Editorial

V.K. Jain*

Mechanical Engineering Department,
Indian Institute of Technology Kanpur,
Kanpur-208 016, India
E-mail: vkjain@iitk.ac.in
*Corresponding author

Bijoy Bhattacharyya

Production Engineering Department,
Jadavpur University,
Kolkata 700 032, India
E-mail: bb13@rediffmail.com

Biographical notes: V.K. Jain has received his BE from M.A.C.T. Bhopal, and ME and PhD from University of 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. He has served I.I.T. Kanpur as a faculty member for 30 years. Presently, he is Emeritus Fellow at I.I.T. 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, machining of advanced engineering materials, shear strain acceleration phenomenon in metal cutting, and CAPP.

Bijoy Bhattacharyya is a Professor of the Production Engineering Department and Coordinator of Center of Advance 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 recipient of various awards.

With the help of a special issue, the readers are able to have many papers on one subject in one issue that facilitates to have a better assessment of the developments in that specific area of research. With this ideology in mind, the papers appearing in this special issue can be classified in two categories, one related to electrochemical machining (ECM) and its hybrid processes (electrochemical spark/discharge machining), and second related to nano-finishing processes. All these macro and meso machining processes have also been scaled down for using them as micromachining processes. The working principle in both, macro and micro machining remains the same. All the papers of this special issue were presented during the 4th International and 25th All India Manufacturing Technology, Design and Research (AIMTDR) Conference held at Jadavpur University, Kolkata (India) during December 14–16, 2012. These papers were

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re-reviewed by the subject experts across the globe before accepting them for publication, which assures their high quality standard.

The first paper of this special issue is on 'Experimental investigation of ultrasonic assisted pulse electrochemical drilling for INCONEL 718 with rotary tool' by D.S. Bilgi and P.V. Jadhav. This paper reports parametric study of the proposed process using MRR and surface roughness as objective functions. The experiments were planned based on Taguchi method and the analysis of the results was carried out using ANOVA. Second paper is on 'Optimisation of ECM process during machining of titanium using quality loss function' authored by S.D. Dhobe, B. Doloi and B. Bhattacharyya. In this work, quality loss function multi objective optimisation has been carried out by employing empirical models developed with the help of experimental data and regression analysis.

Next three papers are related to electrochemical spark/discharge machining, a hybrid process which uses thermal energy (spark energy used for melting and vaporisation of workpiece material) for material removal. This process was developed for machining mainly electrically non-conducting materials however electrically conducting materials can also be machined by this process. Third paper is authored by S.K. Chak and P.V. Rao on the 'Machining of SiC by ECDM process using different electrode configurations under the effect of pulsed DC'. The authors have used pulsed DC power supply and abrasive electrode with orbital motion to enhance the process performance. Fourth paper is authored by L. Paul, S.S. Hiremath, and J. Ranganayakulu, on 'Experimental investigation and parametric analysis of electro chemical discharge machining'. Fifth paper is from C.S. Jawalkar, A.K. Sharma and P. Kumar on 'Investigations on performance of ECDM process using NaOH and $NaNO_3$ electrolytes while micro machining soda lime glass'. A comparison of two electrolytes NaOH and $NaNO_3$ has been made. In this study, the applied voltage was found to be most influencing parameter.

Next two papers are related to nanofinishing. First one in this series is by V.S. Sooraj and V. Radhakrishnan on 'Prospective methodologies to use impact wear for micro/nano finishing of surfaces'. In this paper, regulated surface erosion through low velocity elastic impact of abrasives is analysed using experimental data. It is reported that by this process, finish can be substantially improved. The next paper is by H.S. Mali and A. Manna on 'An experimental investigation during finishing of particulate reinforced Al/10 wt% SiC_p-MMC on developed AFF setup'. They have been able to achieve surface roughness value as good as 5 nanometre in a narrow window of viewing. Last two papers are on grinding. The eighth paper of this special issue is on 'A new way of erosion-abrasion hybrid machining using slotted-diamond grinding wheel' by R.N. Yadav and V. Yadava. In this paper, a new way of hybrid process combining mechanical grinding and electrical discharge machining is proposed. This hybrid process performs better than the individual constituent processes, namely, EDM and grinding. The last paper of this issue is by R.N. Yadav, V. Yadava and G.K. Singh entitled as 'Modelling and simulation of spark assisted diamond face grinding of tungsten carbide-cobalt composite using ANN'. The experimental results have been used to train the ANN.

We highly appreciate the efforts made by the authors in improving their papers presented in AIMTDR-2012 conference held at Jadavpur University Kolkata. We are also thankful to the referees for thorough evaluation of these papers by providing useful and critical comments to improve the quality of 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. M.A. 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.