

Special Issue: MED's 100th Anniversary

We are delighted to present to our manufacturing community a Special Issue in the Journal of Manufacturing Science and Engineering (JMSE) to celebrate the 100th anniversary of the Manufacturing Engineering Division (MED) of ASME. MED, formerly known as the Machine Shop Practice Division (1921-1940) then Production Engineering Division (1940-1996), has continued to be an international catalyst for scientific and technological advancements in manufacturing research, which is the foundation for generating wealth, improving the standard-of-living, and protecting the environment for our society.

In 1997, a special issue to celebrate the 75th anniversary of MED with several landmark review papers was published. In the subsequent 25 years, the manufacturing industry and research community have witnessed transformative changes at an unprecedentedly rapid pace. Internet proliferation and low-cost computing have enormously influenced the foundation of advanced manufacturing. Pro-manufacturing national policy changes in major manufacturing countries have also played a critical role in scientific evolution. Visibility of the importance of manufacturing to prosperity and a substantial increase in research activity investment in advanced manufacturing have been motivated by reports of the Advanced Manufacturing Partnership (AMP) in 2012 and AMP 2.0 in 2014 in the United States, the final report of Industry 4.0 in 2013 in Germany, the Made-In-China 2025 published in 2015, and numerous other instituted national manufacturing policies.

Progress in critical areas of manufacturing research are documented in the 18 peer-reviewed keynote papers in this special issue, which provide a comprehensive summary of advancements in manufacturing science and engineering in industry and academia. Some papers were invited to cover traditional and fundamental manufacturing topics such as: tribology, metal forming, surface damage in ultraprecision machining, abrasive machining, a materials view of metal cutting, micro/meso-scale mechanical machining, manufacturing process control, laser material processing, welding, additive manufacturing, sustainable machining, and chatter stability in machining. Papers on all of these topics highlight the transformative advancements in the past 25 years. New topics in manufacturing, including artificial intelligence, decentralized and distributed production, intelligent maintenance systems, Internet of Things for manufacturing, biomedical manufacturing, and industrial

sustainability, reflect the continuously changing landscape in manufacturing research and the great potential of manufacturing to impact our society.

Some authors have dedicated their papers to the intellectual giants who transformed manufacturing research in the past 25 years. Papers in this special issue are dedicated to the memory of our colleagues: Professors Dick DeVor, Dave Dornfeld, Dick Kegg, Fred Ling, Steve Malkin, P.L.B. Oxley, John Schey, Milton Shaw, Jiri Tlustý, S.A. Tobias, and S.M. Wu. We are also delighted to honor the influential emeritus Professors: Yoram Koren, Galip Ulsoy, and William Wilson.

Engaging the manufacturing community for their input has been a key goal of the guest editors from the start of planning. We were humbled to learn that it is difficult to be perfect in every step of the planning and preparation of this special issue, but greatly appreciate the dedication and efforts of guest authors to make changes and adjust their content to result in a cohesive and integrated issue worthy of the centennial MED anniversary. Reporting our progress back to the manufacturing community during the preparation stage was carried out during the 2019 ASME Manufacturing Science and Engineering Conference (MSEC) in Erie, PA, USA to gather feedback from the research community at large. We would like to especially acknowledge the presenting authors, as well as Dr. Ihab Ragai, the host of the 2019 MSEC, for his support to make this engagement with the manufacturing community a great success. We are planning to have a presentation of the final papers at the 2021 MSEC conference, hosted by the University of Cincinnati.

Special thanks are particularly warranted for the JMSE Editor-in-Chief, Dr. Y. Lawrence Yao, and editorial assistant, Emily R. Bosco, for their professional support and timely assistance throughout the paper review and production process for this special issue. This has truly been a team effort with all members taking on significant duties. We hope you find the result a testament to the range of innovation that has emerged in the manufacturing field in the past 25 years, and an inspiration to your own future in manufacturing.

Thank you,
Guest Editors Albert Shih and Laine Mears

Chairs of the MED in the preceding 25 years: 1995-1996 W. E. Alzheimer, 1996-1997 E. Kannatey-Asibu, Jr., 1997-1998 K. (Subbu) Subramanian, 1998-1999 Gloria Wiens, 1999-2000 Jay Lee, 2000-2001 John Sutherland, 2001-2002 Richard J. Furness, 2002-2003 Amit Bagchi, 2003-2004 Jun Ni, 2004-2005 Scott Smith, 2005-2006 David Stephenson, 2006-2007 Steven Liang, 2007-2008 Michael Molnar, 2008-2009 Jian Cao, 2009-2010 Bin Wei, 2010-2011 Lawrence Yao, 2011-2012 Matthew Bement, 2012-2013 Cedric Xia, 2013-2014 Brad Kinsey, 2014-2015 Xiaoping Yang, 2015-2016 Brian Paul, 2016-2018 Shawn Moylan, 2018-2019 Kevin Chou, 2019-2020 Radu Pavel, 2020-2021 Laine Mears.



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