Editorial

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Biographical notes: Kevin Chou is a Professor in Mechanical Engineering Department at The University of Alabama. He received his PhD in Industrial Engineering from Purdue University. His teaching and research interests include design and manufacturing, CAD/CAM, mechanics, material, metrology, and tribology.

Jarred C. Heigel worked for six years as a Government Contractor for the National Institute of Standards and Technology. While at NIST, he worked on several research projects focused on manufacturing process metrology. He has since left KT Consulting, Inc. and has enrolled at Penn State as a NSF Fellow to pursue his PhD in Mechanical Engineering.

J. Paulo Davim received his PhD in Mechanical Engineering from University of Porto in 1997 and the Aggregation from University of Coimbra in 2005. Currently, he is an Aggregate Professor in Department of Mechanical Engineering of the University of Aveiro and the Head of MACTRIB – Machining and Tribology Research Group. He has more 24 years of teaching and research experience in manufacturing, materials and mechanical engineering with special emphasis in machining and tribology. He is the editor of five international journals, guest editor, editorial board member, reviewer and scientific advisory for many international journals and conferences. He has also published more than 300 articles in journals and conferences (more 150 articles in ISI Web Science, h-index 15).

Machining process metrology has long been studied for not only process performance improvement, but also for process understanding. These process characteristics include forces, temperatures, strain and strain rates, tool wear and part quality, etc. With machining simulations and applications further modernised, accurate assessments of such process characteristics are essential for model validations as well as to enable the industry with such modelling capability for production efficiency. Moreover, for emerging machining processes such as micro-scale machining and high-speed machining, process metrology is even more challenging because of the spatial and temporal resolutions needed and the elevated uncertainty. On the other hand, effective machining process monitoring and control rely on the high-fidelity measurements of such process characteristics. This special issue of the *International Journal of Machining and Machinability of Materials (IJMMM)* includes six research articles related to various aspects in machining process metrology including cutting tool temperature measurements, machined surface roughness measurements, dimensional and profile evaluations in wire electrical discharge machining, cutting force measurements in peripheral milling, the material removal mechanism in abrasive jet machining, and cutting edge geometry measurements. A brief summary of the main contributions is discussed below.

The first article is related to cutting temperature metrology. Whitenton reports possible sources of uncertainty in cutting temperature measurements by infrared thermography. The second article by Kamguem et al. examines machined surface roughness using a vision-based methodology. The special issue continues with a paper on cutting force modelling and measurements in peripheral milling by Mehdi and Zghal. Following that, a paper from Dhake and Samuel investigates dimensional and profile measurements in wire electrical discharge machining. Next, Li et al. investigate the material removal mechanism in an abrasive jet finishing process. Finally, White et al. apply white-light interferometry to measure and analyse the cutting edge geometry of diamond-coated cutting tools.

The Guest Editors would like to thank all the authors and all the referees for their availability and their thorough evaluations of these papers.