

Preface

In recent years, the utilization of metal-matrix composites (MMCs) has increased in various areas of science and technology due to their special mechanical and physical properties. MMCs, particularly aluminium-based composites have a high strength-to-weight ratio, high stiffness, lower thermal expansion coefficient, high thermal conductivity as well as corrosion and wear resistance. Therefore, MMCs have the potential to replace conventional materials in various fields of application such as automotive, aeronautical and aerospace as well as in others advanced industries. As result of these potential applications, there exist a great necessity to understand the problems associates with the machining of these composites. Machining MMCs is a rather complex task owing to it is heterogeneity and to the fact that reinforcements are extremely abrasive and responsible for complex deformation behavior, high tool wear and inferior surface finish.

[Chapter 1](#) of this book provides the mechanics and modelling of chip formation in machining of MMC. [Chapter 2](#) is dedicated to surface integrity when machining metal-matrix composites. [Chapter 3](#) described machinability aspects of metal-matrix composites. [Chapter 4](#) contains information on traditional machining processes and [Chap. 5](#) is dedicated to grinding of metal-matrix composites. [Chapter 6](#) described dry cutting of SiC particulates reinforced metal-matrix composite. Finally, [Chap. 7](#) is dedicated to computational methods and optimization in machining of metal-matrix composites.

The present book can be used as a text book for final undergraduate engineering course or as a topic on manufacturing at the postgraduate level. Also, this book can serve as a useful reference for academicians, manufacturing and materials researchers, manufacturers, materials and mechanical engineers, professionals in composites and related industries. The interest of scientific in this book is evident for many important centers of the research, laboratories and universities throughout the world. Therefore, it is hoped that this book will inspire and enthuse other researches for this field of the machining science and technology.

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