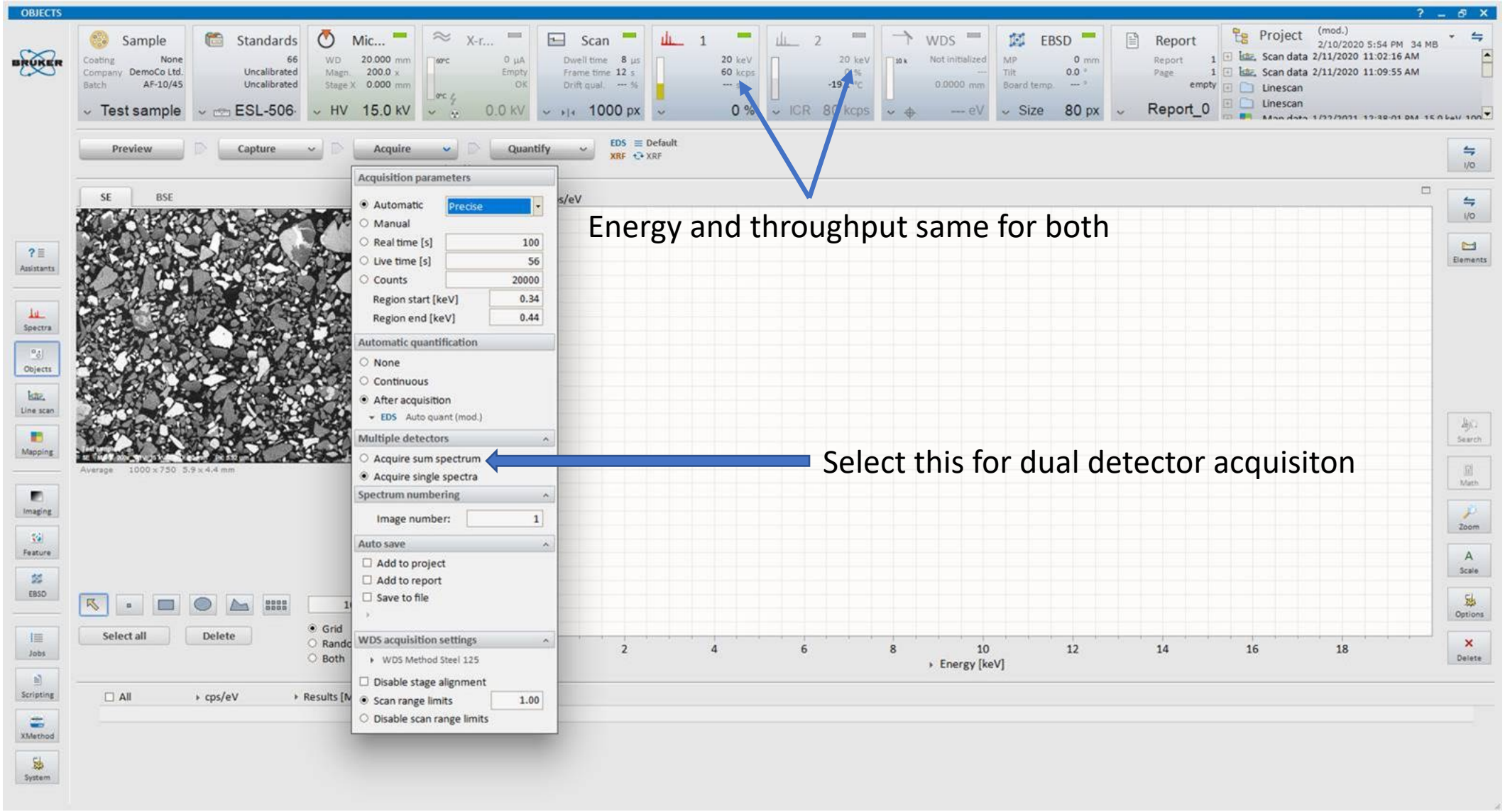
Energy dispersive spectroscopy (EDS) is inherently inefficient. Most of the x-ray counts are not collected. To increase the number of collected counts the solid angle can be increased by using a detector with large area, by decreasing the detector to sample distance or by using more than one detector.

A second Bruker detector became available for the Mira from a decommissioned SEM. This detector has a 30 mm^2 detector versus 60 mm^2 in the existing detector. The detector with the smaller area is attached on the left side of chamber door. Using both detectors can give an approximately 48% increase in solid angle. You will find it useful to use both detectors on small and/or thin particles. If the particles are embedded in a non-uniform matrix the two detectors may not collect the same x-rays since the composition might be different in the two directions (132^o azimuthal angular separation). This can lead to different quantitative results because the absorption and fluorescence will not be the same. Therefore, for quantitative analysis of particles in a uniform matrix use both detectors, otherwise, use the 60mm^2 detector. Using both detectors will be beneficial when doing mapping since counts are at a premium when acquiring maps. Be aware that collecting a spectrum from both detectors is slower.

To use both detectors, click on the down arrow on the Acquire button and check Acquire sum spectrum (see the image below). **Make sure to use the same resolution (throughput) and energy range for both detectors.** The deadtimes are not showing in the panels (software problem). Just make sure the vertical color indicator in the panels is not red. They will turn red if the deadtime is >50%. The best indicator of deadtime is to start collecting a spectrum using a spot. Then you can adjust the current if necessary. If you want to turn off one detector just double-click the detector panel.


Energy and throughput same for both
Select this for dual detector acquisiton
Acquisition parameters
Automatic
Precise
Manual
Real time [s]
100
Live time [s]
56
Counts
20000
Region start [keV]
0.34
Region end [keV]
0.44
Automatic quantification
None
Continuous
After acquisition
Multiple detectors
Acquire sum spectrum
Acquire single spectra
Spectrum numbering
Image number:
Auto save
Add to project
Add to report
Save to file
WDS acquisition settings
Disable stage alignment
Scan range limits
1.00
Disable scan range limits
Energy [keV]