Special Issue

Particle–Bubble Interactions in the Flotation Process

Message from the Guest Editors

The interaction between particles and bubbles serves as the foundation for the successful implementation of froth flotation in mineral or coal beneficiation. These interactions are intricate physiochemical processes rooted in surface science and hydrodynamics. Initially, the effectiveness of collisions between particles and bubbles hinges on the fluid dynamics within the flow field. Advancements in research continually enhance our comprehension of particle–bubble interactions. The swift evolution of testing techniques, such as 3D Particle Image Velocimetry (3D PIV), Atomic Force Microscopy (AFM), and Surface Force Apparatus (SFA), applied in flotation studies has enabled a transition from a macroscopic to a micro-nanoscale examination of these interactions. Furthermore, the utilization of high-speed imaging technology and simulation methods, while considering fluid dynamics, particle properties (size, hydrophobicity, shape, surface roughness, etc.), and bubble properties (size, type, stability), has enabled a deeper understanding of collision, attachment, and detachment phenomena.

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Minerals welcomes submissions that report basic and applied research in mineralogy. Research areas of traditional interest are mineral deposits, mining, mineral processing and environmental mineralogy. The journal footprint also includes novel uses of elemental and isotopic analyses of minerals for petrology, geochronology and thermochronology, thermobarometry, ore genesis and sedimentary provenance. Contributions are encouraged in emerging research areas such as applications of quantitative mineralogy to the oil and gas, manufacturing, forensic science, climate change, geohazard and health sectors.

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