From the Editor

This current issue studies five examines critical issues in mining engineering, mineral processing, advanced materials, fluid modeling, and mineral law to support sustainable and efficient resource development. The first study investigates a landslide in an open-pit mine disposal area in Tanjung Enim using slope stability back analysis. Results show that reduced cohesion due to water saturation and steep slope geometry caused failure, while slope grading and counterweight addition significantly improved safety factors. The second study addresses the growing demand for metallurgical-grade chromite by upgrading low-grade chromite sand from Morowali through physical beneficiation methods. Using shaking table and magnetic separation techniques, the research successfully improved chromium grade and Cr:Fe ratio with high recovery efficiency. The third study reviews and explores advancements in advanced materials and extractive metallurgy. Highlighting how nanostructured materials, bio-inspired techniques, and AI integration enhance extraction efficiency, reduce energy consumption, and optimize mineral value chains, although scalability and environmental challenges remain. The fourth study is another review compares RANS and LES turbulence models in Computational Fluid Dynamics (CFD). This review concludes that the determination of an optimal modeling framework necessitates a balanced computational efficiency, simulation domain scale, and accuracy requirements. Finally, a doctrinal legal study evaluates Indonesia's nickel downstreaming regulations, finding that the regulation remains predominantly instrumental and growth-oriented, lacking a coherent integration of environmental law, administrative accountability, and welfare-state obligations. This study concludes that while policies have increased domestic processing capacity and export value, regulatory fragmentation and environmental governance weaknesses persist, requiring stronger harmonization and enforcement to ensure sustainable and constitutionally aligned mineral governance.

Enjoy read.