Special Issue

Superlubricity Mechanisms and Applications

Message from the Guest Editors

Superlubricity occurs when the frictional resistance between two surfaces in relative motion is exceptionally low or nearly zero. This phenomenon challenges the traditional understanding of friction and offers significant potential for various applications. The study and application of superlubricity can potentially revolutionize the design and performance of mechanical systems such as bearings, gears, and micro-electro-mechanical systems (MEMS). By reducing friction, it can lead to enhanced energy efficiency, less wear and tear, and longer lifetimes of mechanical components. It also opens up new avenues for research in nanotechnology and surface science, as understanding and harnessing superlubricity requires a deep exploration of the interactions at both the atomic and molecular scale. The intention of this Special Issue is to share the physical and chemical mechanisms underlying superlubricity and how superlubricity can be harnessed in real-world engineering scenarios.

Guest Editors

Dr. Tianyi Han

State Key Laboratory of Tribology in Advanced Equipment, Tsinghua University, Beijing 100084, China

Dr. Zhongnan Wang

School of Mechanical, Electronic and Control Engineering, Beijing Jiaotong University, Beijing 100044, China

Deadline for manuscript submissions

31 December 2025

Lubricants

an Open Access Journal by MDPI

Impact Factor 2.9
CiteScore 4.5

mdpi.com/si/227503

Lubricants
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
lubricants@mdpi.com

mdpi.com/journal/lubricants

Lubricants

an Open Access Journal by MDPI

Impact Factor 2.9
CiteScore 4.5

mdpi.com/journal/lubricants

About the Journal

Message from the Editor-in-Chief

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.*

Editor-in-Chief

Prof. Dr. Homer Rahnejat
School of Engineering, University of Lancahire, Preston PR1 2HE, UK

Author Benefits

High Visibility:

indexed within Scopus, SCIE (Web of Science), Ei Compendex, Inspec, CAPlus / SciFinder, and other databases.

Journal Rank:

JCR - Q2 (Engineering, Mechanical) / CiteScore - Q2 (Mechanical Engineering)

Rapid Publication:

manuscripts are peer-reviewed and a first decision is provided to authors approximately 14.8 days after submission; acceptance to publication is undertaken in 1.9 days (median values for papers published in this journal in the first half of 2025).