Automated Workflows for Process Control and Defect Analysis

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As the industry moves into 3D devices and single digit technology nodes the critical dimensions (CD) get smaller and the complexity increases rapidly. Demand for Transmission Electron Microscope (TEM) metrology and defect analysis explodes to meet those challenges coming from small CDs and complex structures. Most of the other metrology and defect techniques run out of steam at these single digit complex technology nodes. Traditionally, TEM metrology and defect analysis are considered to be expensive, manual and time-consuming lab techniques with limited capacity. The available analysis capacity of the R&D Labs is not enough to support the huge demand coming from the production. In this presentation, we will demonstrate how automation enables TEM metrology and defect analysis to be a near-fab solution instead of a lab solution. The throughput, precision and accuracy of these automated workflows will also be discussed in depth through some use case examples. Recent FIB based in-line process monitoring techniques will also be discussed as a precessor to in-line TEM based process monitoring.

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