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## Editorial

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Precision, meso, micro and nano-scale engineering has been the subject of increasing interest and research in both industry and academia over the past two decades. New technology and product developments in the area of automotive, aerospace, electronics, and bio-medical industries require intricate features on products, product miniaturisation, precision manufacturing, and quality control through advanced metrology. Besides, the demand for meso/micro/nano-devices with complex design features built with superior materials has been rapidly increasing. To address these demands, precision micro and nano-engineering has been developing quickly in recent years. It is envisioned that such activities will not only facilitate the exponential development of the global economy but also aid in the scientific understanding of precision, meso, micro, and nano-scale engineering at a fundamental level.

Meso-scale devices, defined as products with the size of a sugar cube and the size of one's fist, include small chemical process systems, air and water purifiers, refrigerators and air-conditioners that weigh only grams, small robotic devices for military uses, and all manner of electronics and sensors and mechanisms that are tiny and lightweight. Manufacturing is constantly pushing toward smaller and smaller scales. This is not a consistent continuum, and in fact, micro-manufacturing which includes semiconductor manufacturing, wafer, and chip manufacturing processes, etc. is a larger field than meso-manufacturing because of exploitation of microelectronics fabrication technologies and the large markets for data storage devices. Making devices at increasingly smaller scales is one of the most exciting and challenging frontiers of manufacturing. Nanotechnology is helping to considerably improve, even revolutionise, many technologies and industry sectors: information technology, homeland security, medicine, transportation, energy, food safety, and environmental science, among many others.

The miniaturised products/components and high precision requirements often demand innovative manufacturing methods, testing, and characterisation tools/techniques. Application of precision manufacturing in aerospace, automotive industries and advances in microelectronics and biomedical engineering, look to the processing of advanced materials and fabrication of functional surfaces. The overall challenge is to achieve synergy among machining, forming and additive manufacturing techniques at meso, micro, and nano scales.

The objective of this special issue is to provide insight into recent trends in the area of precision manufacturing for readers from academia, industry and R&D organisations working in precision, meso, micro and nano-engineering. It consists of original research papers, which cover both fundamental process technologies developments as well as application of precision, meso, micro and nano-technologies which are presented during the 10th International Conference on Precision, Meso, Micro and Nano-engineering (COPEN 10) at the Indian Institute of Technology Madras, Chennai, India during 7–9 December, 2017.