

Acquisition of An Electron-beam Lithography System for a Nanotechnology Research and Education Facility at U.C. Irvine

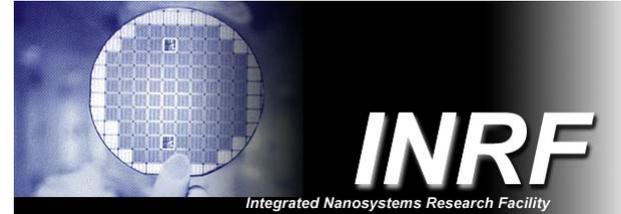
Peter Burke, G.P. Li, Wilson Ho, A. P. Lee, R. Penner, U.C. Irvine DMR-0216635

Research:

The acquisition of electron beam lithography with support from the NSF MRI program has dramatically enhanced research opportunities in four thrust areas ongoing at U.C. Irvine:

- (1) Wireless communications
- (2) Fiber optic communications
- (3) Biotechnology
- (4) Nanotechnology

Over 24 faculty groups use the facility.



Facility Integration:

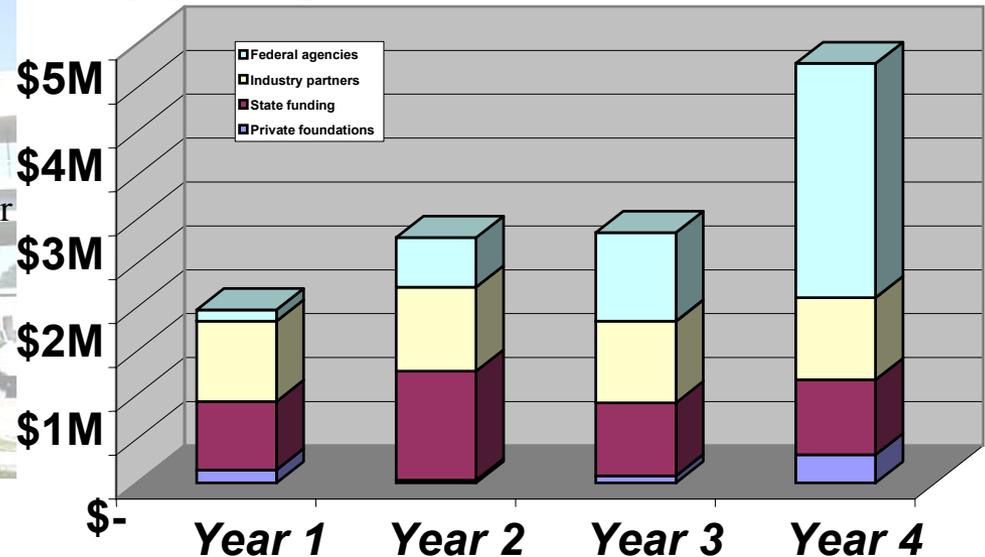
The NSF MRI funded electron-beam lithography system is integrated into an extensive nanofabrication infrastructure, including

- 17,000 sq. ft. class 10,000/1000/100
- SEM/TEM
- Optical lithography to 0.3 μ m with Canon I-4 aligner
- 5 mask aligners
- CVD for nanotube/nanowire growth
- Metal deposition (thermal, sputter, e-beam)
- PECVD, RIE, ICP, DRIE
- Polymer MEMS capability

The facility will be a cornerstone of a new multi-disciplinary institute, the *California Institute for Telecommunications and Information Technology*.

Leveraged Research Funding

Integrated Nanosystems Research Facility
U.C. Irvine



An additional \$2M of equipment was purchased in year 4 from state, industry funding.

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Education:

- At the INRF, students work literally side-by-side with industry partners from over 25 companies, training the next generation of scientists and engineers. Such a training facility is only possible due to support from the NSF MRI and similar equipment programs.

- The NSF MRI supported addition of electron-beam lithography to this facility continues to provides invaluable, hands-on experience with a state-of-the art nanofabrication tool in the INRF.

- The number of users trained continues to grow, contributing to the health of the Nation's technical workforce.



Facility Users

