GROUND SUPPORT 2019

ACG AUSTRALIAN CENTRE FOR GEOMECHANICS

CSIRO | The University of Western Australia | Joint Venture

Ground Support 2019

Proceedings of the Ninth International Symposium on Ground Support in Mining and Underground Construction

23–25 October 2019 | Sudbury, Canada

EDITORS John Hadjigeorgiou and Marty Hudyma

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John Hadjigeorgiou
University of Toronto, Canada

Marty Hudyma
Laurentian University, Canada

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Australian Centre for Geomechanics

The Australian Centre for Geomechanics (ACG) was formally established in 1992 as a University of Western Australia research centre in order to promote research excellence and continuing education in geomechanics, with particular emphasis on its application to the mineral and energy extraction sections of Australia's resources industry.

The Australian Centre for Geomechanics is an unincorporated Joint Venture involving:

- CSIRO Mineral Resources
- The University of Western Australia — Civil, Environmental and Mining Engineering

The ACG draws together staff knowledge, experiences and expertise from within the two groups forming the Centre and facilitates a multi-disciplinary approach to research and education in geomechanics. Research undertaken by the ACG attracts both national and global support and the outcomes of the projects are utilised to promote safer mining and environmental geomechanics practices, operating efficiencies and to meeting community expectations for sustainable mining practices.

With the guidance of strong industry representation on the Board of Management, and close collaboration with senior representatives of the mining industry, research, training and further education activities are tailored directly to the needs of industry. The ACG Board expects the Australian Centre for Geomechanics to be the focal point for industry on geomechanics issues and to address the needs of industry through a collaborative interdisciplinary approach.

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Aside from allowing users to freely download many past and current conference papers, the site features many useful functions. This highly interactive and searchable repository provides importable citation information in various formats, links to the paper authors' profiles on ORCID, ResearchGate and LinkedIn, as well as the ability to share papers on social media.

The Ninth International Symposium on Ground Support in Mining and Underground Construction papers are freely available on the repository.

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Preface

The First International Symposium on Ground Support in Mining and Underground Construction took place in Abisko, Sweden, 1983 under the theme of rock bolting: theory and application in mining and underground construction. This series of symposia has evolved over the years to cover all areas of ground support and provide a documented timeline of the significant advancements in ground support technology and practice in the last 35 years. These are reflected in the improved safety statistics and performance of excavations.

The Ninth International Symposium on Ground Support in Mining and Underground Construction covered the complete spectrum of ground support, from new reinforcement and surface support products, new laboratory and in situ testing methods, quality control, monitoring, numerical modelling and applications in difficult ground conditions.

The organisers of Ground Support 2019 gratefully acknowledge the keynote speakers, Dr Mark Board, Frédéric Mercier-Langevin and Peter Andrews who provided a practical and international perspective from the USA, Canada and Australia.

The organisation of this symposium was conducted by a committee whose membership consisted of Dr Ming Cai, Professor Bruce Hebblewhite, Professor Charlie C Li, Professor Erling Nordlund, Professor Yves Potvin, Professor Pekka Särkkä, Brad Simser, Dr Jonny Sjöberg, Eduardo Rojas Valdivia, Dr Mike Yao and Professor Weishen Zhu. All administrative elements of the symposium were provided by the competent and enthusiastic Australian Centre for Geomechanics team. The symposium benefited from the financial support of many industry sponsors and the organisers gratefully acknowledge them.

Finally, this symposium would not have been possible if it were not for the authors who shared their experiences, and the independent reviewers who provided useful and insightful suggestions.

These proceedings are also freely available from the ACG Online Repository of Conference Proceedings. The papers can be accessed by scanning the QR code on this page or by visiting papers.acg.uwa.edu.au/gs2019.

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