

ADVANCED ELECTRONICS R&D AND MANUFACTURING in Albany/New York's Capital Region



Updated January 2024

INDUSTRY ASSETS

► Albany NanoTech Complex:

- **1.65M sf** facility with **300** toolsets
- **140,000 sf** class 1 capable cleanrooms
- **50,000 sf** more cleanroom space planned for **\$10B** High NA EUV Center
- Wet labs, metrology labs and 3D packaging



Semiconductor Start-Ups:



AMAG nanometro

SEM simulation software and text wafers



Bleximo

Quantum processor microarchitectures



LUX Semiconductors

Semiconductor recrystallization technology for flexible electronics



Geminatio

Materials and infrastructure for low-cost IC shrink paths



NYDesign

Integrated chip design



Menlo Microsystems

Electronic switches, AMAG nanometro, SEM simulation software and text wafers



Pallidus

Prouce silicon carbide crystals



NoMIS Power Group

Silicon carbide semiconductor and module development



SMART Pad

Wafer polishing pads with micro features



Xallent

Nanoscale measurement hardware and software tools

GlobalFoundries Fab 8, Malta

HQ and 300 mm facility with 450,000 sf of MFG cleanroom space

GlobalFoundries Fab 8.2, Malta/Stillwater (Planned)

300 mm fab with 475,000 sf of cleanroom space

High NA EUV Center, Albany (Planned)

\$10B partnership with Micron, IBM, ASML TEL, and others for access to EXE:5200 High NA EUV scanner in new NanoFab Relection with 50,000 sf of cleanroom space

IBM Research AI Hardware Center, Albany

R&D, emulation, prototyping, testing and simulation activities for the new AI cores, with specialization in wafer processing

Materials Engineering Technology Accelerator (META Center), Albany

Applied Materials' R&D hub for prototyping of new materials, process technologies and devices

TEL Technology Center America, Albany

16,000 sf of cleanroom space and 80 Tokyo Electron tools with full flow integrated processing and patterning capabilities

CAPITAL REGION INNOVATION PROWESS

- ▶ **5,000+** semiconductor device patents awarded in U.S. listing at least one Capital Region inventor (2018-2022)
 - ▶ **18th** most workers in R&D in the physical, engineering & life sciences (7,150 in 2022*)
 - ▶ **\$1.215B** in private business R&D spending in 2021*
 - ▶ **\$1.53B** in computer & electronic product exports in 2022 – top 33 exporting metro
 - ▶ **\$8.5M** in SBIR/STTR seed funding for small business semiconductor-related R&D since 2018
 - ▶ **\$480M** spent on engineering R&D by Capital Region colleges and universities in FY2022
- *Albany-Schenectady-Troy MSA*



GlobalFoundries Fab8, Malta



Albany NanoTech Cleanroom

ADVANCED ELECTRONICS WORKFORCE (2022)

10,279 Jobs Including:

3,129 Semiconductor & Related Device Manufacturing

7,150 R&D in the Physical, Engineering, & Life Sciences

DEGREES AWARDED (2022)

21,013 Total Degrees

4,560 STEM Degrees

1,843 Engineering & Engineering Technologies

SUPPLY CHAIN

Advanced Materials & Chemicals

Crystal IS
Evonik Active Oxygens
Lithoz America
Pallidus
Starfire Systems
YINCAE Advanced Materials

Fittings

Harrington Industrial Plastics
Swagelok

Gas

Air Liquide
Noble Gas Solutions

Engineering

DPS Group Global
Exyte
EYP Architecture & Engineering

R&D

AMAG nanometro
Applied Materials
ASML
Bleximo
Geminatio
IBM Research
KLA
LAM Research
Lux Semiconductors
Menlo Microsystems
NoMIS Power Group
NYDesign
Rapidus
Smart Pad
Tokyo Electron
Xallent

Equipment

Banner Industries
Capovani Bros.
Edwards Vacuum
General Control Systems
Precision Valve and Automation
SCREEN Semiconductor Solutions

Engineering Degree Programs

- Clarkson University Capital Region Campus
- Excelsior University
- Rensselaer Polytechnic Institute
- Union College
- University at Albany
- University at Albany, CNSE

Technical Programs

- Capital Region BOCES
- Fulton-Montgomery Community College
- Hudson Valley Community College, Troy
- HVCC North/TEC-SMART, Malta
- Saratoga-Warren-Washington BOCES
- SEMI Industry Approved Apprenticeship Program
- SUNY Adirondack
- SUNY Schenectady