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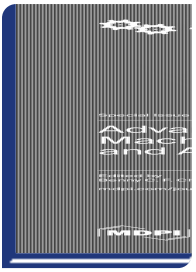
Special Issue Reprint

Advances in Ultra-Precision Machining Technology and Applications



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Ultra-precision machining technology has been widely used in the manufacture of many mission-critical components for various industrial areas, such as advanced optics, photonics aerospace, the automotive industry, telecommunications, biomedical areas, energy, the environment, etc. Nowadays, ultra-precision machining technology is capable of producing workpieces with submicron shape accuracy, nanometer surface roughness, and high geometric complexity. Due to increasing geometrical complexity, high-precision requirements and the evolution of advanced materials of the workpiece being machined lead to numerous research challenges in different fields, including ultra-precision machining technologies, novel machining processes, cutting mechanics, surface generation mechanisms, novel machine design, advanced sensing, and machine metrology. In addition, the machining process can be accurately controlled through the modeling and simulation of ultra-precision machining processes, error compensation, materials sciences, measurement and on-machine metrology, as well as advanced applications for functional uses. This reprint aims to collate the latest research results on ultra-precision machining technology and applications in order to promote the development of related industrial technology with high efficiency, high precision, and intelligence.

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