

Special Issue

Tribology in Manufacturing: Bottlenecks and Advances

Message from the Guest Editor

Tribology is a key technology in high-performance manufacturing. Friction between engineering materials and tools has long been advantageous in fabrication methods for composite materials and welding processes. However, tool wear will decrease the accuracy and precision of cutting or drilling operations. Additionally, abrasive wear of material surfaces will induce frictional heat and uncontrollable chemical reactions between the surface and lubricants. In this Special Issue, recent topics introduce tribological phenomena in mechanical manufacturing, focusing on how to utilize and control them. For instance, friction in additive manufacturing represents an active application of tribology, while the real-time monitoring of cutting tools, workpieces, and cutting machines directly contributes to high-performance fabrication. With the advent of advanced engineering materials, there has been a shift from stabilized components to more complex materials such as metal and polymer composites, as well as metastable phase materials. For these materials, tribological phenomena may present bottlenecks in shaping processes, yet they offer advantages in fabrication.

Guest Editor

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