Special Issue of IEEE Transactions on Device and Materials Reliability
INTERFACE RELIABILITY

The issue scheduled for publication December 2003, is designed to address the increasing tendency for critical interfaces to crack, delaminate and cause reliability failure particularly as the industry migrates to copper low-k with its poor mechanical properties and poor adhesion. However, the issues discussed are applicable well beyond copper low- k pertaining to any composite structure fabricated from dissimilar materials where the mechanical loading effects will most frequently result in interface fracture.
The issue begins by highlighting two papers that have similar approaches for finite element multi-level sub modeling methodology. Similar conclusions regarding the deleterious effect of organic substrates on copper low- k are reached. Another modeling paper presents an in-depth mathematical treatment of interface fracture. Finally two more modeling papers address die attach delamination during assembly and solder reflow. Changing focus, two papers address prediction of stiction failures in MEMs and chemical approaches to reducing stiction. Finally, a paper dealing with the non-destructive analytical approaches to investigate interface integrity is presented.

Analysis of Flip Chip Packaging Challenges on Copper Low-k Interconnects
Lei Mercado, Cindy Goldberg, Shun-Meen Kuo, Tien-Yu Tom Lee, Scott Podzer
Motorola, Tempe, Az

Packaging Effects on Reliability of Copper Low-k Interconnects
Guotao Wang, Caroline Merrill, Paul S. Ho, University of Texas, Austin
Steve Groothuis, Micron Technology Austin, Texas
Jie-Hua (Jeff) Zhao, Motorola, Austin, Texas

Mechanics of Interface Fracture with Applications in Electronic Packaging
Herman F. Nied, Lehigh University

A Study of Delamination Growth in the Die Attach Layer of Plastic IC Packages under Hygrothermal Loading during Solder Reflow
A.A.O. Tay and K.Y. Goh, National University of Singapore

The Prediction of Stiction Failures in MEMs
W.Merlijn van Spengen, Ingrid De Wolf, IMEC, Robert Puers, Dept. K.U.Leuven

Vapor Phase Anti-Stiction Coatings for MEMs
W.Robert Ashurst, C. Carraro, R.Maboudian, University of California, Berkeley

Understanding the Strength of Epoxy-Polyimide Interfaces for Flip Chip Packages
Pat Hootrakul, L.H. Sperling, R.A.Pearson, Lehigh University

Thermo-Mechanical Analysis of Gold Based SiC Die Attach Assembly
Karumbu Meyyappan, Patrick McCluskey, University of Maryland
Liang Yu Chen, NASA GRC

Investigation of Interfaces with Analytical Tools
Rajen Dias, Intel, Chandler, Az

Guest Editors

Dr. Richard Blish	**Dr. Aris Christou**	**Dr. Robert Thomas**	**Dr. Gay Samuelson**
AMD	**U. Maryland**	**JTKnet**	**Intel**

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