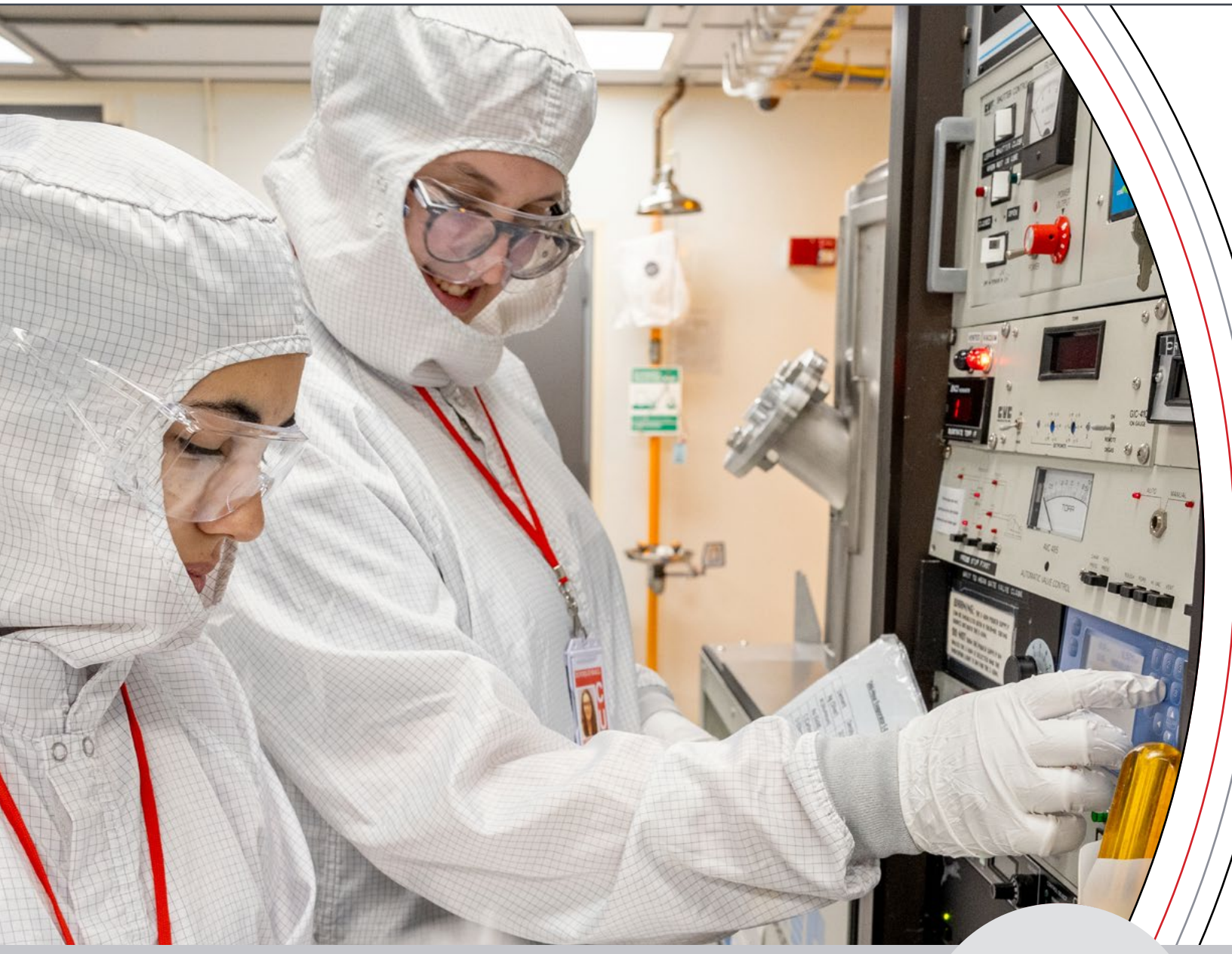
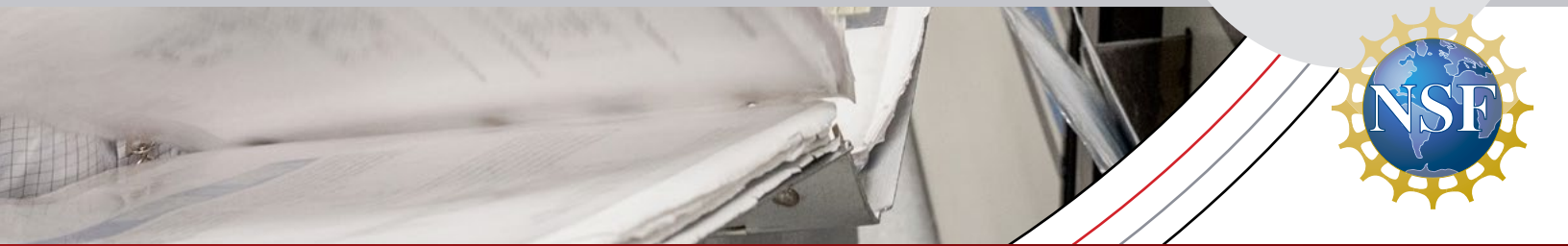
CNF
Cornell NanoScale
Science and Technology Facility

Cutting-Edge Research
Real-World Impact

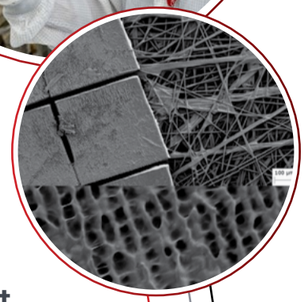


The Cornell NanoScale Science and Technology Facility mission is to enable rapid advancements in science, engineering and technology at the nanoscale by providing efficient access to nanotechnology infrastructure and expertise. CNF operates as a flexible open user facility and is proud to be a member of the National Nanotechnology Coordinated Infrastructure (NNCI).

CNF was the first US-based research facility of its kind supported by the **National Science Foundation**



ADVANCING **INNOVATION**



WHY NSF-FUNDED FACILITIES LIKE CNF ARE IMPORTANT

- **Access** to advanced tools and cleanroom space
- **Support** research from academia, startups, and industry
- **Train** a highly skilled STEM workforce, including graduate students, postdocs, industry users
- **Enable** breakthroughs across fields like energy, medicine, quantum computing, and AI hardware
- **Foster** nationwide collaboration and innovation

Why Needs Are Ever-Evolving in NANOFABRICATION

Quantum, photonics, heterointegration, and biotech are advancing fast

Continually updated toolsets support next-gen applications and staff knowledge

CNF fosters interdisciplinary collaboration across fields

New materials and fabrication methods constantly emerge

Rapid prototyping & process development

CNF maintains flexible infrastructure to adapt to new research demands

Staying competitive requires continual investment in tools and training

Hands-on training with expert staff and state-of-the-art equipment

CNF reinvests in tool upgrades to match global research standards

Users need access to cutting-edge processes and expert guidance

Experienced technical staff and customizable workflows

From idea to execution with personalized consultation

SOCTERA

> **"Any government efforts to enhance domestic semiconductor capabilities must include support of the CNF,** *which continuously positions academic technologies like Soctera's for a successful commercial transition."*
>
> *-Austin Hickman Co-Founder and CEO*

OPEN ACCESS
NANOTECHNOLOGY INFRASTRUCTURE RESOURCE

CNF EQUIPMENT RESOURCES

CNF tools are valued at over $100M, designed for early stage research as well as product development and prototyping

CNF STAFF RESOURCES

CNF includes over 20 scientific and technical experts, along with administrative professionals, who together provide on-site user guidance, advice, training, and process support

EFFECTIVE STREAMLINED ENTRY PROCESS

Users typically up and running in ~2 weeks

CONTINUOUS FUNDING
Ensures continued U.S. leadership in nanotechnology and advanced manufacturing

Over 1,000 unique users each year

CNF researchers travel from all over the United States to use the facilities at CNF

CONCEPT TO COMMERCIALIZATION

ADVANCING NANOTECHNOLOGY TO THE MARKET

From Lab to Fab: REAL-WORLD IMPACT

CNF fosters innovation by providing access to advanced materials and state-of-the-art instruments within a flexible environment tailored to accelerate technology development—an approach that has directly empowered industry leaders **since 1977.**

- **171 different companies** (127 small/startup and 44 large) have used CNF for substantial research, development, and prototyping under NNCI since 2015
- **CNF-realized 2 new startup company launches per year** 19 new startups (under NSF NNCI)
- **CNF** enables use-inspired and translational research by giving researchers, startups, and companies access to state-of-the-art nanofabrication tools—without needing to build their own cleanrooms or facilities
- **Expert staff** advise on process development

CNF's comprehensive equipment sets support:

- Electronics
- Organic and Flexible Electronics
- Spintronics
- Magnetics & Quantum Science
- MEMS / NEMS
- Photonics
- Life Sciences
- Agriculture
- Nanomedicine

VOC Health

*"**At CNF, our team develops cutting-edge sensors for early cancer detection.** Expert staff, high availability of equipment, and seamless lab-to-fab support allows us to achieve excellent yields and high device reliability. Thanks to CNF and NSF, VOC Health is preparing for clinical trials, capital raising, and outsourced production."*

Noah Clay,
Vice President, Sensor Technology

-Alejandro Cortese
OWIC Technologies

FUELING DISCOVERY

ONE COMPANY AT A TIME

PixelEXX Systems Inc

"Based on the progress PixelEXX has achieved at the CNF, the company has raised the attention of multiple potential industrial partners and funding sources. **This has only been possible with the continued access to this full suite of tools and semiconductor fabrication experts."**

-Kenneth Bradley, President & CEO

OWIC Technologies

"The tools and capabilities at CNF are second to none and have enabled us to pursue complex multi-layer processes that would not be possible at most other institutions. **Without the support CNF offers, it would be prohibitively expensive for deep start-up companies to do the R&D necessary for product development."**

-Michael Reynolds, President & CEO

LUX Semiconductors

"The NSF's support of the CNF is indispensable, ensuring that facility costs remain affordable and accessible for startups like ours. **Without this crucial funding, small businesses would struggle** *to compete and contribute effectively to the rapidly growing microelectronics industry."*

-Dylan Richmond,
Advanced Packaging Engineer

1990 → 2000 → 2010 → 2020

transonic · RTS Inc. · Kionix (A ROHM Group Company) · RF Micro Devices · Agave BioSystems · Cerberex Technologies, Inc. · Advion · Xanoptix · McCollister Nanofab Services · PRIMET · PHOEBUS OPTOELECTRONICS LLC · Illuminaria LLC · MiTeGen · Jones Nanofabrication · Orthogonal · Eigenphase Technologies LLC · PACBIO · IMMUCOR · iFyber · WSS wireless sensor solutions · halo labs · tornado spectral systems · WHITE LIGHT POWER INC · VOC Health · Jan BIOTECH · heat-1 · LUX Semiconductors · WIDETRONIX · ePowerSoft Inc · Xallent · UM UltraMEND · SOCTERA · REEgen · Esper Biosciences Inc · Flora Pulse · diagmetrics · Jr2j, LLC · GEEGAH · INSOBIO · Kanvas Biosciences The Microbe Imaging Company · ODYSSEY SEMI · LOGRUS · OWiC TECHNOLOGIES · CyteQuest

NANOSCALE TRAINING THROUGH

EXTENDED REALITY

- To meet the growing demand for skilled nanofabrication professionals, CNF is **expanding its training capacity**—reaching significantly more learners nationwide
- CNF is developing new **VR-based training** modules designed to deliver effective, scalable, and cost-efficient learning experiences
- Regional training programs and the scale-up of **experiential learning in critical and emerging technologies** reaches thousands of individuals each year

NanoScale training through Extended Reality

VR technology enables virtual tours of CNF's world-class facility, making **advanced nanotechnology training and outreach more accessible than ever.**

Tour the Facility

REACHING OUT

CNF supports education and outreach efforts spanning K-12, post-secondary, professional, and public audiences

Since 2015 **our education and outreach programs** have reached over

36,000 individuals

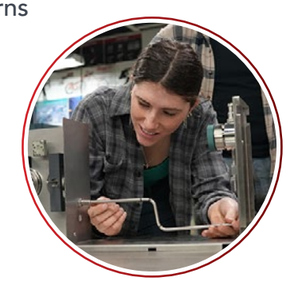
NYS BOCES
- CNF ATLAS program
- Ultrahigh purity welding program

4-H
- New York State Fair
- 4-H Career Explorations

Tompkins County
- Sciencenter
- Expanding Your Horizons

Regional
- Veterans Microelectronics and nanofabrication program
- Community College Microcredentials
- Kangaroo Math
- Junior First Lego League
- Micron Chip Camp
- NanoDay Celebrations

National
- Nanooze
- Technology and Characterization at the Nanoscale short course
- REU
- Interns



- NSF-funded Research Experience for Undergraduates (REU) since 1990
- Over 300 participants
- 54% of all participants have gone on to pursue a Ph.D.
- **More than 90% of participants remain in a scientific career**

NEW YORK STATE 4-H

CNF'S GREATEST ASSET

CNF Cornell NanoScale Science and Technology Facility

"**The expertise of the CNF staff is invaluable**, and they have a portfolio of machines you might only find at two or three places in the U.S. That allows us to always be at the cutting edge of research.

-Kwame Amponsah
Xallent CEO

www.cnf.cornell.edu

National Nanotechnology Coordinated Infrastructure

Cornell University

NEW YORK STATE OF OPPORTUNITY. Empire State Development

NSF