Micro and Nanotech Works: Alumni Success Stories

NACK, SCME and Nano-Link are NSF-funded ATE Resource Centers supporting Nanotechnology Education

Micro and Nanotech Works: Student Success Stories

Outline of Presentation

Introduction…Karen Halvorson
Student Success Stories:
Brandon Harris, NACK
John Butenhoff, Nano-Link
Anthony J. Ross, SCME
Alumni Network Resources…Karen Halvorson

Hot Jobs in Micro and Nanotech

According to the National Science Foundation (NSF), more than 2 million jobs and 6 million supporting positions will be generated in nanotechnology by 2015.

Data Source: National Science Foundation 2010

Micro and Nanotechnology Products Today & Tomorrow

- Products where nanotechnology plays a key role will grow by an estimated $1 trillion per year by 2015.
- The rate of market increase is expected to show a 25% increase per year.
- By 2020, there will be an estimated $3 trillion in products that incorporate nanotechnology as a key performance component.
- The nanotechnology markets and related jobs are expected to double every three years.

Data Source: Michail Roco 9/30/2010

Micro and Nanotechnology Products Today & Tomorrow (continued)

- MEMS devices (not final products) are growing at 10-20% CAGR on average.
- BioMEMS sector is doubling every year.
- MEMS device sales jumped 25% in 2010 overall-- driven by inclusion of sensors in handheld consumer products.
- TI sells about $850M/year in DLP chips
- HP sells about $800M/year in InkJet Print heads
- Computers, cell phones, and tablets all contain MEMS devices

Data Source: Matt Pleil ,SCME 5/6/2011

Examples of Companies That Have Hired Graduates for Micro- and Nanotechnology Jobs

Biological/Biotech/Medical/Pharmaceuticals

Bioforce Nanosciences; Boston Applied Technologies; Boston Scientific; Cetero Research Group; GlaxoSmithKline; Harvest Foods; Hershey Medical Center; Ionic Fusion Corporation; Johnson & Johnson; Pace Analytical Services; Philips Medical Systems; Phillips Plastics; Upsher-Smith.

Chemical/Materials

3M; Adhesives Research; Advanced Gas Technologies; Advanced Powder Products; Alcoa; Bergquist; Boston Scientific; Crystalplex; Dupont; Illuminex; Ionic Fusion Corporation; Merck; NaturalNano, Inc; Pace Analytical Services; RJA Dispursions; Westmoreland Mechanical Testing & Research.

Environmental/Energy

BP Solar; Cosmos Technologies; EnerG2; First Energy; GTS; Neah Power Systems; NDSCS; Plextronics; PPL; Solarity; Spectrum Technologies, Inc.

Electronics/Communications/Optics

3M; Advanced Research Corporation; Advantech; Apogee Photonics/CYOICS; Applied Materials Corporation; Carbon NanoProbes; Cyoptics; EnerG2; Fairchild Semiconductor; General Dynamics Robotic Systems; Hutchinson Technologies; Intel Corporation; Keystone Communications; Lockheed Martin

Components/Devices/Industrial Processing/Equipment

Carbon NanoProbes; Correge Sensors; Cummins Engines; Dana Corporation; Filtration Systems; Fincor Automation; Hysitron; Judson Technologies; Lutron Electronics; Maxima Technologies; Probes Unlimited.

Data Source: NACK Alumni Network 2010

Job Titles for Micro and Nanotech Careers

Biological Laboratory Technician
Biofuels Technician
Chemical Laboratory Technician
Microscope Operator
Scanning Probe Operator
Scientist Specialist
Solid State Technician
Cleanroom Technician
Deposition Technician
Device Technician
Equipment Maintenance Technician
Engineering Technician
Etch Technician
Failure Analysis Technician
Laboratory Technician/Manager
Lithography Technician
Medical Lab Technician
Materials Science Lab Technician
Medical Devices Technician
Microfabrication Technician
Nanobiotech Researcher
Metrology Technician
Nanoelectronics Expert
Nanofabrication Technician
Nano Lab Technician
Nanomaterials Research Associate
Nanoscale Fabrication Technician
Nanoscience Technician
Nanotechnologist
Process Technician
Production Technician
Production Scientist
Quality Control Technician
Research Assistant
Scanning Technician
Test Technician
Thin Films Technician
Vacuum Technician

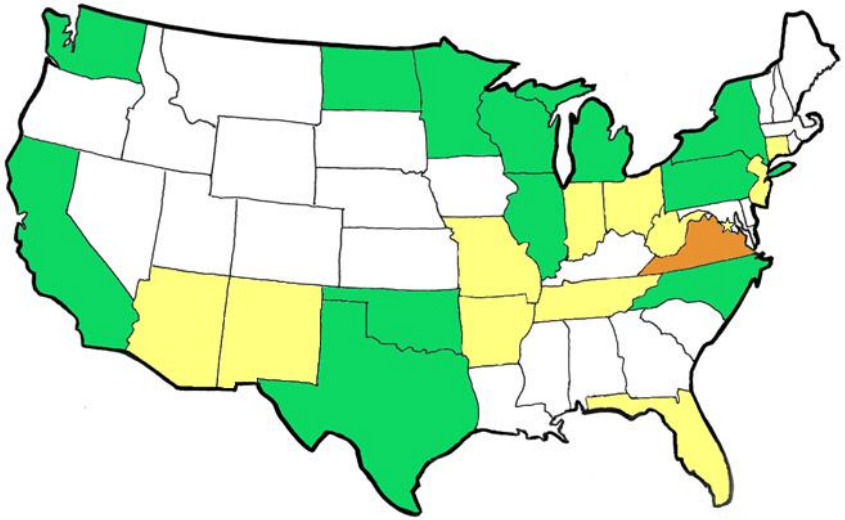
Data Source: NACK Alumni Network, 2010

MNT Career Annual Salaries

Two-Year Associates Degree	$30,000 - $50,000
Four-Year Bachelors Degree	$35,000 - $65,000
Six-Year Master's Degree	$40,000 - $80,000
Eight-Year Doctoral Degree	$75,000 - $100,000

Data Source: P.S.U. Center for Nanotechnology Education and Utilization

Nanotechnology Associate Degree Programs
PLUS Programs under Development
(May 2011)

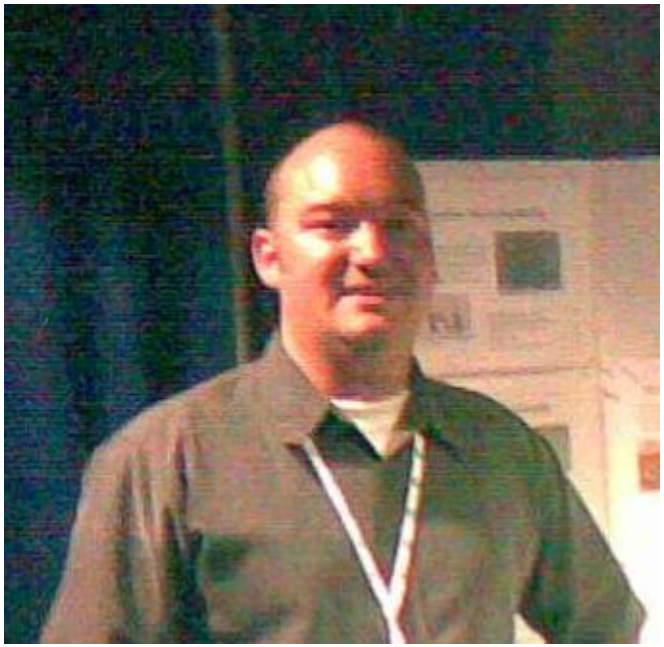


Brandon Harris

- Graduate of Penn State Capstone Program via Pennsylvania College of Technology, A.A.S. in Electronics and Computer Engineering Technology, Nanofabrication emphasis
- Working at Fairchild Semiconductor in Mountain Top, Pennsylvania
- Job Title: Etch Process Engineer
- Enrolled at Wilkes University in Wilkes Barre, Pennsylvania to earn B.S. in Chemistry
- Niche: Nanotechnology--Semiconductor manufacturing

John Butenhoff

- Graduate of Dakota County Technical College in Rosemount, Minnesota; Capstone Program at the University of Minnesota; A.A.S. Nanoscience Technology
- Working at Upsher-Smith located in Maple Grove, Minnesota
- Job Title: Lab Assistant
- Continuing education at University of Minnesota to earn B.S. in Business Administration or Biology.
- Niche: Nanotechnology—nanobio



Anthony J. Ross
"T.J."

- Graduate of Central New Mexico Community College in Albuquerque, New Mexico, A.A.S. in Electronics Technology and A.A.S. in Manufacturing Technology
- Working at Sandia National Laboratories in Albuquerque, New Mexico
- Job Title: Technologist
- Niche: microtechnology
- Continuing Education: Working on BS in Electrical Engineering at the University of New Mexico in Albuquerque, New Mexico

NACK Alumni Network

- Ramie Chackan
- Career Specialist for NACK Alumni Network
- Director of Career Services for Dakota County Technical College in Rosemount, Minnesota

Nanotechnology
Alumni Network

The National Center for Nanotechnology Applications and Career Knowledge (NACK) at Pennsylvania State University invites all undergraduate degree (associate and baccalaureate) nanoscience technology graduates from colleges and universities across the country to join our NACK Nanotechnology Alumni Network.

PURPOSE

The NACK Alumni Network is designed to help nanoscience graduates enhance their professional opportunities, inform them of educational opportunities, and connect them with networking groups.

BENEFITS

- Provide online networking opportunities
- Access career resources
- Connect students to alumni mentors
- Keep alumni informed of current events
- Share success stories

SIGN UP NOW

Nano4Me.org/Alumni

NACK CENTER

NSF

Alumni Network Resources

- Website for alumni of nanotechnology undergraduate education programs across the nation

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- Accessed through NACK website (nano4me.org/alumni)

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- Identifies transfer agreements
- Contains information on nano trends and events

Check Out the NACK Alumni Network
www.nano4me.org/alumni

Questions?