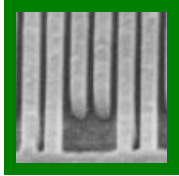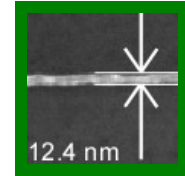# **N**ANOMETER **P**ATTERN **G**ENERATION **S**YSTEM
V9.1

for Direct Write Lithography

using a commercial Electron or Ion Beam Microscope

NPGS provides a powerful, versatile, and easy to use system for doing advanced beam or ion beam lithography using a commercial SEM, STEM, HIM, FIB, or dual beam (SEM/FIB) microscope. The success of NPGS is demonstrated by the strong recommendations from current users which have resulted in over 450 installations around the world.

NPGS is a tool which can be used in a wide variety of applications. The basic lithography process allows patterns to be defined on a flat surface. The subsequent processing, such as metal evaporation or etching, will determine the final structure. NPGS is unique in that it provides a very flexible system which is ideally suited to the wide range of activities in basic research and R&D activities. Examples of some of the structures made with NPGS include: single electron devices, quantum chaos devices, quantum dots, tunnel junctions, one and two-dimensional metal wires/films, linear/circular gratings, surface acoustic wave (SAW) devices, split gate devices, as well as "larger" structures such as micromechanical devices, waveguides, and bonding pads. Since NPGS is so versatile, it is well suited for use in almost any application that can be done with SEM based e-beam lithography.

NPGS can also be used for lithography with a Focused Ion Beam (FIB) or Helium Ion Microscope (HIM). In fact, a single NPGS

installation can be configured with a dual mode to control either the electron beam or the ion beam on dual FIB/SEM systems.

Specifications:

The main hardware component of NPGS is a custom PCIe board that runs in a Windows Workstation PC. This board provides dual 5 MHz, 16 Bit, high timing resolution (0.25%) DAC outputs that control the beam position during pattern writing, as well as a blanking control output and a 16 bit ADC input for image acquisition.
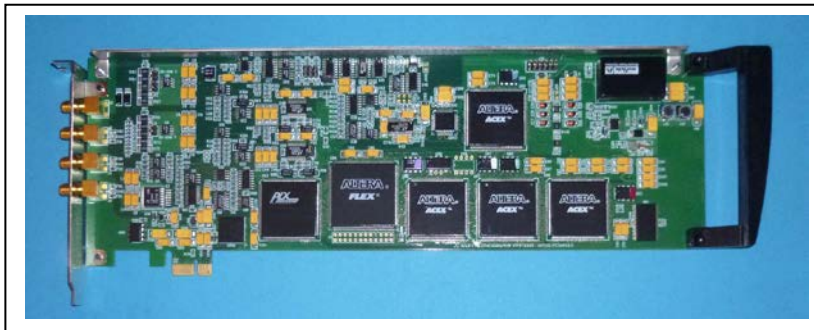
The NPGS software consists of an easy to use graphical user interface that is easily customized by the user, an integrated CAD program, and also advance pattern writing and alignment programs. Five copies of the CAD program are standard with NPGS, thus allowing four 'office' installations of NPGS away from the microscope, and additional licenses for the CAD program are available at a low cost.

NPGS can be provided with the NPGS software and NPGS hardware preinstalled in a Workstation PC. The typical configuration will be:

- Intel® quad core CPU.
- 8 GB RAM, 500 GB Hard Disk, & DVDRW.
- 20" LCD Monitor.
- 64 bit Windows 7 Professional.

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For more information on NPGS, visit:

www.jcnabity.com

or send e-mail to info@jcnabity.com.