

07:00	REGISTRATION	
08:00	Welcome to Country <a href="#">Rosaling Coleman</a>	
08:10	Welcome and introduction <a href="#">Y Potvin</a> , Caving 2022 Conference Chair, Australian Centre for Geomechanics, The University of Western Australia, Australia	
08:20	OPENING ADDRESS: <a href="#">CL Stegman</a> , Rio Tinto, Australia	
<b>PLENARY SESSION ONE</b>		
CHAIR	<a href="#">J Wesseloo</a> , Australian Centre for Geomechanics	
08:30	KEYNOTE ADDRESS: Setting it up for success: considerations for caving projects <a href="#">S Hanrahan</a> , SRK Consulting, Australia	
09:00	Multi-lifts selection using scenario simulation and financial metrics <a href="#">D Villa</a> , Dassault Systèmes, Canada; <a href="#">J Romero</a> , Dassault Systèmes, Chile; <a href="#">N Soto</a> , Dassault Systèmes, Canada	
09:30	A risk-based approach to practical scope definition and management at PT Freeport Indonesia <a href="#">K Llewelyn</a> , PT Freeport Indonesia, Indonesia; <a href="#">R Campbell</a> , Freeport-McMoRan Inc., Canada; <a href="#">A Yuniar</a> , M Sullivan, PT Freeport Indonesia, Indonesia; <a href="#">M Di Ciolli</a> , Freeport-McMoRan Inc., USA	
10:00	MORNING BREAK	
<b>PLENARY SESSION TWO</b>		
CHAIR	<a href="#">S Webster</a> , CMOC-Northparkes Mines	
10:30	Organising for the successful management of complex underground caving mines <a href="#">J Nguz Tshisens</a> , Freeport-McMoRan Inc., USA; <a href="#">A Moss</a> , Sonal Technology Inc., Canada; <a href="#">M Sullivan</a> , Freeport-McMoRan Inc., Indonesia; <a href="#">A Yuniar</a> , Freeport-McMoRan Inc., Indonesia; <a href="#">T Casten</a> , Freeport-McMoRan Inc., USA; <a href="#">C Zimmer</a> , Freeport-McMoRan Inc., Indonesia	
11:00	Northparkes E48 block cave: the mining history of a successful block cave <a href="#">L Snyman</a> , <a href="#">S Webster</a> , CMOC Northparkes, Australia	
11:30	Developing a geotechnical model for the Jwaneng underground project <a href="#">MJ Dunn</a> , HT Chiwaye, O Mogorosi, K Gabanagosi, Debswana Diamond Company, Botswana Assessing the stress field for the Jwaneng underground project <a href="#">MJ Dunn</a> , <a href="#">RO Harris</a> , <a href="#">B Boitshepo</a> , HT Chiwaye, Debswana Diamond Company, Botswana	
12:00	Principal sponsor presentation: OZ Minerals <a href="#">G Iwanow</a> , OZ Minerals, Australia	
12:05	LUNCH	
<b>PARALLEL SESSIONS</b>		
<b>SESSION ONE: GROUND SUPPORT (1)</b>		<b>SESSION TWO: PLANNING (1)</b>
CHAIR	TBA	<a href="#">A Campbell</a> , Beck Engineering Pty Ltd
13:00	Dynamic testing: determining the relationship between rockbolt diameter and the residual dynamic capacity of an axially strained tendon <a href="#">BR Crompton</a> , Epiroc, Australia; <a href="#">G Knox</a> , Epiroc, South Africa	Carrapateena block cave mine design and planning: feasibility study <a href="#">Q Zhang</a> , <a href="#">RJ Hocking</a> , OZ Minerals, Australia
13:20	Concrete: an enabler of large-scale block and sublevel cave mining projects globally <a href="#">F Erismann</a> , Sika Services, Switzerland; <a href="#">M Hansson</a> , Sika Services, Sweden; <a href="#">B Krutroök</a> , Luossavaara-Kiirunavaara Aktiebolag, Sweden	An iterative design and schedule approach to the E22 block cave project and production planning at CMOC Northparkes Mines: a case study <a href="#">K Brown</a> , <a href="#">S Webster</a> , <a href="#">T Bruning</a> , <a href="#">O Garcia</a> , CMOC Northparkes, Australia; <a href="#">AD Campbell</a> , Beck Engineering, Australia
13:40	The influence of drilling on the performance of a yielding self-drilling rockbolt <a href="#">R Abreu</a> , <a href="#">G Knox</a> , Epiroc, South Africa	TBA
14:00	Large-scale dynamic test of ground support systems at the Walenstadt testing facility <a href="#">R Brändle</a> , <a href="#">R Luis Fonseca</a> , <a href="#">G von Rickenbach</a> , <a href="#">G Fischer</a> , Geobrug, Switzerland; <a href="#">JA Vallejos</a> , <a href="#">E Marambio</a> , <a href="#">L Burgos</a> , <a href="#">D Cuello</a> , Advanced Mining Technology Center, University of Chile, Chile	A simulation comparison of operating strategies for electrified block cave mines <a href="#">S Mariager</a> , <a href="#">Q Zhang</a> , OZ Minerals, Australia; <a href="#">C Eustace</a> , <a href="#">S Hegarty-Cremer</a> , <a href="#">K Nguyen</a> , Polymathian, Australia
14:20	Performance investigation of the newly developed X-plate <a href="#">B Darlington</a> , <a href="#">O Vallati</a> , <a href="#">P Young</a> , Sandvik, Australia	Assessing the reasonable prospects for eventual economic extraction of a caving project <a href="#">W Bennett</a> , <a href="#">A Fowler</a> , Mining Plus, Australia
14:40	Shear performance of yielding self-drilling anchors under controlled conditions <a href="#">G Knox</a> , <a href="#">J Hadjigeorgiou</a> , University of Toronto, Canada	Ventilation requirements of cave mines <a href="#">M Hooman</a> , <a href="#">L van den Berg</a> , <a href="#">H Mohle</a> , BBE Consulting (Australasia), Australia; <a href="#">L Paiken</a> , BBE Consulting, South Africa
15:00	AFTERNOON BREAK	
<b>SESSION THREE: MONITORING</b>		<b>SESSION FOUR: MUDRUSH</b>
CHAIR	<a href="#">C Chauvier</a> , OZ Minerals	<a href="#">T da Silva</a> , BHP Nickel West
15:30	Seismic event location uncertainty in caving <a href="#">IG Morkel</a> , IGM Geotechnical, Australia; <a href="#">J Wesseloo</a> , <a href="#">Y Potvin</a> , Australian Centre for Geomechanics, The University of Western Australia, Australia	Development, reconciliation and visualisation of hang-up frequency and fines entry forecasts at PT Freeport Indonesia <a href="#">ME Pierce</a> , Pierce Engineering, USA; <a href="#">K Llewelyn</a> , PT Freeport Indonesia, Indonesia; <a href="#">R Campbell</a> , Freeport-McMoRan Inc., Canada; <a href="#">K Taylor</a> , PT Freeport Indonesia, Indonesia; <a href="#">M Fuenzalida</a> , Itasca Consulting Group, Inc., USA; <a href="#">M Diering</a> , Freeport-McMoRan Inc., USA
15:50	Use of seismic tomography to aid rock mechanics interpretation at New Afton B3 block cave mine <a href="#">C Kamp</a> , <a href="#">A Conley</a> , New Gold Inc., Canada; <a href="#">DS Collins</a> , <a href="#">M Preiksaitis</a> , <a href="#">T Butler</a> , <a href="#">V Shumila</a> , ESG Solutions Inc., Canada	Modelling of wet muck entry at El Teniente for long-term planning <a href="#">O Salas</a> , <a href="#">RL Castro</a> , University of Chile, Chile; <a href="#">E Viera</a> , <a href="#">K Basaure</a> , <a href="#">F Hidalgo</a> , Codelco, Chile; <a href="#">M Pereira</a> , BCTEC Engineering and Technology, Chile BCRisk applications for rill swell hazard analysis in PC1: case study at Cadia East operations <a href="#">J Lett</a> , Newcrest Mining Limited, Australia; <a href="#">RL Castro</a> , University of Chile, Chile; <a href="#">M Pereira</a> , BCTEC Engineering and Technology, Chile; <a href="#">A Osorio</a> , Newcrest Mining Limited, Australia; <a href="#">P Alvarez</a> , BCTEC Engineering and Technology, Chile
16:10	Quantitative correlation of production and seismic response in block caves <a href="#">W de Beer</a> , ESG Solutions, Australia	Modelling considerations for cave compaction at New Afton Mine <a href="#">C Cancino</a> , <a href="#">M Fuenzalida</a> , Itasca Consulting Group, Inc., USA; <a href="#">C Kamp</a> , New Gold Inc., USA
16:30	Geotechnical monitoring of the Carrapateena cave <a href="#">M Poulter</a> , <a href="#">T Ormerod</a> , <a href="#">G Balog</a> , <a href="#">D Cox</a> , OZ Minerals, Australia	Managing the risk of uncontrolled flow of material (mudrush) at Argyle diamond mine <a href="#">D Saepulloh</a> , BHP, Australia; <a href="#">R Hassell</a> , Mining and Civil Integrity Testing, Australia; <a href="#">J Albrecht</a> , Rio Tinto, Australia
16:50	A monitoring strategy to assess the effectiveness of pillar wrapping <a href="#">Y Yanagimura</a> , New Gold Inc., Canada; <a href="#">J Hadjigeorgiou</a> , University of Toronto, Canada	Impact of draw strategy on wet muck spill hazard severity at the Deep Ore Zone mine <a href="#">S Ghadiriannari</a> , <a href="#">S McDougall</a> , <a href="#">E Eberhardt</a> , The University of British Columbia, Canada; <a href="#">K Llewelyn</a> , PT Freeport Indonesia, Indonesia; <a href="#">R Campbell</a> , Freeport-McMoRan Inc., Canada; <a href="#">A Moss</a> , Sonal Mining Technology, Canada
17:10	Monitoring and controls for sublevel caving in an anisotropic rock mass <a href="#">RE Douglas-Brown</a> , BHP, Australia	The use of groundwater monitoring and underground pressure release tests to benefit block caving <a href="#">KL Morton</a> , KLM Consulting Services Pty Ltd, South Africa
17:30	DAY ONE CLOSE	

### PLENARY SESSION THREE

CHAIR *A van As, The University of Queensland*

SESSION SPONSOR



- 08:00 KEYNOTE ADDRESS: Risk, lessons and opportunities: a unified management approach for mass mining *R Campbell, Freeport-McMoRan Inc., Canada*
- 08:30 Oyu Tolgoi: engineering a Mongolian caving dynasty *CL Stegman, Rio Tinto, Australia; O Togtokhbayar, S Herselman, B Altankhuu, Rio Tinto, Mongolia*
- 09:00 X-ray computer tomography and ground conditions at Northparkes cave edges to further the understanding of the caving mechanisms of strain and hydraulic conductivity *S Webster, L Snyman, CMOC Northparkes, Australia; N Francois, M Saadatfar, The Australian National University, Australia*
- 09:30 Raise caving: a novel mining method for deep mass mining *T Ladinig, Montanuniversität Leoben, Austria; M Wimmer, Luossavaara-Kiirunavaara Aktiebolag, Sweden; H Wagner, Montanuniversität Leoben, Austria*  
A trial mining with raise caving mining method: one-time chance to prove the concept? *M Karlsson, Luossavaara-Kiirunavaara Aktiebolag, Sweden; T Ladinig, Montanuniversität Leoben, Austria*

10:00 MORNING BREAK

### PLENARY SESSION FOUR

CHAIR *TBA*

SESSION SPONSOR



- 10:30 Controlled reopening of Kiirunavaara production block 22 after a 4.2 magnitude event *M Svartsjaern, T Rentzelos, Itasca Consultants AB, Sweden; G Shekhar, E Swedberg, M Boskovic, Luossavaara-Kiirunavaara Aktiebolag, Sweden; Y Hebert, Itasca Australia, Australia*
- 11:00 Preliminary results from tests using sublevel caving with 40 m sublevel height at Luossavaara-Kiirunavaara Aktiebolag *C Quinteiro, A Nordqvist, Luossavaara-Kiirunavaara Aktiebolag, Sweden*
- 11:30 Geotechnical challenges driving the mining method change: transition from sublevel stoping to sublevel caving *M Karlsson, J Ihanus, M Matinlassi, T Nikkinen, Outokumpu Chrome Oy, Finland*

12:00 LUNCH

### PARALLEL SESSIONS

#### SESSION FIVE: GROUND SUPPORT (2)

CHAIR *TBA*

SESSION SPONSOR



- 13:00 Practical application of deformation-based support design *M Di Ciolli, Freeport-McMoRan Inc., USA; R Campbell, Freeport-McMoRan Inc., Canada; K Taylor, A Primadiansyah, PT Freeport Indonesia, Indonesia; PK Kaiser, GeoK Inc, Canada*
- 13:20 Geotechnical analysis and ground support selection for the Oyu Tolgoi crusher chamber #2 *GB Sharrock, Itasca Australia, Australia; J Ooi, Rio Tinto, Australia; B Baasanjav Oyu Tolgoi LLC, Mongolia*
- 13:40 A probabilistic evaluation of the displacement-based ground support design approach *R Lowther, J De Ross, C Orrego, Newcrest Mining Limited, Australia; D Cuello, DC Geotech, Australia*
- 14:00 The B11 support methodologies and quality assurance/quality control systems: creating and implementing a traceable support system *AE Vidal da Silva, BHP, Australia*
- 14:20 Challenges of mining in squeezing ground in hard rock underground mines *B Chapula, Newcrest Mining Limited, Australia; M Sharifzadeh, Curtin University, Australia; M Makasi, Newcrest Mining Limited, Australia; E Kabwe, Karora Resources, Australia; G Sharrock, Itasca Australia, Australia; Y Kumar, BHP, Australia*
- 14:40 A mixed-method approach for major excavation ground support evaluation *H Speakman, Barmingo, UK*

#### SESSION SIX: SUBSIDENCE

CHAIR *TBA*

SESSION SPONSOR



- Surface subsidence analysis associated with caving at La Encantada Silver Mine *TV Garza-Cruz, E Ghazvinian, MA Fuenzalida, Itasca Consulting Group, USA; ME Pierce, Pierce Engineering, USA; E Ledesma, La Encantada Silver Mine, Mexico*
- Observed subsidence progression at the New Afton Mine in response to Lift 1 mining *K Davenport, Knight Piésold Ltd., Canada; G Dick, BGC Engineering Inc., Canada; C Kamp, New Gold Inc., Canada*
- Mechanical-flow coupled simulation of a proposed multi-panel sublevel shrinkage *C Drover, Beck Engineering, Australia; F Basson, Newmont Australia Limited, Australia; J Lin, Beck Engineering, Australia; R Kintzel, Newmont, Australia*
- Analysis of caving and ground deformations in Malmberget using a coupled CAVESIM-FLAC3D model *M Sjölander, Itasca Consultants AB, Sweden; L Jonsson, Luossavaara-Kiirunavaara Aktiebolag, Sweden; B Figueiredo, J Sjöberg, Itasca Consultants AB, Sweden; F Ersholm, Luossavaara-Kiirunavaara Aktiebolag, Sweden*
- A coupled modelling approach for discontinuous subsidence at the Cadia East mine *BL Sainsbury, Deakin University, Australia; DP Sainsbury, Geotechnica Pty Ltd, Australia; A Osorio, D Carroll, J Lett, Newcrest Mining Limited, Australia*
- Reviewing Laubscher's empirical method to estimate subsidence limits *C Contreras, The University of British Columbia, and SRK Consulting, Canada; D Elmo, The University of British Columbia, Canada; J Jakubec, A Thomas, SRK Consulting, Canada*

15:00 AFTERNOON BREAK

#### SESSION SEVEN: CASE STUDIES

CHAIR *TBA*

SESSION SPONSOR



- 15:30 Assessing the risk of a sublevel cave – block cave transition using dynamic decision tree analysis overlain with Monte Carlo analysis *PA Pitcher, University College London, UK; RJ Hocking, OZ Minerals, Australia*
- 15:50 Management of production drift convergence and rehabilitation *C Kamp, New Gold Inc., Canada*
- 16:10 Application of empirical methods to calculate crown pillar failure in caving mines *J Jarufe, University of Santiago, Chile; G Barindelli, P Vasquez, Codelco, Chile*
- 16:30 Northparkes E22 deposit: a strategic re-evaluation of mine design and material handling system *Q Garcia, S Webster, T Bruning, K Brown, C Schubert, CMOC Northparkes, Australia*
- 16:50 Oyu Tolgoi and Rio Tinto partnership with Palantir Technologies to provide effective geotechnical risk management *TH Moorcraft, Rio Tinto, UK; K Simanjuntak, O Dorjuren, M Sanaakhorol, E Enkhtaivan, Rio Tinto, Mongolia; G Watt, Rio Tinto, Australia; V Eickhoff, Palantir Technologies, Australia; L Cerny, Palantir Technologies, UK; C Deasy, T Zimmermann, Palantir Technologies, Australia*
- 17:10 Raise bore stability and support at deep depth and highly defected rock mass condition: Oyu Tolgoi case study *J Ooi, G Watt, Rio Tinto, Australia; H Grobler, Oyu Tolgoi LLC, Mongolia*

#### SESSION EIGHT: MODELLING

CHAIR *TBA*

SESSION SPONSOR



- A global review of recovery, dilution and draw control in sublevel caving mines *AD Campbell, Beck Engineering, Australia*
- The discrete fracture network-Block Caving Fragmentation hybrid method: a new tool to assess fragmentation of block caving mining projects *C Guajardo, J Jakubec, SRK Consulting, Canada; E Esterhuizen, Independent Consultant, USA; H Pichuante, A Thomas, SRK Consulting, Canada*
- An effective 2D numerical method to analyse different aspects of cave mechanics *D Elmo, The University of British Columbia, Canada; S Rogers, K Veltin, WSP-Golder, Canada; J Lett, Newcrest Mining Limited, Australia*
- Investigating economic and risk metrics using design of experiments in fully coupled caving geomechanics simulation *S Arndt, Dassault Systèmes, Australia; D Villa, F Khodayari, Dassault Systèmes, Canada; B Ndlovu, Rio Tinto, Australia*
- Application of rock mass strength scale effect at Cadia East mine *M Fuenzalida, Itasca Consulting Group, USA; C Orrego, Newcrest Mining Limited, Australia; E Ghazvinian, Itasca Consulting Group, USA; ME Pierce, Pierce Engineering, USA*
- Numerical modelling of fragmentation by blasting and gravity flow in sublevel caving mines *C Yi, D Johansson, Luleå University of Technology, Sweden; M Wimmer, A Nordqvist, Luossavaara-Kiirunavaara Aktiebolag, Sweden; CR San Miguel, Luleå University of Technology, Sweden*

17:30 DAY TWO CLOSE

18:30 DINNER – National Wine Centre of Australia

### PLENARY SESSION FIVE

CHAIR TBA

- 08:00 KEYNOTE ADDRESS: Geomechanical risks management and control at Andes Norte project: El Teniente mine [P Landeros Córdoba](#), Codelco, Chile
- 08:30 Interpreting cave tracker beacon data at Carrapateena mine [CR Chauvier](#), OZ Minerals, Australia
- 09:00 Distributed acoustic sensing/distributed strain sensing technology and its applications for block cave progress monitoring, rock mass preconditioning, and imaging [J Furlong](#), [Z Anderson](#), [Silixa](#), Canada
- 09:30 Empirical damage prediction in sublevel caving cross-cuts at the Malmberget mine [TH Jones](#), Luossavaara-Kiirunavaara Aktiebolag, Sweden; [D Saiang](#), Luleå University of Technology, Sweden  
Damage mapping and monitoring in sublevel caving cross-cuts at the Malmberget mine [TH Jones](#), Luossavaara-Kiirunavaara Aktiebolag, Sweden; [D Saiang](#), Luleå University of Technology, Sweden

SESSION SPONSOR



### MORNING BREAK

### PLENARY SESSION SIX

CHAIR TBA

- 10:30 Development of rock mass strength block models at Cadia East mine [ME Pierce](#), Pierce Engineering, USA; [P Stonestreet](#), [C Orrego](#), [D Tennant](#), Newcrest Mining Limited, Australia; [TV Garza-Cruz](#), [J Furtney](#), [C Thielsen](#), Itasca Consulting Group, Inc., USA
- 11:00 A review of structural data collection methodologies for discrete fracture network generation [D Sewnun](#), [J Wesseloo](#), [M Heinsen Egan](#), Australian Centre for Geomechanics, The University of Western Australia, Australia
- 11:30 Back-analysis of gravitational flow MB N01-S01 at Chuquicamata underground mine [JF San Martín](#), Codelco, Chile; [RL Castro](#), University of Chile, Chile; [L Arancibia](#), BCTEC Engineering and Technology, Chile; [D Endara](#), [P Vásquez](#), Codelco, Chile  
Physical modelling as a tool to improve our understanding of mechanisms of cave flow [RL Castro](#), University of Chile, Chile; [RE Gómez](#), University of Concepción, Chile; [A Pérez](#), University of Chile, Chile

SESSION SPONSOR



### LUNCH

### PARALLEL SESSIONS

#### SESSION NINE: ROCKBURST AND SEISMICITY

CHAIR [D Cumming-Potvin](#), Australian Centre for Geomechanics

SESSION SPONSOR

BUILDING TRUST



- 13:00 The Kiruna seismic event: important insights from the geotechnical model [M Mawson](#), [CR Dahnér-Lindkvist](#), [UB Anderson](#), Luossavaara-Kiirunavaara Aktiebolag, Sweden; [A Thomas](#), SRK Consulting, Canada; [A Bäckström](#), Luossavaara-Kiirunavaara Aktiebolag, Sweden
- 13:20 Characterisation of seismic activity at a kimberlite block caving operation in a complex geological setting in Quebec, Canada [RL Westley-Hauta](#), Stornoway Diamonds, Canada; [S Meyer](#), Institute of Mine Seismology, Canada
- 13:40 Abutment loading in deep cave mines: towards understanding susceptibility to strainbursts [J Roy](#), The University of British Columbia, Canada; [A Primadiansyah](#), PT Freeport Indonesia, Indonesia; [E Eberhardt](#), The University of British Columbia, Canada; [R Bewick](#), WSP-Golder, Canada
- 14:00 Rockburst management at Luossavaara-Kiirunavaara Aktiebolag's Kiirunavaara mine: what can we learn from COVID-19 management [P Zhang](#), Luleå University of Technology, Sweden
- 14:20 A review of rockbursts associated with block caving [J Liu](#), [C Zhang](#), [I Canbulat](#), [J Oh](#), [S Saydam](#), The University of New South Wales, Australia
- 14:40 The planning of a cave re-orientation at the Ernest Henry sublevel cave mine [E Savage](#), [L Jordan](#), [W Hartman](#), Evolution Mining, Australia

#### SESSION TEN: PLANNING (2)

CHAIR [G Capes](#), BHP

SESSION SPONSOR



- Value-production systems for block caving mines [DM Morrison](#), Centre for Excellence in Mining Innovation, Canada
- Longevity chart for planning production and the renovation of ore passes [W Sredniawa](#), Luleå University of Technology, Sweden; [B Skawina](#), Luleå University of Technology, and Luossavaara-Kiirunavaara Aktiebolag, Sweden; [J Rapp](#), Luossavaara-Kiirunavaara Aktiebolag, Sweden
- Rock fragmentation measurements in sublevel caving: field tests at Luossavaara-Kiirunavaara Aktiebolag's Malmberget mine [S Manzoor](#), [A Gustafson](#), [H Schunnesson](#), [M Tariq](#), Luleå University of Technology, Sweden; [T Wettainen](#), Luossavaara-Kiirunavaara Aktiebolag, Sweden
- Evaluation of the effect of wider-spaced layouts in recovery for high column block caves [P Paredes](#), Newcrest Mining Limited, Australia
- Future underground mining at Luossavaara-Kiirunavaara Aktiebolag Svappavaara: potential to combine caving and stoping methods [M Sormunen](#), Luossavaara-Kiirunavaara Aktiebolag, and Luleå University of Technology, Sweden; [D Saiang](#), [D Saiang](#), Luleå University of Technology, Sweden
- The Luossavaara-Kiirunavaara Aktiebolag transformation: approaches for greater depths and a changing world [TH Jones](#), [J Jonsson](#), [J Bergström](#), [A Martikainen](#), [H Engberg](#), Luossavaara-Kiirunavaara Aktiebolag, Sweden

### AFTERNOON BREAK

#### SESSION ELEVEN: HYDRAULIC FRACTURING

CHAIR TBA

SESSION SPONSOR



- 15:30 Surface hydraulic fracturing trial at Cadia East [G Amoré](#), Newcrest Mining Limited, Australia; [S Duffield](#), Drawpoint Consulting, Australia; [J De Ross](#), [G Viegas](#), Newcrest Mining Limited, Australia
- 15:50 Modelling of fracture initiation near a cave back and its implications for hydraulic fracturing concurrent to cave mining [R Rimmelin](#), The University of Queensland, and BHP, Australia
- 16:10 Multiphysics modelling of fractures in porous media using the eXtended finite element method [A Jafari](#), UNSW Sydney, Gold Fields Australia, Australia; [M Vahab](#), [N Khalili](#), UNSW Sydney, Australia
- 16:30 Stress shadowing effects during hydraulic fracturing in block caving operations [C Mejia](#), Tecgraf Institute, Pontifical Catholic University of Rio de Janeiro, Brazil; [E Azad](#), University of Chile, Chile; [D Roehl](#), Pontifical Catholic University of Rio de Janeiro, Brazil; [JA Vallejos](#), University of Chile, Chile; [E Rojas](#), Codelco, Chile
- 16:50 Hydraulic fracturing in the construction of the Andes Norte project [R Navarrete](#), [C Soto](#), [F Henriquez](#), Codelco, Chile; [H Godoy](#), RyQ, Chile
- 17:10 Experimental investigation of hydraulic fracturing in granite under hydrostatic stress conditions [Z Ali](#), [M Karakus](#), The University of Adelaide, Australia

#### SESSION TWELVE: CHARACTERISATION

CHAIR TBA

- Petroleum-based downhole geophysical methods for subsurface characterisation: a case study from Cadia East mine [KA Galybin](#), Schlumberger Australia, Australia; [G Viegas](#), [D Tennant](#), Newcrest Mining Limited, Australia; [D Lewis](#), Schlumberger Australia, Australia
- In situ stress data management and analysis: implications for numerical modelling [M Musolino](#), [C Chester](#), OZ Minerals, Australia; [A Ford](#), Mining One Consultants, Australia
- The Equotip hardness method for spatial geotechnical assessment of a Northparkes mine block cave [T Bruning](#), [S Webster](#), [R Teet](#), CMOC Northparkes, Australia
- Objectivity through mineralogy: application of spectrographic data and machine learning for improved geotechnical characterisation of porphyries [E Tilley](#), [B Yang](#), SA Otto, WSP-Golder, Canada; [Y Sinaga](#), WSP-Golder, Indonesia; [R Bewick](#), WSP-Golder, Canada
- Benchmarking framework for porphyry copper-gold rock masses for caveability and fragmentation decision making [R Bewick](#), [A Brzovic](#), [S Rogers](#), [C Griffiths](#), SA Otto, WSP-Golder, Canada
- Impact of the typical errors in geotechnical core logging for geomechanical design in large caving mines [A Russo](#), [E Montiel](#), [E Hormazabal](#), SRK Consulting, Chile

- 17:30 CLOSING ADDRESS: [Y Potvin](#), Caving 2022 Conference Chair, Australian Centre for Geomechanics, The University of Western Australia, Australia

### CONFERENCE CLOSE