PROCEEDINGS OF THE 38th International Conference ON GROUND CONTROL IN MINING

ICGCM 2019

Edited by

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The Society for Mining, Metallurgy & Exploration (SME) is a professional society whose more than 15,000 members represents all professionals serving the minerals industry in more than 100 countries. SME members include engineers, geologists, metallurgists, educators, students and researchers. SME advances the worldwide mining and underground construction community through information exchange and professional development.

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PREFACE

The editors, organizing committee, and SME staff extend a warm welcome to all the authors, students, and attendees of the *38th International Conference on Ground Control in Mining* (ICGCM 2019) in Morgantown, West Virginia.

The conference was initially conceived in 1981 by Dr. Syd Peng to bring together members of the mining community in a forum where diverse ground control experience and research can be shared. The conference has been held annually since that time, and has established a rich history of advancing ground control techniques to its current stage. It has provided a unique platform for researchers, regulators, and operators to present, exchange, and discuss topics that are unique, challenging, and/or require immediate solutions. The conference has covered every aspect of ground control in mining. The conference has been attended by researchers from all the mining countries around the world. The papers presented at the conference are accessible online at no cost and represent an exquisite collection of technical papers.

This year we are pleased to announce two special sessions, one focusing on underground limestone mining held on Tuesday afternoon from 2:50 PM to 4:30 PM, and the second on the interaction between longwall mining and gas wells between 4:45 PM and 5:45 PM. We hope that these sessions peak new interest as well as stimulate our audiences. Finally, we encourage anyone with ideas for special session(s) for future meetings to submit them to one of us as we plan. We look forward to a very exciting ICGCM 2020.

We thank all the primary technical reviewers, peer reviewers, chairs, co-chairs, and authors for their contributions and dedication to this conference. In addition, the editors extend appreciation to the SME staff for their hard work, patience, and enthusiastic support. We also thank our sponsors for their continued support in the success of this conference. Lastly, we thank all the participants for joining us and making this conference a success that will drive forward the science of mine ground control for the benefit of all.

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