DESCRIPTION

Although there is increasing need for modeling and simulation in the IC package design phase, most assembly processes and various reliability tests are still based on the time consuming “test and try out” method to obtain the best solution. Modeling and simulation can easily ensure virtual Design of Experiments (DoE) to achieve the optimal solution. This has greatly reduced the cost and production time, especially for new product development. Using modeling and simulation will become increasingly necessary for future advances in 3D package development. In this book, Liu and Liu allow people in the area to learn the basic and advanced modeling and simulation skills to help solve problems they encounter.

• Models and simulates numerous processes in manufacturing, reliability and testing for the first time

• Provides the skills necessary for virtual prototyping and virtual reliability qualification and testing

• Demonstrates concurrent engineering and co-design approaches for advanced engineering design of microelectronic products

• Covers packaging and assembly for typical ICs, optoelectronics, MEMS, 2D/3D SiP, and nano interconnects

• Appendix and color images available for download from the book’s companion website

Liu and Liu have optimized the book for practicing engineers, researchers, and post-graduates in microelectronic packaging and interconnection design, assembly manufacturing, electronic reliability/quality, and semiconductor materials. Product managers, application engineers, sales and marketing staff, who need to explain to customers how the assembly manufacturing, reliability and testing will impact their products, will also find this book a critical resource.
ABOUT THE AUTHOR

**Sheng Liu** is a ChangJiang Professor of Mechanical Engineering at Huazhong University of Science and Technology. He holds a dual appointment at Wuhan National Laboratory for Optoelectronics, and has served as tenured faculty at Wayne State University. He has over 14 years experience in LED/MEMS/IC packaging and extensive experience in consulting with many leading multinational and Chinese companies. Liu was awarded the White House/NSF Presidential Faculty Fellowship in 1995, ASME Young Engineer Award in 1996, and China NSFC Overseas Young Scientist in 1999. He is currently one of the 11 National Committee Members in LED under Ministry of Science and Technology. He obtained a Ph.D. from Stanford in 1992, and got MS and BS in flight vehicle design, Nanjing University of Aeronautics and Astronautics, and he had three years industrial experience in China and USA. He has filed more than 70 patents in China and the USA, and has published more than 300 technical articles.

**Yong Liu** is a global team leader of electrical, thermal-mechanical modeling and analysis at Fairchild Semiconductor Corp in South Portland, Maine. His main interest areas are IC packaging, modeling and simulation, reliability and material characterization. He has previously served as Professor at Zhejiang University of Technology, and has worked as an opto package engineer at Nortel Networks in Boston. Liu has co-authored over 100 papers in journals and conferences, has filed over 40 US patents in the area of IC packaging and power device, and has won numerous awards and fellowships in academia and industry: the Fairchild President Award, Fairchild Key Technologist, Fairchild New Product Innovation Award, the Alexander von Humboldt European Fellowship for study at Braunschweig University of Technology and University of Cambridge. Liu holds a PhD from Nanjing University of Science and Technology.

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