Guest Editorial

THE IEEE 9th Topical Meeting on Electrical Performance of Electronic Packaging (EPEP) was held in Scottsdale, AZ, from October 23–25, 2000. The meeting included 54 oral presentations, 23 poster papers, and seven short courses. A total of 16 papers presented by students competed for two Best Paper Awards. The awards were sponsored by Intel Corporation and IBM Corporation. This TRANSACTIONS' Mini-Special Issue contains significantly expanded versions of the papers presented at the IEEE EPEP Meeting. A total of ten papers were selected from 12 submitted papers. The papers were selected based on the standard IEEE Microwave Theory and Techniques Society (IEEE MTT-S) review process.

The IEEE EPEP Meeting provides a forum for the presentation and discussion of the latest advances in electrical design, analysis, and characterization of on-chip and package interconnections and structures for digital, mixed-signal, RF, microwave, and millimeter-wave applications. The meeting is aimed at bringing together researchers and practicing engineers from industry, universities, and government laboratories from around the world to address all current and future issues affecting the electrical performance of high-speed electronic systems. The uniqueness of this meeting is that it provides an environment for the cross fertilization of ideas between the digital and microwave communities. This is necessary for realizing future systems that contain mixed-signal electronics consisting of digital, analog, RF, microwave, and microelectromechanical system (MEMs) interfaces.

The selected papers address important areas arising in packaging such as accelerated techniques for transmission-line simulation, modeling of interconnects, library development, millimeter-wave package integration, micromachining, and microwave measurements. The paper by Becker *et al.* discusses a novel fully packaged planar line-to-silicon micromachined waveguide for a Ka-band transition. In the paper by Coperich *et al.*, a systematic method for the development of transmission-line models containing frequency-dependent parameters is discussed. The advantage of this approach is that no assumptions are made about the frequency dependence and the method is compatible with existing model-reduction techniques. The paper by Dounavis *et al.* discusses a method for the macromodeling of multiport distributed interconnects. Specifically, this paper addresses the matrix-rational approximation of exponential functions that can be incorporated into already developed model-reduction techniques. In the paper by Abhari *et al.*, a method is discussed for developing computer-aided design (CAD) models for through and buried vias in a parallel-plate environment. These models lead to efficient simulation of vias as compared to the more conventional full-wave simulations. The paper by Suzuki *et al.* addresses a method for the simulation of interconnects for a multiinput multioutput network based on sampled data. In the paper by Sutono *et al.*, the implementation and characterization of an integrated component library in low-temperature co-fired ceramic (LTCC) is discussed. This paper also discusses the feasibility of realizing a 1.9-GHz CMOS power amplifier using integral passives. In the paper by Hu *et al.*, in which the authors use Hermite expansion functions to approximate sampled data. Through these expansion functions, partial sampled data in the time and frequency domains can be used to approximate the response over a large bandwidth. The paper by Zheng *et al.* uses a quasi-static integral formulation for computing the frequency-dependent resistance and inductance parameters for coupled interconnects on silicon. An equivalent-circuit model is then developed, which includes substrate and proximity effects. The paper by Lee *et al.* uses a micromachined optical near-field mapping probe to measure the coupling between microstrip lines. This method provides insight into the coupling mechanism that cannot be obtained by conventional measurement equipment. The paper by Pham *et al.* addresses the development of a millimeter-wave system on a package operating at 60 GHz using multilayer polyimide multichip-module (MCM) technology.

We would like to thank the following reviewers for completing the reviews in a short time. In addition, we would like to thank the authors of these papers for working through their respective Christmas breaks to submit expanded versions of their papers. We would also like to thank the IEEE EPEP Technical Program Committee for the initial screening of the papers and Prof. R. York, School of Electrical and Computer Engineering, University of California at Santa Barbara, for his continued support during the review process.

R. Achar	R. W. Jackson
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MADHAVAN SWAMINATHAN, *Guest Editor*
Georgia Institute of Technology
School of Electrical and Computer Engineering
Atlanta, GA 30332-0250 USA

ROBERT W. JACKSON, *Guest Editor*
University of Massachusetts
School of Electrical and Computer Engineering
Amherst, MA 01003 USA

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Madhavan Swaminathan (A'91–M'95–SM'98) received the M.S. and Ph.D. degrees in electrical engineering from Syracuse University, Syracuse, NY, in 1989 and 1991, respectively.

He is currently an Associate Professor in the School of Electrical and Computer Engineering and a Research Director at the Packaging Research Center, Georgia Institute of Technology, Atlanta. Prior to joining the Georgia Institute of Technology, he was with the Advanced Technology Division, Packaging Laboratory, IBM, East Fishkill, NY, where he was involved with the design of high-performance computer systems. At IBM, he received the second invention plateau based on his inventions. He has authored or co-authored over 100 publications in refereed journals and conferences, and has co-authored three book chapters. He holds eight patents with seven patents pending. His research interests are in electromagnetic modeling, circuit modeling, characterization, and testing of high-frequency digital and mixed-signal integrated-circuits (ICs) and packages.

Dr. Swaminathan served as the cochair for the 1998 and 1999 IEEE Topical Meeting on EPEP. He served as the technical and general chair for the International Microelectronics and Packaging Society (IMAPS) Next-Generation Integrated-Circuit and Package Design Workshop. He serves as the chair of TC-12, the Technical Committee on Electrical Design, Modeling and Simulation within the IEEE Components, Packaging, and Manufacturing Technology (IEEE CPMT) Society and is the co-chair for the 2001 IEEE Future Directions in IC and Package Design (FDIP) Workshop. He is the co-founder of the IMAPS Next-Generation IC and Package Design Workshop and FDIP Workshop. He also serves on the Technical Program Committees of the IEEE EPEP, Signal Propagation on Interconnects (SPI) Workshop, Solid-State Devices and Materials (SSDM) Conference, Interpack, and ISQED. He was a guest editor for the IEEE TRANSACTIONS ON COMPONENTS, PACKAGING, AND MANUFACTURING TECHNOLOGY—A and the IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES. He also serves as the associate editor for the IEEE TRANSACTIONS ON COMPONENTS, PACKAGING, AND MANUFACTURING TECHNOLOGY.

Robert W. Jackson (M'82–SM'88) received the B.S., M.S., and Ph.D. degrees from Northeastern University, Boston, MA, in 1975, 1979, and 1981, respectively.

From 1981 to 1982, he was an Assistant Professor in the Department of Electrical Engineering, Northeastern University. In 1982, he joined the faculty of the University of Massachusetts at Amherst, where he is currently a Professor of electrical and computer engineering. His primary research and teaching interests center on microwave and millimeter-wave electronics, especially integrated circuits. In particular, he has contributed in the areas of numerical modeling of microstrip and coplanar-waveguide circuits, novel printed structures in coplanar waveguides, and the modeling of packages for microwave and millimeter-wave integrated circuits. He has also developed computer-aided-design (CAD) routines for ferrite phase-shifter design and has consulted on topics connected with fiber optics for microwave applications.