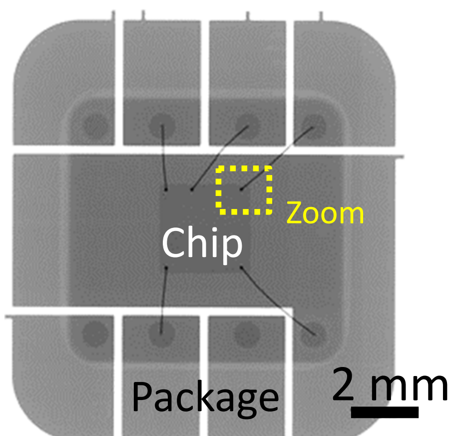
Cross-sectional EBSD analysis of wire bonding inside a package located by XRM

The layout of chips and wires inside a semiconductor package cannot be determined from the outside. Examples of XRM observation for wire bonding positions inside a package and the following cross-sectional processing and EBSD analysis are shown.

XRM: X-Ray Microscope, EBSD: Electron Back-Scattering Diffraction

1. Observation of the inside of a package by XRM

Identification of wire bonding location by XRM.
→ Cross-sectional processing at the center of the wire bonding.



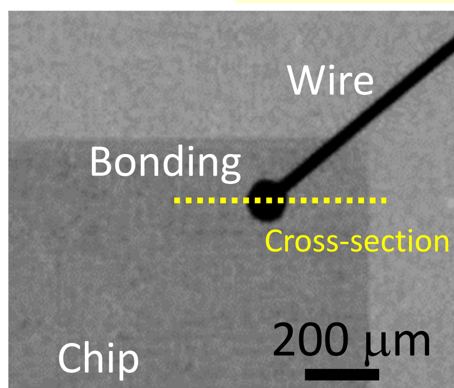


Fig.1. Top-view XRM images of the semiconductor package

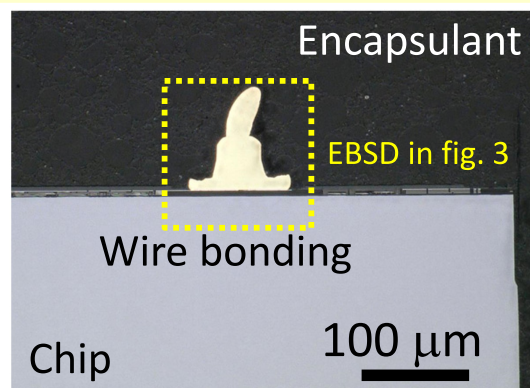
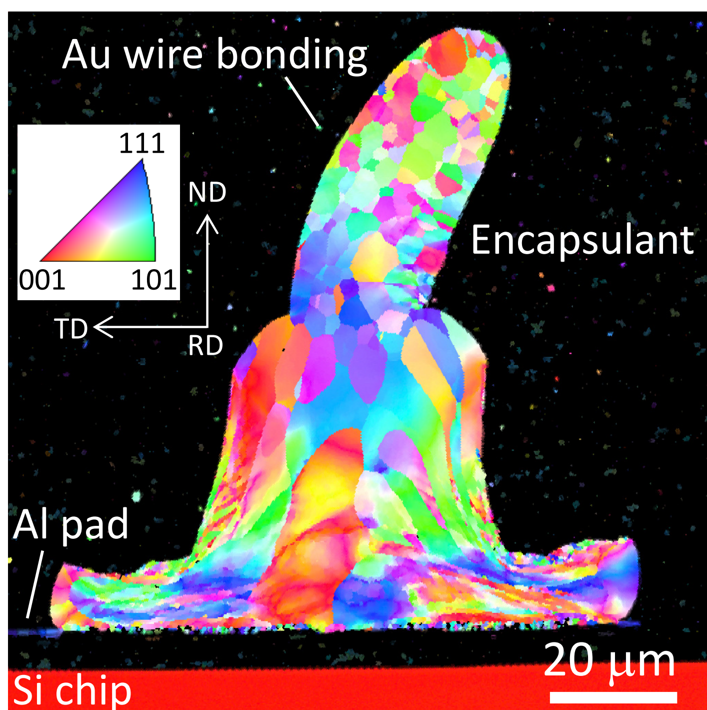


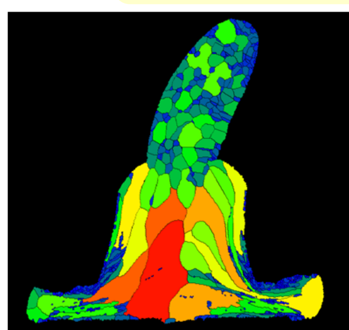
Fig.2. The cross-sectional optical microscope image

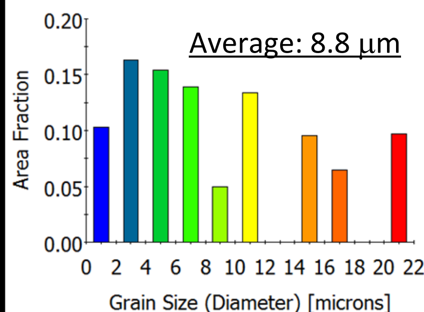
2. Cross-sectional EBSD analysis of the wire bonding

EBSD analysis → grain size distribution and KAM map related to plastic deformation.

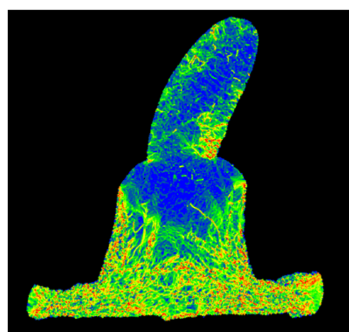


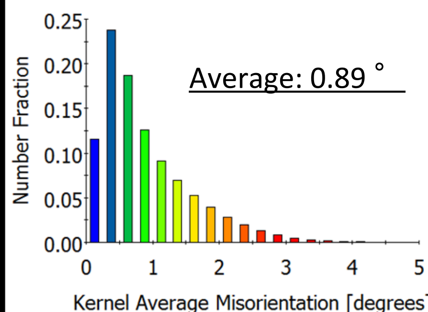
(a) The crystal orientation map (ND)





(b) The grain-size map and chart





(c) The KAM map and chart

Fig.3. Results of the EBSD analysis. (a) The crystal orientation map along normal direction (ND), (b) The grain-size map and chart, (c) The kernel average misorientation (KAM) map and chart according to plastic strain

The internal structure of a sample can be observed by XRM!
The degree and distribution of plastic deformation can be evaluated using EBSD!

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