

# Preface

Micro-manufacturing and precision manufacturing entail the use of sophisticated techniques in order to attain special manufacturing requirements, such as precision machining and finishing of various DTM, bio and smart materials; micro-manufacturing of mechanical components; machining of intricate shapes and features; and precision finishing of engineered products. To accomplish the aforementioned tasks, a number of conventional and advanced processes are strategically exploited. Therefore, knowledge of working principle, process mechanism, and control and accuracy of these processes is essential for their successful implementation.

This book consists of a total of eight chapters emphasizing novel aspects, current trends and latest developments in micro- and precision manufacturing. Chapter “[Machining of Microshapes and Features](#)” details manufacturing of micro-shapes and features by various conventional and advanced processes. Chapter “[Electrochemical Methods of Micropart’s Manufacturing](#)” describes mechanism and working of electrochemical machining for micro-parts manufacturing. Chapter “[Precision Photochemical Machining](#)” is dedicated to precision photochemical machining. Chapter “[Nano-Machining, Nano-Joining and Nano-Welding](#)” highlights the development of nano-manufacturing with focus on nano-machining, joining and welding. Ultraprecision finishing techniques for fabrication of optical components are discussed in Chapter “[Fabrication of Optical Components by Ultraprecision Finishing Processes](#)”. Chapter “[Condition Monitoring in Micro-Injection Moulding](#)” discusses the important aspects of condition monitoring in micro-injection moulding. Chapter “[Surface Finish Improvement of Additive Manufactured Metal Parts](#)” sheds light on some post-finishing methods for additive manufactured metal parts. Chapter “[Precision Coatings](#)” is an impressive note on precision coatings and highlights their principle and applications for various engineered parts.

This book is intended to facilitate the industrial, research and academic community by ensuring knowledge enrichment in theoretical and research aspects of the techniques used to fulfil various micro- and precision manufacturing requirements.

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