



X-RAY MICROSCOPY X4 POSEIDON – Electronic Chip

Application Report 8

The technology sector is one of the largest and most impactful markets in our advancing world. Ensuring the highest quality and resolving production issues are top priorities. X-Ray Microscopy (XRM) offers a non-destructive method to analyze these types of samples for research and development, quality control, failure analysis, and other applications. XRM provides the insight and ability to visualize the internal structures of these materials in 2D and 3D.

XRM allows the user to visualize the internal structures of their sample without altering or damaging the sample during preparation or analysis. This allows for a dynamic sample analysis over time or before and after testing. High quality images are acquired in a relatively short amount of time, allowing work to continue and problems to be solved quickly. When combined with a powerful software package, X-Ray Microscopy (XRM) enables both qualitative and quantitative data interpretation. This allows users to not only identify features but also isolate, quantify, and visualize them.

The X4 POSEIDON microCT imaging workstation is a 3D imaging core facility on your desktop. The following settings were used for this study:

- 7 Mpixel Flat-panel X-ray camera
- 110 kV, 120 μ A
- Scan duration: 2 hours 24 min
- Voxel resolution: 8 μ m

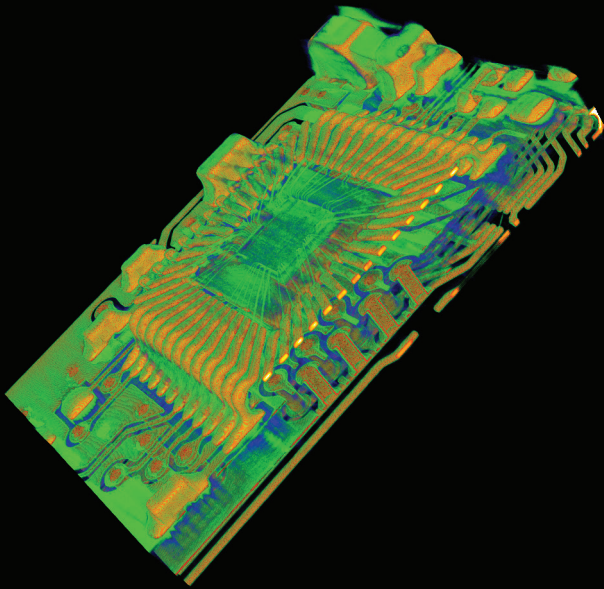


Figure 1
3D rendering of a USB drive.

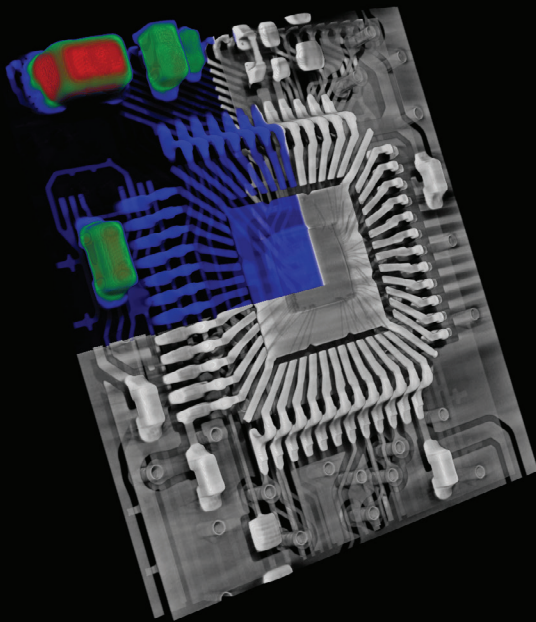


Figure 2
Thickness analysis of the internal components.

3D visualization allows users to see and better understand the details of their samples. It also enhances the presentation of the analysis being performed. Figure 1 shows an internal view of the 3D volume that has been colorized based on x-ray absorption, which is closely correlated to the density of components.

Utilizing Bruker's powerful image analysis software, CT Analyzer (CTAn), various quantitative analyses can be performed allowing the user to confidently solve problems that arise.

In Figure 2 a structure thickness analysis was applied to the electronic components using CTAn.

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