

Quanta Series

Suggested Initial Image Mode, Working Distance (WD), and Initial Beam Conditions:

ETD (High Vacuum)

Working Distance: From > 20 mm to 3 mm;
Optimum WD: 3-5mm, Tilt= 10deg
Beam Conditions: 10kV, Spot 3.

BSED (High Vacuum)

Working Distance: From > 20 mm to 8 mm;
Optimum WD: 8-10mm
Beam Conditions: 10kV, Spot 3.

ETD & BSED (High Vacuum)

Working Distance: From > 20 mm to 8 mm;
Optimum WD: 8-10mm
Beam Conditions: 10kV, Spot 3.

ETD & vCD (High Vacuum)

Working Distance: From > 20 mm to 6 mm;
Optimum WD: 6-10mm
Beam Conditions: 10kV, Spot 3.

BSED (High Vacuum with Beam Deceleration)

Working Distance: From 10 mm to 8 mm;
Beam Conditions: Beam Deceleration Mode On;
Landing Energy 2 keV, Spot 2

vCD (High Vacuum with Beam Deceleration)

Working Distance: From 10 mm to 6 mm;
Beam Conditions: Beam Deceleration Mode On;
Landing Energy 2 keV, Spot 2

LFD (Low Vacuum)

Working Distance: From > 20 mm to 5 mm;
Optimum WD: 5mm, BGPL=5mm
Pressure range : 70 to 130Pa, Starting pressure= 70Pa
Beam Conditions: 10kV, Spot 3.
Detector setting: Contrast 70 Enhance 60

LFD + Low kV cone (Low Vacuum)

Working Distance: From > 20 mm to 5 mm;
Optimum WD: 5mm, BGPL=2mm
Pressure range : 70 to 200Pa, Starting pressure= 70Pa
Beam Conditions: 10kV, Spot 3.
Detector setting: Contrast 70 Enhance 60

LFD + X-ray cone (Low Vacuum)

Working Distance: From > 20 mm to 10 mm;
Optimum WD: 10mm, BGPL=2mm
Pressure range : 70 to 200Pa, Starting pressure= 70Pa
Beam Conditions: 10kV, Spot 3.
Detector setting: Contrast 70 Enhance 60

BSED & vCD (Low Vacuum)

Working Distance: From > 20 mm to 8 mm;
Optimum WD: 8-10mm for BSED, 6-10mm for vCD
Pressure range : 10 to 200Pa, Starting pressure= 40Pa
Beam Conditions: 10kV, Spot 3.

GAD (Low Vacuum)

Working Distance: From > 20 mm to 10 mm;
Optimum WD: 10mm, BGPL=2mm
Pressure range : 10 to 200Pa, Starting pressure= 40Pa
Beam Conditions: 10kV, Spot 3.

LFD + GAD (ESEM™)

Working Distance: From > 20 mm to 10 mm;
Optimum WD: 10mm, BGPL=2mm
Pressure range : 10 to 2600Pa, Starting pressure= 70Pa
Beam Conditions: 10kV, Spot 3.
LFD Detector setting: Contrast 70 Enhance 60

GSED (ESEM™)

Working Distance: From > 20 mm to 5 mm;
Optimum WD: 5mm, BGPL=2mm
Pressure range: 10 to 2600Pa, Optimum Pressure= 300Pa
Beam Conditions: 10kV, Spot 3.
Detector setting: Contrast 70 Enhance 60

GBSD (ESEM™)

Working Distance: From > 20 mm to 5 mm;
Optimum WD: 5mm, BGPL=2mm
Pressure range: 10 to 2600Pa, Optimum Pressure= 300Pa
Beam Conditions: 10kV, Spot 3.

STEM

Mode: I
Working Distance: From 7 mm to 5 mm; Optimal WD=4.5-5mm
Beam Conditions: 15 kV to 30 kV, Spot 3 or Spot 4.
Some General Suggestions:

Some general suggestions

Low Vacuum

Starting pressure conditions: 70 Pa for SE collection, 40 Pa for BSE collection. Remember that your SE signal will increase with increasing pressure; however, increasing the chamber pressure will tend to increase beam spread.

Think about the parameters, eg:

- Working distance
- Gas pressure
- Accelerating voltage
- Electrical properties of specimen
- Don't make life difficult! Mount specimens in/on a conductive medium

Beam Deceleration

Most often used in conjunction with the BSEd and vCD.

Recommended scanning strategy for all detectors

Detectors	ETD	BSED/vCD	LFD/GSED
Slow scan	Dwell time 60us	Dwell time 60us	Dwell time 60us
Drift Corrected Frame Integration (i.e. DCFI)	100ns/300ns No of Integration=256	3us/5us/10us No of Integration=16/8	3us/5us/10us No of Integration=16/8
Line Integration	3us Line Integration N=20	3us/5us Line Integration N=20	3us/5us, Line Integration N=20
To set Contrast Brightness	Dwell time 3us	Dwell time 3us	Dwell time 3us