
Editorial

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Biographical notes: V.K Jain received his BE from M.A.C.T. Bhopal, and ME and PhD from University of Roorkee, Roorkee. He has more than 40 years of teaching and research experience. He has served as a Visiting Professor at the University of California at Berkeley, USA and University of Nebraska at Lincoln, USA. Presently, he is a Professor at Indian Institute of Technology Kanpur. He has 300+ publications to his credit. He has written/edited seven books. He has various research areas of interest, viz. advanced machining processes (ECM, EDM, AFM, MAF, MRAF, and others), machining of advanced engineering materials, shear strain acceleration phenomenon in metal cutting, and CAPP.

Bijoy Bhattacharyya is Professor and ex-Head of the Production Engineering Department and Coordinator of Center of Advanced Study Programme under UGC and Quality Improvement Programme under AICTE of Jadavpur University. His research areas include non-traditional machining, micromachining, advanced manufacturing systems, etc. He has published 94 research papers in reputed journals and 250 research papers in conferences. Several PhDs have been completed under his guidance. He has completed several research projects. He is a recipient of various awards.

Progress of manufacturing is greatly influenced by the advancements in machining technologies. Developments in newer exotic materials and stringent design requirements forced manufacturing engineers to develop newer machining processes to cope up with the present day needs and challenges. Therefore, the goal of this special issue titled 'Recent trends in advanced machining processes' of the *International Journal of Manufacturing Technology and Management (IJMTM)* is to publish current developments in the area of advanced machining processes and to provide a common platform for discussion about how to meet the growing needs of machining technologies.

This special issue of *IJMTM* includes articles, which were reviewed by the subject experts across the globe and presented during the 4th International and 25th All India Manufacturing Technology, Design and Research (AIMTDR) Conference held at

Jadavpur University, Kolkata during December 13–15, 2012. In view of AIMTDR's global acceptance as a reputed conference, this becomes as an international event and one of the most prestigious conferences in manufacturing.

Seven papers have been selected for publication in this special issue on 'Recent trends in advanced machining processes' after revision and modification through careful reviewing process. These selected papers address the issues related to the recent advancements in advanced machining processes, ultra precision finishing, and parametric analysis and optimisation of the processes. A brief summery of the main contributions is as follows.

The first three papers in this special issue are related to nanofinishing technologies in conjunction with chemical or electrochemical machining, which finally improves the finishing rate of the hybrid process under consideration. The first paper by Ranjan, Balasubramaniam and Suri presents a hybrid finishing process viz., chemo-mechanical magnetorheological finishing (CMMRF) applied for finishing of single crystal silicon disc. This process is capable of producing sub-nanometre surface finish (0.48 nm) on the single crystal silicon disc. CMMRF is also used to carry out super finishing of metals and alloys. The second paper by Judal and Yadava reports the development of a cylindrical electrochemical magnetic abrasive machining (C-EMAM) setup. The study related to explore the finishing results of this hybrid machining process consists of electrochemical dissolution and magnetic abrasive machining to analyse the finishing results of the process on non-magnetic stainless steel workpiece using unbonded magnetic abrasive particles. The third paper in this group by Misra, Jain, Dwivedi and Mehta presents investigations into high precision finishing of bevel gears by electrochemical-mechanical finishing (ECMF) process. An indigenously developed ECMF setup for finishing of bevel gears of AISI 1040 steel was used to evaluate the process capability in improving the surface quality of gear teeth profile.

The fourth paper on thermal advanced machining process by Giridharan and Samuel presents the effect of input parameters on energy consumption, surface roughness and material removal rate on machined components turned by wire electrical discharge turning (WEDT) process. The fifth paper by Das, Doloï and Bhattacharyya describes about the investigations into surface roughness of machined hexagonal hole and material removal rate during ultrasonic machining (USM) of zirconia bio-ceramics. Multi-objective optimisation has been carried out for minimising surface roughness of machined surface and maximising material removal rate utilising genetic algorithm (GA). The sixth paper by Tiwari and Pande presents the knowledge software for material properties and fabrication parameters appropriate for the selection of materials for selective laser sintering (SLS) during additive manufacturing (AM). The last paper by Manohar, Joseph, Selveraj and Sivkumar presents the application of desirability function and response surface methodology (RSM) to multi-objective optimisation of turning of Inconel 718 using coated carbide tools.

The guest editors believe that this special issue presents recent trends on various aspects of advanced machining processes. The genuine efforts of the authors to refine and improve research articles are greatly acknowledged. We also wish to thank the referees for their availability and thorough evaluation of these articles by providing useful, critical, but supportive assessments/comments to improve the articles. We are also grateful to the organisers of AIMTDR-2012 Conference for giving us the opportunity to bring out this special issue of AIMTDR-2012. Finally, we are grateful to the Editor-in-Chief, Dr. Mohammed Dorgham of *International Journal of Manufacturing*

Technology and Management for inviting us to act as the guest editors of this special issue. We also greatly appreciate the help and cooperation extended by Dana Mitchell and Jeng Nepomuceno-Silo from Inderscience Editorial Office.