The book covers current advances and practices in machining fibre-reinforced polymer composites under various conventional and nonconventional processes. It presents recent research and practices for effective and efficient process planning, operations of machine tools, control systems, and tooling, and the selection of optimum machining parameters, tool materials, as well as tool geometry. This book is of interest to academicians, students, researchers, practitioners, and industrialists working in aerospace, automotive, marine and sporting industries. It will be of interest to all those involved in the design, manufacturing, processing, and repair of advanced composite materials as well as those who are interested in the materials science and engineering, mechanical engineering, and materials science fields.

It can also be used to teach modern manufacturing engineering or as a textbook for advanced undergraduate and postgraduate engineering courses in machining, manufacturing or materials. Offering comprehensive coverage of the technology, machined parts, and operations of a wide range of machining processes, Machining Technologies presents the essential principles of machining and then examines traditional and nontraditional machining methods. Available for the first time in one easy-to-use resource, this book also presents the general principles of machining followed by an introduction to the major types of machine tools. It discusses the concepts of the machine tool and workpiece, introduces process characteristics that range from the basic principles of material removal, process parameters and equipment involved, to the detailed specific applications. The book discusses various aspects of surface finishing, including types of material to be finished, types of finishing abrasives and their characteristics for material compatibility, that are different from process-specific details. It covers important aspects for machine tool design, materials, and their application in aircraft and other structural applications. Practical experience is given for the end user on how to select the most appropriate method when designing fiber-reinforced composite materials. The book also includes a comprehensive overview of recent advances in the field of Machining Technologies. It is intended for research and development engineers and students, as well as skilled technicians and designers who are associated with the machining of advanced composite materials.
 Chapter 1: Introduction

This book is a comprehensive guide that covers a broad range of composite materials and machining technologies. It discusses the latest advancements in the field, focusing on how to improve the performance and reliability of composite materials used in various industries.

The book is divided into three main parts:

Part I: Composite Materials

This part covers the fundamentals of composite materials, including their classification, properties, and applications. It also discusses the latest research and developments in the field.

Part II: Machining Composite Materials

This part focuses on the machining of composite materials, including the selection of appropriate machining processes, cutting tools, and machines. It also covers the optimization of machining parameters to improve the quality of the machined composite materials.

Part III: Advanced Manufacturing Techniques

This part discusses the latest advancements in manufacturing techniques for composite materials, including 3D printing, rapid prototyping, and other additive manufacturing processes.

The book also includes several case studies and examples to illustrate the application of these technologies in real-world scenarios. It is a valuable resource for researchers, engineers, and students in the field of composite materials and engineering.