A Tutorial of Electron Tomography and Latest Application of TEMography

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Abstract

Tomography imaging in TEM requires the following 4 processes.
1. acquisition : acquire images while continuously tilting the sample
2. alignment : analyze the tilt axis and offset images by image processing
3. reconstruction : calculate to reconstruct the volume data
4. visualization : visualize and analyze reconstructed volume data
And, each processes need some solutions by software.
1. acquisition: To control TEM, camera and other device in sync with high accuracy
2. alignment: Most important process but difficult to evaluate its result
3. reconstruction : Plural calculation method are required depend on characteristics of specimen.
4. visualization: Need many functions for viewing 3D objects
We launched a software named TEMography in 2004. Now, around 400 customers in the world are utilizing it. This product had made the tomography method be approachable to the researchers in all scientific fields, I believe. However, we should keep in mind that obtaining correct result needs not only software but also the understanding of tomography method itself. This short lecture covers all about tomography, from the basic to latest application including EDS tomography, 'in situ' tomography. I hope this will stimulate your intellectual curiosity. Hiromitsu Furukawa is a Vice President of SYSTEM IN FRONTIER, Tokyo Japan and Visiting professor of Hyogo University, Japan. SYSTEM IN FRONTIER is a software company which was established by Furukawa and 2other persons in 2010. Now, 45 employees are developing and supporting TEM/SEM application software, medical examination system and some kind of hardware components.

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