
Editorial

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Biographical notes: Baiyan He received his PhD degree from Tianjin University, and he is currently a full Professor at the School of Mechanical Engineering, Tianjin University. He was also the Program Director at Division II of Engineering, Department of Engineering and Materials Sciences, National Natural Science Foundation of China, in 2014–2016. His research interests are multibody system dynamics, mechanical design and theory, and he is the author over 50 journal and conferences articles of this field.

Jie Hu is currently a Professor of Mechanical Engineering at Beijing Institute of Technology (BIT). She received the National Excellent Young-Scientist Award, National Natural Science Foundation of China in 2013. She is the first author of the article on Science (Impact Factor: 34.661) and the New Century Excellent Talent awarded by the Ministry of Education. She is also the core member in the 973 program and the Innovation Group (Ministry of Education). The total citations of her articles are 230 times.

Xi (Vincent) Wang is an Assistant Professor in the Department of Production Engineering, and also the Chair of the XPRES research centre's research leading team. He is working with the division of sustainable manufacturing. He received his PhD and Bachelor in Mechanical Engineering from the University of Auckland (New Zealand) and Tianjin University (China), respectively in 2013 and 2008. His main research focus is on cloud-based manufacturing, sustainable manufacturing, computer-aided design, process planning and manufacturing. Additionally, he has been involved with STEP-compliant CNC research (ISO10303/14649) for years.

Lihui Wang is a Chair Professor at KTH Royal Institute of Technology, Sweden. His research interests are focused on cyber-physical systems, cloud manufacturing, predictive maintenance, real-time monitoring and control, human-robot collaboration, and sustainable manufacturing systems. He is actively engaged in various professional activities. He is the Editor-in-Chief of the *International Journal of Manufacturing Research*, and Editor of *Robotics and Computer-Integrated Manufacturing* and *Journal of Intelligent Manufacturing*. He has published seven books and authored in excess of 350 scientific publications. He is a Fellow of CIRP, SME and ASME, and a Board Director of North American Manufacturing Research Institution of SME.

The International Conference on Frontiers of Design and Manufacturing (ICFDM) is biennially held by the National Natural Science Foundation of China (NSFC) and Shien-Ming Wu Foundation of USA. It has over 20 years of history. Since 1994, ICFDM has become an important platform to showcase outstanding research achievements in design and manufacturing science. Besides, the conference also aims at promoting and strengthening international academic cooperation and communication. ICFDM 2016 was held in Shenyang, China during August 10–12, 2016. The conference covers research topics on the frontiers of mechanical design and manufacturing

Under the support of related worldwide researchers, 367 papers have been received for ICFDM2016. Each paper was reviewed by at least two anonymous reviewers, and two track chairs. Based on the review results and recommendation from the track chairs, 83 papers have been selected out as the candidate papers for oral presentation at ICFDM2016. After second round review, of which nine papers have been selected out recommended to submit to this special issue on *International Journal of Manufacturing Research (IJMR)*.

After received the nine submissions, each paper was reviewed at least by two reviewers for the third round and the authors were requested to revise their paper according to the comments before the final acceptance in this special issue. Due to the page limitation, eight papers are published in this issue, and the last accepted paper will be published in a regular issue. The eight papers included in this paper are briefly introduced as follows.

In the paper ‘Research on the impact of dynamic performance of Metro gear transmission system caused by track spectrum excitation’, a metro helical gear model of the bend-torsion-axes is established to explore the influence of track irregularity on the gear transmission system of urban rail transit vehicles, which consider the time-varying meshing stiffness, gear meshing error, backlash nonlinearity, etc. The paper lays a theoretical foundation for the research of the metro gear transmission system.

In the paper ‘Quantitative testing of micro-cracks by the MFL technique based on GA-BP neural network’, the authors investigate parameters identification of artificial rectangular micro-cracks ranging between 0.1~0.3 mm by using the MFL technique with a BP neural network improved by a genetic algorithm. The results provide a basis for predicting the sizes of the natural cracks.

In the paper ‘Regarding the Si content associated micro-structural characteristics on the low cycle fatigue behaviour of Al-Si/SiCp composite’, the low-cycle fatigue behaviour of the SiCp/Al-Si composites with different Si content is investigated. The experimental results show that the LCF life and cyclic stress response behaviour of the

SiCp/Al-Si composites used in the study have strong dependence on the content of Si phase.

In the paper 'Frequency analysis of a three-translation vibration isolation device', a three-translation vibration isolation device based on a parallel mechanism is studied to achieve the multi-dimensional vibration isolation and carry out frequency analysis. The results in this paper provide guidance for the optimisation design and practical application of the vibration isolation device.

In the paper 'Mechanism study on gear tooth surface texture in power honing process', the authors build the gear surface model for the bull-gear in gear box based on the involute helicoid theory, and then calculate the tooth surface model of the honing wheel based on the honing parameters and the conjugate contact principle of internal meshing.

In the paper 'Quasi-static and dynamic engraving of small calibre projectile', the authors focus on engraving small calibre projectile under quasi-static and dynamic loading conditions. They investigate the effects of the projectile structure and loading rate on the engraving process.

In the paper 'Analysis of velocity slip flow in lubrication film of aerostatic guide way in micron scale', the authors analyse the flow behaviour of gas film in aerostatic guide way by calculation of LAMMPS, LBM and FLUENT. They propose the stratification theory of gas film and simulate the flow velocity and pressure distribution of the gas film in supporting area.

In the paper 'Thermal-fluid-structure interaction analysis of bladed disk system based on Kriging model and hypothetic elastomer method', a case of multi-field coupling analysis of single-stage bladed disk system is investigated in a compressor, and the effects of different loading modes on mechanics characteristics of bladed disk system is studied.

The last accepted paper 'Reliability assessment of centrifugal compressor impeller based on the Monte Carlo method' will be published in a regular issue due to the page limitation of this issue.

This special issue has been made possible by the strong support of Professor Lihui Wang, the Editor-in-Chief of the journal *IJMR*, the joint effort of Dr. Vincent Wang who is the editor of *IJMR*, and the staff of the Editorial Office, the guest editors, over 20 authors, and over 20 referees. Thanks for the guidance from Professor Yinan Lai, the director of Mechanical Engineering Division, Department of Engineering and Materials Sciences, National Natural Science Foundation of China.