

# Preface

The 9th ICTMP meeting was held virtually in Chennai, India (24 Nov–26 Nov 2021) and is part of an international conference series. The forum took place in Gifu, Japan, 24 years ago for the first time. The overarching goal of this conference was to provide an international forum for the representation and discussion of research results in lubrication, friction, wear, and development of the tribological systems pertaining to manufacturing processes. Initially planned in 2020, the conference had to be postponed due to the global COVID-19 pandemic until November 2021. Finally, twenty-five papers were presented virtually.

The proceedings contain five thematic chapters. Three plenary lectures were given covering: (a) Advances in tribological coatings for superlubricity and ultra-high wear resistance, (b) An integrated experimental and molecular modelling approach to investigate tribological mechanics in hot rolling of metal, and (c) Overview of metal forming research in Indian Academia.

We would like to thank the scientific committee members for reviewing the manuscripts and providing constructive critical comments that helped maintain the high quality of the manuscripts. We would also like to extend our gratitude to authors who were devoted to advancing the understanding of tribological phenomena pertaining to a broad range of manufacturing processes. We are also very grateful to session chairs, student volunteers, and administrative assistants from the Indian Institute of Technology Madras, who made this virtual event successful.

These proceedings provide a record of efforts by international researchers working on tribology for manufacturing systems, and we hope that the presented articles will be helpful for you in searching for innovative engineering solutions.

## **Edited by**

Gracious Ngaile  
Pierre Montmitonnet  
Kuniaki Dohda

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**Conference secretary:** Prof. Tatsuya Funazuka, University of Toyama, JAPAN

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