# FEI Quattro S Field Emission Scanning Electron Microscope operational procedure

#### 1. Vent chamber and load sample

On the right side of the software controls, click on Beam control page

#### Click Vent button

Vacuum	?
Pump	Vent
Sample Cleaning	- + <u>5 min</u>
Igh Vacuum	
◎ Low Vacuum	Water 💌
© ESEM	Water 💌
Chamber Pressure -+	<u>50 Pa</u>

### Confirm Vent



Wait until the sample chamber door can be open.

Load the sample on the sample holder



2. Choose high vacuum or low vacuum and set chamber pressure, then click Pump

Vacuum	?
Pump	Vent
Sample Cleaning	- + <u>5 min</u>
e High Vacuum	
○ Low Vacuum	Water 💌
○ ESEM	Water 💌
Chamber Pressure -+	50 Pa

Choose accessary (normally is no accessory, if using low KV cone or x-ray cone, choose appropriate accessary)

PLA Acces	sories
	No Accessory
	Low kV Cone (500 µm)
7	X-Ray Cone (500 µm)
	GSED
	Lens-mounted DBS
	Cancel

## Wait for the notation sound and make sure turbo pump is in >99% capacity. Then the vacuum is ready

#### 3. Image acquisition

Moving stage: on monitor CCD camera window (sample stage side view window), click on and hold middle button and drag up the stage to about 10mm mark position



Use navigation camera window (bottom left window) to double click on the interest sample area



Choose detector

De	tectors Scan	
1	ETD (SE)	
	ABS (Outer)	
	CBS (AII)	
	ICD (Scint)	
	LVD (SE)	
	GSED	
	GAD-ABS (All)	

Choose beam high voltage and spot size and click beam on button (on Beam control page )

Column		<b>**</b>
Beam On	Spot size	-
		5.00 kV
High Voltage	<ul><li>Ⅰ</li></ul>	•

Click on scanning window 1 (upper left conner) and click **u** to start scanning

Choose magnification on control panel

Choose scanning speed by -+ 50 ns -

Use auto brightness and contrast button or the brightness and contrast knob on the control panel to adjust image brightness and contrast.

Use focus knob on the control panel to focus image

Use Stigmator knob on the control panel to adjust image stigmator if necessary

After focus the image, click on button to link z to FWD

Use Scanning preset to adjusting scanning parameter (resolution, dwell time, line integration) and image acquisition parameter (integration) to get good image

canning presets Basic Setup Name SDT-SlowScan1 Resolution 768 × 512 ▼ 300 ns
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Name SDT-SlowScan1 Resolution 768 × 512 ▼ Owell Time 300 ns
Resolution 768 × 512 ▼ Owell Time 300 ns
Owell Time 300 ns
Bit Depth 16 bit 🝷
ilter Setup
Gran Interlace 1
ine Integration 50
rame Average 1
rame Time 00:00:07
mage Acquisition
ntegrate 1
Drift Correction Yes 🔻
Continuous Scan No 🔻
Action None 👻
Acquisition Time 00:00:07
hared Settings
Mains Lock No 🔻
start scan on left click Yes 🔻
Apply

If using scanning preset: take images by use Ctrl+scanning preset button (eg. S1) and click pause button  $\square$ .

If not using scanning preset: take images by click pause button

Go to file -> save as to save and name the file in /shareddata folder/user folder

#### 4. When finished:

Off beam

Vent column and take out sample

Pump column to high vacuum