

Micro/Nano Technology Service Center Financial Report for FY2010

Dr. Kevin Walsh, Director
Dr. Rob Keynton, Associate Director
Dr. Shamus McNamara, Assisting Director
Mark Crain, Cleanroom Manager
Wendy S. Metcalf, Administrative Associate
Don Yeager, Technical Staff and Facilities Coordinator
Joseph Lake, Technical Staff and Outreach Coordinator
Curtis McKenna, Technical Staff
Caitlin Grothaus, Student Assistant

SUMMARY

The University of Louisville Micro/Nano Technology Service Center (MNTC) is a university-recognized recharge service center established in 2004. It is utilized for both research and teaching. This document serves as its official financial report for the fiscal year ending June 30, 2010. The MNTC ended FY10 with a surplus of \$30,159, compared to a deficit of (\$10,976) in FY09. Details of our financial year follow.

Table 1 presents the overall financial status of the MNTC for FYE 6/30/10. Expenditures for 2010 were \$141,519 and revenues were \$171,678, resulting in a \$30,159 surplus for the fiscal year which will be carried over to FY11. Salaries for 2010 were \$11,237 and Fringe Benefits were negative \$555 (due to salary and fringe credits for some of Mark Crain's salary in FY09 that should have been charged to the Crane grant) for a total of \$10,682 (Table 2), a significant decrease from FY09 (\$38,222). Our largest expenditures were liquid nitrogen (\$43K), laboratory supplies (\$28K), and chemicals (\$24K). The university increased the administrative fee on expenses to 5% (\$6K).

Revenue for the MNTC by quarter is shown in Figure 1 and a summary is displayed in Figure 2. Of our total revenue of \$171K, 97% or \$166K came from internal users. A list of internal faculty users appears in Table 3 and Figure 3. Figure 4 breaks down our internal revenue by department, showing that 50% was generated by ECE faculty. A list of external users appears in Table 4 and external revenue (\$5K) is displayed in Figure 5 illustrating that two startup companies from UofL (Assenti and Nauganeedles) produced 53% of that income. Table 5 presents a comprehensive list of all MNTC internal clients in FY10.

Comparisons of FY04 through FY10 are presented next. As shown in Figure 6, total income decreased in FY10 by \$21K from the previous year, and external income decreased \$10K from the previous year presumably due to the global recession. Figure 7 shows that expenses in FY10 decreased by \$62K from the previous year due to cost saving measures implemented by the cleanroom staff.

Figure 8 presents Total Income from Internal Users (\$874K) since FY04. The top 5 faculty users of the MNTC are Dr. Walsh of ECE (\$220K), Dr. Cohn of ECE (\$88K), Dr. Alphenaar of ECE (\$84), Dr. Keynton of BE (\$72K), and Dr. McNamara of ECE (\$68K).

Figure 9 presents Total Internal Income (\$874K) by Department since FY04. The dominant department continues to be ECE at \$540K or 62%, followed by BE at 12%, Physics at 10%, ME at 6%, and Chemistry at 2%.

Figure 10 shows the number of departments, faculty, students, post docs and researchers who have annually used the cleanroom since FY06. We continue to enjoy an increase in the number of students/researchers/post docs who utilize the facility (about 70 distinct users for FY10). However, the number of faculty and departments appear to have leveled off the last 2 years (14 faculty from 6 departments).

Finally, Figure 11 shows the total Grant Revenue that has come into the University of Louisville as a result of grants which use the cleanroom since 2001. This amount is a staggering \$40M with 48% coming from DOD and 17% from NSF. A significant portion of this funding would not have been possible without the unique resource of our micro/nano cleanroom facility.

FY10 was a landmark year for new capital equipment acquisitions for the MNTC. Through grants from the Navy, NSF EPSCOR and NSF MRI, over \$3M of new capability was added to the cleanroom facility. This included a \$1M LPCVD system, \$500K Heidelberg Laser Pattern Generator, \$500K Oxford PECVD System, \$100K CPK Spray Develop/Etch System, \$200K Zygo Profilometer, \$250K QFI Thermal Imaging

System, \$80K YES Polyimide Vacuum Oven, and \$50K Toho Stress Measurement System. These acquisitions bring our total cleanroom asset value to approximately \$20M.

Not captured in the MNTC Balance Sheet shown in Table 1 is the "*staff subsidy*" which the cleanroom receives through the University and external grant funding. The University provides CAR funding (continuing annual resources or hard money) for an administrative position (Wendy Metcalf), a technical support position (Don Yeager), and 75% of a managerial position (Mark Crain). A Navy grant (Dr. Walsh PI) supports another two technical positions on soft funds (Joseph Lake and Curt McKenna). In total, our staff of 4.75 positions comes to approximately \$243K of support (including fringe benefits). Such human resource support is vital for the continued success of the MNTC. The MNTC operates all of its ~\$20M of capital equipment without any annual maintenance contracts. We therefore rely on our experienced technical staff to keep our sophisticated equipment operational, ensure personnel safety, and provide ongoing training to our nearly 100 cleanroom users. With the afore-mentioned Navy grant ending in December of 2010, the University (Speed Dean's Office and EVPR Office) has generously agreed to pick up the 2 soft money technical positions and increase the managerial position to 100%. Therefore, beginning in January of 2011, the MNTC will have 5.0 fulltime support positions (1 UBM, 1 manager, and 3 technical support engineers). Although these staff numbers are a bit on the low side when compared to other university cleanrooms of our size (10,000 sq. ft.), we are confident in our ability to deliver a safe and quality product to our client user base with a staff of this size (5). The MNTC also relies on a modest subsidy to help maintain its equipment. This "*equipment maintenance subsidy*" is controlled by the Associate Dean of Research (Dr. Tom Starr) and is called the Randolph C & M Lab Account. In 2010, the MNTC was provided \$34,477 from that account to help maintain its \$20M suite of processing and infrastructure equipment.

In conclusion, on behalf of the entire MNTC personnel, we wish to thank all the individuals who have supported and continue to support our micro/nano initiative at the University of Louisville.

*Definitions:

Light User @ \$550/month: A light user doesn't use the DRIE and has less than 4hrs of mask writing time in the month.

Heavy User @ \$800/month: A heavy user uses the DRIE, or print over 15 hrs of LPG time, or uses large amounts of precious metal, or over 4 hrs of training.

Power User Fee @ \$1,050/month: This is applicable to exceptional situations when the user's research needs and expenses are not adequately covered by the Heavy User rate.

Table 1. Financial Status of the MNTC Service Center FYE 6/30/10

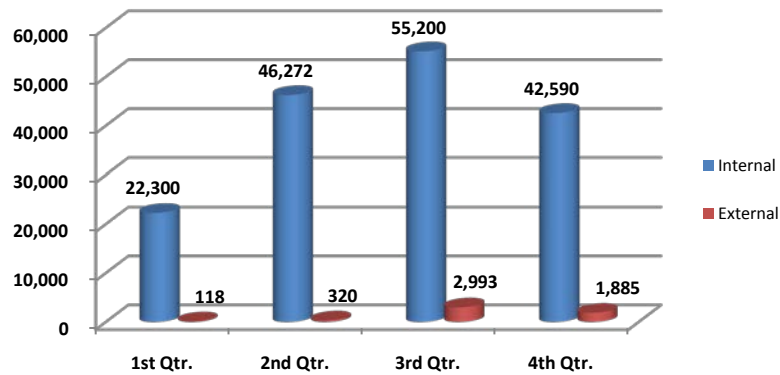
BRB Micro/NanoTechnology Cleanroom Balance Sheet

EXPENDITURES		FY 10
SALARIES AND BENEFITS (S&B)		
Professional & Administrative		(3,158.60)
Student		14,395.88
Health		(457.11)
FICA		(98.59)
TOTAL		<hr/> 10,681.58
SUPPLIES AND EXPENSES (S&E)		
Offset for Purchasing		(1,687.40)
Laboratory		28,292.51
Chemicals		24,423.58
Liq. Nitrogen		43,698.54
Demurrage/Compressed Gas (cylinders)		3,276.65
Office Supplies		1,757.43
Non-Library Books & Binding		88.89
Software		949.23
Stockroom		148.41
Meeting		867.54
Maintenance Supplies		2,636.24
Printing Supplies		560.24
Computer		935.95
Equipment		1,687.40
Security		10.00
Criminal Background Checks		33.00
Overnight and Grant Mailings		589.13
Postal Service		40.58
Printing Services		1,115.92
IT-iTech Xpress		505.00
IT-Voice Network Monthly		828.00
IT-Cellphone Charges		1,479.84
IT-Data Network Monthly		1,104.00
Physical Plant Services		6,856.03
Vehicle Rental		119.95
Registration		375.00
Dues & Membership		19.00
Signage		1,949.05
Business Meals		259.76
Donations		250.00
Publicity & Promotion		1,000.00
UL Administrative Fee		6,667.83
TOTAL EXPENDITURES		<hr/> 141,518.88
INCOME		
USER FEE		
Internal Users		166,362
External Users		5,316
		<hr/> 171,678
		 \$ 30,159.06

Table 2 . Salaries for FY10

Payroll Detail For:	S0083 FY 10		
	Salary	Fringe	Total
Crain, Mark	(3,158.60)	(771.58)	(3,930.18)
Grothaus, Caitlin	9,506.42	175.45	9,681.87
Parthasarathi, Kruthi	777.14	2.47	779.61
Velasco, Vanessa	4,018.57	30.29	4,048.86
Worker's Comp. Ins.		101.42	101.42
	11,143.53	(461.95)	10,681.58

Figure 1. Internal and External Revenue Generated by Quarter for FY10.



Total Amount of Internal Revenue = \$166,362
Total Amount of External Revenue = \$5,316
Total Amount of Revenue = \$171,678

Figure 2. Total Internal and External Revenue Generated in FY10

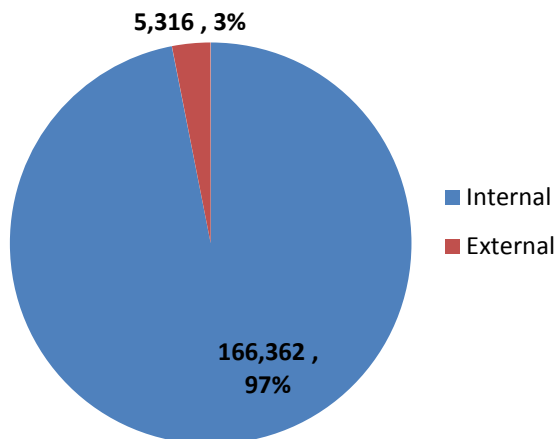


Table 3. Internal Faculty Users in FY10

Amini	ECE	1,497
Berfield	ME	8,830
Bradshaw	ME	4,400
Cohn	ECE	6,000
Fu	Chem. Eng.	6,050
Gamini	PHYSICS	2,750
Harnett	ECE	9,375
Higashi	CHEMISTRY	371
Keynton	BE	16,425
McNamara	ECE	9,975
Mendes	PHYSICS	13,200
Panchapakesan	ME	11,000
Sethu	BE	9,350
Conference		11,014
Walsh	ECE	52,075
Yazdanpanah	ECE	4,050

Total Amount of Internal Revenue = \$166,362

Figure 3. Internal Users in FY10

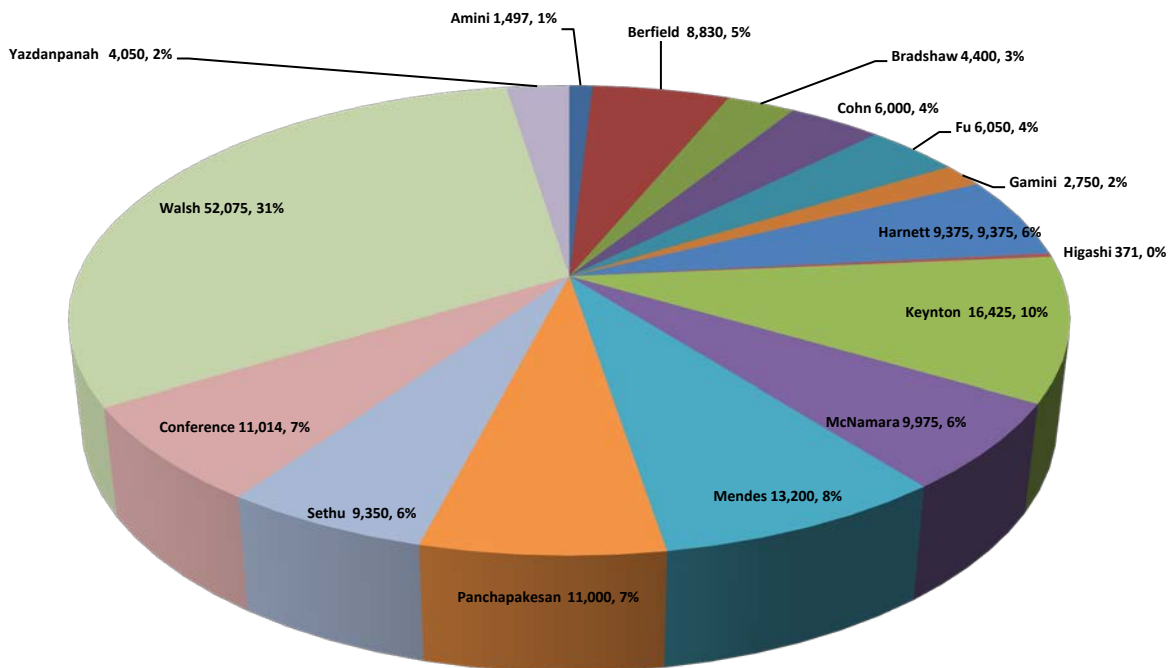
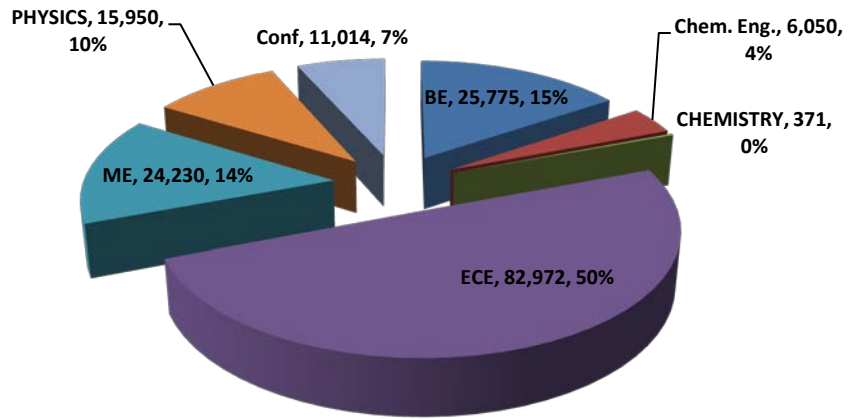


Figure 4. Internal Revenue by Departments in FY10



Total Int. Revenue - \$166,362

Table 4. External Users in FY10

AS Forensics	270
Assenti	2,387
Exotic Electro Optics	1,448
MPD, Inc.	303
Nauganeedles	420
Princeton Univ.	50
SUNY Albany	320
UK-Delong	118

Total Amount of External Revenue = \$5,316

Figure 5. External Users in FY10

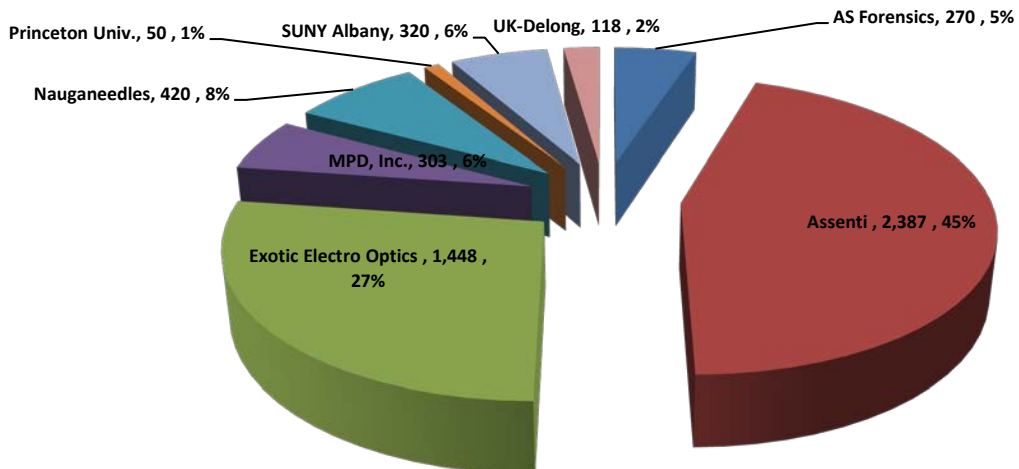


Table 5. FY 10 Internal Cleanroom Clients

<u>Faculty Advisors</u>	<u>Students/Post Docs/Researchers</u>	
Dr. Bruce Alphennar	Aebersold	Julia
Dr. Thomas Berfield	Akojie	Obehi
Dr. Roger Bradshaw	Arva	Sreenath
Dr. Robert Cohn	Atapattu	Mudiyanselage
Dr. Xiaolan Fu	Bannon	James
Dr. Cindy Harnett	Bansal	Tanesh
Dr. Robert Keynton	Brann	Tyler
Dr. Shamus McNamara	Byard	Courtney
Dr. Sergio Mendes	Cambron	Scott
Dr. Balaji Panchapakesan	Carroll	Susan
Dr. Palaniappan Sethu	Chen	Jubin
Dr. Gamini Sumanasekera	Cheong	Ng Nitzia
Dr. Kevin M. Walsh	Crain	Mark
	Crowe	Scott
	Davis	Paul
	Dong	Huihang
	Duff	J. Dominick
	Estrada	Rosendo
	Faiz	Abderrazzak
	Fletcher	Nathan
	Frederick	Paul
	Goessling	Brian
	Gowrishetty	Usha
	Grothaus	Caitlin
	Han	Xue
	Hewaparakrama	Kapila
	Jones	Megan
	King	Benjamin
	King	Kenny
	Lake	Joseph
	Li	Mingxiao
	Lin	Ji-Tzuih
	Lundberg	Jennifer
	Martin	Michael
	McKenna	Curt
	Medepallivenkata	Nara
	Miller	Kane
	Moiseeva	Evgenia
	Nguyen	Dung
	O'Toole	Martin
	Owens	Jeffrey
	Paranyon	Tereza
	Parichehreh	Vahidreza
	Parthasarathi	Kruthi
	Pharas	Kunal
	Porter	Daniel
	Priest	Thomas
	Putcha	Pavan
	Rathfon	Jeremy
	Rensing	Phillip
	Russell	Zachary
	Salmons	Darrel
	Schoen	Michael
	Senousy	Yehya
	Shah	Hemant
	Sherehiv	Andriy
	Sherrard	Kenneth
	Shupe	Rion
	Snatchko	Bryan
	Trada	Hiren
	Velasco	Vanessa
	Wang	Ni
	Webster	Nathan
	Wiederkehr	Rodrigo
	Williams	Stuart
	Willitsford	Adam
	Wilson	Brandon
	Xu	Peng
	Yamarthy	Chakravarthy
	Yazdanpanah	Mehdi

Figure 6. Comparison of Income for FY04 Through FY10

Total Internal Income = \$874,724
 Total External Income = \$261,221
 Total Income = \$1,135,945

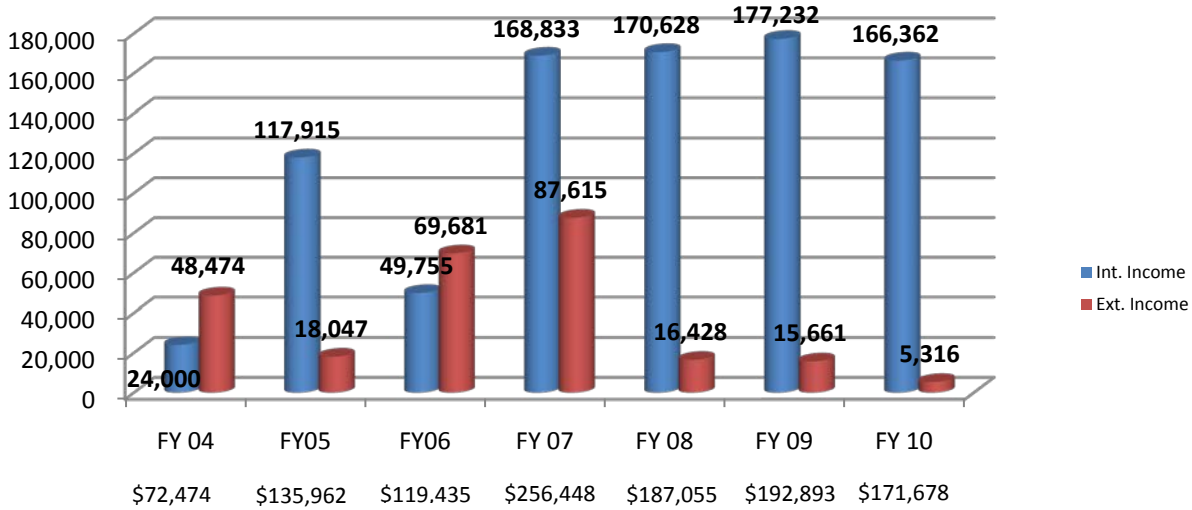
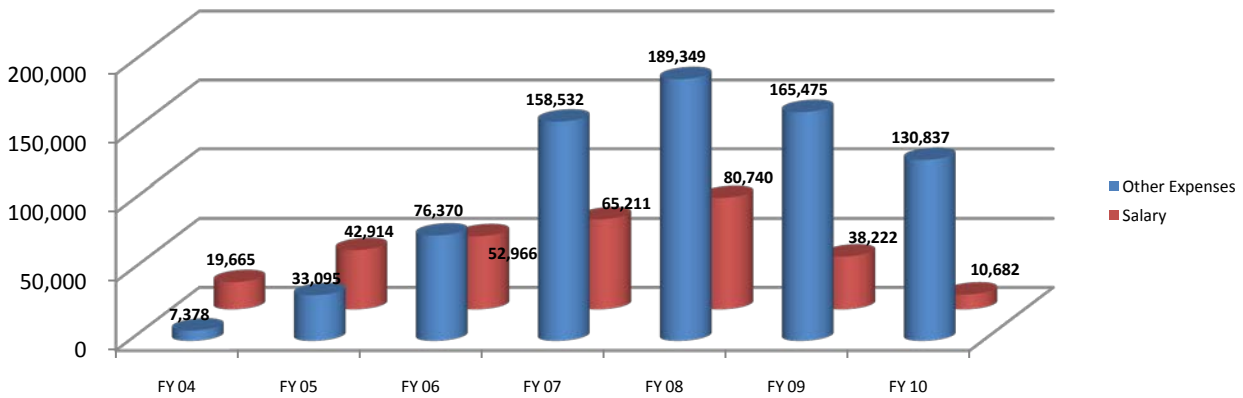


Figure 7. Comparison of Expenses for FY04 Through FY10



Total Other Expenses = \$761,038
 Total Salary = \$310,399
 Total Expenses = \$1,071,436

Figure 8. Cumulative Income for Internal Users since FY 2004

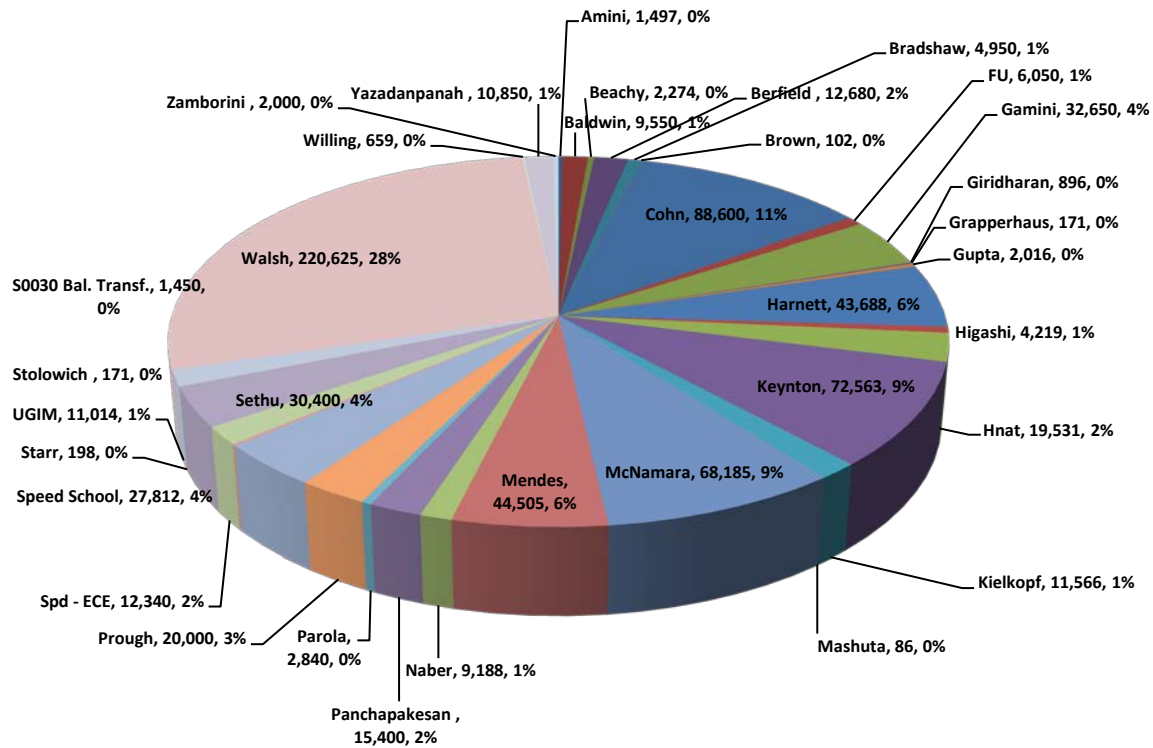
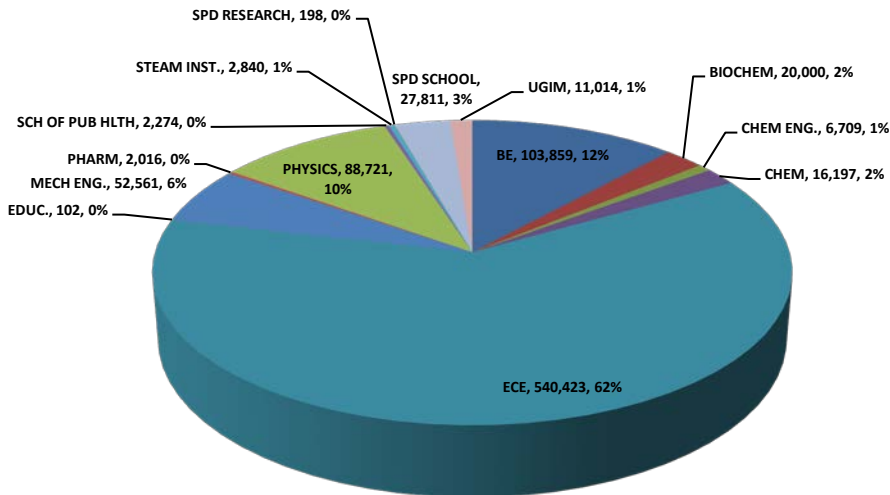
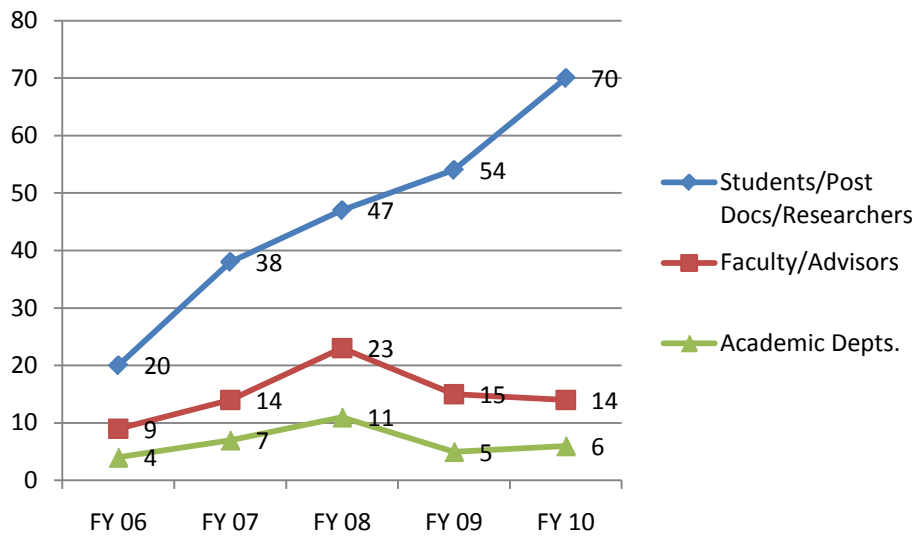


Figure 9. Cumulative Internal Income by Department since FY2004



Total Internal Income = \$874,724

Figure 10. Cleanroom Access since FY06



	Students/Post Docs/Researchers	Faculty/Advisors	Academic Depts.
FY 06	20	9	4
FY 07	38	14	7
FY 08	47	23	11
FY 09	54	15	5
FY 10	70	14	6

Figure 11. Total Grant Dollars that have used the Cleanroom since October 2001

Total grant dollars = \$40,454,600

