



Research Topic

Advances in Design and Implementation of Cementitious Backfills (ADICB)

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About this Research Topic

Cementitious backfill, an engineered material forming of cement, tailings and water, plays a key role in the mining industry. It is a vital element of mines' design for assisting the stabilization of mining-induced openings and the safe disposal of processing tailings. The quality and characteristics of cementitious backfills are remarkably influenced by its intrinsic (i.e., tailings, cement and water) and extrinsic (i.e., field conditions and fill-rock interaction) factors. Although there are lots of works on intrinsic factors, there are relatively few works on field properties of filling. There is a certainty that the actual field properties of backfilling can be different from laboratory-prepared backfills. Estimating the features of in-situ backfills is crucial in optimizing the real design of backfilling regarding cost savings and safety. To guard the environment and sustain the balance among backfill resources, consumption, and ecology, there is a clear

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The goal of this Research Topic is to highlight recent research dealing with improvements in the design and application of cementitious backfills. Studies of cementitious backfills have recently focused on their preparation, design, placement, operation, monitoring, performance, and optimization stages. However, as any backfill system can comprise up to 35% of its operational budget, it is better to focus on a system which is functional, optimized and cost-effective for mines. Hence, this collection will deliver a broad knowledge on mining with cementitious backfills which enhances underground mining efficiency via reduced stope cycle time and increased recovery of ore. Scholars are strongly fostered to submit original research and review papers on topics such as cost-effective backfill types and materials, backfill recipe optimization, innovative backfill plant design, backfill manufacturing and delivery to stopes, in-situ placement/curing conditions, stress and temperature measurements during the pour of cementitious backfills, instrumentation, monitoring, and case studies.

Topics of interest include, but are not limited to, the following:

- Lessons learned from thickening and filtering tailings for cementitious mine backfills
- Investigating the transport characteristics of high-concentration tailings backfills
- Rheology and fresh properties of backfills containing mineral and chemical additives
- Preparation of paste backfilling: the role of tailings, cement, water, and admixtures
- Analysis of the mechanical behavior and microstructure of cementitious backfills
- Plant design, mix recipes, pump/pipeline delivery systems of cementitious backfills
- Cost-benefit analysis of cementitious backfills applied in underground mines
- Environmental impact assessment and risk analysis

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Submission Deadlines

**14 August
2021**

Abstract

**12 December
2021**

Manuscript

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Participating Journals

Manuscripts can be
submitted to this Research
Topic via the following
journals:



cementitious backfilled stopes

- Instrumentation and monitoring of the field properties of cementitious backfills
- Best practices, innovations and experience in cementitious backfill operations
- Case studies: cementitious backfill system and typical backfilling operations
- Emerging issues and technologies for alternative cementitious backfills

Keywords: cementitious backfill, recipe design, geomechanics, in-situ performance, emerging technologies

Important Note: All contributions to this Research Topic must be within the scope of the section and journal to which they are submitted, as defined in their mission statements. Frontiers reserves the right to guide an out-of-scope manuscript to a more suitable section or journal at any stage of peer review.


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