

Special Issue

Applications and Advances of Ion Beam Surface Modification in Tribology

Message from the Guest Editors

Ion beam surface modification technologies enable the precise manipulation of surface composition, microstructure, and mechanical properties, thereby improving wear resistance, reducing friction coefficients, and prolonging the service lives of mechanical components. These techniques have tremendous potential for critical applications in aerospace, advanced machinery, precision instrumentation, and biomedical engineering. This Special Issue focuses on key ion beam technologies for optimizing surface tribological properties, including ion implantation, ion beam-assisted coating deposition, ion beam-induced phase, and microstructure tuning, as well as simulation and modeling techniques for ion beam surface modification. Particular attention is paid to the use of these technologies under diverse tribological conditions. This Special Issue seeks to link fundamental science with technological innovation, advancing the application of ion beam surface modification for addressing tribological failures across complex and demanding engineering scenarios.

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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

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