Special Issue

Nanofluid Minimum Quantity Lubrication

Message from the Guest Editors

This Special Issue focuses on the latest developments in nanofluid-based minimum quantity lubrication (MQL) technologies, an emerging solution for enhancing machining performance while promoting environmental sustainability. Nanofluid MQL, which involves dispersing nanoparticles into lubricants used in minimal quantities, offers significant improvements in cutting forces, tool wear reduction, surface finish, and thermal management compared to conventional lubrication methods. Topics of interest include the design and characterization of nanofluids; mechanisms of lubrication and cooling at the nanoscale; the optimization of MQL parameters for various materials and processes; and lifecycle assessment for eco-efficiency. Contributions may also address challenges such as nanoparticle stability, dispersion techniques, health and safety concerns, and cost-effectiveness. Both experimental studies and simulation-based research are welcome. This Special Issue aims to bridge the gap between fundamental research and industrial application, promoting the broader adoption of sustainable lubrication practices in modern manufacturing.

Guest Editors

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Friction, wear, and lubrication are tribological phenomena that govern the behavior of interacting surfaces in a wide range of machine components. Understanding the physical and chemical nature of these phenomena is critical to achieving long component lifetime and economical operation. Research in the field of tribology is highly interdisciplinary, and encompasses the fields of physics, chemistry, engineering, and mathematical modeling. *Lubricants* invites contributions on new advances in all areas of tribology for publication as peer-reviewed research articles, reviews of current research, letters, and communications. We are committed to providing timely reviews of all articles submitted. Please consider sharing your work with the scientific community through publication in *Lubricants.*

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