Advances in Civil Engineering

Hindawi

Special Issue on

Ground Control of High-Stress Mining Roadways: From Experiments to Cases

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With the increase in the mining depth, complexity of the mining environment, and mining intensity, the surrounding rock of the roadway is under increased stress, and so ground control of those roadways is more difficult. At present, rock bolts and anchor cables are widely employed for effective support of roadways but failure of these elements, along with large deformation of the roadway, can occur due to high stress and other mining and geological factors.

Different types of high-stress roadways are subject to different pressures: roadways buried more than 1000m are usually subject to high in situ stresses, high osmotic pressure, and high temperature; roadways with thick hard overlying strata and roadways with irregular residual working faces are usually subject to high mining-induced stresses; roadways under the remnant pillar are usually subject to high concentrated stresses; and roadways of ultra-thick coal seams are usually subject to high mining-induced stresses due to strong mining intensity. Many studies indicate that the surrounding rock of deep roadways is characterised by obvious mechanical property degradation, brittle deformation transformation to plastic deformation, and nonlinear deformation. However, current ground control theory cannot scientifically illustrate the mechanism of surrounding rock degradation, large deformation, and failure of mining roadways in complex and variable mining and geological conditions.

This Special Issue, therefore, aims to direct more attention to ground control of high-stress roadways, including fundamental experimental studies and case studies. Proposed ground control techniques and principles dealing with case studies of the above-mentioned phenomena are of great importance. Meanwhile, fundamental experiment studies on related topics arising from case studies are equally important if they provide new discoveries or guidance to design proper and ground control schemes.

Potential topics include but are not limited to the following:

- Theoretical study of high-stress roadway deformation and stability control mechanisms
- Laboratory experiments of high-stress roadway deformation and stability control mechanisms
- Numerical simulation of high-stress roadway deformation and stability control mechanisms
- In situ monitoring of high-stress roadways
- Case studies of ground control of high-stress roadways

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