WORKSHOP

HIGH SPEED EDS DATA OUTPUT WITH QUALITY PERFORMANCE METRICS

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Large sample volume 3D microscopy and microanalysis is increasingly utilized to study features up to several microns in size, with a total volumetric sampling area nearing the millimeter scale. Data collection of these larger scale volumes depends upon fast acquisition of electron images, microanalysis data and sample milling. Improvements to the speed of each of these factors have increased the volume that can be studied and the increasing prevalence of plasma beam instruments now permits rapid removal of large sample volumes in order to expose wider and deeper analysis areas for X-ray microanalysis. Subsequently, rapid increases in X-ray analytical speeds are also necessary to reduce the total collection time of volumetric data.

There are several important factors in increasing speed of X-ray microanalysis detectors. Larger area detectors are a starting point, but not always necessary when using electron beam instruments capable of more than several nA on conductive materials. A more important factor is how to efficiently convert input to output counts per second, iCPS and oCPS, respectively, through detector electronics, especially when accepting input count rates up to one million or more iCPS. Output count rates of greater than 500 K CPS while still maintaining data quality for peak resolution, low energy, and trace detection, result in high quality data at the speeds required for large scale analysis.