Electron beam lithography and imaging

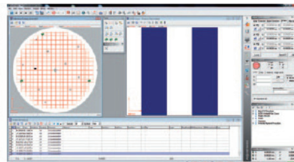
Raith150 Two

PRINCIPLE

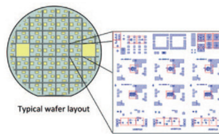
Electron-beam lithography is the practice of scanning a focused beam of electrons to draw custom shapes on a surface covered with an electron sensitive film called a resist ("exposing"). The electron beam changes the solubility of the resist, enabling selective removal of either the exposed or non-exposed regions of the resist by immersing it in a solvent ("developing"). The purpose is to create very small structures in the resist that can subsequently be transferred to the substrate material, by etching or thin film deposition.

FEATURES

Fully automated 8 inch loadlock



Raith NANOSUITE - convenient exposure setup

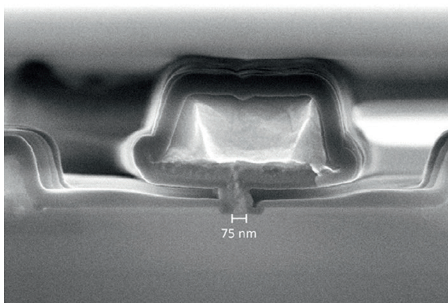


Chip layout with Writing Fields aligned according to gate positions

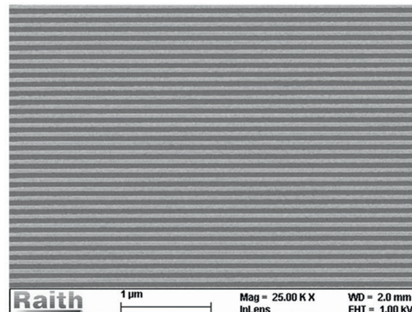
SPECIFICATION

Beam current range	5 pA – 20 nA
Beam energy	20 eV – 30 eV
Stage travel range	150×150×20 mm
Current density	≥ 7500 A / cm²
Current stability	≤ 0.5 % / 8 hours
Minimum line width	< 8 nm guaranteed
Stitching accuracy	≤ 35 nm (mean +3σ)
Overlay accuracy	≤ 35 nm (mean +3σ)

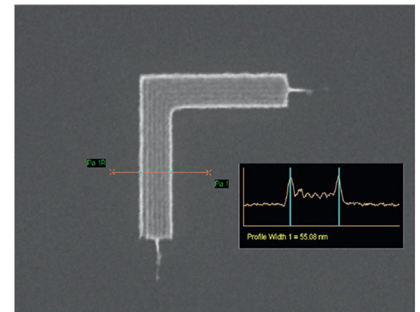
EXAMPLES OF APPLICATIONS



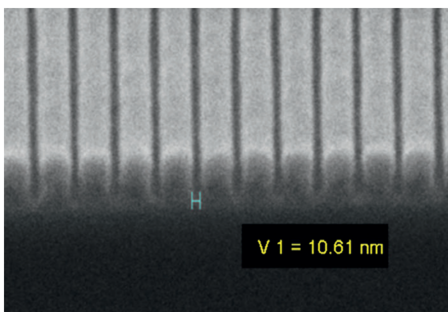
High electron mobility transistor (HEMT) with 75nm T-gate



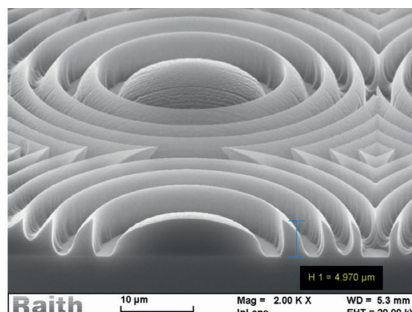
60nm pitch grating in PMMA e-beam resist



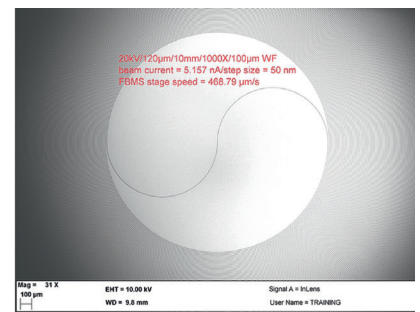
4.5nm lines and spaces in HSQ e-beam resist



Accurate 11nm lines in PMMA (crossection) e-beam resist



3D-Fresnel lens array in 5µm thick e-beam resist



Optical delay waveguide written with traxx-a stitch error free writing mode

MORE INFO

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