Journal of Electronic Packaging

Guest Editorial

Special Section on IMECE 2016

ASME's International Mechanical Engineering Congress and Exposition (IMECE), held from Nov. 11 to 17, 2016, at the Phoenix Convention Center, Phoenix, AZ, is the largest interdisciplinary mechanical engineering conference in the world. IMECE plays a significant role in stimulating innovation from basic discovery to translational application. It fosters new collaborations that engage stakeholders and partners not only from academia but also from national laboratories, industries, research settings, and funding bodies. In 2016, the ASME Electronic and Photonic Packaging Division (EPPD) co-organized the technical track on Micro- and Nano-Systems Engineering and Packaging. Authors and presenters were invited to participate in this event to expand international cooperation, understanding, and promotion of efforts in the area of electronics and photonics packaging. Technical publications were presented in a broad range of relevant areas, including: (1) quality and reliability of electronics and photonics packaging; (2) manufacturing processes, materials, and flexible technologies; (3) advanced 2.5D/3D packaging; (4) thermoelectric devices; (5) thermal modeling techniques; and (6) electronics and photonics thermal management, with special invited talks on the topics of electrocaloric cooling and high-bandwidth packaging challenges. Based on the conference peer-reviews, the authors of few select papers were invited to submit a paper for this Special Section issue. These papers were then subject to the independent peer-review process in accordance with the editorial procedures of the ASME *Journal of Electronic Packaging* (JEP).

This final volume comprises 12 papers that exemplify EPPD's dissemination of knowledge related to the application of engineering approaches, analysis, design, manufacturing, testing, and reliability of microelectronics and photonics components, devices, equipment, and systems. Broadly, the papers discuss a range of novel methodologies for testing and characterization of fracture-based failures, interfacial adhesion strength, and other characteristics that determine the thermomechanical integrity, response, and reliability of electronic packages. These are supported by the development of physics-based compact models for the prediction of component stresses, heat conduction, and interfacial thermal resistances. Thermal management solutions, and their reliability, are explored over a range of scales at the die, package, component, and facilities levels.

This collection of papers will be an excellent resource for the readers and subscribers of the ASME *Journal of Electronic Packaging*. We gratefully acknowledge all of the authors whose work appears in this Special Section. We would also like to acknowledge the reviewers of the journal and JEP Editor Professor Y. C. Lee for their support and cooperation.

Justin A. Weibel
School of Mechanical Engineering,
Purdue University,
585 Purdue Mall,
West Lafayette, IN 47907
e-mail: jaweibel@purdue.edu

S. Ravi Annapragada
United Technologies Research Center,
411 Silver Lane, MS 129-89,
East Hartford, CT 06108
e-mail: annaprs@utrc.utc.com