E-beam lithography system Raith inside FE SEM Hitachi S4800

Electron Beam Lithography (EBL) is a method for manufacturing the extremely fine structures and this is possible due to the small spot size of the electron beam. Consequently this method is based on electron beam scanning over the sample coated with electron-sensitive layer (resist).

FE SEM Hitachi S4800/Raith EBL system **ELPHY Quantum** Version 4.0

Main specifications

1. FE SEM Hitachi S4800

-	Resolution	1 nm (15 kV, working distance 4 mm)
-	Magnification:	high magnification mode – 100X to 800.000X low magnification mode – 30X to 2.000X
-	Electron optics:	Accelerating voltage: 0.5 – 30 kV Cold cathode field emission Lens: electromagnetic, reduction type Objective lens aperture: movable aperture (30, 50, 100 μm) Astigmatism correction coil: electromagnetic

2. ELPHY Quantum Version 4.0

- Pattern design GDSII
- Data import DXF, CIF and ASCII
- Exposure parameter adjustment and calculation
- Line width measurement capabilities
- Digital image acquisition
- Fully integrated proximity effect correction and parameter calculation

In case of resist PMMA 495K (thickness 300 nm), low beam current (20 pA) the smallest feature size is 50 –100 nm.