

DR NOUNÉ SOPHIE MELKOUMIAN

RESUMÉ & LIST OF PUBLICATIONS 2015

CONTACT DETAILS:

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ACADEMIC QUALIFICATIONS:

- 2000 Doctor of Philosophy**
Rock Mechanics and Mining Engineering
School of Mining Engineering
Faculty of Engineering
University of New South Wales
Sydney, NSW Australia
- 1995 Doctor of Philosophy**
Applied Mathematics (Physics and Mathematical Sciences)
Faculty of Mechanics of Solids
Yerevan State University
Yerevan, Armenia
- 1989 BE and MEngSc, University Medallist**
Civil and Industrial Engineering
Faculty of Architecture and Construction
Yerevan State Polytechnic Institute
Yerevan, Armenia

PROFESSIONAL MEMBERSHIPS:

- 2011-current** Australasian Institute of Mining and Metallurgy, Australia
1994-current Institution of Engineers, Australia
1990-current Association of Theoretical and Applied Mechanics, Armenia
1990-current Association of Applied Mathematics, Armenia

ACADEMIC EMPLOYMENT HISTORY:

2014 – current	Senior Lecturer School of Civil, Environmental and Mining Engineering Faculty of Engineering, Computer and Mathematical Sciences University of Adelaide, Adelaide, SA Australia
2007 - 2014	Lecturer School of Civil, Environmental and Mining Engineering Faculty of Engineering, Computer and Mathematical Sciences University of Adelaide, Adelaide, SA Australia
2006 – 2007	Lecturer Australian School of Petroleum Faculty of Engineering, Computer and Mathematical Sciences University of Adelaide, Adelaide, SA Australia
2005 - 2006	Research Fellow School of Mechanical Engineering Faculty of Engineering, Computer and Mathematical Sciences University of Adelaide, Adelaide, SA Australia
1998 - 1999	Research Fellow School of Mining Engineering Faculty of Engineering University of New South Wales, Sydney, Australia
1993 - 2001	Research Fellow Institute of Mechanics Division of Mechanics of Deformable Solids National Academy of Sciences, Yerevan, Armenia

COURSES TAUGHT:

- **MEA course leader** for the following since 2010:
 - Mine Geotechnical Engineering course (2010-2014)
 - Advanced Mine Geotechnical Engineering course (2010-2014)
 - Mining in a Global Environment (2014-current)
- Mine Ventilation
- Engineering Modelling and Analysis IIA
- Thermodynamics for Mine Ventilation
- Reservoir Thermodynamics and Fluid Properties (for the Petroleum Engineering specialty)

Project supervision:

- PhD students
- Masters students by research
- Masters students by coursework

- Final year/honours projects
- Project based courses

PROFESSIONAL EMPLOYMENT, EXPERIENCE AND CONSULTANCY HISTORY:

2009-current	Consulting School of Civil, Environmental and Mining Engineering Faculty of Engineering, Computer and Mathematical Sciences University of Adelaide, Adelaide, SA Australia
2000 - 2005	Founding Director SOLIT Pty Ltd Los-Angeles, California USA
1989 - 1989	Structural Engineer Yerevan-Project Design Institute Yerevan, Armenia

RESEARCH INTERESTS:

- Mine Geotechnical Engineering
- Rock Mechanics
- Fracture Mechanics (crack and failure prediction)
- Active Structural Health Monitoring
- Applied Mathematics and Machine Learning (supervised and semi-supervised)
- Behaviour-based OHS

GRANTS:

- MEA collaborative research grant (\$39K) - awarded in 2014
- DET CRC (\$145K) – awarded in 2012
- Executive Dean’s Start-Up Research Grant (\$10K) - awarded in 2011
- Equity and Diversity Grant (\$5K) – awarded in 2010
- Silver Prize/Grant of the Casio International Developers Contest (US \$10K) – awarded in 2002

ADMISTRATIVE ACTIVITES

- **Faculty Representative at the University Gender and Equity Committee**
Faculty of Engineering, Computer and Mathematical Sciences
The University of Adelaide
- **Champion for ‘Women in Engineering’ and member of the Faculty Learning and Teaching committee**

Faculty of Engineering, Computer and Mathematical Sciences
The University of Adelaide

- **Marketing for the Mining Engineering Education**
School of Civil, Environmental and Mining Engineering
The University of Adelaide
- **Member of Women in Mining Network (WIMnet)**
AusIMM
- **Post-graduate coordinator** – ME by Coursework
School of Civil, Environmental and Mining Engineering
The University of Adelaide
- **School Equity Officer**
School of Civil, Environmental and Mining Engineering
The University of Adelaide
- **Member of the Post-graduate Committee**
School of Civil, Environmental and Mining Engineering
The University of Adelaide
- **Student mentoring**
School of Civil, Environmental and Mining Engineering
The University of Adelaide
- **Member of the Academic Women's Forum**
The University of Adelaide
- **Guest speaker at the Women in Mining Forum**
Australian Prospectors and Miners Hall of Fame, Kalgoorlie, WA, 20th May 2009

PUBLICATIONS:

Books

- N. Melkougian, Floor fracturing and sudden gas release in underground coal mines. Publisher: Herausgeber (1999), 267 pages.

Patents

- Nouné S. Melkougian, Stanley D. Woithe, Michael C. Griffith and Ian G. Cates, 2012, A Device, System and Software Application for Structural Monitoring (Multi-Channel Early Warning Active Structural Health Monitoring (SHM) System). IP Australian, provisional patent reference number: 2012903700; filed on 27 August 2012 (filed through Adelaide Research and Innovation Pty Ltd).

Journals Publications (*last 5 years*):

- Hashemi S.S. and Melkougian N., 2015, Effect of localised zones in borehole failure in poorly cemented sandy formations; *Journal of Petroleum Science and Engineering*. (*under review*)
- Hashemi S.S. and Melkougian, 2015, Effect of different stress paths on the behavior of weakly cemented sands adjacent to a drilled borehole; *Journal of Petroleum Science and Engineering*. (*under review*)
- Hashemi S.S. and Melkougian N., 2014, A new sand dislocation criterion at boreholes drilled through poorly cemented sandy formations; *Journal of Engineering Geology*. (*under review*)
- Schwartzkopff, A, Xu, Ch. and Melkougian, N., 2014, A three-dimensional analytical method for mixed-mode propagation of an arbitrarily orientated internally pressurized circular fracture in a remotely compressed rock material; *International Journal of Fracture*. (*under review*)
- Hashemi S.S., Taheri A., Melkougian N. and Jaksa M., 2014, Real-time monitoring of borehole stability with respect to the behaviour of poorly cemented sandstones by a new designed experimental test; *International Journal of Rock Mechanics and Mining Sciences*. (*under review*)
- Hashemi, S., Momeni, A. and Melkougian, N., 2014a, Investigation of borehole stability in poorly cemented granular formations by discrete element method; *Journal of Petroleum Science and Engineering*, 113, 23-35.
- Hashemi, S., Taheri, A. and Melkougian, N., 2014b, Shear failure analysis of a shallow depth unsupported borehole drilled through poorly cemented granular rock; *Engineering Geology*, 183: 39-52.
- Bezhanyan, V., Melkougian, N.S., Chlingaryan, A. and Sargsyan, S., 2013, Extension of Bleustein-Gulyaev surface waves on the case of two electrodes. *Journal of Proceedings of Yerevan State University of Architecture and Construction*, RA Ministry of Education and Science, YERIA Publishing House, ISSN 1829-1384, Volume III(42), pp. 66-72.
- Schwartzkopff, A.K., Priest, S., Melkougian, N. and Edugo, J.A., 2012, Design and fabrication of a low cost true triaxial cell for testing multiple size specimens. (Presented at the ISRM – 12 International Congress on Rock Mechanics, 18-21

October 2011). *Geomechanics Research Series: True Triaxial Testing of Rocks*, CRC Press, Taylor and Frances group, ISSN 0292-4856, Volume 4, pp 83-93.

- Bezhanyan, V.A., Melkougian, N.S. and Sarkisyan, S.A, 2010, Effect of a this and plastic adhesive layer on the stress singularities in bonded dissimilar isotropic elastic materials; *Journal of Proceedings of the Yerevan State University of Architecture and Construction*; 2(35), pp.130-136
- Melkougian, N., Priest, S. D. and Hunt, S.P., 2009, Further development of the three-dimensional Hoek-Brown yield criterion; *Rock Mechanics and Rock Engineering*; 42(6): pp.835-847
- Lawrence, S.J.; Willis, C.R.; Melkougian, N. and Griffith, M.C., 2009, Eathquake design of unreinforced masonry residential buildings up to 15 metres in height; *Australian Journal of Structural Engineering*; 10(1), pp.85-99

Conference papers (last 5 years):

- Hashemi S.S., Momeni A. and Melkougian N., 2013, Numerical simulation of borehole breakout in poorly cemented granular sands; *The 47th U.S. Rock Mechanics/Geomechanics Symposium*, 23-26 June 2013, San Francisco, California, USA.
- Schwartzkopff, A.K., Melkougian, N.S., and Woihe, S.D., 2013, Design Improvements for a True Triaxial Cell to Monitor Initiation and Propagation of Damage and Body Cracks during Testing, *Twenty-Second International Conference on Mine Planning and Equipment Selection*, 14-19 Ocotber 2013, Dresden, Germany. Proceedings of the 22nd MPES Conference, Springer International Publishing, pp. 551 – 560.
- Statsenko, L. and Melkougian, N.S., 2013, Modeling Blending Process at Open-Pit Stockyards: A Northern Kazakhstan Mining Company Case Study, *Twenty-Second International Conference on Mine Planning and Equipment Selection*, 14-19 Ocotber 2013, Dresden, Germany. Proceedings of the 22nd MPES Conference, Springer International Publishing, pp. 1017 – 1027.
- Melkougian, N.S., Woihe, S.D., Kuo, Y.L. and Schwartzkopff A.K., 2013, A New Cost-Effective Active Structural Health Monitoring Technology for Detecting Shear Bands in Poorly Cemented Sands Leading to Exploration Borehole Collapse, *Twenty-second International Conference on Mine Planning and Equipment Selection*, 14-19 Ocotber 2013, Dresden, Germany. Proceedings of the 22nd MPES Conference, Springer International Publishing, pp. 1231 – 1241.
- Statsenko, L. and Melkougian, N., 2013. A Case Study on Blending Raw Ores at Open Pit Stockyard Using Decision Support System for Designing Effective Technological Schemes for Open Pit Mines. *13th International Multidisciplinary Scientific GeoConference and EXPO SGEM2013*, 16-22 June 2013, Albena, Bulgaria. SGEM2013 Conference Proceedings, 2013, Vol. 1, pp 297 - 304.
- Hashemi S.S., Melkougian N. and Xu C., 2012, Effect of grain bonding on the stability of a borehole drilled through unconsolidated formations, *The 7th Australasian Congress on Applied Mechanics*, 9 - 12 December 2012, Adelaide, Australia.
- Melkougian, N., Xu, Ch., Karakus, M., Cox, P., l'Anson, R., Stojakovich, J. and Ciano, O., 2012, Feasibility study of a deep geological repository for high level radioactive waste (HLW) in Central Australia. *Thirteenth International*

Symposium on Environmental Issues and Waste Management in Energy and Mineral Production (SWEMP 2012), 28-30 November 2012, New Delhi, India, pp 203-203.

- Mirahmadi, A., Melkougian, N.S., Priest, S.D. and Schwartzkopff, A.K., 2012, Comparison and validation of a number of three dimensional rock failure criteria through true triaxial tests on Kanmantoo bluestone. *Twenty First International Symposium on Mine Planning and Equipment Selection (MPES 2012)*, 28-30 November 2012, New Delhi, India, pp 447-458.
- Schwartzkopff, A.K., Mirahmadi, A., Melkougian, N.S. and Priest, S.D., 2012, Recommendations on further development of a true triaxial cell for testing rock specimens of different sizes. *Twenty First International Symposium on Mine Planning and Equipment Selection (MPES 2012)*, 28-30 November 2012, New Delhi, India, pp 727-738.
- Hashemi, S.S., Melkougian, N. and Xu, Ch., 2012, Effect of grain bonding on the stability of a borehole drilled through low cemented formations, *Seventh Australasian Congress on Applied Mechanics (ACAM 7)*, 9-12 December 2012, Adelaide, Australia, pp 884-894.
- Schwartzkopff, A.K., Priest, S.D., Melkougian, N., Egudo, J., 2011, Design and fabrication of a low cost true-triaxial cell for testing multiple size specimens, *Proceedings of the 12th International Congress on Rock Mechanics*, October 16-21, Beijing, China.
- Melkougian, N., Milnes, P. and Mather, D., 2011, The Effects of extreme events on attitudes to occupational health and safety, *Proceedings of the Mine Planning and Equipment Selection (MPES) Conference*, October 12-14, 2011, Almaty, Kazakhstan.
- Milnes, P., Melkougian, N., Mather, D., 2011, Identifying and clearing cultural blockages to occupational health and safety, *Proceedings of the Mine Planning and Equipment Selection (MPES) Conference*, October 12-14, 2011, Almaty, Kazakhstan.
- Xu C., Karakus M., Melkougian N., Wang C., Sui Q. and Wang J., 2011, Probabilistic slope stability analysis of Fresh Bulldog Shale formation in prominent Hill open pit, *APCOM2011*, Wollongong, Australia.
- Milnes, P., Melkougian, N. S., Mather, D., Milnes, T., Stewart, A. and Tan, L., 2010, 'She'll be right mate' – culture and safety. *Proceedings of the Mine Planning and Equipment Selection (MPES) Conference*, 1-3 December, 2010, Fremantle, WA, Australia (2010), 427-437.
- Maadad, N. and Melkougian, N., 2010, Workplace experiences of international academic staff in South Australian universities. *Refereed Proceedings of the National Symposium on Migrant Security 2010: Citizenship and social inclusion in a transnational era*, 15-16 July, 2010, Brisbane, Queensland, Australia, 137-145.
- Duncan, J., Melkougian, N. and Xu, Ch., 2010, Site selection study for the conceptual design of a deep underground radioactive waste repository in Australia, *Proceedings of the 10 IASTED International Conference on Artificial Intelligence and Applications*, February 15-17, 2010, Innsbruck, Vienna, 470-475.
- Melkougian, N., 2010, Predicting stress-strain relationship in stratified rock mass by using machine learning techniques, *Proceedings of the 10 IASTED International Conference on Artificial Intelligence and Applications*, February 15-17, 2010, Innsbruck, Vienna, 479-484.

- Chlingaryan, A. and Melkounian, N., 2010, Automated monitoring of bonding materials properties in complex structures using machine learning, *Proceedings of the 10 IASTED International Conference on Artificial Intelligence and Applications*, February 15-17, 2010, Innsbruck, Vienna, 489-493.
- Melkounian, N.S., Melkumyan, A.S. and Wu, C.Q., 2009, Suggestion of a method for predicting different response characteristics including major cracks induced by blast loading in concrete slabs using machine learning; *8th international conference on shock and impact loads on structures*, 2-4 December 2009, Adelaide, Australia; pp.435-440