR	4320
<i>A. Vasebi, E. Poulin, D. Hodouin, A. Desbiens</i>	
ADVANCED PROCESS CONTROL FOR GRINDING CIRCUITS	4330
<i>D. Groenveld, M. Rozou</i>	
MINERAL PROCESSING PLANT'S DEBOTTLANECKING THROUGH PROCESS MODELING	4338
<i>K. Adham, T. Buchholz</i>	
APPLYING ONLINE ORE HARDNESS ESTIMATION TO SAG OPERATION AND OPTIMISATION	4347
<i>F. Couet, S. Makni, G. Gagnon, C. Rochefort</i>	
PREDICTION OF PARTICLE SIZE DISTRIBUTION IN MILLING PROCESS USING DISCRETE ELEMENT METHOD	4357
<i>S. Fukui, Y. Tsunazawa, C. Tokoro</i>	
A MODEL TO PREDICT WEAR RATE OF SHELL LINERS IN TUMBLING MILLS - THE SARCHESHMEH COPPER COMPLEX AND THE GOL-E-GOHAR IRON ORE COMPANY SAG MILL CASES	4367
<i>E. Nematollahi, Z. Bibak, A. Ghasemi, M. Moghaddam, S. Banisi</i>	

PRODUCTION OPTIMIZATION: LEVERAGING AUTOMATION BEYOND PROCESS CONTROL.....	4378
<i>J. Jimenez</i>	
NEW TRENDS IN ADVANCED PROCESS CONTROL AND IMPACT ON MINERALS PROCESSING OPERATIONS	4382
<i>A. Morrow, W. Poe</i>	
LASER-INDUCED BREAKDOWN SPECTROSCOPY OF MOLTEN MATTE.....	4393
<i>A. Moreau, A. Hamel, P. Bouchard, M. Sabsabi</i>	
GREATER USE OF GEOSCAN ON-BELT ANALYSIS FOR PROCESS CONTROL AT SEPON COPPER OPERATION.....	4403
<i>L. Balzan, T. Jolly, A. Harris, Z. Bauk</i>	
SYNTHESIS OF α-BROMO-SATURATED FATTY ACIDS AND THEIR COLLECTING PROPERTIES ON QUARTZ MINERAL.....	4412
<i>B. Luo, Y. Zhu, C. Sun, J. Liu, Y. Li, Y. Han</i>	
RESEARCH ON MODELING AND SIMULATION OF BATCH GRINDING WITH VERTICAL MILL	4420
<i>L. Huang, G. Zhang, X. Xiao, F. He, X. Song</i>	
APPLICATION OF DYNAMIC MODELLING FOR BROWNFIELD PROCESS SIMULATION	4430
<i>A. Soltanzadeh, B. Legare, M. Ruel</i>	
MODELING OF AGGLOMERATE SIZE DISTRIBUTION FOR HEAP LEACHING	4439
<i>N. Dhawan, R. Rajamani</i>	
PROCESS ALARMS: A REAL TIME DECISION TOOL	4452
<i>M. Tardif</i>	
ABB A MODERN CONTROL ROOM – HUMAN FACTORS AND THEIR IMPACT ON PLANT SAFETY AND OPTIMIZATION	4462
<i>F. Campbell</i>	
MINERAL PROCESSING PLANT ASSET AND ENERGY OPTIMIZATION: THE CALMING CLOUD OVER OPERATIONS	4473
<i>O. Bascur, M. Halhead, L. Garrigues, M. Jarvis</i>	
OPERATOR COMPETENCY AND THE CHALLENGES OF TODAY'S MINERAL PROCESSING PLANTS	4484
<i>S. Pilon, S. Castonguay</i>	
WORKING WITH UNCERTAINTY IN ADAPTIVE PROCESSING OPTIMISATION	4493
<i>K. Van Den Boogaart, R. Delgado, S. Camacho</i>	
GMT: A SPREADSHEET-BASED SOFTWARE TO PREDICT CHARGE SHAPE AND TRAJECTORY IN TUMBLING MILLS.....	4502
<i>M. Maleki-Moghaddam, M. Yahyaei, S. Banisi</i>	
MODEL FOR FINE WET SCREENING.....	4513
<i>A. Mwale, A. Mainza, P. Bepswa, S. Simukanga, J. Masinja</i>	
EXPERT CONTROL SYSTEM OF A HYBRID PILOT ROUGHER FLOTATION CIRCUIT INCLUDING PREDICTIVE MODELS.....	4524
<i>L. Bergh, J. Yanatos, J. Olivares, J. Duran</i>	
CONTROL OF SPIRAL CONCENTRATORS FOR THE CONCENTRATION OF IRON ORE	4534
<i>M. Sadeghi, C. Bazin, P.-O. Devin, F. Lavoie, D. Hodouin, M. Renaud</i>	
FLOWMETER VALIDATION METHOD FOR PIPES WITH SCALING IN AN INDUSTRIAL WATER PUMPING STATION FOR MINERAL PROCESSING IN LOS PELAMBRES MINE, CHILE, THROUGH FLUORESCENT AND RADIOACTIVE TRACERS	4546
<i>F. Dias, O. Jimenez, A. Diaz, G. Leinenweber, D. Rojas, F. Munizaga, R. Bernal, C. Salinas</i>	
INTEGRATED PROCESS PREDICTION	4553
<i>M. Powell</i>	
IDENTIFICATION OF THE DYNAMIC BEHAVIOUR OF AN AUTOGENOUS MILL BY USE OF TIME SERIES CLUSTER ANALYSIS.....	4554
<i>J. Bardinas, C. Aldrich, B. Albijanic</i>	
IN-SITU GAS HOLDUP SENSOR FOR INDUSTRIAL FLOTATION MACHINES.....	4563
<i>M. Maldonado, P. Olivares, C. Gomez</i>	
SAG MILL DYNAMICS AND DIAGNOSTICS: CASE STUDIES USING NOVEL NON-CONTACT ACOUSTIC MEASUREMENT	4574
<i>R. Pax, B. Cornish</i>	
CHARGE LEVEL DETERMINATION (JC) IN GRINDING MILLS BY NON-DESTRUCTIVE ELECTRONIC SENSORS	4584
<i>N. Chacon, P. Mascaro, A. Cecchi</i>	

THE MODELLING OF SCRUBBERS AND AG MILLS, WHEN TO USE THEM	4595
<i>M. Daniel</i>	
BINDER MATRIX REACTIVITY UNDER CO ₂ GASIFICATION: A POSSIBLE EXPLANATION OF THE ANODE DISINTEGRATION IN THE ELETROLYSIS BATH IN HALL-HEROULT PROCESS.....	4609
<i>F. Chevarin, M. Kavand, D. Ziegler, M. Fajard, H. Alamdari</i>	
INVESTIGATION OF LINER SHAPE EFFECTS ON LOAD MOVEMENT IN TUMBLING MILLS BY DISCRETE ELEMENT METHOD (DEM) - THE SARCHESHMEH COPPER COMPLEX AND GOL-E-GOHAR IRON ORE COMPANY SAG MILL CASES	4621
<i>Z. Bibak, E. Nematollahi, A. Ghasemi, M. Moghaddam, S. Banisi</i>	
RARE EARTHS AND OTHER MINERAL RAW MATERIALS: THE MANY FACES OF CRITICALITY	4632
<i>R. Eggert</i>	
METALLURGICAL FLOWSHEET DEVELOPMENT FOR THE GAKARA HIGH GRADE RARE EARTH DEPOSIT	4642
<i>J. Brown, R. Amata</i>	
SIGNIFICANT REDUCTION IN HYDROCHLORIC ACID CONSUMPTION IN RARE EARTH EXTRACTION FROM FERROCARBONATITE (MONTVIEL PROJECT).....	4658
<i>P. Hajiani</i>	
THE SEARCH MINERALS DIRECT EXTRACTION TECHNOLOGY FOR RARE EARTH RECOVERY	4665
<i>D. Dreisinger, N. Verbaan, M. Johnson, G. Andrews</i>	
RARE EARTH FLOTATION FUNDAMENTALS: A REVIEW	4678
<i>C. Anderson, P. Taylor, C. Anderson</i>	
MODELING AND OPTIMIZATION OF RARE EARTH MINERAL FLOTATION USING SALICYLHYDROXAMIC ACID.....	4693
<i>R. Ladouceur, C. Young, P. Amelunxen</i>	
FUNDAMENTAL STUDY OF THE MONAZITE-CALCITE FLOTATION SEPARATION	4704
<i>W. Zhang, R. Honaker, J. Groppo</i>	
FLOTATION-MAGNETIC SEPARATION HYBRID PROCESS FOR CONCENTRATION OF RARE EARTH MINERALS CONTAINED IN A CARBONATITE ORE	4714
<i>T. Negeri, M. Boisclair</i>	
MABOUMINE PROJECT: A HYDROMETALLURGICAL PROCESS FOR THE RECOVERY OF RARE EARTH ELEMENTS FROM A POLYMETALLIC ORE DEPOSIT IN GABON.....	4728
<i>D. Beltrami, S. Belair, V. Weigel</i>	
SELECTIVE COUNTER CURRENT LEACHING AND OXALATE PRECIPITATION OF RARE EARTH ELEMENTS IN CHLORIDE MEDIA: THE CASE FOR BASTANSITE AND ANCYLITE MINERALS.....	4738
<i>H. Kasaini, E. Bourrivaudy, T. Laroche</i>	
DIRECT EXTRACTION OF RARE EARTH ELEMENTS FROM A SILICATE ORE.....	4749
<i>J.-F. Boulanger, C. Bazin, K. Turgeon, L. Whitty-Leveille</i>	
OPTIONS FOR THE SEPARATION OF RARE EARTH ELEMENTS	4760
<i>J. Goode</i>	
COMMISSIONING OF A MINI REE SX PILOT PLANT AT SGS MINERALS - LAKEFIELD SITE	4790
<i>E. Bourrivaudy, N. Verbaan, J. Brown, R. Molnar, S. Jayasekera</i>	
AN INTEGRATED PROCESS FOR SEPARATION AND PURIFICATION OF RARE EARTH ELEMENTS IN CHLORIDE MEDIUM.....	4806
<i>V. Lakshmanan, P. Wong, G. Hatch, D. Tait, M. Halim</i>	
MANAGEMENT OF RADIOACTIVE WASTES FROM RARE EARTH ELEMENT PRODUCTION	4816
<i>D. Feasby, D. Chambers, L. Lowe</i>	
RARE EARTH ELEMENT IMPACTS ON BIOLOGICAL WASTEWATER TREATMENT	4828
<i>Y. Fujita, J. Barnes, S. Fox</i>	
THE INFLUENCE OF BOTH CATION AND ANION TYPE ON LEACHING EFFICIENCY OF LANTHANIDES FROM ION-ADSORPTION ORES	4837
<i>G. Moldoveanu, V. Papangelakis</i>	
MIGRATION OF EXCHANGEABLE RARE EARTH AND ALUMINUM IN LEACHING PROCESS OF WEATHERED CRUST ELUTION-DEPOSITED RARE EARTH ORE.....	4851
<i>Z. He, Z. Zhang, R. Chi</i>	
SCANDIUM: AN UNUSUAL ELEMENT WITH A BRIGHT FUTURE	4861
<i>W. Duyvesteyn</i>	

RECOVERY OF SCANDIUM FROM INDUSTRIAL PROCESS SOLUTIONS – OBSERVATIONS FROM PRELIMINARY TESTING.....	4886
<i>T. Feldmann, F. Belanger, P. Coursal, G. Demopoulos</i>	
INVESTIGATIONS ON THE RECOVERY OF SCANDIUM AS A BYPRODUCT FROM MABOUMINE PROJECT.....	4899
<i>D. Beltrami, D. Ragueh, S. Belair, V. Weigel</i>	
IMPURITY CONTROL IN EXTRACTION AND REFINING OF SCANDIUM OXIDE.....	4906
<i>C. Hartley, L. Liao</i>	
ADVANCED CHARACTERIZATION OF THE REE MINERALOGY AND IMPLICATIONS IN MINERAL PROCESSING	4915
<i>T. Grammatikopoulos, A. Jordens, C. Gunning</i>	
A MINERALOGICAL INVESTIGATION INTO THE OPTIMUM GRIND SIZE OF THE NECHALACHO RARE EARTH ORE FOR SELECTIVE COMMINUTION OF ZIRCON.....	4931
<i>C. Marion, A. Jordens, T. Grammatikopoulos, K. Waters</i>	

VOLUME 8

RECOVERY OF RARE EARTH ELEMENTS FROM COMPLEX RAW MATERIALS BY OUTOTEC'S SOLUTIONS.....	4944
<i>J. Guentner, E. Kolchmainen, M. Tiihonen, J. Karonen, L. Haavanlammi, J. Hammerschmidt</i>	
PRETREATMENT METHODS FOR RARE EARTH ELEMENT EXTRACTION IN SUPERCritical CARBON DIOXIDE	4957
<i>L. Sinclair, D. Baek, R. Fox</i>	
LEACHING OF RARE EARTH ELEMENTS FROM PHOSPHOGYPSUM (BY-PRODUCT OF PHOSPHATE FERTILIZER PRODUCTION).....	4967
<i>M. Walawalkar, G. Azimi, C. Nichol</i>	
MICROFLUIDIC SOLVENT EXTRACTION OF RARE EARTH ELEMENTS	4976
<i>F. Kriel, E. Kolar, R. Sede, R. Catthoor, S. Middlemas, E. Klier, G. Hatch, C. Priest</i>	
SEPARATION AND PURIFICATION OF RARE-EARTH ELEMENTS BASED ON ELECTROPHORETIC MIGRATION	4984
<i>P. Hajiani</i>	
EVALUATION OF LIQUID MEMBRANE SYSTEMS FOR REE EXTRACTION.....	4997
<i>R. Varela, K. Forsberg, J. Cruz, A. Rasmussen</i>	
ENHANCED SEPARATION OF RARE EARTH ELEMENTS.....	5011
<i>K. Lyon, M. Greenhalgh, R. Herbst, T. Garn, A. Welty, M. Soderstrom, B. Jakovljevic</i>	
PHOTOCHEMICAL SEPARATION OF EUROPIUM FROM EUROPIUM/YTTRIUM MIXTURES.....	5019
<i>B. Van Den Bogaert, K. Binnemans, T. Van Gerven</i>	
CANADIAN RARE EARTH ELEMENTS R&D PROGRAM: MODEL OF COLLABORATION	5031
<i>J. Zinck, I. London</i>	
FLOTATION DEVELOPMENT TESTWORK ON REE SAMPLES FROM THE STRANGE LAKE ALKALIC COMPLEX	5042
<i>B. Yu, Y. Oyediran, M. Robart</i>	
NORTHERN MINERALS LTD, BROWNS RANGE PROJECT: PROCESS FLOWSHEET IMPROVEMENTS.....	5054
<i>C. Griffith, M. Famerman-Melnikova, A. Manis, T. Safinski, K. Sodenhoff, E. Catovic, T. Hadley, R. Jones</i>	
INVESTIGATION OF RECOVERY OF REE FROM MARVAST PLACER DEPOSITS IN PILOT SCALE.....	5065
<i>A. Mohammadi, A. Ojaghi</i>	
THERMODYNAMIC AND MICROSTRUCTURE INVESTIGATIONS OF AL-MG-SI EXTRUSION ALLOYS: CRITERIA FOR PHASE SELECTION AND FORMABILITY	5071
<i>K. Korgiopoulos, A. Farkoosh, O. Rodop, L. Armenta, B. Cook, M. Pekguleryuz</i>	
RARE EARTH RECOVERY FROM FINE KAOLIN RESIDUE USING GRAVITY/FLOTATION PROCESSING ROUTE	5082
<i>Q. Dehaine, L. Filippov, I. Filippova</i>	
EXPERIENCES IN COLORIMETRIC FROTHER ANALYSIS.....	5093
<i>A. Zangooi, C. Gomez, J. Finch</i>	
THE APPLICATION OF FAM PROCESS IN THE BENEFICIATION OF RARE EARTH ORE	5103
<i>J. Deng, B. Chen, W. Xiong</i>	
A STUDY ON DIRECT OXALATE PRECIPITATION FOR REE RECOVERY FROM A LOW- GRADE REE PREGNANT SOLUTION	5112
<i>C. Xia, W. Griffith</i>	

MATERIAL BALANCING AND ESTIMATION OF EQUILIBRIUM CONSTANTS: APPLICATION TO SOLVENT EXTRACTION TESTS OF RARE EARTH ELEMENTS	5123
<i>K. Turgeon, C. Bazin, J.-F. Boulanger, L. Whitty-Veveille, D. Lariviere</i>	
INNOVATIVE PROCESS FOR METALS RECOVERY FROM NUCLEAR AND MINE WASTES	5135
<i>N. Reynier, R. Lastra, C. Laviolette, J. Fiset, N. Bouzoubaa, M. Chapman</i>	
PILOT-SCALE INDUSTRIAL MICROWAVE-IR SORTING OF PORPHYRY COPPER ORES	5147
<i>A. Batchelor, R. Ferrari-John, J. Katrib, G. Dimitrakis, C. Dodds, S. Kingman</i>	
RARE EARTH SOLVENT EXTRACTION MODELING ADVANCES	5158
<i>T. McCallum, B. Jakovljevic, A. Quilodran, P. Wong, G. Hatch</i>	
PREDICTIVE MODELING OF RARE EARTH ELEMENT SEPARATION BY SOLVENT EXTRACTION USING METSIM	5168
<i>T. Laroche, H. Kasaini</i>	
THE COMPOSITION, CHEMICAL PROPERTIES, AND PROCESSING OF THE UNIQUE NIOBIUM-RARE EARTH ORES OF THE TOMTOR DEPOSIT	5175
<i>V. Kuzmin, D. Flett, V. Kuzmina, A. Zhizhaev, N. Gudkova, D. Kuzmin, M. Mulagaleeva, A. Tolstov, O. Logutenko</i>	
THE CHUKTUKON NIOBIUM-RARE EARTH METALS DEPOSIT: GEOLOGY AND TECHNOLOGICAL CHARACTERISTICS OF THE ORES	5186
<i>S. Serdyuk, V. Lomayev, V. Kuzmin, D. Flett, N. Gudkova, D. Kuzmin, M. Mulagaleeva, V. Kuzmina, S. Kalyakin, O. Logutenko</i>	
COMBINED TECHNOLOGY FOR COMPLEX RARE-METAL ORES PROCESSING	5198
<i>A. Kurkov, A. Rogozhin, S. Anufrieva, E. Likhnikovich</i>	
THE EXTRACTION OF RARE EARTHS FROM REFRactory ORES OF A DEPOSIT IN KAZAKHSTAN	5209
<i>Z. Abisheva, Y. Bochevskaia, Z. Karshigina, E. Sargelova</i>	
DISSOLUTION OF RARE EARTH ELEMENTS FROM APATITE ORE IN SULFURIC ACID SOLUTION	5219
<i>A. Battengel, A. Narankhuu, A. Batnasan, K. Haga, Y. Watanabe, A. Shibayama</i>	
ISOLATION OF RARE EARTH ELEMENT PHOSPHATE PRECIPITATE IN THE NITROPHOSPHATE PROCESS FOR MANUFACTURING OF FERTILIZER	5229
<i>M. Alemrajabi, K. Forsberg, K. Korkmaz, A. Rasmussen</i>	
VIABILITY OF PHOSPHOGYPSUM AS A SECONDARY RESOURCE OF RARE EARTH ELEMENTS	5239
<i>V. Yahorava, V. Bazhko, M. Freeman</i>	
SOLID-STATE REDUCTION OF SOUTH AFRICAN MANGANESE AND CHROMITE ORES: EFFECT OF AN ORGANIC BINDER AND B_2O_3	5255
<i>K. Bisaka, M. Makwarela, M. Erwee</i>	
MICROBIALLY MEDIATED LEACHING OF RARE EARTH ELEMENTS FROM RECYCLABLE MATERIALS	5271
<i>D. Reed, Y. Fujita, D. Daubaras, D. Bruhn, J. Reiss, V. Thompson, Y. Jiao</i>	
SUSTAINABLE HYDROMETALLURGICAL RECOVERY OF VALUABLE ELEMENTS FROM SPENT NICKEL-METAL HYDRIDE HEV BATTERIES	5281
<i>K. Korkmaz, K. Forsberg, M. Alemrajabi, A. Rasmussen</i>	
RECOVERY OF RARE METALS FROM SPENT HYDRODESULPHURIZATION CATALYST	5294
<i>T. Suzuki, K. Manabe, A. Fuji, N. Matsunaga, D. Murakami, M. Niinae, J. Shibata</i>	
DETERMINATION OF D_{50} IN JET DIFFUSER FLOTATION COLUMN BY USING THE VELOCITY GRADIENT APPROACH	5301
<i>O. Sahbaz, B. Oteyaka, A. Ucar</i>	
TWO-STAGE TUNGSTEN (FERBERITE)-COPPER ORE PROCESSING USING GRAVITY AND LEACHING APPROACHES	5308
<i>G. Mollataheri, H. Abdollahi, P. Karimi, A. Amini, A. Mirzaei</i>	
STUDY ON SULFIDATION ROASTING AND FLOTATION OF REFRactory LEAD-ZINC OXIDE ORE	5318
<i>Y. Shi, M. Liu, J. Xiao, J. Chen, Y. Long, F. Hu, Y. Luo</i>	
INFLUENCE OF CRYSTALLIZATION CONDITIONS ON THE PREPARATION OF MESOPOROUS MATERIALS FROM NATURAL ZEOLITE	5327
<i>Z. Ma, Q. Zhang, X. Weng, J. Wang, W. Su</i>	
OPTIMIZATION OF EFFECTIVE PARAMETERS IN GOLD EXTRACTION PROCESS FROM POLY METAL ORE, USING THIOUREA AS A CYANIDE ALTERNATIVE AND SODIUM CYANIDE	5336
<i>H. Abdollahi, P. Karimi, A. Amini, A. Mirzaei</i>	

HYDROMETALLURGICAL PROCESSING OF BOZSHAKOL (KAZAKHSTAN) DEPOSIT MIXED ORE.....	5347
<i>K. Mamyrbayeva, G. Guseinova, V. Lukanov</i>	
FLOTATION OF ULTRA-FINE SCHEELITE PARTICLES ASSISTED BY NANOBUBBLES	5358
<i>W. Zhou, L. Ou, Q. Feng, G. Zhang, Y. Lu, Q. Shi, H. Chen, Z. Qiu, L. Zeng</i>	
TECHNOLOGICAL ASPECTS OF RECOVERY OF PRECIOUS METALS FROM CARBONACEOUS ORES.....	5367
<i>T. Alexandrova</i>	
RESEARCH ON COMBINED GREEN DEPRESSANTS FOR FLOTATION SEPARATION OF LEAD FROM COPPER.....	5375
<i>D. Chen, Y. Dong, Y. Zhou, J. Yang</i>	
FLOTATION PERFORMANCE AND MECHANISMS OF A-HYDROXYOCTYL PHOSPHINIC ACID ADSORPTION TO OXIDE ORES	5386
<i>F. Li, H. Zhong, S. Wang, G. Liu</i>	
FLOTATION SEPARATION OF DIASPORE AGAINST ALUMINOSILICATE MINERALS USING N-(HYDROXYAMINO)-4-OXOBUTYL ALKYLAMIDE SURFACTANTS AS COLLECTORS	5396
<i>L. Deng, G. Zhao, H. Zhong, S. Wang, G. Liu</i>	
STRENGTH AND MECHANISM OF PORTLAND CEMENT PREPARED FROM STONE COAL VANADIUM SLAG.....	5407
<i>P. Zhang, L. Ou, K. Liu</i>	
ASPECTS OF HEMATITE BIOFLOTATION USING A GRAM-POSITIVE BACILLUS SUBTILIS STRAIN AS A BIOREAGENT	5416
<i>E. Pecanha, M. Monte, A. Merma, M. Torem</i>	
ECONOMIC ANALYSIS OF CRUSHING SYSTEM IN METALLURGICAL SLAG RECYCLE SYSTEM.....	5425
<i>F. Zhang, X. Luo</i>	
CEMENTATION OF SILVER FROM SYNTHETIC LEACH SOLUTIONS OF WASTE OF PRINTED CIRCUIT BOARDS (WPCB)	5434
<i>H. Deveci, E. Yazici, A. Bas</i>	
EXPERIMENTAL STUDY ON COMMINUTION AND MINERAL LIBERATION OF A COPPER ORE BY INTERPARTICLE BREAKAGE	5443
<i>J. Liu, W. Sun</i>	
PHYSICS OF GRAVITATIONAL SEPARATION AS A MASS PROCESS	5464
<i>E. Barsky</i>	
MASS TRANSFER IN THE PROCESSES OF CASCADE SEPARATION OF BULK MATERIALS	5478
<i>E. Barsky</i>	
COMPARISON OF NUMERICAL MODELS FOR PREDICTION OF IRON'S WEIGHT EFFICIENCY, CASE STUDY GOL GOHAR DTP FLOTATION CIRCUIT	5490
<i>A. Saravari, A. Sam</i>	
DETERMINATION OF ENVIRONMENTAL FOOTPRINT FOR VARIOUS TYPES OF COMMINITION DEVICES IN TERMS OF DUST AND NOISE EMISSION	5499
<i>S. Wasilewski, A. Saramak, Z. Nasiemiec, D. Saramak, T. Gawenda</i>	
COPPER RECOVERY FROM ELECTRIC CABLE SCRAP BY SHAKING TABLES	5509
<i>C.-M. Katsari, G. Anastassakis</i>	
STUDIES ON COLLECTOR-FREE FLOTATION KINETICS OF TALC AND CHALCOPYRITE	5519
<i>L. Bai, Y. Han, Z. Yuan, Y. Ma, F. Niu</i>	
THE PROGRESS AND STUDY OF LEAN MAGNETITE PRECONCENTRATION IN CHINA	5527
<i>F. Liu, X. Xia, Y. Zhu, X. Wang, Y. Zhang</i>	
VIBRATION COUPLING AND NUMERICAL ANALYSIS ON SELF-SYNCHRONOUS FEATURE OF INERTIA VIBRATION CRUSHER	5535
<i>X. Xia, X. Wang, L. Han, A. Kalinin, X. Luo</i>	
XPS STUDY ON THE REACTION MECHANISM OF CHLORITE WITH NEW ANIONIC COLLECTOR A6.....	5543
<i>W. Chen, Y. Zhou, W. Li</i>	
ARSENIC REMOVAL FROM A COPPER SULPHIDE CONCENTRATE BY SELECTIVE FLOTATION OF ENARGITE AND THE SELECTIVE LEACHING OF ARSENIC	5554
<i>B. Zhang, Y. Zhang, X. Ma, J. Wang, F. Jiao, X. Liu, G. Qiu, W. Qin</i>	
DESIGN OF SPECIAL FLOTATION EQUIPMENT FOR HIGH-PURIFY QUARTZ SAND	5566
<i>S. Lu, M. Tan, T. Feng, Z. Shen, Z. Han</i>	

SPECIAL ASPECTS OF CIRCUITS DESIGN WITH THE USE OF HPGR TECHNOLOGY BASED ON PILOT TESTING DATA AND INDUSTRIAL OPERATING EXPERIENCE	5574
<i>A. Senchenko, Y. Kulikov</i>	
TECHNOLOGY FOR PROCESSING OF REFRACtORY GOLD-CONTAINING CONCENTRATES BASED ON ULTRAFINE GRINDING AND ATMOSPHERIC OXIDATION	5587
<i>A. Senchenko, A. Aksenov, A. Vasiliev, Y. Seredkin</i>	
PREDICTION OF SPECIFIC AG/SAG ENERGY BASED ON BOND METHOD TESTS	5594
<i>A. Senchenko, Y. Kulikov</i>	
DEVELOPMENT AND IMPLEMENTATION OF PYROMETALLURGICAL PROCESSING OF PRIMARY GOLD CONCENTRATE WITH HIGH STANNUM CONTENT	5601
<i>A. Senchenko, S. Rybkin, A. Aksenov</i>	
DEVELOPMENT OF A TECHNOLOGY TO PROCESS ANTIMONITE GOLD-BEARING ORE	5608
<i>A. Senchenko, S. Ulianov, A. Shvets, A. Aksenov</i>	
SELECTION OF A PROCESS FLOWSHEET TO TREAT OLD COPPER-CONTAINING TAILINGS WITH THE USE OF PROCESS MINERALOGY	5619
<i>A. Senchenko, S. Ulianov, E. Kurchevskaya</i>	
RESEARCH AND REALIZATION OF THE LAYERED CONVECTION COARSE PARTICLE FLOTATION COLUMN	5625
<i>L. Li, L. Wang, Q. Zhang, S. Mao, Z. Qiao, J. Luo</i>	
RESEARCH ON SCALE-UP AND DESIGN METHOD OF VERTICAL SCREW STIRRED MILL	5633
<i>G. Zhang, L. Huang, Y. Long, Y. Liu, X. Xiao, L. Shi</i>	
APPLICATION OF POTENTIAL CONTROL TO THE FLOTATION OF GALENA BY VARYING DISSOLVED OXYGEN PH AND IONIC STRENGTH LEVELS	5642
<i>M. Tadie, K. Corin, J. Wiese, C. O'connor</i>	
THERMO ADHESIVE SEPARATION OF DIFFERENT PLASTICS FROM WEEE STREAMS	5651
<i>I. Gombkoto, B. Csoke</i>	
DRY BENEFICIATION OF FINE COAL IN A CONTINUOUS VIBRATED GAS-FLUIDIZED BED SEPARATOR	5659
<i>X. Yang, Y. Zhao, Z. Luo, C. Duan</i>	
-0.5MM HIGH SULFUR FINE COAL MICROWAVE ENERGY ABSORPTION PERFORMANCE AND ELECTROMAGNETIC CHARACTERISTICS IN THE MAGNETIC SEPARATION DESULFURIZATION	5669
<i>B. Zhang, Y. Zhao, C. Duan, Z. Luo, X. Yang, L. Dong</i>	

VOLUME 9

USE OF NON-IONIC SURFACTANTS AS EMULSIFIER IN COAL FLOTATION: AN EXPERIENCE FROM LAB-SCALE TO PLANT	5679
<i>S. Jaiswal, P. Garg, M. Sinha, A. Das, Rashmi, A. Mukherjee, A. Bhatnagar</i>	
IMPROVED MALACHITE FLOATABILITY VIA DEPLETION-INDUCED ATTRACTION FORCE	5692
<i>J. Choi, A. Gomez-Flores, G. Kim, S. Choi, S. Kim, H. Kim</i>	
BIOFLOTATION OF MALACHITE FROM COMPLEX SYSTEM USING RHODOCOCCUS OPACUS.....	5702
<i>G. Kim, J. Choi, S. Choi, Y. Song, H. Kim</i>	
PREPARATION OF CARBONACEOUS ADSORBENT FROM RICE STRAW USING SULFUR IMPREGNATION FOR NICKEL RECOVERY FROM NICKEL PLATING WASTE SOLUTION.....	5709
<i>T. Wajima</i>	
OBTAINING AMMONIUM ORTOMOLYBDATE FROM ERDENET LLC MOLYBDENUM CONCENTRATE	5721
<i>A. Sarnai, P. Munkhbaatar, J. Oyunaa</i>	
INVESTIGATING THE EFFECTIVE PARAMETERS ON THE PYRITE FLOATABILITY CASE STUDY: SARCHESHMEH COPPER MINE	5728
<i>F. Pourakbari, A. Sam, M. Yarahmadi</i>	
EFFECT OF CHEMICAL AND PHYSICAL PARAMETERS ON INDUSTRIAL ROTARY VACUUM DRUM FILTER	5734
<i>M. Abadi, M. Abdollahy, M. Khalesi, R. Rezazadeh</i>	
ENERGY EFFICIENCY IN COMMINUTION – GETTING MORE FROM THE CRUSHING STAGE	5744
<i>H. Manouchehri, A. Christoffersson, T. Nilsson-Wulff</i>	

EFFECT OF MECHANICAL ACTIVATION OF FLY ASH ON GEOPOLYMER PROPERTIES	5756
<i>G. Mucci, I. Gombkoto, Z. Molnar, I. Osvath, S. Kumar</i>	
THE EFFECT OF CHLORITE ON THE FLOTATION OF PYRRHOTITE	5765
<i>Q. Shi, Y. Chen, Q. Feng, G. Zhang</i>	
MODIFICATION OF CONVENTIONAL THICKENER BY INSTALLATION OF LAMELLA MODULES.....	5775
<i>V. Stoilov, E. Visariev, I. Bonchev, I. Stanoev, I. Gradinarov, V. Stoyanova</i>	
A SIMULATION STUDY OF THE BALL MILL FILL FACTOR AND TOPOGRAPHY USING TWO TYPES OF GRINDING MEDIA - BALLS AND TETRABALLPEBS.....	5782
<i>L. Kuzev, N. Hristov</i>	
PYRITE DRY ENRICHMENT USING A VIBRATED FLUIDIZED BED.....	5791
<i>C. Zhou, C. Duan, B. Zhang, Y. Zhao, P. Zhang, T. Zhang</i>	
REMOVAL OF OXYANIONS FROM METALS' EXTRACTION WASTEWATER BY MODIFIED ZEOLITE	5801
<i>M. Panayotova, V. Panayotov</i>	
SELECTIVE FLOTATION OF TUNGSTEN MINERALS FROM CALCIUM MINERALS USING BENZOHYDROXAMIC ACID COMPLEXES	5812
<i>Y. Hu, W. Sun, H. Han, R. Liu, X. Meng, Y. Guo, X. Li, C. Cao, W. Huang, W. Chen</i>	
AN APPROACH TO ASSESS AND CONTROL THE FLOTATION OF MINERALS - SEMICONDUCTORS.....	5824
<i>V. Panayotov, M. Panayotova</i>	
THE INFLUENCE OF SHOTCRETE ON FLUORSPAR FLOTATION AND ITS REMOVAL BY SENSOR BASED SORTING.....	5835
<i>J. Heizmann, H. Wotruba</i>	
MOLYBDENITE BEHAVIOUR IN THE FLOTATION PROCESS OF ASSAREL CONCENTRATOR.....	5845
<i>N. Kolev, M. Poibrenski, I. Nishkov</i>	
CRITERIA FOR CHOICE OF OPTIMAL ORE PREPARATION SCHEMES.....	5856
<i>G. Gazaleeva, E. Bratygin</i>	
INCREASING TECHNOLOGY INDEXES OF BENEFICIATION OF COPPER SLAG	5862
<i>S. Mamontov, V. Ashikhin</i>	
IMPROVEMENT IN QUALITY OF PYRITE CONCENTRATE BY LOW COST FLOTATION- GRAVITY SEPARATION FLOWSHEET AT FANKOU MINE.....	5868
<i>M.-L. Li, Z.-S. Sun, R. Cui</i>	
EFFECT OF GRINDING CONDITIONS ON SELECTIVE DISPERSION FLOCCULATION OF HIGH ALUMINA CONTAINING IRON ORE SLIMES	5878
<i>D. Kumar, V. Tammisetti, B. Rai, Pradip</i>	
DEVELOPMENT AND INDUSTRIAL APPLICATION OF NANO ALLOY STEEL MAGNETIC LINER	5888
<i>M. Wei, J. Wu, Q. Duan, W. Wu, L. Zhou, C. Wang</i>	
EFFECT OF ULTRASONIC TREATMENT ON THE FLOATABILITY OF ILMENITE AND TITANAUGITE	5895
<i>Y. Zhu, X. Hu, G. Zheng, X. Zhang</i>	
THE DEVELOPMENT OF GOLD RECOVERY TECHNOLOGY FROM PYRITEPYRRHOTITE-PYRRHOTITE-BEARING ORES	5902
<i>V. Mullov, L. Kin, O. Khmelnitskaya, V. Lodeischikov, A. Byvaltsev, A. Yevdokimov, S. Petrov</i>	
COMPARISON OF MODEL BASED ENERGY ESTIMATION FOR AN HPGR APPLICATION	5911
<i>A. Kumar, F. Wang, B. Klein, Z. Davaanyam</i>	
APPLICATION AND MECHANISM STUDIES OF A NOVEL COLLECTOR IN FLOTATION OF A POLYMETALLIC SULFIDE ORE AT TIBET JIAMA MINE.....	5917
<i>G. Li, J. Kou, C. Sun, T. Sun, P. Wang, X. Yuan</i>	
PRESSURE OXIDATION PYROMETALLURGICAL TECHNOLOGY OF GOLD-BEARING AND LEAD AND ZINC SULFIDE CONCENTRATES UNDERGOING COMBINED TREATMENT	5928
<i>C. Dzgoev, I. Yevtushevich, S. Schtoick, A. Yepiforov, S. Gudkov, Y. Yemilianov, S. Balikov</i>	
TECHNICAL NOTE ON THE DEVELOPMENT OF A NEW ATTACHMENT TIMER FOR PREDICTING THE CHANGE IN ORE FLOATABILITY	5936
<i>Z. Javor, N. Schreithofer, K. Heiskanen, R. Sema</i>	
SELECTED COMPOSITIONS SULFHYDRYL COLLECTORS AND FLOTATION KINETICS OF SULFIDE MINERALS FROM REFRACTORY PYRITE PYRRHOTITE ORES OF NON-FERROUS METALS	5941
<i>V. Ignatkina, V. Bocharov, F. Milovich</i>	

MINERALOGICAL CHARACTERISTICS AND BENEFICIATION OF A MICRO-FINE AND LOW GRADE REFRACTORY GOLD ORE	5950
<i>Y. Chen, Y. Song, W. Li</i>	
THE ROLE OF BUBBLE AIR STREAM IN SELECTIVE FLOTATION	5960
<i>V. Samyguin, V. Ignatkina</i>	
THE EFFECT OF CHEMICAL INTERACTION IN NI(II) ION FLOTATION	5969
<i>F. Hoseinian, M. Safari, M. Irannajad</i>	
TECHNOLOGY AND MECHANISM RESEARCH FOR CRYSTAL PHASE REGULATING FLOTATION OF COPPER-CONTAINING SLAG	5980
<i>H. Huang, Z. Dai, Y. Hu, W. Sun, X. Cao</i>	
FLOTATION BEHAVIOR AND MECHANISM OF CHALCOPYRITE AND GALENA IN PRESENCE OF O-ISOPROPYL-N-ETHYL THIONOCARBAMATE	5990
<i>Y. Bu, Y. Hu, W. Sun, R. Liu, Z. Gao, W. Hu, H. Tao</i>	
USE OF THE ATTAINABLE REGION METHOD TO INVESTIGATE THE BREAKAGE BEHAVIOR OF A BED OF SILICA PARTICLES	5999
<i>N. Hlabangana, G. Danha, D. Hildebrandt, D. Glasser, S. Wabula</i>	
TREATMENT OF HIGH IRON CALCINES IN THE ELECTROLYTIC ZINC PLANT OF METALLURGICA MET-MEX PEÑOLES, S.A DE C.V.	6010
<i>C. Rosales</i>	
APPLICATION OF THE WOODGROVE STAGED FLOTATION REACTOR (SFR) TECHNOLOGY AT THE NEW AFTON CONCENTRATOR	6018
<i>K. Swedburg, C. Bennett, M. Samuels, P. Wells</i>	
SYNTHESIS AND APPLICATION RESEARCH OF NANO-HYDROTALCITES	6031
<i>T. Qi, L. Lei, Z. Yi, L. Yulin</i>	
RESEARCH ON RECYCLE TECHNOLOGY OF FLOTATION TAILINGS WATER FOR COMPLEX COPPER-SULFUR-TUNGSTEN POLYMETALLIC ORE	6037
<i>X. Zhou, L. Deng, T. Guan, G. Fu, Y. Chen</i>	
RESEARCH ON THE INFLUENCE OF GRAIN SIZE COMPOSITION ON CASSITERITE RECOVERY	6047
<i>L. Deng, X. Zhou, G. Fu, T. Guan, Y. Chen</i>	
STUDY ON NEW TECHNOLOGY FOR REFRACTORY MULTI-METALLIC PYROCHLORE ORE FROM AFRICA	6056
<i>Z. Zhang, Y. Tang, H. Hu, T. Dong, W. Huang, J. Yang</i>	
A NEW AND COST-EFFECTIVE PROCESS FOR THE PRODUCTION OF MID- AND HIGH-MN ADVANCED HIGH STRENGTH STEEL (AHSS)	6066
<i>S. Ge, V. Hernandez, S. Mostaghel, M. Cramer</i>	
APPLICATION OF HUATE® NEW STYLE ELUTRIATION ELECTROMAGNETIC SEPARATOR IN MAGNETITE BENEFICIATION TECHNOLOGY	6078
<i>Z. Wang, F. Liu, M. Liu, S. Liu, H. Jia, Y. Liu</i>	
DEVELOPMENT AND EVALUATION OF A NEW BUBBLE GENERATING DEVICE BASED ON IMPINGING JETTING FOR COLUMN FLOTATION	6090
<i>C. Acuna, P. Ramirez, M. Vera</i>	
USING ATOMIC FORCE MICROSCOPY (AFM) AND SCALING ANALYSIS TO MONITOR SURFACE ROUGHNESS CHARACTERISTICS OF INDUSTRIAL ZINC ELECTRODEPOSITS	6097
<i>S. Mahboob, J. Shepherd, J. Gonzalez</i>	
THE APPLICATION OF FLORREA 8920, A NEW HYDROXAMATE-BASED FLOTATION COLLECTOR FOR THE FLOTATION OF RARE EARTH MINERALS	6108
<i>A. Jordens, Y. Zhiyong, F. Cappuccitti</i>	
EFFECT OF BENDING ANGLE AND PUNCH TIP RADIUS ON SPRING-FORWARD IN AN AL-MG-SI ALLOY	6120
<i>S. Bakhshivash, B. Sadeghi, F. Rahimi, M. Haghshenas</i>	
SOLVENT EXTRACTION OF METALS FROM MINERAL LEACH SOLUTIONS: CHALLENGES AND OPPORTUNITIES	6130
<i>C. Priest, F. Kriel, J. Ralston</i>	
ENHANCED FLOTATION OF PLATINUM MINERAL FINES THROUGH FEED CAVITATION - "BRINGING THE MOUNTAIN TO MOHAMED"	6138
<i>A. Singh</i>	
THE IRON ELEPHANT A BRIEF HISTORY OF HYDROMETALLURGISTS' STRUGGLES WITH ELEMENT NO. 26	6148
<i>A. Monhemius</i>	

NOVEL PROCESS OF NH₃-N REMOVAL AND RECOVERY IN RARE EARTH AND NON-FERROUS INDUSTRY WASTEWATER: FUNDAMENTAL, SIMULATION AND COMMERCIAL PROJECTS	6162
<i>X. Lin, H. Cao, C. Liu, X. Li, B. Wang</i>	
DEVELOPING AND SUSTAINING CAPABILITY IN PROCESS MINERALOGY	6171
<i>E. Wightman, C. Evans</i>	
INVESTIGATION OF VOLATILIZATION OF ARSENIC AND ANTIMONY FROM TENNANTITE/TETRAHEDRITE ORE BY ROASTING PROCESS.....	6181
<i>K. Haga, M. Razak, B. Altansukh, Y. Takasaki, A. Shibayama</i>	
DIRECT NUMERICAL SIMULATION OF BUBBLE-PARTICLE INTERACTIONS UNDER MICROGRAVITY CONDITIONS.....	6192
<i>T. Qin, F. Niu, L. Bai, J. Zhang</i>	
COMPLEX PROCESSING OF PHOSPHOR PRODUCTION SLAG WITH RARE EARTH METALS RECOVERY AND DREIVING OF SILICON-CONTAINING SOLUTION	6201
<i>Z. Abisheva, Y. Bochevskaya, Z. Karshigina, A. Akcil</i>	
PROCESS MINERALOGY OF COPPER AND LEAD CONCENTRATES: UNCERTAINTIES AND METALLURGICAL DECISIONS	6213
<i>R. Mermillod-Blondin, E. Re, H. Bouzahzah, J.-F. Wilhelmy, M. Benzaazoua, A. Chopard</i>	
PROBLEMS REQUIRING ATTENTION IN THE DESIGN OF A RARE EARTH SEPARATION PROCESS.....	6224
<i>D. Li</i>	
WHAT HAPPENED ON THE ROAD TO RARE EARTH SUCCESS?	6231
<i>A. Neill</i>	
THE USE OF SPIRAL SEPARATORS FOR IRON ORES CONCENTRATION	6237
<i>S. Prokopev, M. Bolotin, M. Shulgina, Y. Prokopev</i>	
ECONOMICAL RARE-EARTH EXTRACTION WITH DUE ENVIRONMENTAL CONCERN	6244
<i>P. Broad</i>	
MODELLING OF AN OPEN MILL WITH SCALPED FEED FOR THE MAXIMUM PRODUCTION OF A DESIRED PARTICLE SIZE RANGE	6254
<i>N. Chimwani, D. Hildebrandt, D. Glasser</i>	
A SUSTAINABLE EXTRACTION STRATEGY FOR SEPARATING HEAVY RARE EARTHS FROM ION-ADSORBED DEPOSIT	6264
<i>X. Sun</i>	
A CLEAN PROCESS FOR BAYAN OBO MIXED RARE EARTH CONCENTRATE BASED ON THE SEPARATION OF CERIUM USING VALENCY CHANGE AND COMPLEXATION.....	6279
<i>D. Zou, J. Chen, D. Li</i>	
WEIGHT LOSS MEASUREMENTS OF AZ31 AS CAST AND AFTER HEAT TREATMENT WITH THE USE OF NEUTRAL SALT SPRAY TESTS	6286
<i>A. Dobkowska, B. Adamczyk-Cieslak, J. Mizera, K. Kurzydlowski</i>	
A SOLUBILITY STUDY OF ELECTRO - GENERATED CHLORINE IN DIFFERENT AQUEOUS MEDIA	6292
<i>P. Choubey, M.-S. Kim, J.-C. Lee, K.-W. Chung, S.-M. Shin</i>	
SILICATE ROCKS - A SOURCE OF POTASH FOR FERTILIZERS?	6299
<i>N. Dhawan, Y. Singh, G. Pradhan</i>	
RARE EARTH ELEMENTS IN MALAYSIA: OVERVIEW OF PROCESSING, SUSTAINABILITY AND ENVIRONMENTAL IMPACT	6308
<i>S. Kuan, L. Saw, Y. Ghorbani, E. Galvez, L. Cisternas, J. Nessel</i>	
THIOL COLLECTOR COMPOSITION IN FLOTATION OF PLATINUM GROUP METAL CONTAINING CU-NI ORES.....	6318
<i>A. Lavrinenko, D. Makarov, L. Sarkisova, N. Gluhova</i>	
OPTIMIZATION OF POX-CIL PROCESS FOR REFRACTORY GOLD-BEARING CONCENTRATES TREATMENT.....	6328
<i>A. Boldyrev, S. Balikov, S. Gudkov, A. Bogorodskiy, Y. Yemelyanov</i>	
UPDATE OF CANADIAN RARE EARTHS PROJECTS AND TECHNOLOGICAL TRENDS	6335
<i>M. Sauber, J. Zinch</i>	
BASIC SEPARATION FLOWSHEETS POTENTIALLY USED IN CHINA'S BAOTOU AND SOUTHERN RARE EARTH OPERATIONS	6355
<i>F.-X. Cheng, S. Wu, C.-S. Liao, C.-H. Yan</i>	
HIGH IRON CALCINES TREATMENT IN ELECTROLYTIC ZINC PLANT OF METALLURGICAL MET-MEX PENOLES, S.A DE C.V	6359
<i>C. Rosales</i>	

PLANT SURVEY OF ASHELE COPPER-ZINC OPERATION: OPPORTUNITIES FOR IMPROVING METAL RECOVERIES AND CONCENTRATE GRADES.....	6369
<i>J. Li, J. Zhou, G. Feng, F. Gao, W. Lai, G. Li, J. Ma, S. Chen</i>	
ELECTRODIALYSIS APPLICATIONS IN THE METALLURGY AND MINING INDUSTRIES - AN OVERVIEW	6378
<i>J.-N. Cloutier, G. Houlachi, R. Labrecque</i>	
Author Index	