

# Preface

Due to COVID-19, the 5<sup>th</sup> International Conference on Material Engineering and Manufacturing (ICMEM 2021), the 4<sup>th</sup> International Conference on Materials Design and Applications (ICMDA 2021), and the 5<sup>th</sup> International Conference on Materials Engineering and Nano Sciences (ICMENS 2021) were successfully held virtually.

We were glad that it was meaningful and worthy for us to provide the premier interdisciplinary platform for all scholars to present and discuss the most recent innovations, trends, and concerns as well as practical challenges encountered and solutions adopted in the fields of materials engineering, nanoscience and manufacturing technologies.

This book contains 28 selected papers presented at the conferences. All papers were selected based on the quality and relevance to the conference. We hope that the conference proceedings will offer the readers a good insight into the future direction of research in related field.

We would like to acknowledge all of those who supported ICMEM, ICMDA&ICMENS 2021. Special thanks extend to technical and reviewer committees for their contribution in enhancing the scientific merit and quality of the proceedings. We also express our sincere gratitude to distinguished speakers and delegates for their participation! We hope that we can see you in person in ICMEM, ICMDA&ICMENS 2022.

Conference Chairs

Prof. Akira Toriumi, The University of Tokyo, Japan

Prof. Takashige Omatsu, Chiba University, Japan

May 20, 2021

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