
Editorial

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Biographical notes: Vijay Kumar Jain obtained his MTech and PhD from the University of Roorkee (now IIT Roorkee). He has about 38 years of teaching and research experience. He has won three gold medals, two silver medals and one best paper award as recognition to his research work. He is editor of three international journals, Associate Editor of *International Journal of Advanced Manufacturing System* and member of the editorial board of ten international journals. He has around 200 publications to his credit. He has also written five books. He has various research areas of interest, viz. advanced machining and nanofinishing.

This special issue has the selected re-reviewed research papers from those papers that were presented in the ‘micromachining’ session of the 3rd International and 24th All India Manufacturing Technology Design and Research Conference (AIMTDR) held at Visakhapattanam, India. This is a bi-annual conference attended by the participants from India and abroad in large number.

The demand of industries for μ -machining and nanofinishing of various types of materials (metallic, ceramics and plastics) is increasing day by day. Miniature parts have applications in various industries like electronics, medicines, communications, avionics and others. Some of the examples of the products that require μ -machining are micro holes in fibres, micro nozzles for high temperature jets, micro moulds, etc. Conventional methods (turning, drilling, etc.) with modified versions have been employed for μ -machining of various types of materials. Conditions for chip production during conventional material removal processes (at μ level) are affected by molecular scale phenomenon. The depth of cut is in the range of nanometers ($= 10^{-9}$ m).

This special issue consists of seven research papers related to the field of ‘micromachining and nanofinishing’. Out of these seven papers, three papers are based on advanced micromachining processes, next three are dealing with the investigations into traditional micromachining and the last paper reports about the advanced nanofinishing technique.

Balasubramaniam et al. deal with the effects of the condition of the electrode on the accuracy of micro-drilled holes using EDM process. Kibria et al. have reported the findings related to the optimisation of process parameters of Nd: YAG laser micro-Turning. The optimisation has been carried out using response surface methodology. The third paper discusses a hybridised process related to some investigations into pulse electrochemical honing of gears. In this work, the optimum values of electrolyte composition and temperature have been obtained by graphical analysis technique.

Next three papers report investigations in traditional micromachining processes. First paper of this class presents the investigations about the various aspects of mechanical micromachining. It deals with the effects of tool edge radius, size effect, minimum chip thickness, etc., on the process performance. In the second paper, Giridhar et al. have reported an approach for identification of mode of micro grooving in sintered alumina. In the third paper, Raju et al. have reported investigations about honing operation. Last paper of this special issue reports the nanofinishing of both magnetic and non-magnetic materials using magnetic abrasive finishing (MAF) process while it is normally believed that MAF is capable to finish only non-magnetic materials.

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