

Workshop Goals

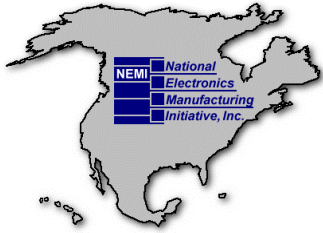


The goal of this workshop is to bring together modelers and experimentalists to

- < define the state-of-the-art in reliability modeling and mechanical property measurements of solder joints made with lead-free solders
- < determine the "necessary and sufficient" experimental data modelers need
- < describe the changes needed to improve modeling and data, including failure criteria
- < develop a consensus on the best test methods for collecting needed data
- < complete the assessment of missing high priority data



Connect with and Strengthen Your Supply Chain



Workshop on Modeling and Data Needs for Lead-Free Solders

Sponsored by NEMI, NIST, NSF, and TMS
New Orleans Convention Center, Room 240
February 15, 2001 - New Orleans, LA



8:30 **Welcome** - Review of workshop objectives. Preview of strawman test methods -
Carol Handwerker - NIST

8:45 **NEMI Task Force Overview** - Ron Gedney -NEMI- and Jasbir Bath - Solectron

9:15 **NSF Assessment of Environmental Issues in Electronics Manufacturing** -
Cynthia Murphy - University of Texas, Austin

9:45 **NIST Advanced Technology Program** - Carol Handwerker - NIST

10:00 Ahmer Syed - Amkor

Overview of Reliability Models and Data Needs

What are the various types of reliability models for lead-free solders?

What is common in all of the reliability models available for lead-free solders?

Are these models sufficient to describe the properties?

What data are needed for these models, for the modeling community?

If we collect the data that the modelers request, will it be enough to make accurate
predictions of reliability?

10:40 Leon Keer - Northwestern University

Constitutive and Damage Accumulation Modeling

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predictions of reliability?

11:20 Chris Bailey - University of Greenwich

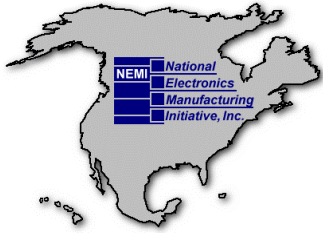
Manufacturing and Reliability Modeling

Interaction between manufacturing models and reliability models

Sensitivity of reliability to solder joint shape and complex stress states

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- 1:00 Darrel Frear - Motorola
Experiments needed to characterize solder joint behavior
What is the set of experiments needed to completely characterize solder joint behavior as input into reliability modeling ?
Strengths and weaknesses in existing techniques
What improvements are necessary?
- 1:40 Alek Zublewicz - Motorola
Experiments needed to characterize solder joint behavior
What is the set of experiments needed to completely characterize solder joint behavior as input into reliability modeling ?
Strengths and weaknesses in existing techniques
What improvements are necessary?
Alek will emphasize microstructural information needed.
- 2:20 **Discussion of Modeling and Data/Database Needs**
Moderators: Jasbir Bath and Carol Handwerker)
- 3:00 Break
- 3:15 Continued: **Discussion of modeling and data/database needs**
- 4:00 Summarize needs and opportunities; define action items
- 4:30 Adjourn



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