**Lecture Notes in Mechanical Engineering** 

Golam Kibria B. Bhattacharyya *Editors* 

## Accuracy Enhancement Technologies for Micromachining Processes



Golam Kibria · B. Bhattacharyya Editors

Accuracy Enhancement Technologies for Micromachining Processes



Editors
Golam Kibria
Department of Mechanical Engineering
Aliah University
Kolkata, India

B. Bhattacharyya Department of Production Engineering Jadavpur University Kolkata, India

ISSN 2195-4356 ISSN 2195-4364 (electronic) Lecture Notes in Mechanical Engineering ISBN 978-981-15-2116-4 ISBN 978-981-15-2117-1 (eBook) https://doi.org/10.1007/978-981-15-2117-1

## © Springer Nature Singapore Pte Ltd. 2020

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer imprint is published by the registered company Springer Nature Singapore Pte Ltd. The registered company address is: 152 Beach Road, #21-01/04 Gateway East, Singapore 189721, Singapore

## **Contents**

S. P. Leo Kumar	J
Strategies for Improving Performance of Ultrasonic Micromachining Process	23
Accuracy Improvement and Precision Measurement on Micro-EDM Amit Kumar Singh, Siddhartha Kar and Promod Kumar Patowari	47
Improvement of Profile Accuracy in WEDM—A Novel Technique Mukandar Sekh	<b>7</b> 9
Laser-based Fabrication of Micro-channels	95
Pulsed Nd:YAG Laser Cutting: Accuracy Improvement and Parametric Influences	109
Improvement in Surface Finish and Geometrical Accuracy by Laser Micro-turning	121
Accuracy Improvement Techniques in Electrochemical Micromachining (EMM)	149
Surface Micromachining—Advances and Advanced Characterization Techniques Arjyajyoti Goswami	165
Generation of Nano-Level Surface Finish by Advanced Nano-Finishing Processes A. Barman and M. Das	199