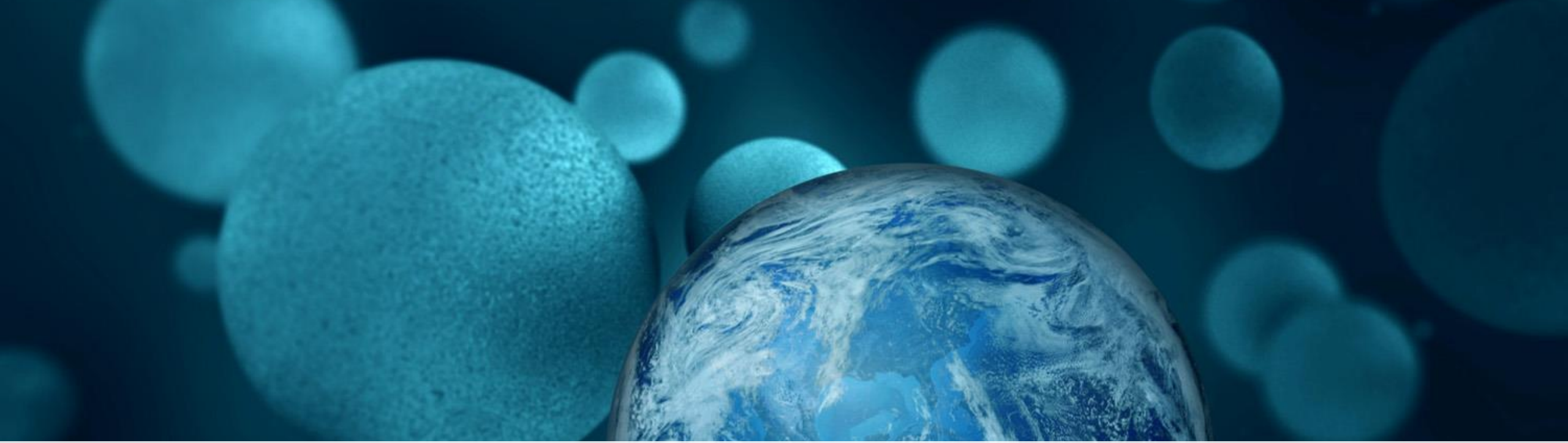

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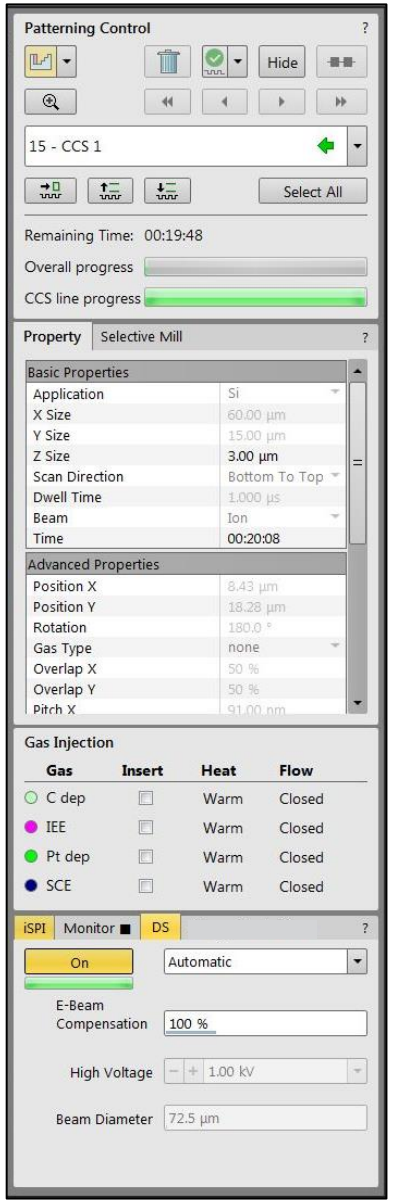
Scios
Drift Suppression mode

Module 9

Drift Suppression mode

- Drift Suppression (DS) = Automated charge compensation
- Standard feature in the UI; in patterning control area
- Accurate and fast milling of non-conductive material
- E-beam is used to compensate for the positive charge
- Max. ion beam current can be compensated
- New e-beam alignment for DS on Scios2

NOTE: for Scios1 max ion BC that can be compensated is 15nA



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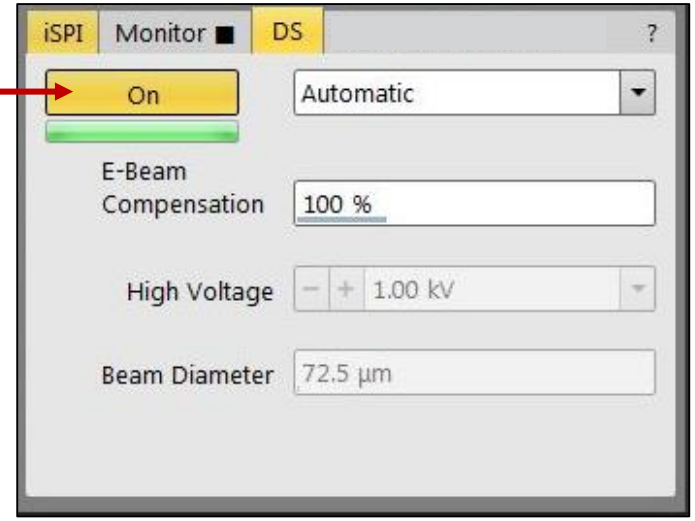
Drift Suppression mode: easy control



- Drift Suppression (DS) in patterning control area: Switch ON DS:

  Automatic:

  - e-beam is set to OptiTilt mode

    e-beam is blanked and set to spot mode

  NOTE: The position of the green cross can be moved in the e-beam quad.

  - e-beam compensation = 100%;

    e-beam current $I_{b(e)} \sim 3I_{b(ion)}$

    using 1kV for e-beam compensation
  - Beam Diameter = Defocus of beam
  - Beam diameter/defocus is automatically calculated according to pattern size.

  Custom settings : can be used to fine tune the auto settings.

NOTE: # both beams switch on/unblank simultaneously when the patterning/ion beam imaging starts ;
this to avoid charging the sample either by e-beam or i-beam
ETD (or ICE) can be used for imaging; they will collect SE's generated by the i-beam and the e-beam.
So the higher the currents the more the image quality will be affected.

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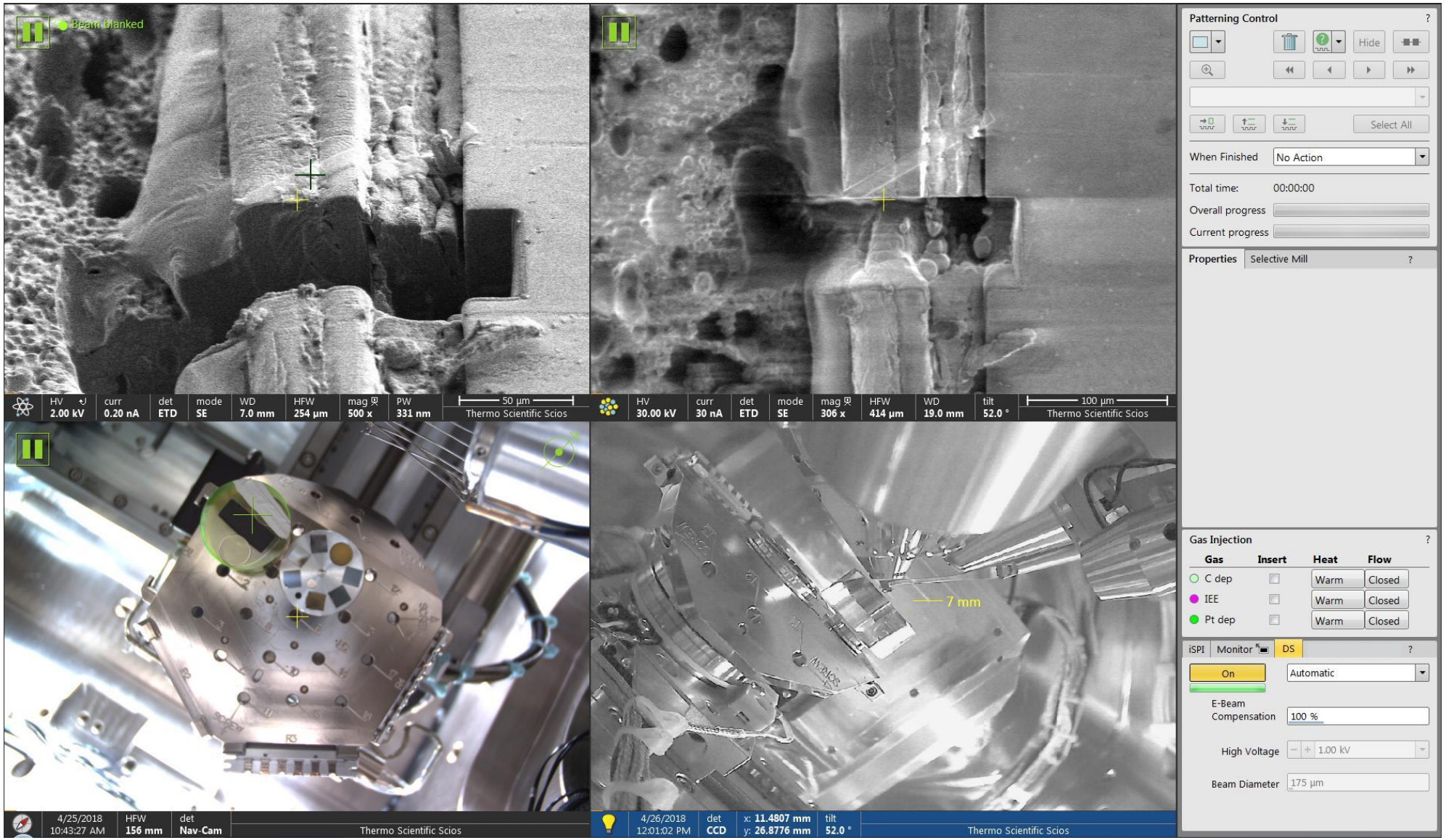
Drift Suppression; User interface

- DS = On
- E-beam in spot mode (green cross) with correct BC to compensate the 30nA FIB and defocused
- Updated FIB image at 30nA + DS mode (e-beam 1kV + 90nA)



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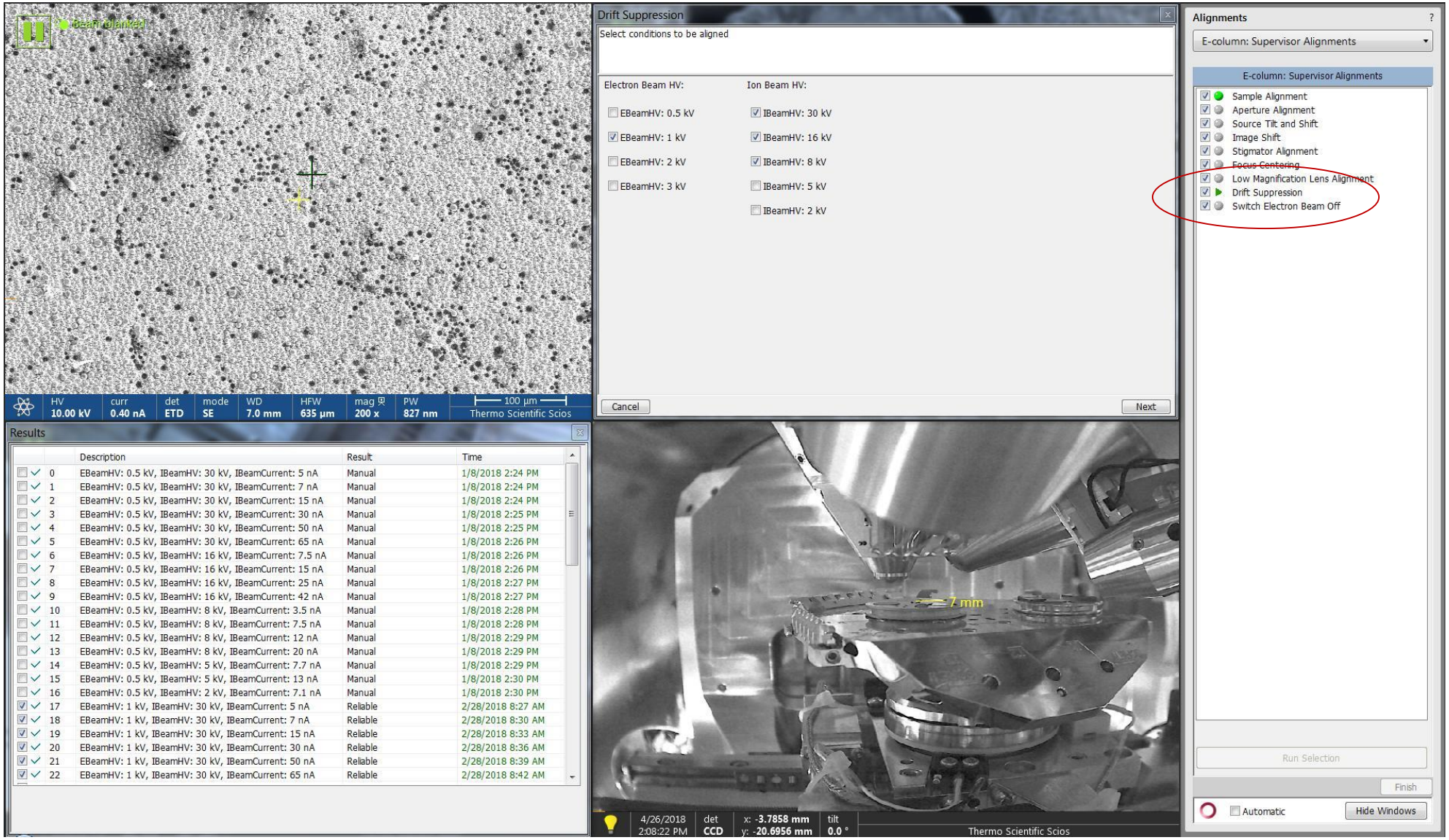
Drift Suppression; new alignment procedure

4kV to 200V
1pA – 13nA

- Max e-beam current that is aligned is 13nA.
- That's the reason that for Scios1 the max ion BC that could be compensated without any problem was 15nA
- The higher e-beam currents for low kV (<3kV) need to be aligned separately.
- A selection can be made to be aligned.



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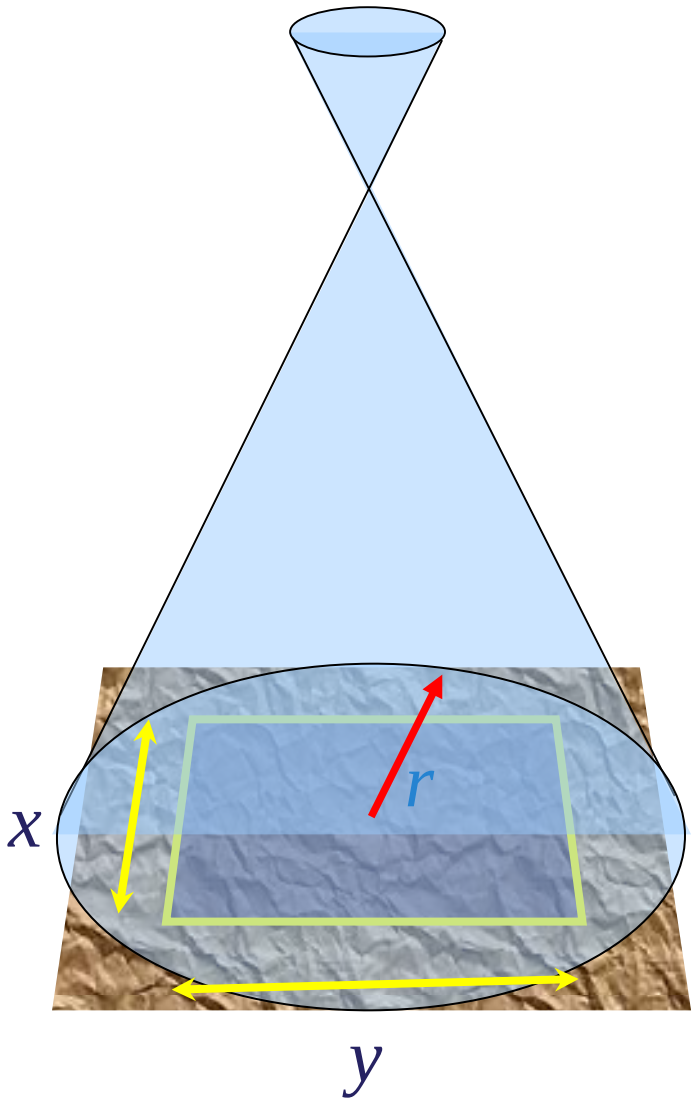
How does it work?



- E-beam current is calculated and changed automatically: $I_{b(e)} \sim 3I_{b(ion)}$
- Defocused beam according to pattern size

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