

Preface

Inspired from Germany's "Industry 4.0" plan, the State Council approved a plan called "Made in China 2025" in 2013, which was drafted by the Ministry of Industry and Information Technology of the People's Republic China. Its guideline is to have manufacturing be innovation-driven, emphasize quality over quantity, achieve green development, optimize the structure of Chinese industry, and nurture human talent. Although there is a significant role for the state in upgrading Chinese manufacturing industry, making it more efficient the plan also calls for the innovation design in mechanical field.

Since prehistory times, the ancient inhabitants of the earth have made design as a way to meet needs, and increasingly complex. In the days of the great scientist James Watt, who worked on the improvisation of the steam engine, mechanical engineering started developing rapidly and systematically. And nowadays, the design factor has become one of the most important aspects of mechanical engineering. With detailed design and engineering process, it can always save lots of costs and improve efficiency.

As the efficiency and quality of producers are highly uneven, if the country wants to avoid being squeezed by both newly emerging low-cost producers and more effectively cooperate with advanced industrialized economies, it need to be overcome multiple challenges in a short time. Mechanical engineering entailed an additional element of design with innovation playing a key role may result in the innovation of an entirely new automobiles, space shuttles, drilling machines, appliances, milling equipment, and much more.

Under the background of "Made in China 2025" development strategy, the 2017 International Conference on Mechanical Design (ICMD2017) has one theme as *Innovative Design Pushes "Made in China 2025"*. The conference is going to be held in Beijing, China, during November, and it is a leading conference in the field of mechanical design in China which aims to provide an international platform for researchers, scholars, and scientists to present their research advances and exchange their ideas. The scope of the conference covers a broad spectrum of areas with multidisciplinary interests in the fields of mechanical design and manufacturing for future manufacturing activities.

With over 165 submissions, the rigorous review process was held with detailed and in-depth comments on each paper. This resulted in the acceptance of 113 papers with an additional period for authors to revise their papers following the reviewers' comments. We are very pleased with the overwhelming support from authors and from the communities and with the excellent work from the authors and their serious effort to improve and finalize the papers.

This book presents a vivid development of mechanical engineering under the stimulation of the "Made in China 2025" and is a collection of the work in design and development across the disciplines. With the contributions from the authors, this book delivers a lasting impact on the study and development of mechanical design.

In compiling this book, we are pleased to see the variety of the topics, the depth of the study, and the wide range of the applications of innovative design theory. The development of innovative mechanisms is seen in the book contributing to development of mechanical design and presents a strong part for advancing the knowledge in the field and for economical development. We thank all the authors for their contributions and meticulous manner in preparing their manuscripts and thank all the reviewers for their rigorous review and detailed comments to help authors to improve their papers. Further, we thank Jingjun Yu for his dedication and persistence in checking every manuscript and contacting the authors for their revision of the manuscripts and for finalizing this book.

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In organizing the first international conference of mechanical design, we are grateful to members of the scientific committee, the program committee, and the chairs/co-chairs for rigorous peer review of papers.

We are grateful to Beijing Institute of Technology for hosting this conference and for their generous financial support. We particularly thank Professor Jibin Hu in his capacity as the Dean of the School of Mechanical Engineering and organization committee of the conference and all of the reviewers specially Jinjun Yu (Beihang University) for many fruitful works Jinjun Yu in his capacity as and thank Professor Yinan Lai of the National Natural Science Foundation of China (NSFC) for her invaluable support.

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