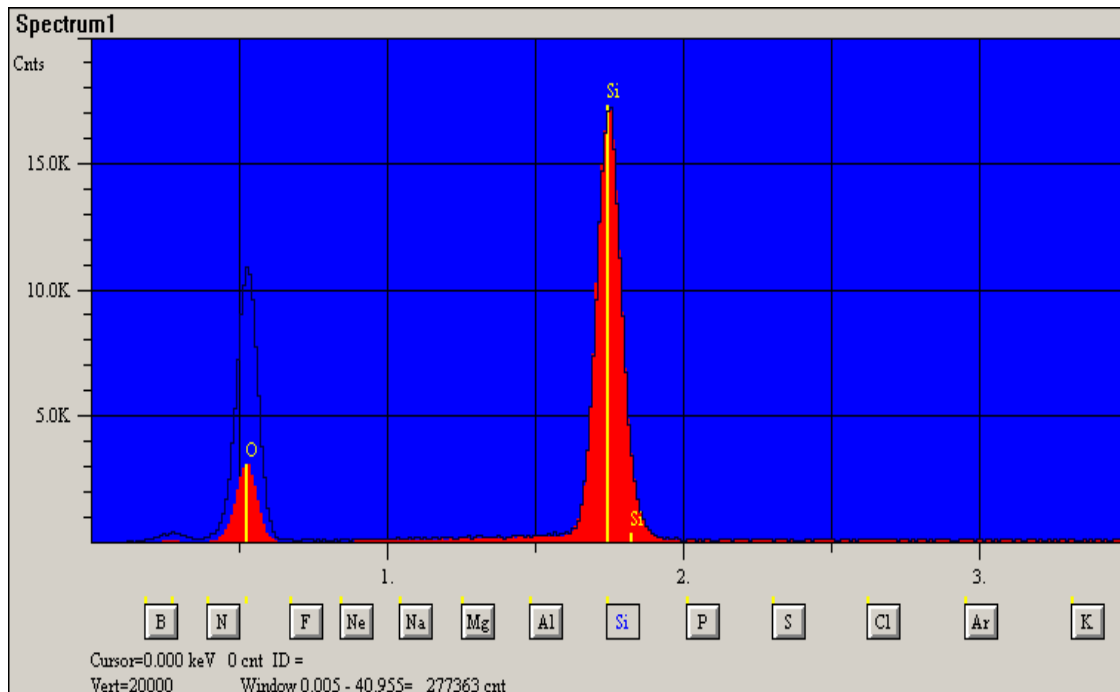


JoeXray LLC

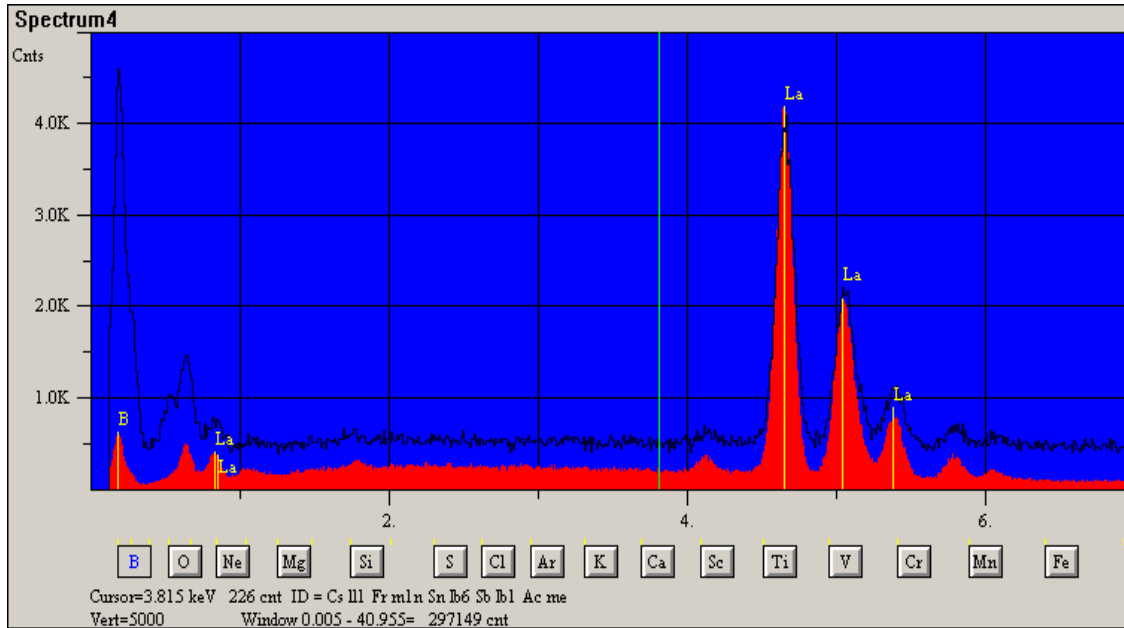
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LoMax data comparison on a LEICA 360FE SEM

A LoMax unit was installed and calibrated on a SEM operated by UES Inc. in Dayton, Ohio. The unit was setup and after three calibration trials a successful installation was achieved with the SEM working distance set at 21mm. Standards of SiO and LaB6 were chosen to test the initial data acquisitions. First the data was ran at 100 seconds livetime using 20kV, 1nA, and the system utilizes a NORAN Voyager system with a NORAN 10mm 138eV resolution at MnK SiLi detector. The LoMax was then installed and data from the same standards was acquired, The beam current needed to be adjusted from 1 nA down to 320pA to use the same pulse processor settings to keep the deadtime as close as possible to the 30% noted in the standard detector configuration from the baseline runs.

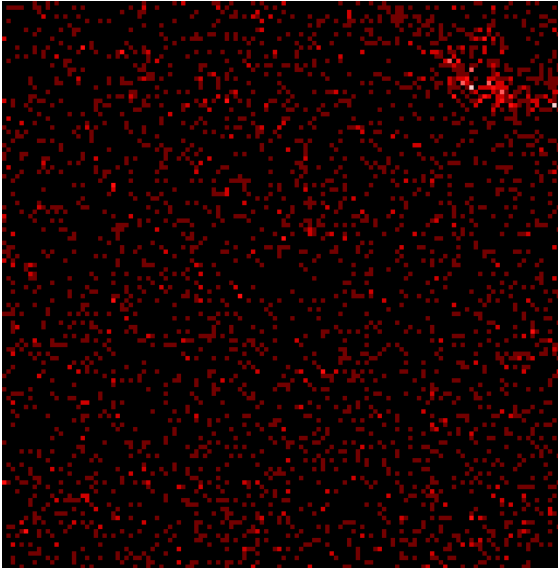


The SiO standard spectrum without the LoMax is the solid red. The overlay spectrum was normalized at 1.72 to 1.76KeV and shows the count rate performance increase at O, over 3X performance.

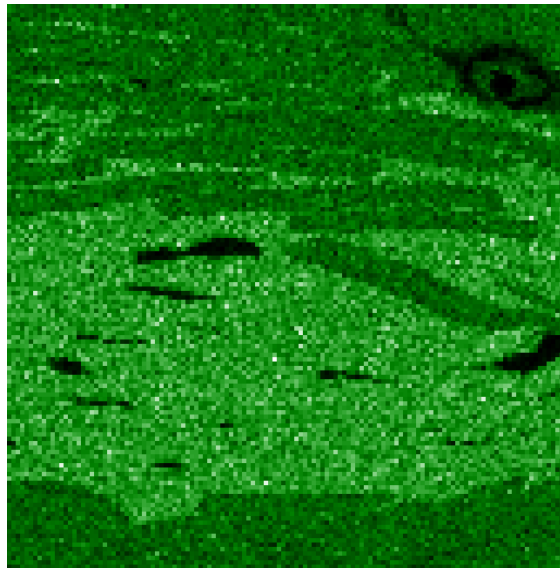


Here is a LaB6 comparison showing the B being attenuated by a factor of over 8 times. The continuum increase is thought to be due to the LaB6 sample lightly charging in the beam.

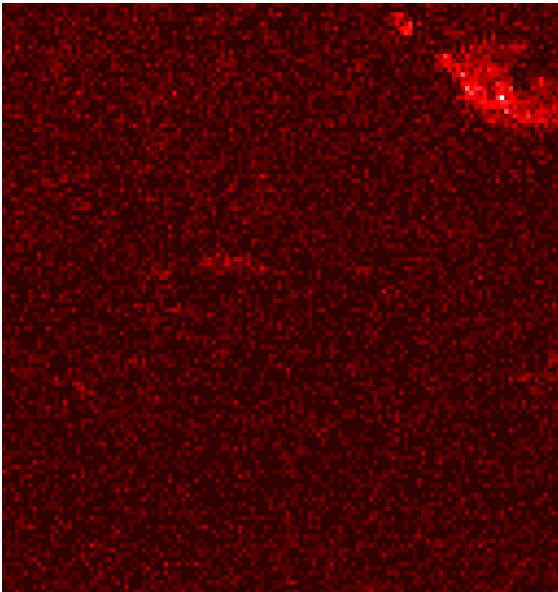
Since the light element or low energy range of the detection is where the LoMax has been designed to benefit the EDS analysis, we decided to run a real sample from one of the users of this SEM. A rare earth sample was selected consisting of Fe and a range of B of approximately 1% in one phase and from 6 to 8% in the B rich phase.



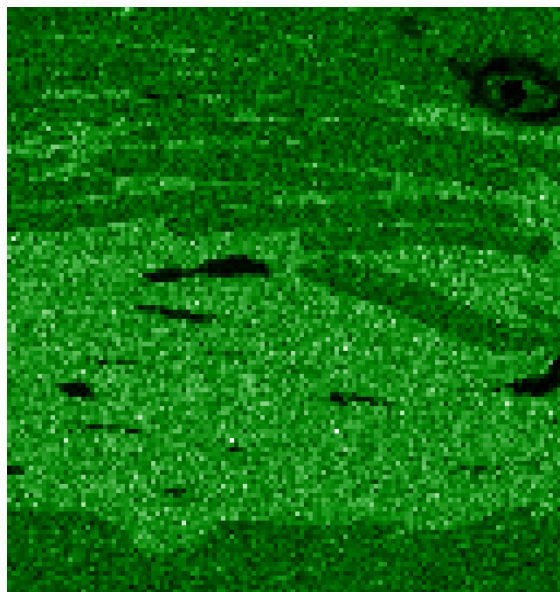
B without LoMax



Fe without LoMax



B with LoMax installed



Fe with LoMax installed

EDS detection of the B in the higher percentage areas was barely able to find B at all in this sample. With the LoMax the B was easily detected in the high percentage phases, and the maps above show the higher concentration of B with direct comparison maps of the sample at 221x, 128 x 128 map resolution at .1mSec acquisition time. Each Fe & B map acquisition ran Approximately 35 minutes.

Since the 1% range of B is much lower than EDS can detect, even with the LoMax, the author is going to analyze the sample with the latest Parallax Research HEXS parallel beam spectrometer in the next few weeks.