Electronics & Devices

Hitachi Research Laboratory
Mechanical Engineering Research Center

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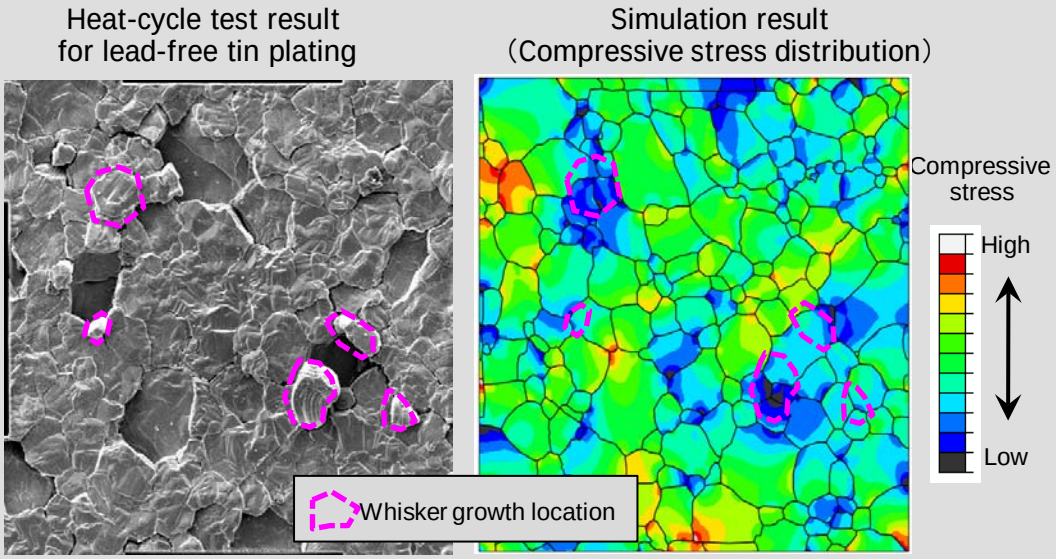
Simulation of whisker growth phenomena in lead-free tin plating



Hitachi, Ltd. and Renesas Electronics Corporation have co-developed a simulation technology to simulate the whisker formation phenomenon, which may cause failures in electric and electronic devices. A whisker is the crystal-hillock extrusion occurring on lead-free tin plating.

The new technology cuts the time and costs involved in development by providing predictions of reliability tests within a few days while actual tests take more than one month.

Features of the technology developed

This technology predicts where whisker formation occurs, by calculating the transport of tin atoms induced by the stress gradient in lead-free tin plating.

Whisker formation can be suppressed by controlling the shape and crystal orientation of the tin plating.

Future directions

This technology will contribute to increasing the reliability of electric and electronics devices which use environmentally-friendly materials such as lead-free tin plating and solder.

Conference presentation

This result was presented at the 25th Spring meeting of the Japan Institute of Electronics Packaging, held at Yokohama National University from 8th - 10th March 2011.

A word from the development team

We hope to promote this technology to contribute to the design of environmentally-friendly materials as well as increasing the long-term reliability of electronic equipment.