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## Machining Processes for Fiber-Reinforced Composite Materials

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### Introduction

The emergence of fiber-reinforced composites can be regarded as a significant breakthrough in the development era of new materials in human society. This can be seen by their huge impacts on the material distributions in a variety of industrial fields due to their superior mechanical/physical properties and flexible structural functionalities. To meet the eventual application requirements, machining operations such as milling, turning, drilling, etc. are required to precisely fabricate theses fibrous composites. In spite of their widespread applications, these composite materials are rather difficult to cut due to their anisotropic behavior and heterogeneous architecture. Particular issues in the composites machining are associated with severe defects formation, rapid tool wear progression and short tool life, resulting in a large number of part rejections. To solve fundamentally the technical issues, experimental and theoretical research devoted to investigations of cutting mechanisms, process parameters optimization, wear prediction and management is of vital importance.

This special issue aims to report on the newest research in the fields of various machining processes for fiber-reinforced composites covering a variety of aspects including the mechanical modeling of force and heat generation, optimization of process parameters, numerical modeling, damage detection, wear prediction and control. Full papers, communications, and reviews are all welcome.

### Aims and Scope:

- Chip removal mechanisms of composite materials
- Conventional machining techniques involving turning, milling, drilling, etc.
- Hybrid machining operations for composite materials
- Mechanistic modeling of force and heat generation
- Optimization of process parameters in cutting composites
- Numerical simulation and FE analysis of machining composites
- Composite damage characterization, detection and quantification
- Wear prediction and control for composites machining

### Keywords:

Fibrous composites; Machining processes; Numerical modeling; Chip removal modes; Cutting forces; Surface quality; Tool wear; Process monitoring.