GENERAL CONGRESS INFORMATION

**DETAILS AND UPDATES**
Complete and/or updated descriptions, if not provided in this program, are available online at [www.impc2018.com](http://www.impc2018.com) and in the official mobile application IMPC 2018.

**REGISTRATION**
The registration desk is located in the foyer (1 floor) of the World Trade Center. Delegates must register before accessing the technical sessions, purchasing tickets for social functions, or for participating in any Congress activity. Congress badge must be worn at all time. Please approach the registration desk with any enquiries or comments.

**REGISTRATION DESK SCHEDULE**
- Sunday, September 16: 10:00 — 20:00
- Monday, September 17: 08:00 — 20:00
- Tuesday, September 18: 07:30 — 19:00
- Wednesday, September 19: 07:30 — 19:00
- Thursday, September 20: 07:30 — 19:00

**SPEAKERS’ INFORMATION**
Speakers are required to attend the ‘Meet-and-Greet’ Coffee on the morning of their presentation from 7:30 to 8:00 that will be held in the Valdai-Seliger Hall. During the ‘Meet-and-Greet’ Coffee, Speakers will:
- Meet their Session Chairs
- Supply their biography

**INTERNATIONAL EXHIBITION «IMPC2018-EXPO. MINING AND MINERAL PROCESSING»**
The Expo is located in the Expocentre Fairgrounds.
Address: Russia, Moscow, Krasnopresnenskaya nab.-14

- Sunday, September 16: 10:00 — 18:00
- Monday, September 17: 10:00 — 18:00
- Tuesday, September 18: 10:00 — 16:00

**INTERNET**
Complimentary Wi-Fi is available in the World Trade Center.

**OFFICIAL IMPC 2018 MOBILE APPLICATION**
Please use an Official IMPC 2018 application in your cellphone. You will be updated on the latest news about the IMPC 2018 and take advantage of the following functions:
- Schedule your agenda
- Browse the Program of the Congress
- Chat with your colleagues
- Make your virtual Exhibition tour
- Check general information

**SIMULTANEOUS INTERPRETATION**
(English and Russia)
If you plan to use the simultaneous interpretation services, please have your identification card with you when requesting your headset. Please note: simultaneous interpretation will be available only during the Opening Ceremony, Plenary Sessions and Closing Ceremony. Headsets must be returned at the end of each Plenary Session and after Closing Ceremony.

**IMPC BANQUET & AWARDS**
Meeting Point: Registration desk
Time: 18.15
IMPC BANQUET & AWARDS will be held in the Estet Event.
Address: Moscow, Vëtkina street, building 4
CONGRESS CENTER FLOOR 2

- A1 Hall
- A2 Hall
- A3 Hall
- Press Hall
- Congrесс Зал (Congress Hall)
- Зал Амфитеатр (Amphitheater Hall)
- Комната докладчика (Speakers room)
- Центр по сбору презентаций (Presentation Check Point)
- Escalators
- Smoking room
- Toilets
- Movable walls
# Daily Schedule of Events

## 16 September

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</thead>
<tbody>
<tr>
<td>10.00 – 20.00</td>
<td>Registration</td>
<td>Expocentre Fairgrounds, Pavilion 7</td>
</tr>
<tr>
<td>9.00 – 15.00</td>
<td>Moscow Sightseeing tour</td>
<td>Crowne Plaza, AZIMUT Hotel Smolenskaya, Ibis Moscow Oktyabrskoye Pole, Hotel National</td>
</tr>
<tr>
<td>8.00 – 16.30</td>
<td>IMPC Council Meeting*</td>
<td>Expocentre Fairgrounds, Pavilion 7</td>
</tr>
<tr>
<td>11.30</td>
<td>Expo Opening «IMPC2018-EXPO. Mining and Mineral Processing»</td>
<td>Expocentre Fairgrounds, Pavilion 7</td>
</tr>
<tr>
<td>17.00 – 20.00</td>
<td>Welcome Reception</td>
<td>Expocentre Fairgrounds, Pavilion 7</td>
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## 17 September

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<tr>
<th>Time</th>
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<th>Location</th>
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</thead>
<tbody>
<tr>
<td>10.00 – 10.30</td>
<td>IMPC Opening Ceremony</td>
<td>World Trade Center Congress Hall</td>
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<tr>
<td>10.30 – 11:15</td>
<td>Plenary Lectures</td>
<td>World Trade Center Congress Hall</td>
</tr>
<tr>
<td>11.15 – 11.50</td>
<td>Poster Session and Coffee Break</td>
<td>World Trade Center Foyer</td>
</tr>
<tr>
<td>11.50 – 12.35</td>
<td>Technical sessions</td>
<td>World Trade Center</td>
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<tr>
<td>10.00 – 18.00</td>
<td>International Exhibition «IMPC2018-EXPO. Mining and Mineral Processing»</td>
<td>Expocentre Fairgrounds, Pavilion 7</td>
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<tr>
<td>12.35 – 14.00</td>
<td>Lunch</td>
<td>World Trade Center Valdai-Seliger Hall</td>
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## 18 September

<table>
<thead>
<tr>
<th>Time</th>
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<th>Location</th>
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</thead>
<tbody>
<tr>
<td>8.20 – 9.50</td>
<td>Plenary Lectures</td>
<td>World Trade Center Congress Hall</td>
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<tr>
<td>9.50 – 10.35</td>
<td>Poster Session and Coffee Break</td>
<td>World Trade Center Foyer</td>
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<tr>
<td>10.35 – 13.05</td>
<td>Technical sessions</td>
<td>World Trade Center</td>
</tr>
<tr>
<td>10.35 – 11.55</td>
<td>METALLOINVEST Presentation</td>
<td>World Trade Center Press Hall</td>
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<tr>
<td>11.00 – 12.00</td>
<td>Young Authors Commission</td>
<td>World Trade Center Neva Hall</td>
</tr>
<tr>
<td>10.00 – 16.00</td>
<td>International Exhibition «IMPC2018-EXPO. Mining and Mineral Processing»</td>
<td>Expocentre Fairgrounds, Pavilion 7</td>
</tr>
<tr>
<td>12.00 – 13.20</td>
<td>TOMS Presentation</td>
<td>World Trade Center Press Hall</td>
</tr>
<tr>
<td>Time</td>
<td>Event</td>
<td>Location</td>
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</tr>
<tr>
<td>13.05 — 14.35</td>
<td>Lunch</td>
<td>World Trade Center Valdai-Seliger Hall</td>
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<tr>
<td>14.35 — 15.35</td>
<td>Technical sessions</td>
<td>World Trade Center</td>
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<tr>
<td>15.00 — 18.00</td>
<td>「The Plaksin’s Readings — 2018」</td>
<td>World Trade Center Press Hall</td>
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<tr>
<td>15.35 — 16.05</td>
<td>Coffee Break</td>
<td>World Trade Center Foyer</td>
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<tr>
<td>16.05 — 18.00</td>
<td>Technical sessions</td>
<td>World Trade Center</td>
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<tr>
<td>15.30 — 17.00</td>
<td>Education Workshop</td>
<td>World Trade Center Neva Hall</td>
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<tr>
<td>17.10 — 18.00</td>
<td>IMPC General Body Meeting</td>
<td>World Trade Center Amphitheater Hall</td>
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<tr>
<td>19 September 8.20 — 9.50</td>
<td>Plenary Lectures</td>
<td>World Trade Center Congress Hall</td>
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<tr>
<td>9.50 — 10.35</td>
<td>Poster Session and Coffee Break</td>
<td>World Trade Center Foyer</td>
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<tr>
<td>10.35 — 13.05</td>
<td>Technical sessions</td>
<td>World Trade Center</td>
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<tr>
<td>13.05 — 14.00</td>
<td>Lunch</td>
<td>World Trade Center Valdai-Seliger Hall</td>
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<tr>
<td>14.00 — 15.00</td>
<td>Technical sessions</td>
<td>World Trade Center Foyer</td>
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<tr>
<td>15.00 — 15.30</td>
<td>Coffee Break</td>
<td>World Trade Center Foyer</td>
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<tr>
<td>15.30 — 18.00</td>
<td>Technical sessions</td>
<td>World Trade Center</td>
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<tr>
<td>15.30 — 17.00</td>
<td>Mineral Processing Workshop</td>
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<tr>
<td>18.15 — 22.00</td>
<td>IMPC Banquet &amp; Awards</td>
<td>Estet Event</td>
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<tr>
<td>20 September 7.00 — 8.30</td>
<td>IMPC Council Breakfast Meeting*</td>
<td>World Trade Center A Hall</td>
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<tr>
<td>9.00 — 10.05</td>
<td>Technical sessions</td>
<td>World Trade Center</td>
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<tr>
<td>10.05 — 10.35</td>
<td>Coffee Break</td>
<td>World Trade Center Foyer</td>
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<td>10.35 — 13.00</td>
<td>Technical sessions</td>
<td>World Trade Center</td>
</tr>
<tr>
<td>13.00 — 14.00</td>
<td>Lunch</td>
<td>World Trade Center Valdai-Seliger Hall</td>
</tr>
<tr>
<td>14.00 — 15.00</td>
<td>Technical sessions</td>
<td>World Trade Center</td>
</tr>
<tr>
<td>15.00 — 15.20</td>
<td>Coffee Break</td>
<td>World Trade Center Foyer</td>
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<tr>
<td>16.00 — 18.00</td>
<td>IMPC Closing Ceremony</td>
<td>World Trade Center Amphitheater Hall</td>
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<tr>
<td>21 September</td>
<td>Industrial Tours</td>
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<tr>
<td></td>
<td>Cultural Tours</td>
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* Private Meeting / by invitation only
**Summary / Monday, September 17**

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<thead>
<tr>
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<th>Event</th>
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<tbody>
<tr>
<td>08.00–20.00</td>
<td>Registration (Foyer, 1 floor)</td>
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<tr>
<td>10.00–10.30</td>
<td>Opening Ceremony. Words of Welcome (Congress Hall)</td>
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<tr>
<td>10.30–11.15</td>
<td>Plenary Presentations (Congress Hall)</td>
</tr>
<tr>
<td>Chairs:</td>
<td>Valentine Chanturiya, Russia, Cyril O’Connor, South Africa</td>
</tr>
<tr>
<td>10.30–11.15</td>
<td>Modern seafloor hydrothermal systems and the sustainable exploitation of massive sulfide deposits: future mineral resources or unjustified expectations? (p. 365) Academician, Prof. Nikolay Bortnikov, Russian Academy of Science, Russia</td>
</tr>
<tr>
<td>11.15–11.50</td>
<td>Poster Session and Coffee Break (Foyer, 1 floor)</td>
</tr>
<tr>
<td>11.15–11.50</td>
<td>Poster Session and Coffee Break (Foyer, 1 floor)</td>
</tr>
</tbody>
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Moscow, Russia
<table>
<thead>
<tr>
<th>11.50–12.35</th>
<th>12.35–14.00</th>
<th>14.00–15.00</th>
<th>15.00–15.20</th>
<th>15.20–18.00</th>
<th>16.40–18.00</th>
<th>17.00–18.30</th>
<th>18.30–21.00</th>
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<tr>
<td><strong>Technical Sessions</strong></td>
<td><strong>Technical Sessions</strong></td>
<td><strong>Technical Sessions</strong></td>
<td><strong>Coffee Break</strong></td>
<td><strong>Technical Sessions</strong></td>
<td><strong>Technical Sessions</strong></td>
<td><strong>International Advisory Committee Meeting</strong></td>
<td><strong>Cultural Reception</strong></td>
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<tr>
<td><strong>A1 Hall</strong></td>
<td><strong>A2 Hall</strong></td>
<td><strong>A3 Hall</strong></td>
<td><strong>Amphitheater Hall</strong></td>
<td><strong>Press Hall</strong></td>
<td><strong>Don Hall</strong></td>
<td><strong>Selenga Hall</strong></td>
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</tr>
<tr>
<td><strong>Session 1. Comminution &amp; classification</strong></td>
<td><strong>Session 2. Surface chemistry. Flotation fundamentals. Flotation reagents. Flotation technology</strong></td>
<td><strong>Session 3. Physical enrichment — gravity, magnetic and electrostatic separation</strong></td>
<td><strong>Session 4. Hydro- and bio-hydrometallurgy</strong></td>
<td><strong>Session 5. Environmental problems and recycling of mineral-containing waste products</strong></td>
<td><strong>Session 6. Process modeling</strong></td>
<td><strong>Session 7. Technological mineralogy</strong></td>
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<tr>
<td><strong>Session 22. Environmental problems and recycling of mineral-containing waste products</strong></td>
<td><strong>Session 23.</strong></td>
<td><strong>Session 24.</strong></td>
<td><strong>Session 25.</strong></td>
<td><strong>Session 26.</strong></td>
<td><strong>Session 27.</strong></td>
<td><strong>Session 28.</strong></td>
<td><strong>Session 29.</strong></td>
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1. Lunch
2. Coffee Break
3. International Advisory Committee Meeting (Neva Hall)
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<th>Session 2</th>
<th>Session 3</th>
<th>Session 4</th>
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</thead>
<tbody>
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<td>11:50–12.15</td>
<td>Communion &amp; classification</td>
<td>Surface chemistry.</td>
<td>Physical enrichment — gravity, magnetic and electrostatic separation</td>
<td>Hydro- and bio-hydrometallurgy</td>
</tr>
<tr>
<td></td>
<td>Chair: Vasily Arsentyev, Russia</td>
<td>Chair: Uliy Rubinshtein, Russia</td>
<td>Chair: Alexander Kurkov, Russia</td>
<td>Chair: Galina Sedelnikova, Russia</td>
</tr>
</tbody>
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**KEYNOTE**

- GENERALIZED THEORY OF VIBRATORY SEPARATION OF GRANULAR MATERIALS (p. 385)
  - Leonid Vaisberg
  - Mekhanobr-Tekhnika REC, Russia

- DEVELOPMENT OF NORILSK NICKEL CONCENTRATORS IN 2015–2017 (p. 1022)
  - Sergey Dyachenko
  - P5C MMC Norilsk Nickel, Russia

- RECOVERY OF RARE EARTHS AND P FROM A PHOSPHATE FLOTATION TAILS (p. 761)
  - Jirong Zhang¹, H. Liang¹,², D. DePaoli²
  - ¹FIPR Institute, Florida Polytechnic University, USA
  - ²Oak Ridge National Laboratory, USA

- THE ACTIVATED CARBONS ADSORPTION OF CYANIDE COMPLEXES OF TRANSITION METALS FROM SOLUTIONS AND PULPS: CAUSE AND EFFECT (p. 286)
  - N.V. Vorob’ev-Desyatovskii¹, S.A. Kubyshkin¹, A. Pichugina², A.A. Agafonov³, S.M. Sukharzhvsky³, A.L. Shakhnin³, A.A. Komlev⁴
  - ¹JSC Polymetal Engineering, Russia
  - ²M.V. Lomonosov Moscow State University, Faculty of Chemistry, Russia
  - ³St. Petersburg State University, Institute of Chemistry, Russia
  - ⁴Peter the Great St. Petersburg Polytechnic University, Russia

**ELEMENT METHOD (DEM) — THE SARCHESHMEH COPPER COMPLEX CONE CRUSHER CASE (p. 144)**
- Elham Nematollahi¹, S. Zare¹, F. Ghorbani¹, A. Ghasemi¹, S. Banisi²
  - ¹Kashigar Mineral Processing Research Center, Shahid Bahonar University of Kerman, Iran
  - ²Mining Engineering Department, Shahid Bahonar University of Kerman, Iran

**EFFECT OF IMPELLER DESIGN AND OPERATION ON BUBBLE SIZE AND FROTHER STABILITY (p. 542)**
- Diego Mesa, A. Morrison, P. Brito-Parada
  - Department of Earth Science and Engineering, Royal School of Mines, Imperial College London, United Kingdom

**DRY MAGNETIC SEPARATION OF MAGNETITE-QUARTZ BLENDS USING CYCLOMAG PLANAR MAGNETIC SEPARATOR (p. 135)**
- Emmanuel Baawuah¹, C. Kelsey²
  - ¹Future Industries Institute, University of South Australia, Australia
  - ²IMP Technologies, Pty., Ltd., Australia

**PRESSURE OXIDATION AS A UNIVERSAL METHOD FOR PROCESSING SULPHIDE CONCENTRATES OF PRECIOUS AND BASE METALS (p. 106)**
- Alexander V. Epiforov, Stanislav V. Balikov
  - Irkutsk Research Institute of Rare and Precious Metals and Diamonds (IRGIREDMET JSC), Russia

12.35–14.00  Lunch. (Valdai-Seliger Hall, 1 floor)
<table>
<thead>
<tr>
<th>Press Hall</th>
<th>Don Hall</th>
<th>Selenga Hall</th>
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</table>
| **Session 5.** Environmental problems and recycling of mineral-containing waste products  
*Chair: Elena Zelinskaya, Russia* | **Session 6.** Process modeling  
*Chair: Valery Morozov, Russia* | **Session 7.** Technological mineralogy  
*Chair: Joe Zhou, Canada* |
| **KEYNOTE**  
**THE GEO-METALLURGY OF THE CIRCULAR ECONOM. — DESIGN FOR RECYCLING OF FAIRPHONE AS AN EXAMPLE**  
(p. 1061)  
*Marcus A. Reuter*  
Helmholtz Institute Freiberg for Resource Technology, Germany | **KEYNOTE**  
**THE STUDY ON GENETIC MINERAL PROCESSING ENGINEERING** (p. 421)  
*Sun Chuanyao¹, Han Long², Zhou Junwu³, Song Zhenguao⁴*  
¹State Key Laboratory of Mineral Processing, BGRIMM, China  
²Institute of Mineral Processing, BGRIMM, China  
³State Key Laboratory of Process Automation in Mining & Metallurgy, BGRIMM, China | **KEYNOTE**  
**NEW METHODS OF MINERAL PROCESSING AND TECHNOLOGY FOR THE PROGRESS OF SUSTAINABILITY IN COMPLEX ORE TREATMENT** (p. 6)  
*E.G. Ozhogina¹, Olga Kotova²*  
¹All-Russian scientific-research institute of mineral resources named after N.M. Fedorovsky, Russia  
²Institute of Geology Komi Science center of Ural Branch of RAS, Russia |
| **11.50–12.15**  
*BIOREMEDIATION OF Pb(II) IONS FROM AQUEOUS SOLUTION USING EXTRACELLULAR POLYMERIC SUBSTANCES (EPS) PURIFIED FROM PSEUDOMONAS FLUORESCENS** (p. 679)  
*S. Vimalnath¹, R. Vasant Kumar², S. Carsten³, Sankaran Subramanian⁴*  
¹Department of Materials Engineering, Indian Institute of Science, India  
²Department of Materials Science and Metallurgy, University of Cambridge, United Kingdom  
³National Chair of Materials Science and Metallurgy, University of Nizwa, Oman | **CRITICAL ASSESSMENT OF FROTH FLotation FUNDAMENTAL MODELS** (p. 70)  
*Nathalie Kupka¹, D.H. Hoang²,³, Martin Rudolph⁴*  
¹Department of Mineral Processing, Helmholtz Institute Freiberg for Resource Technology, Germany  
²Department of Mineral Processing, Faculty of Mining, Hanoi University of Mining and Geology, Vietnam  
³Institute of Mechanical Process Engineering and Mineral Processing, Technische Universität Bergakademie Freiberg, Germany | **EXPERIMENTAL SUBSTANTIATION OF THE RELATION OF THE STRUCTURAL-CHEMICAL PROPERTIES OF MINERAL EDUCATION ON NATURAL DIAMONDS FROM THE SUBSTANCE COMPOSITION OF THE KIMBERLITE ORE** (p. 715)  
*Iurii Podkamennyi¹, G.P. Dvoichenkova², O.E. Kovalchuk²*  
¹Institute of Comprehensive Exploitation of Mineral Resources Russian Academy of Sciences, Russia  
²Geo-Scientific research Enterprise ALROSA, Russia |
| **12.15–12.35**  
*BIOREMEDIATION OF Pb(II) IONS FROM AQUEOUS SOLUTION USING EXTRACELLULAR POLYMERIC SUBSTANCES (EPS) PURIFIED FROM PSEUDOMONAS FLUORESCENS** (p. 679)  
*S. Vimalnath¹, R. Vasant Kumar², S. Carsten³, Sankaran Subramanian⁴*  
¹Department of Materials Engineering, Indian Institute of Science, India  
²Department of Materials Science and Metallurgy, University of Cambridge, United Kingdom  
³National Chair of Materials Science and Metallurgy, University of Nizwa, Oman | **CRITICAL ASSESSMENT OF FROTH FLotation FUNDAMENTAL MODELS** (p. 70)  
*Nathalie Kupka¹, D.H. Hoang²,³, Martin Rudolph⁴*  
¹Department of Mineral Processing, Helmholtz Institute Freiberg for Resource Technology, Germany  
²Department of Mineral Processing, Faculty of Mining, Hanoi University of Mining and Geology, Vietnam  
³Institute of Mechanical Process Engineering and Mineral Processing, Technische Universität Bergakademie Freiberg, Germany | **EXPERIMENTAL SUBSTANTIATION OF THE RELATION OF THE STRUCTURAL-CHEMICAL PROPERTIES OF MINERAL EDUCATION ON NATURAL DIAMONDS FROM THE SUBSTANCE COMPOSITION OF THE KIMBERLITE ORE** (p. 715)  
*Iurii Podkamennyi¹, G.P. Dvoichenkova², O.E. Kovalchuk²*  
¹Institute of Comprehensive Exploitation of Mineral Resources Russian Academy of Sciences, Russia  
²Geo-Scientific research Enterprise ALROSA, Russia |

**NOTE**

Monday, September 17
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<tr>
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<th>A2 Hall</th>
<th>A3 Hall</th>
<th>Amphitheater Hall</th>
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<tbody>
<tr>
<td></td>
<td>Chair: Margarita Mezzetti, Germany</td>
<td>Chair: Janusz Laskowski, Canada</td>
<td>Chair: Ralph Holmes, Australia</td>
<td>Chair: Galina Sedelnikova, Russia</td>
</tr>
<tr>
<td>11.00–11.20</td>
<td>RESEARCH AND PRACTICE OF ROLLER-PRESSES IN ORE PREPARATION (p. 73)</td>
<td>TAILORING CHEMISTRIES TO MEET THE NEED IN SILICA SAND BENEFICIATION (p. 7)</td>
<td>EFFECTS OF PHYSICAL SEPARATION AS A PRETREATMENT FOR AMMONIUM THIOSULFATE LEACHING OF GOLD FROM WASTE MOBILE PHONES (p. 107)</td>
<td>PRESSURE LEACHING OF CARBONACEOUS SULFIDE CONCENTRATES FOR RECOVERY OF COPPER AND IRON (p. 545)</td>
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<tr>
<td></td>
<td>Pavel Fedotov</td>
<td>Lucas Moore, G. Wang, Y.R. Xiong, J. Gu, and K. Price¹</td>
<td>Sanghee Jeon¹, M. Ito², R. Pongsumrunkul¹, S. Tanaka¹, N Kitajima¹, C.B. Tabelin², N. Hiroyoshi²</td>
<td>Refilwe S. Magwaneng¹, Kazutoshi Haga², Altansukh Batnasan², Atsushi Shabayama¹, Masato Kosugi², Ryo Kawarabuki², Kohei Mitsuhashi³, Masanobu Kawata³</td>
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<td></td>
<td>National Research Irkutsk State Technical University, Russia</td>
<td>Industrial Minerals, ArrMaz, United States of America</td>
<td>Laboratory of Mineral Processing and Resources Recycling, Division of Sustainable Resources Engineering, Graduate School of Engineering, Hokkaido University, Japan</td>
<td>Department of Earth Resource Engineering and Environmental Science, Graduate School of International Resource Sciences, Akita University, Japan</td>
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<td>11.20–11.40</td>
<td>RECASTING MINERAL PROCESSING FLOW-SHEETS (p. 74)</td>
<td>COLUMN DIAMETER EFFECTS ON DYNAMIC FROTHER STABILITY MEASUREMENT (p. 178)</td>
<td>EXPERIMENTAL INVESTIGATION INTO THE KINETICS OF THE FALCON UF CONCENTRATOR (p. 320)</td>
<td>COMBINED ENERGY IMPACT ON ACID LEACHING OF EUDIALYTE CONCENTRATE (p. 108)</td>
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<tr>
<td></td>
<td>C.G. Kelsey¹, Joseph Kelly¹ and W. Skinner¹</td>
<td>Stefan Geldenhuys, B. McFadzean</td>
<td>Quentin Dehaine¹,², Y. Foucaud³, C. Eswaraiah¹,², J-S. Kroll-Rabotin¹, L. Filippos²</td>
<td>Andrey Samusev, V.A. Chanturiya¹, V.G. Minenko¹</td>
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<td></td>
<td>IMP Technologies PL, Australia</td>
<td>Centre for Minerals Research, Department of Chemical Engineering, University of Cape Town, South Africa</td>
<td>Camborne School of Mines, University of Exeter, UK</td>
<td>Institute of Comprehensive Exploitation of Mineral Resources, Russian Academy of Sciences (ICEMR RAS), Russia</td>
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<td></td>
<td>Technical Director IMP, Australia</td>
<td></td>
<td>Université de Lorraine, France</td>
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<tr>
<td>11.40–12.00</td>
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<td>Yuan Long, Guowang Zhang, Xiao Xiao, Lilong Huang, Li Shi</td>
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<td>Département Science et Ingénierie des Matériaux et Métallurgie (S2M), Institut Jean-Lamour, Université de Lorraine, CNRS, France</td>
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<td>Changsha Research Institute of Mining &amp; Metallurgy, China</td>
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<td>Gabor Mucsi1, R. Szabo1, B. Egyed1, F. Kristaly1, Á. Récz1, I. Gombkó1, S. Nagy1, S. Kumar1</td>
<td>J. Steyn1, Oswaldo Bascur1, B. Gorain</td>
<td>Valery Morozov1, Ganbaatar Zorigt1, Delgerbat Lodoy1, Y.P. Morozov1</td>
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<td>Marina Belykh1, S.V. Petrov1, A. Yu. Chikin1, N.L. Belkova2, E.P. Olberg1</td>
<td>Tomasz Niedoba1, P. Pięta, A. Surowiak1, D. Jamróz2</td>
<td>F. Rosenblum1, J.E. Nesset1, James Finch1, K.E. Waters1, R. Langlois1</td>
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<td>1 Irkutsk Research Institute of precious and rare metals and diamonds, Russia, 2 Limnological Institute RAS, Russia</td>
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<td>1 Department of Mining and Materials Engineering, McGill University, Canada</td>
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² Helmholtz Institute Freiberg for Resource Technology, Helmholtz-Zentrum Dresden-Rossendorf, Germany | **ELECTROCHEMICAL OXIDATION AND DISSOLUTION OF REFRACTORY BENGUET (PHILIPPINES) GOLD CONCENTRATE IN HYPOCHLORITE SOLUTIONS** (p. 590)  
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¹ Department of Mining, Metallurgical and Materials Engineering, University of the Philippines, Philippines |
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Mining Institute the Far Eastern Branch of Russian Academy of Sciences, Russia | **PURIFICATION OF A NORWEGIAN ILMENITE ORE TO PRODUCE SYNTHETIC RUTILE** (p. 374)  
James M. Mwase¹, Stoyan Gaydardzhiev¹, Eduard Stefanescu², Egon Sehner²  
¹ GeMMe, Mineral Processing and Recycling, University of Liege, Belgium  
² CMI Industry Metals, Group Cockerill Maintenance & Ingénierie, Germany |

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<td>1 GeMMe – Laboratory of Mineral Processing &amp; Recycling, University of</td>
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<td><em>Sebastian Contreras</em>*, C. Ihle*, H. Palza*</td>
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Department of Industrial and Material science, Chalmers University of Technology, Sweden | **DEPORTMENT STUDY AND EXTRACTIVE METALLURGY OF GOLD AND SILVER IN A SULFIDE ORE FROM CHINA** (p. 509)  
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¹ Integrated Process Mineralogy Solutions Inc. Canada  
² Barrick Gold Corporation, Canada  
³ Surface Science Western, Western University  
⁴ AuTec Innovative Extractive Solutions | |
| **17.00-17.20**  
**NEW EFFICIENT TECHNIQUES OF SAPONITE RECOVERY FROM PROCESS WATER OF DIAMOND TREATMENT PLANTS YIELDING HIGH-QUALITY MARKETABLE PRODUCTS** (p. 66)  
Vladimir Minenko¹, Makarov D.V.², Samuev A.L.¹, Suvorova O.V.³, Selivanova E.A.⁴  
¹ Institute of Comprehensive Exploitation of Mineral Resources, Russian Academy of Sciences, (ICEMR RAS), Russia  
² Institute of Industrial North Ecology Problems of the Kola Science Centre of RAS, Russia  
³ I.V. Tananaev Institute of Chemistry and Technology of Rare Elements and Mineral Raw Materials of the Kola Science Centre of RAS, Russia  
⁴ Geological Institute of the Kola Science Centre of RAS, Russia | **FINE MODELLING OF ORES FOR GEOMETALLURGY-BASED PROCESS SIMULATION** (p. 558)  
S. Brochot¹, Manuel Gonzalez Fernandez² and M.V. Durance³  
¹ Caspeo, 3 avenue Claude Guillemin, BP 36090, 45060, Orleans CEDEX 2, France  
² Caspeo Chile SpA, Santiago, Chile | **PROBLEM OF PROCESS-RELATED DAMAGE TO DIAMONDS AND POSSIBLE WAYS OF ITS SOLUTION. INSTRUMENTAL ASSESSMENT METHOD** (p. 768)  
Igor Makarysky, L.G. Tarasova, D.N. Nikitin  
Yakutniproalmaz Institute, Russia | |
17.00–18.30  International Advisory Committee Meeting

**A1 Hall**

**Session 15.** Comminution & classification  
*Chair: Pavel Fedotov, Russia*

**Session 16.** Surface chemistry. Flotation fundamentals. Flotation reagents. Flotation technology  
*Chair: Vladko Panayotov, Bulgaria*

**A2 Hall**

**Session 17.** Physical enrichment — gravity, magnetic and electrostatic separation  
*Chair: Rolf Cleiv, Norway*

**A3 Hall**

**Session 16.** Surface chemistry. Flotation fundamentals. Flotation reagents. Flotation technology  
*Chair: Vladko Panayotov, Bulgaria*

**17.20-17.40**

**REPLACING PETROV’S PROCESS WITH ATMOSPHERIC FLOTATION USING PB-BHA COMPLEXES FOR SEPARATING SCHEELITE FROM FLUORITE (p. 179)**  
Haisheng Han¹, Wei Sun¹, Yuehua Hu¹, Anh V Nguyen¹,², Xiaodong Li¹, Kefeng Chen¹, Honghu Tang¹, Jianjun Wang¹, Zhao Wei¹, Ruolin Wang¹  
¹School of Mineral Processing and Bioengineering, Central South University, China  
²School of Chemical Engineering, The University of Queensland, Australia

**PROCESSING A COMPLEX W ORE BY PRECONCENTRATING WITH A FALCON CONCENTRATOR PRIOR TO FLOTATION (p. 255)**  
Yann Foucaud¹, Q. Dehaine¹,², I. Filippova¹, L. Filippov¹  
¹GeoRessources, Université de Lorraine, CNRS, France  
²Camborne School of Mines, University of Exeter, United Kingdom

**17.40-18.00**

**A NUMERICAL STUDY OF THE EFFECTS OF MICROWAVE PRE-TREATMENT ON VALUE LIBERATION FROM A ZINC ORE (p. 648)**  
Pierre-Henri Koch¹, Edson Charikinya²  
¹Division of Minerals and Metallurgical Engineering (MiMeR), Luleå University of Technology, Sweden  
²Minerals to Metals Initiative, University of Cape Town, South Africa

**MODIFICATION OF STRUCTURAL – CHEMICAL AND TECHNOLOGICAL PROPERTIES OF RARE – METAL MINERALS UNDER THE INFLUENCE OF HIGH – POWER ELECTROMANETIC PULSES (p. 28)**  
I.Zh. Bunin, Maria Ryazantseva, E.V. Koporulina  
The laboratory of mineral components separation theory, N.V. Mel’nikov Institute of Comprehensive Exploitation of Mineral Resources of Russian Academy of Science, Russia

**INTERMEDIATE SIZE BENEFICIATION WITH REFLEX CLASSIFIER (p. 175)**  
Bijay Tiwari, D. Bhargav, Jitender Singh, D. Chakraborty  
Process Technology group, Tata Steel Limited, India

**18.30-21.00**

**Cultural Reception** (Valdai-Seliger Hall, 1 floor)
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| **Session 18.** Hydro- and bio-hydrometallurgy  
Chair: Grigory Voiloshnikov, Russia | **Session 22.** Environmental problems and recycling of mineral-containing waste products  
Chair: Marinela Panayotova, Bulgaria | **Session 20.** Process modeling  
Chair: Tomasz Niedoba, Poland | **Session 21.** Technological mineralogy  
Chair: Jing Li, Canada |
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Aalto University, School of Chemical Technology, Department of Materials Science and Engineering, Finland | DEVELOPMENT OF A SAG MILL MODEL BASED ON THE SAGDESIGN TEST: APPLICATION TO PLANT DESIGN AND OPTIMIZATION (p. 587)  
S. Brochet¹ and Manuel Gonzalez Fernandez²  
¹Caspeo, 3 avenue Claude Guillemin, BP 36009, 45060, Orleans CEDEX 2, France  
²Caspeo Chile SpA, Santiago, Chile | EFFECTS OF COPPER SLAG COOLING STUDIED WITH IMAGE PROCESSING SOFTWARE (p. 810)  
Milen Kadiyski, V. Stoyanova, V. Stoilov, E. Visariev  
Aurubis Bulgaria, Bulgaria |  |
| 17.40-18.00  
THE IMPROVEMENT OF HEAVY RARE EARTH RECOVERY FROM WEATHERED RESIDUAL RARE EARTH ORE BY PLANETARY MILLING ADDED SODIUM HYDROXIDE (p. 496)  
Tatsuya Kato¹, G. Granata², C. Tokoro³, Y. Tsunazawa¹, T. Takagi³  
¹Graduate School of Creative Science and Engineering, Waseda University, Japan  
²Faculty of Science and Engineering, Waseda University, Japan  
³Research Institute for Geo-Resources and Environment, National Institute of Advanced Industrial Science and Technology, Japan | NEW MINERAL SENSING TECHNOLOGIES FOR GRADE ENGINEERING® AND COARSE GANDE REJECTION (p. 798)  
Greg Wilkie¹, P. Revell¹, P. Coghill¹, A. Blouin¹, M. Sabsabi³  
¹CRC ORE OTAT Technology Transfer Centre, Australia  
²CSIRO Minerals Resources, Australia  
³National Research Council of Canada, Canada |  |
| 18.30-21.00 Cultural Reception (Valdai-Seliger Hall, 1 floor) |  |  |  |
### Summary / Monday, September 18

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### Plenary Session

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<td>The future of mining: will in-place recovery ever come of age? (p. 677)</td>
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<td><em>Prof. Robin Batterham, University of Melbourne, Australia</em></td>
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<td>Current status and main development areas of mineral and chemical company «EUROCHEM» (p. 1058)</td>
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<td><em>Igor Nechaev, General Director of the JSC «MCC «EuroChem», Russia</em></td>
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<td><strong>Session 24.</strong> Surface chemistry. Flotation fundamentals. Flotation reagents. Flotation technology</td>
<td><strong>Session 25.</strong> Physical enrichment – gravity, magnetic and electrostatic separation</td>
<td><strong>Session 26.</strong> Hydro- and biohydrometallurgy</td>
<td><strong>Session 27.</strong> Process modeling</td>
<td><strong>Session 28.</strong> Technological mineralogy</td>
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<td>13.00–14.30</td>
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<td><strong>Session 30.</strong> Surface chemistry. Flotation fundamentals. Flotation reagents. Flotation technology</td>
<td><strong>Session 31.</strong> Physical enrichment – gravity, magnetic and electrostatic separation</td>
<td><strong>Session 32.</strong> Hydro- and biohydrometallurgy</td>
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<td><strong>Session 39.</strong> Pillarization, agglomeration and sintering</td>
<td><strong>Session 21.</strong> Technological mineralogy</td>
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<td><strong>THE MAIN TRENDS IN THE ENRICHMENT EFFICIENCY IN THE PROCESSING OF IRON ORES</strong></td>
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<td>15.00–18.00</td>
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<td>11.00–12.00</td>
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| 10:35-11:00 | **KEYNOTE** STATE OF RARE AND RARE EARTH METALS PRODUCTION IN THE WORLD AND KAZAKHSTAN (p. 80)  
Zinesh Abisheva  
Kazakh National Research Technical University named after K.I. Satpayev, Satpayev, Kazakhstan  
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Antony Anberg, Gonzalo Saldiva, Romke Kuvenhoven, Francisco Soto, Heriban Soto, Catherine Souza  
1 Los Andes Copper, Chile  
2 Minera Vizcachitas, Chile  
3 Empirica Consultores, Chile  
4 SGS Minerals, Chile  
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Joe Zhou, Y. Dymov, J. Li  
1 Joe Zhou Mineralogy Ltd, Canada  
2 Process Metallurgy Consultant Ltd, Canada  
3 Zijin Mining Group, China  
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| 11:00-11:20 | **TUNGSTEN LEACHING FROM SCHEELITE CONCENTRATE USING SODIUM HYDROXIDE IN THE PRESENCE OF PHOSPHATE BY AUTOCLAVING PROCESS (p. 46)  
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School of Resources and Civil Engineering, Northeastern University, China  
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1 R&D Department, Fakoor Sanat Tehran Company, Iran  
2 Exploration and Mining Department, Technical Office, Kusha Madan Consulting Eng., Iran  
3 Mining Engineering, University of Tehran  
4 FST & IDG Joint Venture, Western Australia  
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X.H. Li, Q. Zhang, Z.H. Shen, F. Xie, and S. Mao  
1 College of Materials and Metallurgy, Guizhou University, Guiyang, China  
2 Mining College, Guizhou University, Guiyang 550025, China  
3 National & Local Joint Laboratory of Engineering for Effective Utilization of Regional Mineral Resources from Karst Areas, Guiyang, China  
4 Guizhou Key Lab of Comprehensive Utilization of Non-metallic Mineral Resources, Guiyang, China  
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Kazutoshi Haga, K. Amano, A. Battsgenj, A. Battasan, Y. Watanabe, A. Shibayama  
1 Akita University, Graduate School of Engineering Science, Japan  
2 Akita University, Graduate School of Engineering and Resource Science, Japan  
3 Akita University, Graduate School of International Resource Sciences, Japan  
11:20-11:40 | **NUMERICAL SIMULATION OF THE EFFECT OF NEAR GRAVITY DENSITY PARTICLES ON THE PERFORMANCE OF DMC TREATING COAL (p. 929)  
Asha Kumari A.V., Narasimha Mangadody, Raja Banerjee R., Sreedhar G.E., Shivakumar R., Ranjan Kumar  
1 Department of Chemical Engineering, Indian Institute of Technology Hyderabad, India  
2 Department of Mechanical and Aerospace Engineering, Indian Institute of Technology Hyderabad, Ordinance Factory Estate, India  
3 Research and Development, National Mineral Development Corporation Limited, India  
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Ilya Anisimov, A.M. Sagitova, I.A. Agapov, N.V. Rylov  
Technology Research Department, Polymetal Engineering JSC, Russia.  
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<td>Chair: Georgios Anastassakis, Greece</td>
<td>Chair: Imre Gombkoto, Hungary</td>
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<td>Adam Racz¹, K. Bohics², F. Kristaly³, E. Gregus¹, G. Mucsi¹</td>
<td>Sergey Kondratev</td>
<td>Alexander Kurkov, A.A. Rogozhin, S.I. Anufrieva, E.G. Likhnikevich</td>
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<td>¹Institute of Raw Material Preparation and Environmental Processing, University of Miskolc, Hungary</td>
<td>Federal State Budgetary Scientific Institution — N.A. Chinakal Institute of Mining, Siberian Branch, Russian Academy of Sciences, Russia</td>
<td>Technology Department, All-Russian Scientific-Research Institute of mineral resources named after N.M. Fedorovsky, Russia</td>
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<td>Kari Niiranen¹, Viktoria Töyrä¹ and Patrick Krolop²</td>
<td>Wynand Roux, N. Naude</td>
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<td>Department of Industrial and Materials Science, Chalmers University of Technology, Sweden</td>
<td>¹Technical and Process Development, Luossavaara-Kirunavaara AB (publ.), Sweden</td>
<td>Department of Materials Science and Metallurgical Engineering, University of Pretoria, South Africa</td>
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<td>DEGREE EVALUATION OF GRINDING ON FRACTIONAL COMPOSITION AT DESTRUCTION OF POLYMINERAL RAW MATERIALS (p. 605)</td>
<td>EFFECT OF COMPOSITION AND MOLECULAR STRUCTURE ON THE FLOTATION ACTIVITY OF OXYETHYLATED SURFACTANTS (p. 44)</td>
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<td>Stanislav Titkov¹, N.N. Panteleeva¹, E.I. Afonina¹, S.N. Aliferova², T.M. Gurkova¹, A.V. Konobeevskich¹</td>
<td>K.L. Sandvik¹, Hakon Havskjold¹, N. Church¹, E. Larsen¹, M. Tro¹, T. Malvik¹, R. A. Kleiv¹</td>
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<td>Mineral Processing Department, Saint-Petersburg Mining University, Russia</td>
<td>¹Galurgy Institute, Russia</td>
<td>¹Department of Geoscience and Petroleum, Norwegian University of Science and Technology, Norway</td>
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<td>²Division of Economic Geology and Petrology, Institute of Mineralogy, TU Bergakademie Freiberg, Germany</td>
<td>²Uralkali company, Russia</td>
<td>²Rana Gruber A/S, Norway</td>
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<td>BULK ORE SORTING FOR GRADE ENHANCEMENT (p. 524)</td>
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<td>P.J. Coghill¹, Nick Cutmore¹, D.G. Miljak¹, C. Beal¹, A.S. Breesder¹</td>
<td>¹CSIRO Mineral Resources, Australia</td>
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<td>¹Institute of Mineral Processing Machines, TUBAF; Germany</td>
<td>¹CSIRO Mineral Resources, Australia</td>
<td>²RFC Ambrian Limited, Australia</td>
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<td>²Institute of Fluid Power, TU Dresden, Germany</td>
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¹ JSC Irgiredmet, Russia | DESIGNING OF MASS FLOW OBSERVER SYSTEM OF A MINERAL PROCESSING PLANT (p. 592)  
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Hatch Ltd., Canada | APPLIED ORE MICROSCOPY IN SOLVING CONCENTRATION PROBLEMS OF PB-ZN-AG ORE RICH WITH SB AND AS (p. 942)  
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Department of Mineral Processing, Faculty of Mining and Geology, University of Belgrade, Serbia |
| COPPER RECOVERY AND ARSENIC REMOVAL FROM ENARGITE ORES AND CONCENTRATES DURING HIGH PRESSURE OXIDATIVE LEACHING (p. 163)  
Atsushi Shibayama¹, Altansukh Batnasan¹, Kazutoshi Haga²  
¹ Graduate School of International Resource Sciences, Akita University, Japan  
² Graduate School of Engineering Science, Akita University, Japan | MULTI-OBJECTIVE OPTIMIZATION OF A MINERAL PROCESSING PLANT VIA MACMACHINE LEARNING AND GENETIC ALGORITHMS (p. 543)  
Vishnu Masampally, Aditya Pareek, Nagaravi Kumar, Varma Nadimpalli, Venkataramana Runkana  
TCS Research, Tata Consultancy Services Ltd., Pune, 411013, India | ASSESSMENT OF RENTAL INCOME IN MINERAL PROCESSING FOR RARE EARTH DEPOSITS (p. 997)  
Sergey Grishaev¹, S.V. Bogdanov²  
¹ Minpromtorg, Russia  
² State University of Management, Russia |
| THE INTMET PROJECT PROVIDES INNOVATIVE HYDRO AND BIOHYDRO- TECHNOLOGIES TO DEAL EFFICIENTLY WITH POLYMETALLIC AND COMPLEX SULFIDE ORES (p. 583)  
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¹ Cobre Las Cruces, Spain  
² Mintek, South Africa | NEW DATA ON ADSORPTION OF BUTYL XANTHATE ON THE SULFIDES UNDER CONDITIONS OF THEIR PRELIMINARY TREATMENT BY WATER ELECTROLYSIS PRODUCTS (p. 77)  
Elizaveta Koprulina¹, M.V. Ryazantseva¹, E.L. Chanturiya¹, E.S. Zhuravleva²  
¹ The N.V. Mel’nikov Institute of Comprehensive Exploitation of Mineral Resources of Russian Academy of Science, Russia,  
² National University of Science and Technology MISiS, Russia | INFLUENCE OF ENERGY PULSE IMPACTS ON PHYSICO-CHEMICAL, STRUCTURAL AND TECHNOLOGICAL PROPERTIES OF DIAMOND AND KIMBERLITE ROCK-FORMING MINERALS (p. 858)  
Nataliya Anashkina¹, Bunin I.Zh.¹, Khachatryan G.K.²  
¹ Federal state budgetary institution “N.V. Mel’nikov Institute of Comprehensive Exploitation of Mineral Resources RAS”, Russia  
² Federal State Unitary Enterprise “Central Geological Research Institute for Nonferrous and Precious Metals”, Russia |
| CHANGES IN THE GOLD COMPLEX CHEMISTRY AND EQUILIBRIUM REACTIONS AFFECTING GOLD RECOVERY IN THE CALCIUM THIOSULFATE SYSTEM (p. 292)  
Janet Baron Gavidia¹, Y. Choi²  
¹ AuTec Innovative Extractive Solutions Ltd., Canada  
² Barrick Gold Corporation, Canada | | |
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**Neva Hall**

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<tr>
<td>15.30-17.00</td>
<td>Education commission workshop</td>
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**A1 Hall**

<table>
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<tr>
<th>Time</th>
<th>Session</th>
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</table>
| 14.30-14.55 | **KEYNOTE** COMPARING THE ORE BREAKAGE CHARACTERISTICS OF DRILL CORE AND CRUSHED ORE USING THE JKRBT (p. 568)  
**Herbert Hill**, **A. Mainza**, **L. Bbosa**, **M. Becker**  
Centre for Minerals Research, Department of Chemical Engineering, University of Cape Town, South Africa |

**KEYNOTE** PROCESS FLOWSHEET FOR UDOKAN COPPER ORES (p. 1018)  
**Arkady Senchenko**, **K.V. Fedotov**, **V.A. Chanturiya**  
1 Science–Research and Design Institute “Technologies of Minerals Separation” (Institute TOMS) Ltd., Russia  
2 Institute of Mineral Resources Management and Processing of the Irkutsk National Research Technical University, Russia  
3 Institute of Complex Exploration of Mineral Resources of the Russian Academy of Science, Russia |

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<tr>
<th>Time</th>
<th>Session</th>
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| 14.55-15.15 | **SELECTED EFFECTS OF HIGH-PRESSURE GRINDING THAT INCREASE THE LEVEL OF ORE RECOVERY (p. 645)**  
**Daniel Saramak**  
AGH University of Science and Technology, Faculty of Mining and Geotechnology, Department of Environmental Engineering and Mineral Processing, Poland |

**DEMYSTIFYING PROCESS WATER EFFECTS ON GANGUE-DEPRESSANT ADSORPTION IN SULPHIDE FLOTATION (p. 128)**  
**Malibongwe Manono**, **Corin K.C.**, **Wiese, J.G.**  
Centre for Minerals Research, Department of Chemical Engineering, University of Cape Town, South Africa |

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<th>Time</th>
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| 15.15-15.35 | **IMPROVEMENT OF THE SELECTIVE COMMINUTION OF A LOW-GRADE SCHIST ORE CONTAINING CASSITERITE USING A HIGH VOLTAGE PULSE TECHNOLOGY (p. 741)**  
**Kathy Bru** and **D. B. Parvaz**  
1 BRGM, Water, Environment and Ecotechnologies Division — Waste and raw materials & recycling Unit, France  
2 SELFRAG AG, Switzerland |

**DEVELOPMENT A NOVEL PROVEN WET MAGNETIC SEPARATOR FOR IMPROVEMENT EFFICIENCY OF LEBEDINSKY CONCENTRATE PLANT (p. 674)**  
**M. Asghari**, **Rasool Hejazi**, **A. Dehghani**, **M. Saghaeian**, **A. Haratian**  
1 Fakoor Meghnatis Spadana (FMS) Company, Iran  
2 FakoorSanat Tehran Company, Iran |

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<td>15.35-16.05</td>
<td><strong>Coffee Break.</strong> (Foyer)</td>
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**A2 Hall**

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| 14.30-14.55 | **SESSION 29. COMMUNICATION & CLASSIFICATION**  
Chair: **Pavel Fedotov**, **Russia** |

**SESSION 30. SURFACE CHEMISTRY. FLUIDATION FUNDAMENTALS.**  
**Flotation reagents. Flotation technology**  
Chair: **Aleksandr Kurkov**, **Russia** |

**SESSION 31. PHYSICAL ENRICHMENT — GRAVITY, MAGNETIC AND ELECTROSTATIC SEPARATION**  
Chair: **Toyohisa Fujita**, **Japan** |

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| 14.35-15.15 | **IMPROVEMENT OF THE SELECTIVE COMMINUTION OF A LOW-GRADE SCHIST ORE CONTAINING CASSITERITE USING A HIGH VOLTAGE PULSE TECHNOLOGY (p. 741)**  
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**DEVELOPMENT A NOVEL PROVEN WET MAGNETIC SEPARATOR FOR IMPROVEMENT EFFICIENCY OF LEBEDINSKY CONCENTRATE PLANT (p. 674)**  
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<td>15.35-16.05</td>
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<tr>
<td><strong>Session 32.</strong> Hydro- and bio-hydrometallurgy</td>
<td><strong>Session 33.</strong> Pillarization, agglomeration and sintering</td>
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<td><em>Chair: Christie Dorfling, South Africa</em></td>
<td><em>Chair: Satyananda Patra, India</em></td>
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**KEYNOTE** BIOOXIDATION OF GOLD AND SILVER-EARING HIGH SULPHIDE REFRATORY CONCENTRATE (p. 115)

Galina Sedelnikova, Savari E., Kim D., Dmitrakova U

Mineral Processing Department, Central research institute of geological prospecting for base and precious metals (TsNIGRI), Russia

**KEYNOTE** EVALUATION AND IMPROVEMENT OF SAMPLING AND ANALYSIS FOR MOISTURE CONTENT IN IRON ORE PELLET FEED — VARIOGRAPHIC SAMPLING EXPERIMENTS AND IR ON-LINE ANALYSIS (p. 152)

Karin Engström¹, K-O. Mickelsson¹, K.H. Esbensen², S. Töyrä¹

¹LKAB, Sweden
²Adjunct professor, Aalborg University, Denmark. Adjunct professor, Geological Survey of Denmark and Greenland (GEUS), Copenhagen. Assoc. Professor, Université du Québec à Chicoutimi.

**SYSTEMS OF SAMPLING AND PROCESS CONTROL OF MINERAL DRESSING (p. 36)**

V.Z. Kozin¹, Yu.P. Morozov¹, Alexander Komley², P.S. Volkov¹, E.A. Bekchurina¹

¹Department of mineral dressing, Ural State Mining University, Russia
²LLC “Tail CO”, Russia

**OBTAINING OSMIUM CONCENTRATE FROM WASTEWATER OF COPPER PRODUCTION (p. 230)**

Z.S. Abisheva¹, A.N Zagorodnyaya¹, Yelena Bochevskaya¹, A.S. Sharipova¹, E.A. Sargelova¹

¹NJSC Kazakh National Research Technical University named after K.I. Satpaev (NJSC «KazNITU»), Kazakhstan
²JSC “Institute of Metallurgy and Ore Beneficiation” (JSC «IMOB»), Kazakhstan

**THERMODYNAMIC ANALYSIS OF THE PROCESS OF SOLID-PHASE SINTERING OF ILMENITE CONCENTRATE DEPOSITS «CENTRAL» (p. 47)**

Evgeny Bratygin¹, E.G. Dmitrieva¹

¹JSC «Uralmekhanobr», Russia

**APPLICATIONS OF PROCESS MINERALOGY IN THE GOLD DEPARTMENT STUDY OF FLOTATION PROCESS STREAMS (p. 208)**

Xiaowen (Wendy) Ma¹, David Way², Hans Liang²

¹BV Minerals — Metallurgical Division, Canada
²JK Tech Pty Ltd., Australia

**TECHNOLOGY OF COMPLEX PROCESSING OF PHOSPHORIC SLAGS WITH RARE-EARTH METALS RECOVERY AND OBTAINING OF PRECIPITATED SILICON DIOXIDE (p. 231)**

Yelena Bochevskaya¹, Z.S. Abisheva¹, Z.B. Karshigina¹, Ata Akcil³

¹JSC "Institute of Metallurgy and Ore Beneficiation” (JSC “IMOB”), Kazakhstan
²NJSC Kazakh National Research Technical University named after K.I. Satpaev (NJSC “KazNITU”), Kazakhstan
³Mineral-Metal Recovery and Recycling (MMR&R) Research Group, Mineral Processing Division, Department of Mining Engineering, Suleyman Demirel University, Turkey

**USE OF THE SATURATION CURVE TO PREDICT THE OPTIMAL MOISTURE IN SINTERING (p. 188)**

Filipe Guimaraes¹, A. M. Costa¹, A. C. Araujo¹, T. Sylow³, M. Gotelip Barbosa¹

¹ArcelorMittal Maitizes Research, France
²Universidade Federal do Rio Grande do Sul, Brazil
³ArcelorMittal Mining, United Kingdom

**RATIONALE FOR THE USE OF PRELIMINARY MAGNETIC PULSE TREATMENT OF IRON ORES FOR THEIR SELECTIVE (p. 917)**

Pavel Ananyev, Plotnikova A.

¹NCP “CIMT”, Russia
²“GUN”), Russia

**COFFEE BREAK. (Foyer)**

14:30-14:55

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<tr>
<td>16.05-16.25</td>
<td><strong>Session 35.</strong> Communion &amp; classification</td>
<td><strong>Session 36.</strong> Surface chemistry. Flotation fundamentals. Flotation reagents. Flotation technology</td>
<td><strong>Session 37.</strong> Physical enrichment — gravity, magnetic and electrostatic separation</td>
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<td>Chair: Daniel Saramak, Poland</td>
<td>Chair: Stanislav Titkov, Russia</td>
<td>Chair: Alexander Karkov, Russia</td>
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<td>16.05-16.25</td>
<td><strong>SEGREGATION OF MINERALS IN DYNAMIC AIR CLASSIFIERS</strong> <em>(p. 790)</em></td>
<td><strong>A MULTISTAGE FLOTATION MODEL AND ITS APPLICATIONS</strong> <em>(p. 41)</em></td>
<td><strong>CHARACTERISTICS OF SECONDARY COPPER MINERALS USING HEAT AND MICROWAVE TREATMENTS FOR PHYSICAL SEPARATION</strong> <em>(p. 733)</em></td>
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<td>Thomas Mutze¹, G. Kretschmar², T. Leißner¹, F. v. d. Meer³</td>
<td>Boris Ksenofontov, V.P. Yakushkin</td>
<td>Toyohisa Fujita¹, J. Ponou¹, Y. Iwazaki¹, G. Dodhiba¹, K. Mitsuhashi¹, T. Atarashi¹, M. Kawata¹, S. Yamasaki¹</td>
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<td>¹TU Bergakademie Freiberg, Institute of Mechanical Process Engineering and Mineral Processing, Germany</td>
<td>Department of Ecology and Environment Protection, Bauman Moscow State Technical University, Russia</td>
<td>¹Department of Systems Innovation, Graduate School of Engineering, The University of Tokyo, Japan</td>
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<td>²Knauf Gips KG, Germany</td>
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<td>²Research and Development Department, Nittetsu Mining Co. Ltd., Japan</td>
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<td>³WEIR Minerals, The Netherlands</td>
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<td>16.25-16.45</td>
<td><strong>AN INVESTIGATION OF PARTICLE SHAPE EFFECTS ON LOAD MOVEMENT IN TUMBLING MILLS BY DISCRETE ELEMENT METHOD</strong> <em>(p. 145)</em></td>
<td><strong>DENSITY FUNCTIONAL THEORY STUDY OF ACTIVATION OF QUARTZ IN AQUEOUS OLEATE SOLUTION</strong> <em>(p. 58)</em></td>
<td><strong>SIZE-BY-SIZE EVALUATION OF THE CONCENTRATION PROCESS IN SPIRAL CONCENTRATORS</strong> <em>(p. 714)</em></td>
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<td>Zahra Bibak¹, S. Rahmani¹, S. Banisi³</td>
<td>Chen Zhang, Lixia Li, Zhitao Yuan, Xinyang Xu</td>
<td>Damla Izerdem, S.L. Ergun</td>
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<td>¹Kashigar Mineral Processing Research Center, Shahid Bahonar University of Kerman, Iran</td>
<td>College of Civil and Resources Engineering, Northeastern University, China</td>
<td>Hacetette University Mining Engineering Department, Mineral Processing Division, Turkey</td>
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<td>²Mining Engineering Department, Shahid Bahonar University of Kerman, Iran</td>
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<td>16.45-17.05</td>
<td><strong>DETERMINING IMPACT OF OPERATING PARAMETERS ON HPGR PERFORMANCE USING DESIGN EXPERT AND INDUSTRIAL TESTS RESULTS</strong> <em>(p. 833)</em></td>
<td><strong>USE OF LIGNIN DERIVATIVES FOR SELECTIVE FLOTATION OF CU-MO</strong> <em>(p. 191)</em></td>
<td><strong>TRIBOELECTRIC SEPARATION OF ILMENITE ORE BASED ON TRIBOELECTRIC CHARACTERISTICS OF MINERALS</strong> <em>(p. 687)</em></td>
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<td>Parisa Ghobadi¹, E. Pourjeneací²</td>
<td>Lina Uribe¹, Leopoldo Gutierrez², Vicente Hernandez³, Caludia Vidal³, Regis Texeira³</td>
<td>Hai Feng Wang¹,², Guangwen Zhang¹,², Zhen Peng¹,², Xing Yang¹,², Yaqun He¹,²,³</td>
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<td>¹Process Engineering department, Fakoor Sanat Tehran (FST), Iran</td>
<td>¹Department of Mining Engineering, University of Talca, Chile</td>
<td>¹Key Laboratory of Coal Processing and Efficient Utilization, China University of Mining &amp; Technology, China</td>
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<td>²Process operation department, Asfah Toos (AST), Iran</td>
<td>²Department of Metallurgical Engineering, University of Concepcion, Chile</td>
<td>²School of Chemical Engineering and Technology, China University of Mining &amp; Technology, China</td>
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<td>³Center of Biotechnology, University of Concepcion, Chile</td>
<td>³Advanced Analysis &amp; Computation Center, China University of Mining &amp; Technology, China</td>
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<td>17.05-17.25</td>
<td><strong>RESEARCH ON KINEMATICS OF MEDIA IN TOWER MILL BASED ON DISCRETE ELEMENT METHOD</strong> <em>(p. 311)</em></td>
<td><strong>RESEARCH OF SLURRY PREPARATION BEFORE SELECTIVE FLOTATION FOR SULPHIDE POLYMETALLIC ORES</strong> <em>(p. 12)</em></td>
<td><strong>A HOLISTIC APPROACH TO PRECONCENTRATE NICKEL IN LATERITE ORES</strong> <em>(p. 176)</em></td>
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<td>Jiancheng He¹,², Shijie Lu¹,², Jianchao Yao¹,², Hongxi Zhou¹,², Xiaoxu Sun¹,²</td>
<td>Tatvana Aleksandrava, Sergey Romanenko, Karen Arastumian</td>
<td>Saeed Farrokhpay, L. Filipov</td>
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<td>¹Beijing General Research Institute of Mining and Metallurgy Beijing, 100160 China</td>
<td>Saint-Petersburg Mining University</td>
<td>Université de Lorraine, GeoRessources Laboratory, UMR 7359, 2 rue du Doyen</td>
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<td>²BGRIMM Machinery &amp; Automation Technology Co., Ltd. Beijing, 100160 China</td>
<td></td>
<td>Marcel Roubault, 54518 Vandoeuvre-lès-Nancy, France</td>
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<td>17.10-18.00</td>
<td><strong>IMPC General Body Meeting.</strong> <em>(Amphitheater Hall)</em></td>
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<td>16.05-16.45</td>
<td><strong>THE CHARACTERISTICS OF GOLD OPEN CIRCUIT POTENTIAL IN FERRIC CHLORIDE LEACHING</strong> (p. 722)</td>
<td><strong>WATER-BENTONITE INTERACTION OF IRON ORE GREEN PELLETS THROUGH MICRO-STRUCTURAL ANALYSIS</strong> (p. 372)</td>
<td><strong>PROCESS IMPROVEMENT IN IRON ORE AND SINTER THROUGH REAL-TIME ON BELT ANALYSIS</strong> (p. 105)</td>
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<td><strong>Sipi Seisko, J. Aromaa, M. Lundström</strong> Department of Chemical and Metallurgical Engineering, School of Chemical Engineering, Aalto University, Finland</td>
<td><strong>Satyananda Patra, R. Venugopal</strong> Department of Fuel &amp; Mineral Engineering, Indian Institute of Technology (Indian School of Mines), Dhanbad, Jharkhand, India</td>
<td><strong>Mike Kalicinski, L. Balzan¹, A.R. Harris², and Z. Bauk³</strong> ¹Technical Consultant, Scantech International, Australia ²Operations Manager, Scantech International, Australia ³Product Optimisation Manager, Scantech International, Australia</td>
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| 16.25-16.45  | **NEW FLUORIDE BERYLLIUM TECHNOLOGY** (p. 736)  
**Alexander Dyachenko, Roman Kraydenko, Lev Malyutin** Tomsk Polytechnic University, Russia | **INFLUENCE OF LIMESTONE AND DOLOMITE PARTICLE SIZES ON GRANULATION OF SINTER FEED BLENDS CONTAINING HIGH MAGNETITE CONCENTRATE** (p. 447)  
**Mustapha Adam¹, J. Addai-Mensah¹², J. Begelholle³, W. Skinner³** ¹Future Industries Institute, University of South Australia, Australia ²Department of Mining and Process Engineering, Namibia University of Science and Technology, Namibia ³Simecc Mining, Australia | **INFLUENCE OF LIMESTONE AND DOLOMITE PARTICLE SIZES ON GRANULATION OF SINTER FEED BLENDS CONTAINING HIGH MAGNETITE CONCENTRATE** (p. 447)  
**Mustapha Adam¹, J. Addai-Mensah¹², J. Begelholle³, W. Skinner³** ¹Future Industries Institute, University of South Australia, Australia ²Department of Mining and Process Engineering, Namibia University of Science and Technology, Namibia ³Simecc Mining, Australia |
| 16.45-17.05  | **NEW FLUORIDE TUNGSTEN TECHNOLOGY** (p. 738)  
**Alexander Dyachenko, Roman Kraydenko, Sergey Chegrintsev** Tomsk Polytechnic University, Russia | **PHYSICO-CHEMICAL CHARACTERISATION OF INDUSTRIAL MANGANESE DUSTS AND SLUDGES AND ITS IMPLICATION FOR AGGLOMERATION: FROM ORE TO METAL** (p. 495)  
**John-Lee Dubos¹,², B. Orberger¹,², J.M. Milazzo¹, S.B. Blancher¹, J. Lützenkirchen³** ¹Eramet Research, France ²GEOPS, Université Paris Sud-Université Paris Saclay, France ³Catura Geoprojects, France | **RELATING THE MINEROLOGICAL CHARACTERISTICS OF MANGOTE SURFACE OXIDIZED ORE TO GOLD BENEFICIATION** (p. 11)  
**Jun Xiao, Daixiong Chen, Yanhong Dong and Jianwen Yang** Hunan Research Institute for Non-ferrous Metals, Changsha, China 410100 |
| 17.10-18.00  | **NITRIC ACID LEACHING FOR PRE-TREATMENT OF A COPPER BEARING AUROFERROUS PYRITIC CONCENTRATE** (p.184)  
**Oktay Celep, P. Altinkaya, E.Y. Yazici and H. Deveci** Hydromet B&PM Group, Department of Mining Engineering Division of Mineral&Coal Processing, Karadeniz Technical University, Turkey | **AN INVESTIGATION ON CHLORIDE AND AKALINE IMPURITIES OF PELLETIZING PLANTS IN IRAN** (p. 551)  
**Armin Abazarpooor, R. Hejazi, M. Saghaeian, V. Sheikhzadeh** R&D department, Fukoor Sanat Tehran Company, Iran | **IMPC General Body Meeting.** (Amphitheater Hall) |
### Summary / Wednesday, September 19

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<td><strong>Plenary Presentations</strong> (Congress Hall)</td>
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<td>Pradip, India</td>
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<td>Juan Yianatos, Chile</td>
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<td>08.20</td>
<td>Innovation-based processes of integrated and high-level processing of natural and technogenic minerals in Russia (p. 183)</td>
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<td><em>Academician, Prof. Valentine Chanturiya, Institute of Comprehensive Exploitation of Mineral Resources Russian Academy of Sciences (ICEMR RAS), Russia</em></td>
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<td>08.50</td>
<td>Technological Innovation and Sustainable Competitive Advantage in the Copper Industry — Real or Imaginary? (p. 1059)</td>
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<td><em>Dr. John Marsden, John O. Marsden LLC dba Metallurgium, USA</em></td>
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<td><strong>09.50–10.35</strong></td>
<td><strong>Poster Session and Coffee Break</strong> (Foyer. 1 floor)</td>
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<td>Comminution &amp; classification</td>
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<td>13.00–14.00</td>
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<td>Coffee Break</td>
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<td>15.30–17.00</td>
<td>Minerals processing commission workshop</td>
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<td>18.15–22.00</td>
<td>IMPC Banquet &amp; Awards</td>
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<td>10:35-11:00</td>
<td>Session 40. Comminution &amp; classification</td>
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<td>Chair: Diana Drinkwater, Australia</td>
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<td>10:35-11:00</td>
<td>KEYNOTE: CUTTING-EDGE TECHNOLOGICAL SOLUTIONS ENABLING COMPETITIVE ADVANTAGES OF IRON-ORE CONCENTRATE PRODUCED BY PJSC MIKHAILOVSKY GOK (p. 1029)</td>
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<tr>
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<td>Rinat Ismagilov¹, A.V. Kozub², D.O. Sharkovsky³</td>
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<td>¹ METALLOINVEST Management Company LLC, Russia</td>
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<td>11:00-11:20</td>
<td>POSITRON EMISSION PARTICLE TRACKING OF NEAR GRAVITATIONAL MATERIAL INSIDE A DENSE MEDIA CYCLONE (p. 916)</td>
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<td>Maximilian Richter¹, A.N. Mainza¹, I. Govender² and N. Mangadoddy³</td>
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<td>¹ Centre for Minerals Research, Department of Chemical Engineering, University of Cape Town, South Africa</td>
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<td>² School of Engineering, University of Kwa-Zulu Natal, South Africa</td>
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<td>³ Indian Institute of Technology, India</td>
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<tr>
<td>11:20-11:40</td>
<td>UNDERSTANDING THE INTERACTION OF MULTICOMPONENT PARTICLES IN HYDROCYLE CLASSIFIER USING CFD MODEL (p. 941)</td>
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<tr>
<td></td>
<td>Mandakini Padhi, Narasimha Mangadoddy, Teja Reddy</td>
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<td>Department of Chemical Engineering, Indian Institute of Technology, India</td>
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<td><strong>Session 44.</strong> Environmental problems and recycling of mineral-containing waste products</td>
<td><strong>Session 45.</strong> Dewatering</td>
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<td>Chair: Neil Snyders, South Africa</td>
<td>Chair: Giuseppe Bonifazi, Italy</td>
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**Keynote**

**INDUSTRIAL WATERS AS A PERSPECTIVE SOURCE OF HYDROMINERAL RAW MATERIALS** (p. 221)

Elena Zelinskaya

Irkutsk National Research Technical University, Russia

**EFFECT OF SALT WATER ON THE DYNAMICS OF FLOCCULATION OF COPPER SULPHIDE TAILINGS CONTAINING KAOLINITE** (p. 454)

Claudia Castillo¹, C. Ihle², P. Pawell³

¹CSIRO Mineral Resources, Chile
²Department of Mining Engineering, Universidad de Chile, Chile
³CSIRO Mineral Resources, Australia

**INVESTIGATING THE RHEOLOGICAL BEHAVIOUR OF A WITBANK COAL-WATER MIXTURE (CWM)** (p. 759)

David Deglon¹, P.O. Gyebi², J-P Franzidis²

¹Centre for Minerals Research, University of Cape Town, South Africa
²Minerals to Metals Initiative, University of Cape Town, South Africa

**ECOLOGICAL STRATEGY OF MINING DEVELOPMENT — FORMATION OF NEW WORLDVIEW FOR THE NATURAL RESOURCES EXPLOITATION** (p. 54)

Melnikov Nikolay N., Mesyats Svetlana P., Skorokhodov Vladimir F.

Mining Institute Kola Science Centre RAS, Russia

**THE EFFECT OF SCREENING PANEL SELECTION ON DRAIN RATES AND MEDIA RECOVERY IN A DENSE MEDIA CIRCUIT** (p. 435)

L. Kabondo¹, Neil Snyders¹, S.M. Bradshaw¹, G. Akdogan¹, V. Roicher², B. Combrink²

¹Department of Processing Engineering, Stellenbosch University, South Africa
²Multotec, South Africa

**INVESTIGATION ON REACTION BEHAVIORS OF ANSHAN-TYPE CARBONATE-BEARING IRON ORE FINES BY FLUIDIZED ROASTING** (p. 173)

Peng Gao, J.W. Yu, Y.X. Han and Y.J. Li

Department of Mineral Processing, School of Resources and Civil Engineering, Northeastern University, China

**DEVELOPMENT OF A MATERIAL RECYCLING PROCESS FOR CARBON AND GLASS FIBRE REINFORCED COMPOSITES** (p. 1012)

S. Teige, S. Narra, I. Eickhoff, M. Nelles

University of Rostock Faculty of Agricultural and Environmental Sciences Department of Waste Management and Material Flow, Germany

**NETWORKED FLOC STRUCTURE ANALYSIS WITH MICRO-CT METHOD** (p. 494)

Ryan MacIver¹, M. Pawlik¹, H. Hamza², L. Malin²

¹NBK Institute of Mining Engineering, University of British Columbia, Canada
²BC Research Inc., Canada

**MULTISTAGE GRAVITY SEPARATION OF DENSE MINERALS USING THE REFLUX™ CLASSIFIER** (p. 180)

D.M. Hunter, C.P. Lowes, J. Zhou, S.M. Iveson, Kevin Galvin

Newcastle Institute for Energy and Resources, University of Newcastle, Australia
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<td>COMPLEX SOLUTIONS FOR INCREASE OF PRODUCTION VOLUMES OF IRON ORE CONCENTRATE WITH Fe CONTENT MORE THAN 69.5% AT JSC LEBEDINSKY GOK (p. 1030) S.M. Okunev, E.V. Mezentseva JSC LEBEDINSKY GOK, Russia</td>
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<td>ON THE SELECTION OF TECHNOLOGIES OF COMPREHENSIVE PROCESSING OF ORES OF NON-FERROUS AND RARE METALS BASED ON PENETRATIVE DISCLOSURE OF MINERALS COMPREHENSIVE PROCESSING (p. 157) V.A. Bocharov¹, Tatyana Yushina¹, V.A. Ignatkina¹, A.A. Kayumov¹, I.M. Petrov² ¹Department of Processing and Concentration of Mineral and Technogenic Resources, Mining Institute, National Research University of Technology MISiS, Russia ²INFOMINE Research Group, Russia</td>
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<td>OUTCOME ANALYSIS OF TESTWORK CARRIED OUT USING VARIOUS SEPARATION METHODS TO DETERMINE OXIDIZED QUARTZITE PROPERTIES (p. 1032) L.N. Gridasov, E.V. Shelepov, T.V. Ignatova PJSC Mikhailovsky GOK, Russia</td>
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<td>GOLD ADSORPTION AND ELUITION IN THIOSULFATE LEACHING SYSTEM USING FUNCTIONALIZED MAGNETIC NANOPARTICLES (p. 796) Nirmala Ilankoon, E.A. Oraby, J.J. Eksteen, C. Aldrich Department of Mining Engineering &amp; Metallurgical Engineering, Western Australian School of Mines, Australia</td>
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<td>STUDY OF ILMENITE AND ANATASE MECHANOCHEMICAL REDUCTION AND THEIR SUBSEQUENT LEACHING (p. 809) Marcela Achimovičová¹, M. Kaňuchová¹, J. Briančin¹ ¹Institute of Mineral and Waste Processing, Waste Disposal and Geomechanics, University of Technology, Germany ²Institute of Geotechnics, Slovak Academy of Sciences, Slovakia ³Faculty of Mining, Ecology, Process Control and Geotechnology, Technical University, Slovakia</td>
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**Wednesday, September 19**

11:40-12:00

**PRODUCTION GRADE CLASSIFICATION OF OXIDIZED FERRUGINOUS QUARTZITES DEPOSITED IN MIKHAILOVSKOYEORE FIELD (p. 1033) R.I. Ismagilov¹, V.V. Khromov², I.N. Gridasov² ¹METALLOINVEST Management Company, Russia ²PJSC Mikhailovsky GOK, Russia**

12:00-12:20

**COLUMN FLOTATION OF COALS AND MINERALS WITH OSCILLATORY AIR SUPPLY (p. 164) J. Wang, C. Li, Liguang Wang The University of Queensland, School of Chemical Engineering, Australia**

**Session 47.** Surface chemistry. Flotation fundamentals. Flotation reagents. Flotation technology

**Chair: Yuliya Rubinstein, Russia**

**INVESTIGATING REAGENT-MINERAL INTERACTIONS BY COLLOIDAL PROBE ATOMIC FORCE MICROSCOPY (p. 285) Bent Babel, Martin Rudolph Processing department, Helmholtz Institute Freiberg for Resource Technology, Germany**
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*Chair: Neil Snyders, South Africa* | **Session 45.** Dewatering  
*Chair: Giuseppe Bonifazi, Italy* | **Session 46.** Processing of fines and slimes  
*Chair: Georgios Anastassakis, Greece* |

**MICROBIAL COMMUNITY RESPONSES TO CYANIDE IN A BIOLOGICAL TREATMENT REACTOR FOR CYANIDE CONTAINING WASTEWATER FROM GOLD PROCESSING PLANT (p. 824)**  
Doyun Shin¹,²,³, Hyunsik Park¹,², Jae-chun Lee¹,², Minseuk Kim¹, Jaeheon Lee¹  
¹ Korea Institute of Geoscience and Mineral Resources (KIGAM), Republic of Korea  
² Korea University of Science and Technology, Republic of Korea  
³ University of Arizona, USA

**USE OF GUAR GUM AS A CLAY-FLOCCULATING AGENT FOR CHALCOPYRITE FLOTATION (p. 253)**  
M. Jeldres¹, R.J. Jeldres², Leopoldo Gutierrez³  
¹ Department of Metallurgical Engineering, University of Concepcion, Chile  
² Department of Chemical Engineering and Mineral Process, Universidad de Antofagasta, Chile

**ECOLOGICAL MONITORING OF WATERS MINING INDUSTRY HAVING TECHNOGENESIS AS A BASIS FOR SELECTING STRATEGY AND TECHNOLOGY OF THEIR PROCESSING (p. 266)**  
Natalia Orekhova¹, I.V. Shadrunova¹, N.A. Volkova¹, N.G. Novikova²  
¹ Magnitogorsk State Technical University named after G.I. Nosov, Russia  
² Federal State Institution of Science Institute of complex development of mineral resources to them. N.V. Melnizkov, Academician of the Russian Academy of Sciences, Russia  
³ UMMC-Holding Corporation, Russia

**DEWATERING AND WATER RECYCLING EXPERIMENTS ON BAUXITE FLOTATION TAILINGS (p. 946)**  
Yuhua Wang, Dongfang Lu, Yanqing Jiang and Huilan Yang  
School of Minerals Processing & Bioengineering, Central South University, China

**PRODUCTION OF SYNTHETIC CARNALLITE FROM THE WASTES OF TITANIUM AND MAGNESIUM PRODUCTION WITH THE EXTRACTION OF NIOMIUM-CONTAINING MIDDLEINGS (p. 279)**  
Almagul Ulutarakova, Onayev Murat, Yessengaziyev Azamat, Barkytova Botakoz  
Joint Stock Company Institute of Metallurgy and Ore Beneficiation, Kazakhstan
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<td>S.A. Nemykin¹, M.E. Taranenko¹, V.A. Krivonosov²</td>
<td>Chengwei Li, Zhivong Guo, Wei Sun, Yuehua Hu School of Mineral Processing and Bioengineering, Central South University, China</td>
<td>W. Valery¹, K. Duffy¹, R. Hayashida², Alex Jankovic³, Ericho Tabosa³, Ivan Yelkin³</td>
<td>Hadi Abdollahi¹, Pouya Karimi¹, Ahmad Amini²</td>
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<td>PHYSICAL MODELING TO DESIGN TOOTHED SCREW ROLL CRUSHERS AND SHREDDERS (p. 1048)</td>
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<td>CHI Zhang¹, Junyi Wu²</td>
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<td>Stepanenko A.I. GORMASHEXP ORT, Russia</td>
<td>Lisa Malm¹, Ann-Sofi Kindstedt Danielsson¹, Anders Sand¹, Jan Rosenkranz³ and Ingvar Ymén³</td>
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13.00-14.30 Lunch. (Valdai-Seliger Hall, 1 floor)
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HIGH VOLTAGE PULSE FRAGMENTATION FOR METAL LIBERATION FROM WASTE LED LAMPS (p. 896)  
*Amit Kumar, V.K. Kuppusamy, M. Holuszko*  
NBK Institute of Mining Engineering, University of British Columbia, Canada  
EFFICIENT PERFORMANCE OF THE THICKENER BY ADJUSTING THE OPERATIONAL PROCESS PARAMETERS; INDUSTRIAL EXPERIMENTS AT JALAL ABAD HEMATITE IRON ORE CONCENTRATE PLANT (p. 504)  
*Mehdi Mohammadinejad, M. Zare, R. Hejazi, M. Saghaeian*  
\(^1\)FarooqSanat Tehran Company, Iran  
INVESTIGATING FINE PARTICLE RECOVERY IN THE LEAD FLOTATION CIRCUIT OF MINERA FRESNILLO (p. 578)  
*K. Tungpalan\(^1\,3\), Mario Corona-Arroyo\(^2\), L. Carillo\(^4\), A. Tolentino\(^4\), C. Quintero\(^4\), J. Bravo\(^4\), R. Zarate\(^5\) and A. Lynch\(^6\)*  
\(^1\)Department of Mining, Metallurgical and Materials Engineering, University of the Philippines, Diliman, Philippines  
\(^2\)División de Ingenierías, Departamento de Minas, Metallurgia y Geología, Universidad de Guanajuato, México  
\(^3\)Julius Kruttschnitt Minerals Research Centre, University of Queensland, Australia  
\(^4\)Compañía Minera Fresnillo PLC, Unidad Fresnillo, Zacatecas, México  
\(^5\)Centro de Investigación y Desarrollo Tecnológico, Departamento de Procesamiento de Minerales, Servicios Especializados Peñoles, México |
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*Urs Peuker*  
TU Bergakademie Freiberg, Institute Mechanische Verfahrenstechnik und Aufbereitungstechnik, Germany  
OIL ASSISTED COLUMN FLOTATION OF A CASSITERITE-BEARING COMPLEX SKARN ORE FROM THE ORE MOUNTAINS, GERMANY (p. 426)  
*Edgar Schach\(^1\), Markus Buchmann\(^2\), Tom Leistner\(^1\), Marius Kern\(^1\), Urs A. Peuker\(^2\), Martin Rudolph\(^1\)*  
\(^1\)Helmholtz Institute Freiberg for Resource Technology, Germany  
\(^2\)Institute of Mechanical Process Engineering and Mineral Processing, TU Bergakademie Freiberg, Germany |
| **13.00-14.30**  
Lunch. (Valdai-Seliger Hall, 1 floor) | | |

\(^1\)FakoorSanat Tehran Company, Iran
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<td>A COMPARISON OF SINGLE-PARTICLE AND PARTICLE-BED BREAKAGE OF MINERAL ORES UNDER COMPRESSIVE LOADING (p. 838)</td>
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<td>Sarah Gong, B. Klein, S. Nadolski, C. Sun, T. Sun, J. Kou</td>
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<td><strong>HYDROMETALLURGICAL TREATMENT OF NI HYPERACCUMULATOR BIOMASS: COMPARISON OF A. MURALE AND R. BENGALENSIS (p. 927)</strong></td>
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**KEYNOTE** SCIENTIFIC INNOVATIONS IN RSE “NC CPMRM RK”: SYSTEMATIC APPROACH (p. 99)

Abdurassul Zharmenov  
National Centre on complex processing of mineral raw materials of RK, Kazakhstan

**PILOT DENSE MEDIUM SEPARATION OF HEMATITE FINES** (p. 462)

Tebogo Moloane¹, C. Bergman¹, Heloise Thiele²  
¹ Minerals Processing Division  
² Mintek, South Africa

**EXPERIMENTAL STUDIES OF THE PELLETIZING-FLOCCULATION PROCESS OF IRONHYDROXIDE CONTAINING SUSPENSIONS IN A TAYLORCOUETTE-REACTOR** (p. 159)

Logsch F.¹, Claudia Glaser,  
Balz J.¹, Ay P.¹, Leiker M.²  
and Heiduschke R.²  
¹ Brandenburg University of Technology, Chair of Mineral processing Cottbus, Germany  
² P.U.S. Produktions- und Umwelt Service GmbH, Lauta, Germany

**CHITOSAN AS A SELECTIVE FLOCCULANT FOR BENEFICIATION OF HIGH ALUMINA CONTAINING INDIAN IRON ORE SLIMES: A THEORETICAL AND EXPERIMENTAL STUDY** (p. 150)

Dharmendr Kumar, Vinay Jain, Venugopal Tammisetti and Beena Rai  
Physical Sciences Research, TCS Research, Tata Research Development and Design Centre, Tata Consultancy Services, 54-B, Hadapsar Industrial Estate, Hadapsar, Pune, Maharashtra, India-411013
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<td>HAVE YOU BEEN ON A MINE SITE? THE SMI-JKMRC STUDENT VENTURE (p. 560)</td>
<td>SURFACE BROKEN BONDS: A FAST WAY TO START MINERAL CHEMISTRY STUDIES (p. 169)</td>
<td>REE RECOVERY FROM MINE TAILINGS VIA THE HYPERACCUMULATOR D. DICHOTOMA (p. 928)</td>
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<td>J. J. Frausto¹, E.C. Avelar¹, G. Figueroa¹, Y. Reja¹,</td>
<td>Zhiyong Gao, Ruiying Fan</td>
<td>Baptiste Laubie¹, Z. Chour¹, Y.-T. Tang², R.-L. Qui³, J.L. Morel¹, M.-O. Simonnot¹,</td>
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<td>D.K. Tungpalan¹, M.A. Corona-Arroyo², R. Alanis³, S. Gómez³, A.J. Lynch³,</td>
<td>School of Minerals Processing and Bioengineering, Central South University,</td>
<td>L. Muhr¹</td>
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<td>Dr. Marcin Ziemsk</td>
<td>China</td>
<td>¹Université de Lorraine, France</td>
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<td>²School of Environmental Science and Engineering, Sun YatSen University, China</td>
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<td>³Université de Lorraine, France</td>
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<td>²División de Ingenierías, Departamento de Minas, Metalurgia y Geología, Universidad de Guanajuato, Ex Hacienda de San Matias, Guanajuato, Gto, 36020</td>
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<td>MITIGATION OF OPERATIONAL SHORTCOMINGS IN AN ISAMILL THROUGH DESIGN</td>
<td>PHYSICAL SEPARATION AND HYDROMETALLURGICAL PROCESSES FOR TREATMENT OF</td>
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<td>CHANGE- A NUMERICAL PERSPECTIVE (p. 861)</td>
<td>WEEE (p. 908)</td>
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<td>S. Sahu, N.K.V. Nadimpalli and Venkataramana Runkana</td>
<td>H. Deveci¹, E.Y. Yazici¹, Afa. Akeil², C. Erust² and O. Celep³</td>
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<td>Tata Research Development &amp; Design Centre, Tata Consultancy Services,</td>
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<td>¹Hydromet B&amp;PM Research Group, Div. of Mineral&amp;Coal Processing, Dept. of Mining</td>
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<td>54, Hadapsar Industrial Estate, Pune, India 411013</td>
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<td>Eng., Karadeniz Technical University, Trabzon, 61080, Turkey</td>
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<td>²Department of Mining Engineering, Mineral Processing Division (Mineral-Metal Recovery and Recycling Research Group), Suleyman Demirel University, TR32260 Isparta, Turkey</td>
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<td>15.00-15.35</td>
<td>Coffee Break. (Foyer)</td>
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<th>Session 53. Processing of fines and slimes</th>
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<td>Shuai Yuan, Yanjun Li, Yuexin Han, Jie Liu</td>
<td>INDUSTRIAL OPTIMIZATION OF OPERATIONAL PARAMETERS TO IMPROVE RECOVERY OF ULTRAFINE HEMATITE FROM WET TAILING DAMS (p. 481)</td>
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<td>College of Resources and Civil Engineering, Northeastern University, China</td>
<td>Arash Tohry¹, M. Dehghani¹, M. Farahani¹, R. Hejazi¹, M. Saghaeian², S. Chehre Chelgani³</td>
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<td>14:55-15:15</td>
<td>¹ Production and Process Unit, Chador-Malu Tailing Recovery Plant, Chador-Malu Mining and Industrial Company, Iran</td>
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<td>14:55-15:15</td>
<td>² R&amp;D Department, Fakoor Sanat Tehran Company, Iran</td>
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<td>14:55-15:15</td>
<td>³ Department of Electrical Engineering and Computer Science, University of Michigan, USA</td>
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<td>15:00-15:30</td>
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<td>INTENSIFICATION OF NON-FERROUS METALS LEACHING FROM LOW-GRADE COPPER-NICKEL ORES AND TAILINGS (p. 64)</td>
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<td>Institute of Industrial Ecology Problems in the North Kola Science Center of the Russian Academy of Sciences, Russia</td>
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<td>15:15-15:35</td>
<td>Aleksandrova T.N., Anastasia Afanasova</td>
<td>Aleksandrova T.N., Anastasia Afanasova</td>
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<td>15:15-15:35</td>
<td>Department of Mineral Processing, Faculty of mineral raw materials processing, Saint-Petersburg Mining University, 2, 21st Line of Vasilievsky Island, Saint-Petersburg 199106, Russia</td>
<td>Department of Mineral Processing, Faculty of mineral raw materials processing, Saint-Petersburg Mining University, 2, 21st Line of Vasilievsky Island, Saint-Petersburg 199106, Russia</td>
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**Neva Hall**

15.30–17.00  
**Minerals processing commission workshop.** Chair: Rodney Elvish, Australia

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| **THE NEW SUITE OF BREAKAGE CHARACTERISATION TESTS** (p. 573)  
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JKMRC. Sustainable Minerals Institute, University of Queensland, 40 Isles Rd, Indooroopilly, 4069, Australia | **THE EFFECT OF A HIGH SHEAR HYDRODYNAMIC CAVITATION DEVICE ON THE FLOTATION OF A PGM UG2 ORE** (p. 274)  
Victor Ross¹, M. Dlane¹, A. Singh¹, M. Nithane¹  
¹ Mineral Processing Division, Mintek, South Africa  
² GoldOre Pty Ltd, South Africa | **ON THE RECOVERY OF ASSOCIATED MINERALS IN THE FLOTATION PROCESS BASED ON SIZELIBERATION DATA** (p. 466)  
Paulina Vallejos, Juan Vianatos, H. Gallardo  
Automation and Supervision Centre for Mining Industry, CASIM Department of Chemical and Environmental Eng., Federico Santa Maria Technical University, Chile | **EVALUATING THE IMPACT OF MECHANICAL PRETREATMENT ON LEACHING OF BASE METALS FROM WASTE PRINTED CIRCUIT BOARDS** (p. 405)  
W.A. Rossouw, Christie Dorfling  
Department of Process Engineering, Stellenbosch University, South Africa |
| **COAL GRINDING AIDED BY HIGH PRESSURE WATER JETS** (p. 29)  
Maria Caterina Tilocca¹, M. Surracco²  
¹ Department of Civil-Environmental Engineering and Architecture, University of Cagliari-via Marengo 2–09123, Cagliari — Sardinia — Italy  
² Department of Civil-Environmental Engineering and Architecture, University of Cagliari-via Marengo 2–09123, Cagliari — Sardinia — Italy | **THE USE OF DIISOBUTYL THIOPHOSPHINATES IN THE FLOTATION OF COPPER-NICKEL ORE CONTAINING PLATINUM GROUP ELEMENTS** (p. 71)  
Anatoly Lavrinenko¹, D.V. Makarov², L.M. Sarkisova¹ and N.I. Gluhova¹  
¹ Institute of Comprehensive Exploitation of Mineral Resources Russian Academy of Science, Russia  
² Institute of Industrial Ecology Problems in the North, Russia | **MINERAL SOLID TRANSPORT IN A TWODIMENSIONAL FLOTATION FROTH** (p. 469)  
Vallejos P.¹, Juan Vianatos¹, Matamoros C.¹, Diaz F.²  
¹ Automation and Supervision Center for Mining Industry (CASIM), Department of Chemical and Environmental Engineering, Federico Santa Maria Technical University, Chile  
² Nuclear Trace and Engineering Ltd., Chile | **INTRODUCTION OF GRAVITY CONCENTRATES INTENSIVE CYANIDATION TECHNOLOGY USING PLANT AUGUST KSh-3 AT RUSSIAN OPERATIONS** (p. 979)  
V. M. Mulloy, A.V. Yevdokimov, Ye.V. Bogorodsky  
Igiredmet JSC, Russia |
| **RESEARCH ON THE INFLUENCE OF KEY PARAMETERS OF TOWER MILL ON GRINDING EFFECT** (p. 225)  
Shijie Lu¹,², Jiancheng He¹,², Xiaoxu Sun¹,², Hongxi Zhou¹,², Jianchao Yao¹,²  
¹ Beijing General Research Institute of Mining and Metallurgy, Beijing 100160 China  
² BGRIMM Machinery & Automation Technology Co., Ltd. | **INVESTIGATION OF THE REVERSE FLOTATION OF HEMATITE IN THREE DIFFERENT TYPES OF LABORATORY FLOTATION CELLS** (p. 283)  
Mehdi Safari¹, F.S. Hoseinian¹, D. Deglon¹, K., L.L. Filio²,³, T. Souza¹  
¹ Centre for Minerals Research, Department of Chemical Engineering, University of Cape Town, South Africa  
² Department of Mining and Metallurgical Engineering, Amirkabir University of Technology, Iran  
³ University of Sao Paulo, Polytechnic Engineering School, Mining and Petroleum Department Brazil  
ª Vale Institute of Technology, Brazil | **ON POSSIBLE EXTRACTION OF FREE GOLD WITHIN GRAIN SIZE –0.8+0 MM BY FLASH FLOTATION OF LOW-SULPHIDE GOLD-CONTAINING ORES** (p.476)  
Oleg Poperechnikova, A.V. Kuptsova, S.P. Nagaeva  
SP ZAO RIVS, Russia | **THE DEVELOPMENT OF AMMONIACAL AND CYANIDATION TECHNOLOGY OF GOLD RECOVERY FROM COPPER GOLD-BEARING ORE** (p. 980)  
Vasili Lodeischikov, O.D. Khmelinitskaya, V.F. Petrov  
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### LEACHING OF GOLD FROM WASTE PRINTED CIRCUIT BOARDS IN AN IODINE–IODIDE SOLUTION AND REGENERATION OF THE SPENT LIXIVIANT (p. 348)

Altansukh Batnasan¹, Kazutoshi Haga² and Atsushi Shibayama¹

¹ Graduate School of International Resource Sciences, Akita University, 1–1 Tegata-Gakuen machi, Akita, 010–8502, Japan
² Graduate School of Engineering Science, Akita University, 1–1 Tegata-Gakuen machi, Akita, 010–8502, Japan

### STUDY ON THE CHARACTERISATION AND PROCESSING OF IRON ORE AFTER GRINDING BY HPGR (p. 604)

Ivan Silin¹, J. Huben¹,², H. Wotruba¹, A. Ognyanova²

¹ Unit of Mineral Processing (AMR), RWTH Aachen University, Lochnerstraße 4–20, 52064 Aachen, Germany
² MBE Coal & Minerals Technology GmbH, 20, Gottfried-Hagen-Strasse, 51105 Köln, Germany

### DESULPHURISATION OF WASTE CAR TYRES BY BIOLEACHING FOLLOWED BY FLOTATION (p. 336)

Ljudmilla Bokányni¹, T. Varga²

¹ Department of Bioprocessing and Reaction Techniques, Institute of Raw Materials Preparation and Environmental Processing, University of Miskolc, Hungary
² Department of Bioprocessing and Reaction Techniques, Institute of Raw Materials Preparation and Environmental Processing, University of Miskolc, Hungary

### SMALL HYDROCYCLONES FOR CLASSIFICATION OF PARTICLES IN THE MICRON RANGE (p. 608)

Dennis Vega, P.R. Brito-Parada, J.J. Cilliers

Department of Earth Science and Engineering, Imperial College London, United Kingdom

### ULTRAFAST AGGLOMERATION USING A NOVEL BINDER IN A CONTINUOUS PLUG FLOW SYSTEM (p. 635)

Daniel Borrow, K. van Netten, K.P. Galvin

Centre for Advanced Particle Processing and Transport, Newcastle Institute for Energy and Resources, University of Newcastle, Australia
### Session 55. Surface chemistry. Flotation fundamentals. Flotation reagents. Flotation technology
Chair: Maria Ryazantseva, Russia

**The Laws of Froth Products’ Beneficiation in Tapered Chutes** (p. 35)
Yury Morozov, Bekchurina E.A.
Department of mineral dressing, Ural State Mining University, Russia

**Phosphate as a Potential Substitute for Dichromate, When Depressing Galena in Copper and Lead Separation** (p. 477)
Alexandra Lundmark¹, Ingvar Ymén²
¹ Boliden Mineral, Dept. of Process Technology, Sweden
² RISE- Research Institutes of Sweden AB, Bioscience and Materials / Surface, Process and Formulation, Sweden

### Session 56. Surface chemistry. Flotation fundamentals. Flotation reagents. Flotation technology
Chair: Lisa Malm, Sweden

### Session 57. Hydro- and bio-hydrometallurgy
Chair: Grigory Voiloshnikov, Russia

**Technology of Complex Processing of Sulfide-Magnetite Ore** (p. 52)
Sergey Mamonov¹,², S.V. Volkova¹, T.P. Dresvyakyna¹
¹ OJSC “Uralmekhanobr”, Russia
² Non-state Higher Educational Establishment “UMMC Technical University”, Russia

**Iron Ore Flotation with a Modified Depressant** (p. 484)
Arash Tohry¹, P. Hatefi¹, A. Dehghani¹, O. Rahmani¹, M. Noor-Mohammadi¹
¹ Department of Mining and Metallurgical Engineering, Yazd, University, Iran
² Chador-Malu Mining and Industrial Company, Iran
³ Toofal Sanat Consulting Engineering Company, Chador-Malu, Iron Ore Mine, Iran

**Adsorption Recovery of Gold in Pressure Oxidation of Refractory Sulphide Concentrates** (p. 356)
JSC Irgiredmet, Russia

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Chair: Grigory Voiloshnikov, Russia

**Study of Pressure Oxidation and Bacterial Leaching Efficiency as a Method of Refractory Gold Concentrate Breakdown** (p. 1024)
Saburbayeva L.Yu.¹, Anna Boduen², Polezhayev S.Yu.¹, Ukrainstev I.V.³
¹ SP ZAO IVS, Russia
² St. Petersburg Mining University, Russia
³ SP ZAO IVS, Russia

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**IMPC Banquet & Awards.** Meeting Point: Registration desk (World Trade Center)

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*Chair: Alexey Novoselov, Chile* | **Session 59.** Processing of fines and slimes  
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| **16.40 - 17.00** ESTIMATE OF EFFICIENCY USE OF THE ELECTRIC PULSE METHOD IN COMBINED PROCESSING TECHNOLOGY OF COPPER-NICKEL SLAG DUMP (p. 95)  
Alexander Potokin  
Center of Physical and Technical Problems of Energy in Northern Federal State Russian Academy of Sciences Kola Science, Russia | **16.30-16.50** UPGRADEING OF CHROMITE BY CARBOCHLORINATION METHOD USING SOLID CHLORINATING AGENT AND CARBON (p. 358)  
Pei-Wei Han¹, Peng Qian¹, Yong Liu², Shu-Feng Ye¹, Shao-Jun Chu³  
¹ State Key Laboratory of Multiphase Complex Systems, Institute of Process Engineering, Chinese Academy of Sciences, China  
² China Machinery International Engineering Design and Research Institute Co., China  
³ School of Metallurgical and Ecological Engineering, University of Science and Technology Beijing, China |
| **16.50-17.20** DEVELOPMENT OF DEEP AND COMPREHENSIVE PROCESSING PROCESSES OF TECHNOGENIC MINERAL RAW MATERIALS IN A VIEW OF SUSTAINABLE DEVELOPMENT STRATEGY (p. 1042)  
Olga Gorlova¹, I. V. Shadrunova², V. A. Zhilina¹  
¹ Nosov Magnitogorsk State Technical University, 38, Lenin Street, Magnitogorsk, Russia 455000  
² Institute of Comprehensive Exploitation of Mineral Resources of the Russian Academy of Sciences, 4, Kryukovskii Tupik, Moscow, Russia 111020 | **16.50-17.10** STABILITY OF PHILIPPINE NICKEL LATERITE ORE IN AQUEOUS SUSPENSION: BASIS FOR PROCESS DEVELOPMENT AND TREATMENT (p. 721)  
M.J.C. Zerna, Herman Mendoza¹  
¹ Department of Mining, Metallurgical, and Materials Engineering, College of Engineering, University of the Philippines, Philippines |
| **17.20-17.40** | |
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Summary / Thursday, September 20

| 08.00 | Registration (Foyer, 1 floor) |

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<td>Session 67. Surface chemistry. Flotation fundamentals. Flotation reagents. Flotation technology</td>
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<td>16.00-18.00</td>
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|        | Chair: Fathi Habashi, Canada |
| 09.00-09.25 | **KEYNOTE** WETTABILTY HETEROGENEITIES AND THEIR IMPORTANCE IN HETEROAGGULATION PROCESSES FOR MINERAL SEPARATION (p. 600)  
|         | Martin Rudolph1, F. Perez Maldonado1,2, B. Babel1, L. Ditscherlein2, P. Knüfer2, U.A. Peuker2  
|         | 1 Department of Processing, Helmholtz Institute Freiberg for Resource Technology (HIF), Germany  
|         | 2 Institute of Mechanical Process Engineering and Mineral Processing, TU Bergakademie Freiberg, Germany  
|         | **KEYNOTE** FUNDAMENTALS OF THE USE OF COLLECTOR BLENDS FOR THE FLotation OF LOW CONTRAST NON SULFIDE ORES (p. 905)  
|         | Lev Filippov1,2, I.V. Filippova1,2  
|         | 1 Université de Lorraine, Laboratoire GeoRessources ENSG, France  
|         | 2 National University of science and technology MISIS, Russia  
|         | **THE EFFECT OF SOME DESIGN AN OPERATING VARIABLES ON VACUUM PRESSURE AND BUBBLE SIZE IN A JAMESON CELL** (p. 1060)  
|         | Xiangzhou Ding, Yue Hua Tan and James A. Finch  
|         | Department of Mining and Materials Engineering, McGill University, 3610 rue Robert-Bourassa, Montréal, Quebec, Canada  
|         | H3A 0C5  
|         | **INVESTIGATION OF COLUMN FLOTATION HYDRODYNAMICS USING ELECTRICAL RESISTANCE TOMOGRAPHY COUPLED WITH PRESSURE TRANSDUCERS** (p. 930)  
|         | Balraj Vadakonda1, Prasad Kopparthi1,2, A.K. Mukurjee1, Narasimha Mangadoddy1  
|         | 1 Department of Chemical Engineering, Indian Institute of Technology Hyderbad, India  
|         | 2 R & D division TATA Steel, India.  
| 09.25-09.45 | **APPLYING ANALYSIS OF MINERAL SURFACES TO PREDICT FLotation BEHAVIOR** (p. 330)  
|         | Hidekazu Matsukawa1, R. Kawarabuki1, K. Mitsuhashi1, M. Katata1, C. Tokoro1, K. Haga1, A. Shibayama1  
|         | 1 Nittetsu Mining Co., Japan  
|         | 2 Faculty of Creative Science and Engineering, Waseda University, Japan  
|         | 3 Department of Engineering in Applied Chemistry, Akita University, Japan  
|         | 4 Graduate School of International Resource Sciences, Japan  
|         | **FROTH PROPERTIES AND ITS EFFECT ON LABSCALE FLOTATION OF A CARBONACEOUS SEDIMENTARY APATITE ORE** (p. 570)  
|         | Duong Huong Hoang1,2, Nathalie Kupka1, Urs A. Peuker2, Martin Rudolph1  
|         | 1 Department of Processing, Helmholtz Institute Freiberg for Resource Technology, Germany  
|         | 2 Institute of Mechanical Process Engineering and Mineral Processing, Technische Universität Bergakademie Freiberg, Germany  
|         | 3 Department of Mining Processing, Faculty of Mining, Hanoi University of Mining and Geology, Vietnam  
|         | **RESEARCH OF SLURRY PREPARATION BEFORE SELECTIVE FLOTATION FOR SULPHIDE-POLYMETALLIC ORES** (p. 943)  
|         | Tatiana Aleksandrova, Sergey Romanenko, Karen Arastumian  
|         | Saint-Petersburg Mining University, Russia  
| 09.45-10.05 | **APPLYING AN ATOMIC FORCE MICROSCOPY IN THE STUDY OF THE FLotation OF COPPER SULFIDE MINERALS** (p. 616)  
|         | Jinhong Zhang, Wei Zhang  
|         | Department of Mining and Geological Engineering, The University of Arizona, USA  
|         | **EFFECT OF EPISTEMIC UNCERTAINTY IN THE SELECTION OF CONCENTRATION CIRCUIT STRUCTURES** (p. 332)  
|         | R. Acosta-Flores1, L.A. Cisternas1, F.A. Lucay2, Edelmira Gálvez1  
|         | 1 Department of Mineral Process and Chemical Engineering, Universidad de Antofagasta, Chile  
|         | 2 Department of Mines and Metallurgical Engineering, Universidad Católica del Norte, Chile  
|         | **WASTE MANAGEMENT OF MINING AND PROCESSING OF NONMETALLIC RAW MATERIALS** (p. 441)  
|         | Lygina T.Z., Luzin V.P., Kornilov A.V., Chekmarev A.S.  
|         | Federal state unitary enterprise “Central scientific research Institute of Geology of nonmetal minerals”, Russian Federation, Kazan  
| 10.05-10.35 | **Poster Session and Coffee Break.** (Foyer, 1 floor)  

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**SECONDARY MINERALIZATION IN TAILINGS OF PORPHYRY COPPER DEPOSITS** (p. 492)  
Alexey Novoselov, U. Kelm1  
1 Instituto de Geología Económica Aplicada, Universidad de Concepción, Chile

**INFLUENCE OF HALIDE AND PSEUDOHALIDE IONS ON GOLD EXTRACTION FROM DOUBLE REFRACTORY CONCENTRATES IN POX-CIL PROCESS** (p. 897)  
S.F. Kaplan, A.S. Dolotov and Valery Kovalev  
CJSC Polymetal Engineering, 2 Prospect Narodnogo Opolchenia, Saint Petersburg, Russia 198216

**INVESTIGATION OF PROCESSING OF PYROMETALLURGICALLY PRE-TREATED LATERITIC NICKEL ORES** (p. 791)  
Klaus M. Hahn1, Hermann Wotruba1,  
Bernd G. Friedrich2  
1 Unit of Mineral Processing (AMR), RWTH Aachen University, Germany  
2 Institute IME Process Metallurgy and Metal Recycling, RWTH Aachen University, Germany

**SMALL SCALE PROCESSING OF Au FROM A WEATHERED REFRACTORY ORE TAILINGS HEAP** (p. 439)  
Neil Snyders1, G. Akdogan1,  
S.M. Bradshaw1, J.H. van Vreden2,  
R. Smith1  
1 Department of Processing Engineering, Stellenbosch University, South Africa  
2 Goldplat Recovery Pty Ltd, South Africa

**UTILIZATION OF HIGHLY SALINE RECYCLING INDUSTRIAL WATER AND ITS INFLUENCE ON THE EXTRACTION OF GOLD FROM DOUBLE REFRACTORY CONCENTRATES IN THE FRAMEWORK OF AUTOCLAVE TECHNOLOGY (POX-CIL)** (p. 898)  
Saveliy Kaplan, A.S. Dolotov and V.N. Kovalev  
CJSC Polymetal Engineering, 2 Prospect Narodnogo Opolchenia, Saint Petersburg, Russia 198216

**ENERGY AND COST EFFICIENT TRANSPORTATION OF MINERALS AND TAILINGS IN SLURRY FORM** (p. 802)  
V. Prasad, P. Thareja1, Surya Mehrotra2  
1 Department of Chemical Engineering, Indian Institute of Technology Gandhinagar, India  
2 Dept. of Material Science & Engineering, Indian Institute of Technology Gandhinagar, India

**EAFD TREATMENT JOINING PYRO AND HYDRO METALLURGY** (p. 801)  
Massimo Maccagni, E. Guerrini1,  
J. Nielsen2  
1 Engitec Technologies S.p.A., Italy  
2 Engitec USA, USA

**ORGANIC CARBON PRESSURE OXIDATION IS A NEW APPROACH TO DOUBLE-REFRACTORY GOLD CONCENTRATE PROCESSING** (p. 1015)  
V. Kovalev, S. F. Kaplan, Valery Tsyplyakov,  
Nikolai V. Vorob’ev-Desyatovskii,  
Igor A. Agapov  
CJSC Polymetal Engineering, 2 Prospect Narodnogo Opolchenia, Saint Petersburg, Russia 198216

**GEOMETALLURGICAL INVESTIGATION OF THE PROCESSING OF REE-Y-Nb-Zr COMPLEX ORE** (p. 818)  
Janet Katzmarzyk1, L. Gronen2, H. Wotruba1,  
S. Sindern2, F.M. Meyer2, A. Hellmann2  
1 Unit of Mineral Processing (AMR), RWTH Aachen University, Germany  
2 Institute of Applied Mineralogy and Economic Geology, RWTH, Aachen University, Germany  
3 German-Mongolian Institute of Resource Technology, GMIT Campus, Mongolia

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**10.05-10.35 Poster Session and Coffee Break. (Foyer, 1 floor)**
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<td>Department of Mining and Materials Engineering, McGill University, Canada</td>
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<td>Department of Earth Resources Engineering, Kyushu University, Japan</td>
<td>National Institute of Mining-Metallurgy Science &amp; Technology, Vietnam</td>
<td>Department of Mineral Processing Engineering, Northeastern University, Shenyang, China</td>
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<td>Joint-stock company “Irkatsk research institute of precious and rare metals and diamonds”, Russia</td>
<td>School of Minerals Processing and Bioengineering, Central South University, China</td>
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<td>Georg Weingrill1, J. Neubacher2, H. Flachberger1</td>
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<td>1 Departamento de Ingeniería Química y Procesos de Minerales, Universidad de Antofagasta, Chile</td>
<td>Institute of Complex Exploitation of Mineral Resources, RAS, Russia</td>
<td>1 Chair of Mineral Processing, Montanuniversität Leoben, Franz-Josef-Straße 18, 8700 Leoben, Austria</td>
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Chair: Stoyan Gaydardzhiev, Belgium | **Session 69.** Surface chemistry. Flotation fundamentals. Flotation reagents. Flotation technology  
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¹ Mekhanobr-Orgsintez-Reagent, Russia  
² Kvadrat Plus, Russia | **ON BUBBLE-PARTICLE DETACHMENT MECHANISMS IN COARSE PARTICLE FLOTATION** (p. 363)  
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⁴ Discipline of Chemical Engineering, School of Engineering, University of Newcastle, Australia  
⁵ School of Chemical Engineering, University of Queensland, Australia | **THE EFFECT OF PH ON THE DEPRESSION OF IRON OXIDES IN THE PRESENCE OF COMPLEX GANGUE SILICATE MINERALS** (p. 541)  
Carlos Henrique Veloso⁷, L.O. Filippov⁸, I.V. Filippova⁹, A.C. Araujo¹⁰  
⁷ Université de Lorraine, France  
⁸ ArcelorMittal Mining Global Research and Development, France |
| 12.20-12.40 | **REVERSE FLOTATION OF IRON ORE: CIRCUIT UPGRADING** (p. 699)  
A. Silva¹, Antonio Peres², P. Oliveira¹  
¹ Samarco, Mina do Germano, Brazil  
² UFMG Universidade Federal de Minas Gerais, Brazil | **STUDY OF THE WETTING BEHAVIOR AND FLOTATION PROPERTIES OF TALC AND MOLYBDENITE** (p. 375)  
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National Engineering Laboratory of Biophyrometallurgy, General Research Institute for Nonferrous Metals Engineering, China | **OPTIMISING FROTHER STABILITY OF COPPER FLOTATION TAILINGS** (p. 565)  
Isobel Mackay¹, J.J. Cilliers¹, A.R. Videla², P.R. Brito-Parada¹  
¹ Department of Earth Science and Engineering, Imperial College London, United Kingdom  
² Department of Mining Engineering, Pontificia Universidad Catolica de Chile, Chile |
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Vladimir Samyguin, A.Y Nikitin, E.C. Nikulin, I.Y. Titov  
Somex, 5, Gazpromovnaya Street, Kolomna, Moscow region, Moscow, Russia, 140405 | |

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¹ OOO BASF, Russia  
² BASF SE, Germany  
³ BASF Oy, Finland | **PREPARATION OF SLAG BASED CEMENTITIOUS MATERIAL AND ITS APPLICATION IN THE CEMENTATION OF TAILINGS (p. 465)**  
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¹ College of Chemical and Environmental Engineering, Shandong University of Science and Technology, China  
² Sinosteel Mining 8, Haidian, China | **EVALUATION OF APPLICABILITY OF HIGHINTERNAL-PHASE (HIP) EMULSIONS BASED OIL AGGLOMERATION PROCESS TO TREAT FINES FROM WESTERN CANADIAN BITUMINOUS COALS AND RUSSIAN SUB-BITUMINOUS COALS (p. 853)**  
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¹ Norman B. Keevil Institute of Mining Engineering, University of British Columbia (UBC), Canada  
² Branch of “SibNHugleobogascheniye” LLC in Krasnoyarsk city, Russia |
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A. Demirag and Firat Burat  
Istanbul Technical University, Faculty of Mines, Mineral Processing Department, 34469 Maslak, Istanbul, Turkey | |
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P. Solozhenkin¹, Olga Ibragimova², E. Emelyanenko³, J. Yagudina⁴  
¹ IPKON the RASci, Russia  
² Department of Geoscience and Petroleum, Norwegian University of Science and Technology, Norway  
³ Department of Geology and Mineral Processing Engineering, Nizhniy Magnitogorsk State Technical University, Russia  
⁴ Uchal’ Mining and Concentration, Complex, Russia | | |
| 12.00-12.20 | 12.20-12.40 | 12.40-13.00 |
| 12.00-13.00 | Lunch. (V aldai-Seliger Hall, 1 floor) | |

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<td>SIMULATION RESEARCH OF THE RESIDENCE TIME DISTRIBUTION IN 0.2 M3 FLOTATION CELL (p. 1038) Shen Zhenchang¹, Zhang Ming¹, Chen Feifei¹, Chen Jianhua² ¹ Beijing Engineering Research Center on Efficient and Energy Conservation Equipment of Mineral Processing, State Key Laboratory of Mineral Processing, BGRIMM Technology Group, China ² Guangxi University, China</td>
<td>APPLICATION OF DEPRESSANT TS IN BARITE RECOVERY FROM A LEAD-ZINC TAILINGS (p. 732) Hongying Zhang, Y.H. Tang, J. Zhang Guangdong Institute of Resources Comprehensive Utilization, China</td>
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<td>RESEARCH ON THE INFLUENCE OF IMPELLER PUMPING PERFORMANCES AND GAS ACCUMULATION EFFECT ON FLUID DYNAMICS OF AIR FORCES &amp; PULP INDUCES FLOTATION CELL (p. 546) Yang Yihong, Zhang Ming, Chen Dong, Han Dengfeng Beijing Engineering Research Center on Efficient and Energy Conservation Equipment of Mineral Processing, State Key Laboratory of Mineral Processing, BGRIMM Technology Group, Beijing, China</td>
<td>FINE PARTICLE RECOVERY BY ELECTROFLotation WITH SODIUM OLEATE (p. 444) R.H. Rojas, Mauricio Leonardo Torem, A.G. Merma Department of Chemical and Materials Engineering, Pontificial Catholic University of Rio de Janeiro, Brazil</td>
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(Mark Viduetsky, V.A. Maltsev, A.P. Purgin, I.F. Garifullin, A.M. Panshin, A.A. Metelev, A.I. Stepanenko, I. Yochev)  
(Operating flotation cells of the KFM series in the head of full-scale copper, copper-zinc, lead-zinc ore concentration circuits (p. 1045))  
Xiangzhou Ding, Yue Hua Tan, James A. Finch  
Department of Mining and Materials Engineering, McGill University, Canada  
14.00-14.20 | **Session 77.** Environmental problems and recycling of mineral-containing waste products  
*Chair: Elena Zelinskaya, Russia*  
(Tingsheng Qiu, Huashan Yan, Ting Li, Xiong Huang, Guanghua Ai)  
1 Faculty of Resource & Environmental Engineering, Jiangxi University of Science & Technology, Ganzhou, Jiangxi 341000, China  
2 Jiangxi Key Laboratory of Mining Engineering, Ganzhou 341000, China  
3 SLon Magnetic Separator Ltd., Ganzhou, Jiangxi 341000, China  
4 Zijin Design and Research Institute of Mining and Metallurgy, Xiamen, Fujian 361000, China  
14.20-14.40 | **Session 78.** Surface chemistry. Flotation fundamentals. Flotation reagents. Flotation technology  
*Chair: Valeriy Morozov, Russia*  
(Jaakko Karvonen, L.E. Veik, J.O. Leppinen, S.M. Luukkanen)  
1 Outotec Research Center, Pori Kuparrilu 10, 28330 Pori, Finland  
2 University of Oulu Pentti Kaitera katu 1, 90014 Oulu, Finland  
14.40-15.00 |
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<td>Chair: Zhiyong Gao, China</td>
<td>Chair: Lev Filippov, France</td>
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2 Ural state mining University, 30, Kuibysheva street, Ekaterinburg, Russia, 620144

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AGH University of Science and Technology Faculty of Mining and Geoengineering Department of Environmental Engineering and Mineral Processing Mickiewicz 30 Ac., 30–059 Cracow, Poland

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Central South University 932, Lushan Street, Changsha, China 410083

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3 Department of Mining, Islamic Azad University of Bafq, Bafq, Yazd, Iran

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University of KwaZulu-Natal, King George V Ave, Durban, South Africa, 4041

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NBK Institute of Mining Engineering & Mineral Processing UBC, Canada

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2 St. Petersburg Mining University, dom 2, liniya 21, V.O., St. Petersburg, Russia

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        Private Bag X3, Rondebosch, 7700, Cape Town, South Africa
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3 Fresnillo PLC, Calz. Saltillo 400 #989, Col. Campestre La Rosita, Torreon, Coah. Mexico, 27250
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DonWoo Lee1, H. Cho1 and J. Kwon2
1 Department of Energy System Engineering, Seoul National University, Korea
2 Korea Institute of Geoscience and Mineral Resources, Korea

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Danielle Rocha1, H.B. Miller1 and D.B. Mazzinghy2
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2 Mining Engineering Department, Universidade Federal de Minas Gerais, Belo Horizonte, Minas Gerais, Brazil

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Jiangxi University of Science and Technology, School of Resource and Environmental Engineering, Ganzhou, Jiangxi 341000, China

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PREDICTING THE PERFORMANCE OF A BATCH VERTICAL STIRRED MILL (p. 256)

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2 Mining Engineering Department, Universidade Federal de Minas Gerais, Belo Horizonte, Minas Gerais, Brazil

THE CORRELATION OF PARTICLE SIZE DISTRIBUTIONS BETWEEN GROUND PRODUCT AND CLASSIFICATION UNDERFLOW (p. 972)

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2 Mining Engineering Department, Federal University of Minas Gerais, Brazil
3 Minas Rio Project, Anglo American, Brazil

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1 Sandvik Mining and Rock Technology, Sandvik SRP AB, Svedala, Sweden
2 Adj. Professo, NBK Institute of Mining Engineering, University of British Columbia, Canada

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Fangming Liu1,2, Xiao’ou Xia1,2, Xiuqian Luo1, Bang Chen1, Xu Wang1, Wei Tang1
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2 University of Science & Technology Beijing (USTB), Beijing, China

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2 Chalmers University of Technology, SE-412 96 Gothenburg, Sweden

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Igor Barmin1, A.V. Tugolukov1, V.V. Morozov2, V.V. Polivanskaya1
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2 National University of Science and Technology MISIS

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1 Beijing General Research Institute of Mining and Metallurgy (BGRIMM), Beijing, China
2 University of Science & Technology Beijing (USTB), Beijing, China
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<td>CSIRO Mineral Resources, P.O.Box 883, Kenmore, QLD 4069, Australia</td>
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<td>Guangdong Institute of Resources Comprehensive Utilization, State Key Laboratory of Rare Metal Separation and Comprehensive Utilization, Guangdong Provincial Key Laboratory of Mineral Resource Development and Comprehensive Utilization, 363 Changxing Road, Guangzhou, PRC 510650</td>
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\(^2\)University of Science&Technology Beijing Haidian District, Beijing, China 100083                                       |
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\(^2\)College of Foreign Languages, Baoji University of Arts and Sciences, Baoji 721000, China                                               |
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2 School of Mechanical Engineering, University of Science and Technology Beijing, 30 Xueyuan Road, Haidian District, Beijing 100083, China |
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3 Alumni of University of Cologne, Mathematical Institute, Cologne 50931, Germany  
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¹Siberian Federal University, 79 Svobodny, Krasnoyarsk, Russia, 660041
²Krasnoyarsk Science Centre of the SB of RAS, 50, Akademgorodok, Krasnoyarsk, Russia, 660036

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²Faculty of Land Resource Engineering, Kunming University of Science and Technology, China
³School of Chemistry and Chemical Engineering, Xi’an University of Science and Technology, China

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¹Department of Chemistry and Environmental Engineering, Jiujiang University, Jiujiang, Jiangxi, China
²State Key Laboratory of Mineral Processing, Beijing General Research Institute of Mining and Metallurgy, Beijing, China

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¹Department of Earth Sciences, Stellenbosch University, South Africa
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²College of Resources and Environmental Engineering, Wuhan University of Science and Technology, China
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¹ National Institute of Mining-Metallurgy Science & Technology, Vietnam
² Department of Science and Technology, Ministry of Industry and Trade, Vietnam

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¹ Department of Mineral Processing and Recycling, 1University of Mining and Geology “St. Ivan Rilski”, 1700 Sofia, Bulgaria
² Dundee Precious Metals Chelopech, 2087, Bulgaria

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LEACHING BEHAVIOR OF CU, BI AND SB FROM TROF FURNACE DORÉ SLAG DURING MINERAL ACID LEACHING (p. 137)

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EVALUATION OF DISPERGANTS ON THE FLOATABILITY OF MOLYBDENITE IN SEAWATER USING INDUCTION TIME MEASUREMENTS (p. 614)

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ALKALINE PRESSURE OXIDATION LEACHING OF ARSENIC FROM GOLD CONCENTRATE IN LOWER TEMPERATURE (p. 153)

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COMPUTATIONAL INSIGHTS INTO THE INTERACTION MECHANISM OF FLOATATION REAGENTS WITH CHALCOPYRITE AND HIGHTHROUGHPUT SCREENING FLOATATION REAGENT FOR COPPER ORES (p. 623)

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BIOHYDROMETALLURGICAL EXTRACTION OF NONFERROUS AND NOBLE METALS FROM PRIMARY MINERAL ORES AND SPENT STACKS OF HEAP LEACHING OF OXIDED ORES (p. 154)

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A TREATMENT PROCESS FOR MINE, TAILINGS STORAGE FACILITY, CIRCULATING, AND WASTE WATER AT MINING AND METALS PROJECTS (p. 1044)

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THIOSULPHATE LEACHING OF GOLD/SILVER FROM A COPPER-BEARING PYRITIC GOLD CONCENTRATE (p. 185)

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RECOVERY OF FREE CYANIDE FROM THIOCYANATE WITH OZONE (p. 303)

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FLOATATION SEPARATION RESEARCH ON A CARBON-CONTAINING REFRACTIVE COPPERMOLYBDENUM ORE (p. 82)

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INTEGRATING COMPUTATIONAL MODELING WITH EXPERIMENTAL ENTHALPY OF ADSORPTION: A XANTHATE–PYRITE SYSTEM (p. 595)

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RESEARCH ON MANGANESE CLEANER PRODUCTION TECHNOLOGIES (p. 780)

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A NEW TYPE OF 700 M3 BIO-OXIDATION REACTOR FOR REFRUCTORY GOLD CONCENTRATE (p. 536)

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