



Contribution ID: 94

Type: Poster

Combining in-situ synchrotron XRD and in-situ SEM to characterise the microstructure change of Sn-Bi based solder alloy during heating

With increased interest in Sn-Bi based low temperature solder alloys in electronic packaging industries, understanding the changes of the microstructure during heating is essential for improving reliability and enabling wider application. In this study, in-situ heating synchrotron powder X-ray diffraction (PXRD) was adopted to investigate the change in lattice parameters of the Sn and Bi phases in a Sn-37wt%Bi alloy during heating. The results revealed that the change in lattice parameters of Sn and Bi depend not only on temperature but also the concentration of Bi in Sn and Sn in Bi. These results indicate significant changes in the microstructure during heating. In-situ scanning electron microscopy (SEM) with a heating stage was used to investigate how the microstructure of Sn-37wt%Bi develops at different temperatures. The results provide a deep insight into the changes in crystal structure and microstructure of Sn-Bi based solder alloys during thermal cycling in a temperature range relevant to service conditions in electronic devices.

Level of Expertise

Student

Presenter Gender

Man

Pronouns

He/Him

Do you intend to attend UM2022

Unsure at this stage

Students Only - if available would you be interested in student travel funding

Yes

Students Only –Do you wish to take part in the Student Poster Slam

Yes

Terms and conditions (Please confirm that you have read all the requirements and agree to the conditions)

Yes

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