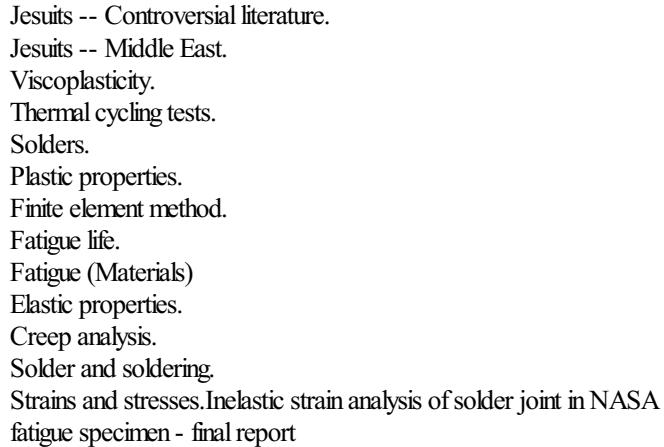


Inelastic strain analysis of solder joint in NASA fatigue specimen - final report

University of Maryland - The influence of prior strain rate on stress relaxation in solder alloys

Description: -



NASA contractor report -- NASA CR-187864.

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Inelastic Strain Analysis of Solder Joint in NASA Fatigue Specimen

As a result, the frequency-modified Coffin—Manson model was introduced by Shi et al. It combines the measured thermal fatigue crack growth rate of the corner solder joint and simulates nonlinear fracture characteristics average strain energy density per cycle around the crack tip of the corner solder joint with different crack lengths.

A State

Finite element analysis and simulation of adhesive bonding, soldering and brazing: A bibliography (1976)

In the second part, the specimens were subjected to two levels of stress: a stress amplitude for number of cycles and then lower stress amplitude for a given number of cycles.

A State

Damage pre-cursors based health management and prognostication methodology has been presented for electronic systems in harsh environments. Similar work is shown in Ref.

Feature extraction and damage

Some common information is repeated for self-completeness. . The creep and fatigue of solder joints are mainly due to the mismatch of coefficient

of thermal extension CTE between component and PCB.

Inelastic Strain Analysis of Solder Joint in NASA Fatigue Specimen

Plastic Strain-Based Fatigue Model Failure in low-cycle fatigue LCF is mainly due to cyclic plastic deformation.

Feature extraction and damage

This information forms an important input for fatigue damage models, when predicting the fatigue life of solder joints under thermal cycling.

A new experimental method to evaluate creep fatigue life of flip

For most of the solder materials, creep develops in three stages: primary, secondary, and tertiary creep. With all the partitioned cyclic fatigue life known, Miner's rule was used to predict creep-fatigue life for each solder alloy Akay et al. Finite element modeling was also performed to confirm the agreement of deformation of the solder joints under mechanical and thermal loading.

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