

Principal Geotechnical Engineer and General Manager ITASCA Australia

Expertise

Dr Sharrock's is General Manager of Itasca Australia and has 15 years industry experience in a wide range of rock mechanics positions such as Principal Geotechnical Engineer (Newcrest Mining NL), Rock Mechanics Engineer (Mt Isa Mines), Senior Geotechnical Consultant, (AMC Consultants), Senior Lecturer in Geotechnical Engineering (UNSW) and Associate Professor - Caving Geomechanics (UQ). His consulting, operational and research experience spans underground and surface mining in hard rock and coal.

His last caving position was as Principal Geotechnical Engineer at Newcrest's Cadia East, Ridgeway Deeps, Ridgeway SLC and Telfer Mines over a 5 year period. His geotechnical responsibilities covered all aspects of the discipline including measuring excavation damage, seismic risk management, ground support design and numerical modelling of stress, seismicity, deformation and flow. In addition to Newcrest, consulting experience includes: Argyle, Perseverance, North Parks, Koffiefontein, Resolution, Goldex, and various other project studies including Afton, Ekati, Perseverance Deeps, Telfer Deeps and Ridgeway Deeps (Lift 2).

Dr Sharrock has acted as expert witness in a number of legal actions including the Melik Inquiry and Beaconsfield Coronial Inquest. He also holds an Adjunct Associate Professorship at Brian Research Centre at the University of Queensland and assists with projects in the field of Caving Geomechanics.

Education

PhD in Mining Engineering (Geomechanics), 2003
University of Queensland, Australia

M.Sc. (Res) in Materials Science, 1996
University of Queensland, Australia

Bachelor of Applied Science (Mining Engineering), 1993
University of New South Wales, Australia

Registration

Certified Chartered Professional Geotechnical Engineer

Professional Affiliations

Australasian Institute of Mining and Metallurgy (AusIMM)

The University of Queensland

Honors

Sloan Outstanding Paper Award – Computers and Geotechnics (2019)

Computers and Geotechnics – Outstanding Paper Award (2018)

Australian Awards for Teaching (2010)

Awards for Programs that Enhance Learning; Australian Learning and Teaching Council

Teaching Excellence Award – UNSW (2008)

Deans Award for Outstanding PhD Research – Uni. of Queensland (2004)

Postgraduate Award - University of Queensland (1997-2000)
Co-Op Scholarship in Mining Engineering – UNSW (1990-1993)
BHP Science and Technology Award – National Winner (1989)
Young Innovator of the Year Award – State Winner (1988)

Professional Experience

2013 - Present	ITASCA Australia, Brisbane, Queensland, Australia Principal Geotechnical Engineer & General Manager
2011 - Present	University of Queensland, Australia Associate Professor
2011 - 2013	Newcrest Mining NL Principal Geotechnical Engineer
2006- 2011	UNSW, Geotechnical Engineering, Sydney, NSW, Australia Senior Lecturer
2008 – 2011	Newcrest Mining NL Specialist Geotechnical Engineer
2003 - 2006	AMC Consultants, Perth, Western Australia Senior Geotechnical Consultant
1999 - 2003	Mt Isa Mines Ltd, Mount Isa, Queensland, Australia Principal Geotechnical Engineer
1994 - 1999	University of Queensland, Australia Post Graduate Researcher / Geotechnician / Tutor

Papers and Publications

Sharrock, G.B., Ooi, J., Baasanjav, B. (2022) 'Geotechnical analysis and ground support selection for the Oyu Tolgoi Crusher Chamber #2', Caving 2022 Conference, Adelaide Australia.

Chapula, B., M. Sharifzadeh R., Makasi, M., Kabwe Beta-Hunt, E., **Sharrock**, G.B., Kumar, Y. (2022) 'Challenges of Mining in Squeezing Ground in Hard Rock Underground Mines', Caving 2022 Conference, Adelaide Australia.

Chapula, B., M. Sharifzadeh R. Morla, **Sharrock**, G.B. (2019) 'The Evaluation of Large Deformation in Deep Underground Mine Excavations using RQD', ISRM-EUROCK-2020-193 International Society for Rock Mechanics and Rock Engineering, ISRM International Symposium - EUROCK 2020, 14-19 June.

Sharrock, G.B., Chapula, B. (2019) 'Anisotropic rock mass behaviour in large deformation ground at CSA mine', South African Mining Journal 2020.

Sharrock, G.B., Chapula, B. (2019) 'Anisotropic rock mass behaviour in large deformation ground at CSA mine', Proceedings of Deep Mining 2019 Conference, Cape Town, South Africa.

Hebert, Y., **Sharrock**, G.B. (2018) 'Three-Dimensional Simulation of Cave Initiation, Propagation and Surface Subsidence using a Coupled Finite Difference - Cellular Automata Solution', Proceedings of Caving 2018 Conference, Vancouver, Canada.

Akram, S., **Sharrock**, G.B., Mitra, R. (2018) 'Investigating mechanics of conglomeratic rocks: influence of clast size distribution, scale and properties of clast and interparticle cement'. Bulletin of Engineering Geology and the Environment. 12 April 2018.

Sharrock, G.B, Cuello, D. (2016) 'Geotechnical Milestones at Mount Lyell Mine'. Massmin 2016 - Seventh International Conference and Exhibition on Mass Mining.

Brunton, I, Lett, J, **Sharrock**, G, Thornhill, T, and Mobilio, B, (2016). 'Full scale flow marker experiments at the Ridgeway Deeps and Cadia East block cave operations'. Massmin 2016 - Seventh International Conference and Exhibition on Mass Mining.

Lett, J, Jager, A, Brunton, I, Capes, G, Rachocki, J, Mobilio, B, **Sharrock**, G, and Secheny, M, (2016). 'Undercutting to surface breakthrough - Cadia East Panel Cave Stage 1'. Massmin 2016 - Seventh International Conference and Exhibition on Mass Mining.

Bahaaddini, M., **Sharrock**, G.B., Hebblewhite, B.K. (2013) 'Numerical investigation of the effect of joint geometrical parameters on the mechanical properties of a jointed rock mass under uniaxial compression', J. Computers and Geotechnics, Volume 49, April 2013, Pages 206-225.

Nilsson, M., Edelbro, C., **Sharrock**, G. (2012) 'Numerical estimation of joint shear strength using digital photogrammetry', Proc. Eurock, Sockholm, 28-29 May 2012.

Hashim, H., **Sharrock**, G.B. (2012) 'Dimensionless percolation rate of particle percolation in block caving mines', Proc. Massmin 2012 Conference, Sudbury.

Sharrock, G.B., Beck, D.A., Capes, G., Brunton, I. (2012) 'Applying coupled Newtonian Cellular Automata-Discontinuum Finite Element models to simulate propagation of Ridgeway Deeps Block Cave', Proc. Massmin 2012 Conference, Sudbury.

Brunton, I., **Sharrock**, G.B. (2012) 'Full scale marker trials at Ridgeway deeps block cave mine' Proc. Massmin 2012 Conference, Sudbury.

Tibbett, J., **Sharrock**, G.B., Hebblewhite, B.K. (2012) 'A review on the effects of faults on the mechanics of cave propagation', Proc. Massmin 2012 Conference, Sudbury.

Capes, G., **Sharrock**, G.B., Lowther, R. (2012) 'Quantifying undercut excavation damage at Ridgeway deeps block cave mine', Proc. Massmin 2012 Conference, Sudbury.

Beck, D.A., **Sharrock**, G.B., Capes, G. (2011) 'A coupled DFE-Newtonian Cellular Automata scheme for simulation of cave initiation, propagation and induced seismicity', Proc. American Rock Mechanics Symposium, Asheville, USA, 2011.

Bahaaddini, M., **Sharrock**, G.B., Hebblewhite, B.K. (2011) 'Synthetic rock mass modelling of a rock mass with non-persistent joints', 35th APCOM Symposium 201, Paper Number: 90

Akram, S., **Sharrock**, G.B. (2011) 'Physical and numerical investigation of conglomeratic rocks', Proc 2nd International FLAC-DEM Symposium, 2011, Feb 14-16, 2011, Melbourne Australia.

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Akram, S., **Sharrock**, G.B. (2011) 'The role of interstitial cement in synthetic conglomeratic rocks', Proc 2nd International FLAC-DEM Symposium, 2011, Feb 14-16, 2011, Melbourne Australia.

Bahaaddini, M., **Sharrock**, G.B., Hebblewhite, B.K. (2011) 'A comparison of physical and numerical experiments on artificial jointed rock masses using PFC3D', Proc 2nd International FLAC-DEM Symposium, 2011, Feb 14-16, 2011, Melbourne Australia.

Sharrock, G., Vakili, A., Duplancic P., Hastings N. (2011) 'Numerical Analysis of mine subsidence for the Perseverance Deeps Block Cave', Proc 2nd International FLAC-DEM Symposium, 2011, Feb 14-16, 2011, Melbourne Australia.

Hashim, M.H.M., **Sharrock**, G.B. (2010) 'Quantification of shear strains in a 2D block cave scaled physical model', ISRM International Symposium and 6th Asian Rock Mechanics Symposium, 23-27 October 2010, New Delhi (India).

Akram, S., **Sharrock**, G.B. (2010) 'Physical and numerical investigation of a cemented granular assembly of steel spheres', Int. J. Numer. Anal. Meth. Geomech.

Mosse-Robinson, S., **Sharrock**, G.B. (2010) Laboratory Experiments to Quantify the Pull-out Strength of Single Strand Cable Bolts for Large Boreholes, Proc 2nd Australasian Ground Control Conference in Mining, Sydney 2010.

Sharrock, G., Capes, G., Fuller, P. Kerr, G., Penney, A. (2010) 'Laboratory and Field Tests on Point Anchored Resin Bolts at the Ridgeway Deeps Block Cave', Proc 2nd Australasian Ground Control Conference in Mining, Sydney 2010.

Sandy, M., **Sharrock**, G., Albrecht, J., Vakili, A. (2010) 'Managing the Transition from Low Stress to High Stress Conditions', Proc 2nd Australasian Ground Control Conference in Mining, Sydney 2010.

Lowther, R.J., Capes G.W., **Sharrock** G.B. (2010) 'A deformation monitoring plan for extraction level drives at Ridgeway Deeps block cave mine', Proc. Caving 2010 Conference, Perth Australia.

Sharrock, G.B., Hashim, H. (2009) 'Disturbed Flow in Block Caving', Proc. American Rock Mechanics Symposium, Asheville, USA, July 2009.

Hashim, H., **Sharrock**, G.B. (2009) 'Numerical Investigation of the Effect of Particle Shape on Percolation', Proc. American Rock Mechanics Symposium, Asheville, USA, July 2009.

Sharrock, G.B., Akram, S., Mitra, R. (2009) 'Application of Synthetic Rock Mass Modeling to Estimate the Strength of Jointed Sandstone', Proc. American Rock Mechanics Symposium, Asheville, USA, July 2009.

Akram, S., **Sharrock**, G.B. (2009) 'Physical and Numerical Investigation of a Cemented Granular Assembly under Uniaxial and Triaxial Compression', Proc. American Rock Mechanics Symposium, Asheville, USA, July 2009.

Sharrock, G.B. (2008) 'The isolated extraction zone – a review', Proc. 1st Southern Hemisphere Rock Mechanics Symposium, pp 255-271.

Hashim, H., **Sharrock**, G.B. (2008) 'A review of particle percolation in mining', Proc. 1st Southern Hemisphere Rock Mechanics Symposium, pp 273-284.

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Sharrock, G.B., Sandy, M., Albrecht, J., Basson, F. (2007) 'Practical estimates of rock mass strength in underground mining operations', in IRSM Congress (2007) Lisborn City.

Albrecht, J., **Sharrock**, G.B. (2006) 'A Model to Forecast Rockburst Damage'. Chapter 42 - Challenges in Deep and High Stress Mining, Editors: Potvin, Y., Hadjigeorgiou, J., Stacey, D., Publisher: Australian Centre for Geomechanics ISBN: 978-0-9804185-1-4, 666 pages.

Albrecht, J., **Sharrock**, G.B. (2006) 'Excavation design guidelines and support requirements for seismic conditions', in Proc Deep and High Stress in Mining, Quebec City.

Mikula, P., **Sharrock**, G.B., Lee, M., Kinnerly, E. (2005) 'Seismicity management by tight slot blasting for stress control at Mount Charlotte', in Proc. RASIM6, Perth.

Sharrock, G.B., Beck, D., Booth, G., Sandy, M. (2004a) 'Simulating gravity flow in sub-level caving with cellular automata', Proc. Massmin 2004, Santiago, pp 189-194.

Booth, G., **Sharrock**, G.B., Beck, D., Booth, G., Sandy, M. (2004b) 'Visual grade control techniques and sub-level cave draw optimization', Proc. Massmin 2004 Conference, Santiago, pp 189-194.

Sharrock, G.B., (2003). 'Cellular automata and the simulation of cave-draw', Australian Mining Magazine (November Edition), pp 62- 63.

Sharrock, G.B., Slade, N., Thin, I., Duplancic, P. (2002) 'The prediction of stress induced caving on a mining abutment', Proc Deep and High Stress Mining Conference, Australian Centre for Geomechanics, Nov 2002, Section 13, pp1-21

Sharrock, G.B., Kuszmaul, J. (1999): 'Tool shearing of a granular material', Proc. 2nd Australasian Congress Applied Mech. Canberra, Australia.

Sharrock, G.B., Aspinall, T.O., Scott, A. (1997): 'Scale modeling of dragline block operating methods', J. Australian Coal Rev., Calgary Canada

Sharrock, G.B., Aspinall, T.O., Scott, A. (1996): 'Measurement and analysis of dragline operating parameters for block excavation', Proc. 4th Int. Symp. on Mine Planning and Equipment Selection, Calgary Canada.