

Special Issue

Advances in Boundary Lubrication

Message from the Guest Editor

In machine elements, rough surface contacts are often not dry and are lubricated by thin boundary films. The surface roughness effect could be significantly reduced with advanced precision engineering. Hence, thin boundary lubricant films remain the last barrier preventing direct metal-to-metal interaction. Such interactions could lead to an undesirable drop in machine element efficiencies. To prevent this, the boundary lubrication performance can be enhanced by introducing suitable additives that could adsorb onto the surface to form thin protective films. The additives often involve molecules with active boundary elements or nanoparticles that could impart solid lubrication at a molecular level. Besides, the additives must be relevant to the application. Thus, it is essential to elucidate the effect of boundary lubricant addition and the mechanisms that give rise to boundary lubrication. This Special Issue intends to share advances in the design/synthesis of additives, characterization, optimization, and other novel aspects in boundary lubrication. It covers studies involving the adoption of advanced and green materials and elucidating their boundary lubrication mechanisms.

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