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Journal of Electronic Packaging

Guest Editorial

Special Issue on InterPACK2022

The International Technical Conference and Exhibition on Packaging and Integration of Electronic and Photonic Microsystems (InterPACK) is a flagship conference of ASME Electronic and Photonic Packaging Division (EPPD). Since 1992, InterPACK has been a premier international conference for the exchange of state-of-the-art knowledge in research, development, manufacturing, and applications of electronics packaging and heterogeneous integration. The international nature of the meeting has been highly beneficial in promoting global interactions between industry, academia, research institutions, funding agencies, startups, and entrepreneurs. InterPACK2022 was held in Garden Grove, CA, USA, on Oct. 25–27, 2022 and it had ten tracks of Heterogeneous Integration, Servers of the Future, Edge and Cloud Computing, Internet of Things, Additive Printed Electronics, Flexible and Wearable Electronics, Photonics and Optics, Power Electronics, Energy Conversion and Storage, and Autonomous, Hybrid and Electric Vehicles.

Artificial intelligence (AI)/Large Language Model (LLM) based Generative AI have changed everyone's life and work model with introduction of ChatGPT and other models/applications since early 2023. The rise of AI drives demands for more powerful hardware for computing, increased network bandwidth and new memory technology for significant memory capacity and bandwidth. IC packaging has become more critical to extend Moore's law of Integrated Circuit (ICs) to better performance, more functionality, ever higher density, with improved energy efficiency, while the conventional method of scaling transistor size by lithography getting more costly. Heterogeneous integration, which integrates chiplets fabricated in different silicon nodes or specialty fab processes through 2.5D/3D advanced packaging into one packaged device can provide maximum device performance with much faster product development cycle, lower cost, and higher yield. However, all these bring new challenges to IC packaging industry from all perspectives, new materials, modeling techniques, thermal management, and signal integrity/power integrity (SI/PI), to name a few. The seven papers selected into this Special Issue for InterPACK2022 cover a broad range of topics for addressing some fundamental challenges in advanced packaging. The topics include: (1) lead-free solder material characterization for interconnects, (2) additively printed electronics using aerosol-jet and screen-printed silver ink, (3) novel thermal management development via jet impingement cooling and two-phase immersion cooling, and (4) application of AI to automotive sensors in thermal management. All papers published in this JEP Special Issue for InterPACK2022 went through a standard peer-review process for journal papers published by ASME.

We would like to thank all the authors who have revised their original conference papers to fit this Special Issue and the reviewers who have made significant contributions to help improve quality of the papers. We also want to express our sincere thanks to the ASME JEP Editor-in-Chief (EIC), Professor Shi-Wei Ricky Lee for his guidance and support, and the assistant to EIC, Dr. Jeffery Lo for his help in this journey.

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