

# Micro/Nano Technology Service Center Financial Report for FY2009

Dr. Kevin Walsh, Director  
Dr. Rob Keynton, Associate Director  
Dr. Shamus McNamara, Assisting Director  
Mark Crain, Cleanroom Manager  
Wendy S. Metcalf, Administrative Associate

The University of Louisville Micro/Nano Technology 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 formal financial report for the fiscal year ending June 30, 2009. The MNTC ended FY09 with a deficit of (\$10,976), compared to a deficit of (\$83,135) in FY08. The deficit was due primarily to a continued reduction of income from external clients. As a consequence, we responded by increasing our FY09 monthly user fees\* by \$50 and created a 3<sup>rd</sup> user category called a "power user". Details of our financial year follow.

Table 1 presents the overall financial status of the MNTC FYE 6/30/09. Expenditures for 2009 were \$203,697 and revenues were \$192,721. Salaries for 2009 were \$31,625 and Fringe Benefits were \$6,597 for a total of \$38,222 (Table 2), a significant decrease from FY08 (\$80,740). Our largest expenditures were liquid nitrogen (\$49K), laboratory supplies (\$52K), and chemicals (\$22K). An additional expense was incurred when the university began charging service centers a 2% administrative fee on expenses (\$4K).

Revenue for the MNTC by quarter is shown in Fig 1 and a summary is displayed in Fig 2. Of our total revenue of \$192K, 92% or \$177K came from internal users. A list of internal faculty users appears in Table 3 and Fig 3. Fig 4 breaks down our internal revenue by department, showing that 57% was generated by ECE faculty. A list of external users appears in Table 4 and external revenue (\$15K) is displayed in Fig 5 illustrating that two startup companies from U of L, Assenti and Orthodata produced almost 50% of that income. Table 5 presents a comprehensive list of all MNTC internal clients in FY09.

Comparisons of FY04 through FY09 are presented next. As shown in Fig 6, total income increased in FY09 by \$5K from the previous year, and external income decreased from the previous primarily due to the reduction in external income as a result of the global recession. Figure 7 shows expenses in FY09 decreased by \$66K from the previous year due to cost saving measures implemented by the cleanroom staff.

Fig 8 presents Total Income from Internal Users (\$845K) since FY04. The top 5 faculty users of the MNTC are Dr. Walsh of ECE (\$225K), Dr. Cohn of ECE (\$86K), Dr. Alphenaar of ECE (\$86K), Dr. Keynton of BE (\$68K), and Dr. McNamara of ECE (\$58K).

Fig 9 presents Total Internal Income (\$845K) by Department since FY04. The dominant department continues to be ECE at \$526K or 62%, followed by BE at 12%, Physics at 11%, Chemistry at 3% and ME at 4%.

Fig 10 Shows the number of departments, faculty, students, post docs and researchers who have used the cleanroom since FY06.

Finally, Fig 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 \$36M with 45% 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.

Not captured in the MNTC Balance Sheet shown in Table 1 is the "Staff Subsidy" that the cleanroom receives through the University and through direct external funding (Dr. Walsh PI). The University provides CAR funding (continuing operating 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 and a NSF EPSCoR Infrastructure grant supports another technical support position on soft funds (Joseph Lake). In total, this support of 3.75 positions comes to approximately \$234K of funding including fringe benefits. Such 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 up and running. With new equipment additions in FY09 (\$1M LPCVD furnace system from NSF MRI, \$400K LPG from DOD, etc), we will need to expand that critical support team.

It should also be noted that UofL moved into the number 8 spot in the world for 2009 in "Micro/nano Commercialization" according to Small Times Magazine. In 2006/2007, we moved our micro/nano operation from the 1,000 sq. ft. cleanroom located in Lutz Hall to the new AGI-designed 7 bay, 10,000 sq. ft. cleanroom in the Shumaker Research Building. Our operating expenses jumped accordingly during that period, as reflected in this report.

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 6/30/09**

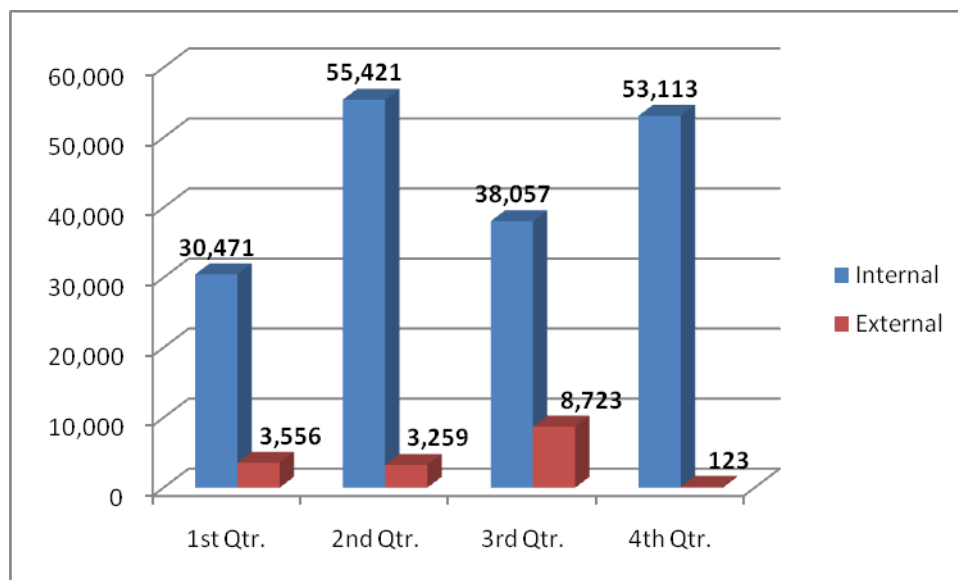
**BRB Micro/NanoTechnology Cleanroom Balance Sheet**

| <b>EXPENDITURES</b>                    |  | <b>FY 09</b>      |
|----------------------------------------|--|-------------------|
| <b>SALARIES AND BENEFITS (S&amp;B)</b> |  |                   |
| Professional & Administrative          |  | 19,144.67         |
| Student                                |  | 8,800.18          |
| Temp                                   |  | 3,680.00          |
| Health                                 |  | 4,678.40          |
| FICA                                   |  | 1,918.82          |
| TOTAL                                  |  | 38,222.07         |
| <b>SUPPLIES AND EXPENSES (S&amp;E)</b> |  |                   |
| In-State Travel-Misc Exp.              |  | 96.80             |
| Out-Of-State-Hotel                     |  | 66.66             |
| Out -Of-State Air                      |  | 511.80            |
| Out-Of-State-Misc Expense              |  | 260.38            |
| Laboratory                             |  | 51,997.62         |
| Chemicals                              |  | 21,985.14         |
| Liq. Nitrogen/Comp. Gas (cylinders)    |  | 49,416.62         |
| Demurrage                              |  | 1,781.66          |
| Office Supplies                        |  | 1,189.21          |
| Stockroom                              |  | 132.75            |
| Meeting                                |  | 505.82            |
| Maintenance Supplies                   |  | 3,751.07          |
| Computer                               |  | 3,274.26          |
| Furniture                              |  | 1,141.00          |
| PSC-Legal                              |  | 711.20            |
| Security                               |  | 10.00             |
| Freight                                |  | 50.00             |
| Overnight and Grant Mailings           |  | 640.27            |
| Postal Service                         |  | 14.07             |
| Photo Duplicating/Reprints             |  | 1,104.08          |
| IT-iTech Xpress                        |  | 211.50            |
| IT-Printing Svcs                       |  | 720.00            |
| IT-Copy Finishing Svcs                 |  | 15.00             |
| IT-Voice Network Monthly               |  | 528.00            |
| IT-Cellphone Charges                   |  | 2,219.76          |
| IT-Digital Poster Svcs                 |  | 120.00            |
| IT-Graphic Design Svcs                 |  | 187.50            |
| IT-Lamination/Mounting Svcs            |  | 24.00             |
| IT-Data Network Monthly                |  | 924.00            |
| IT-Pre Print Design                    |  | 75.00             |
| Physical Plant Services                |  | 1,517.17          |
| Equipment Maint                        |  | 8,671.88          |
| Computer Maint                         |  | 62.78             |
| Registration                           |  | 139.00            |
| Dues & Membership                      |  | 59.60             |
| Parking                                |  | 22.00             |
| Flowers/Memorials                      |  | 88.93             |
| Signage                                |  | 2,887.00          |
| Business Meals                         |  | 122.72            |
| Donations                              |  | 250.00            |
| Publicity & Promotion                  |  | 3,995.00          |
| UL Administrative Fee                  |  | 3,994.06          |
| <b>TOTAL EXPENDITURES</b>              |  | <b>\$203,697</b>  |
| <b>INCOME</b>                          |  |                   |
| <b>USER FEE</b>                        |  |                   |
| Internal Users                         |  | \$177,061         |
| External Users                         |  | \$15,660          |
| <b>TOTAL INCOME</b>                    |  | <b>\$192,721</b>  |
| <b>DEFICIT</b>                         |  | <b>(\$10,976)</b> |

**Table 2 . Salaries for FY09**

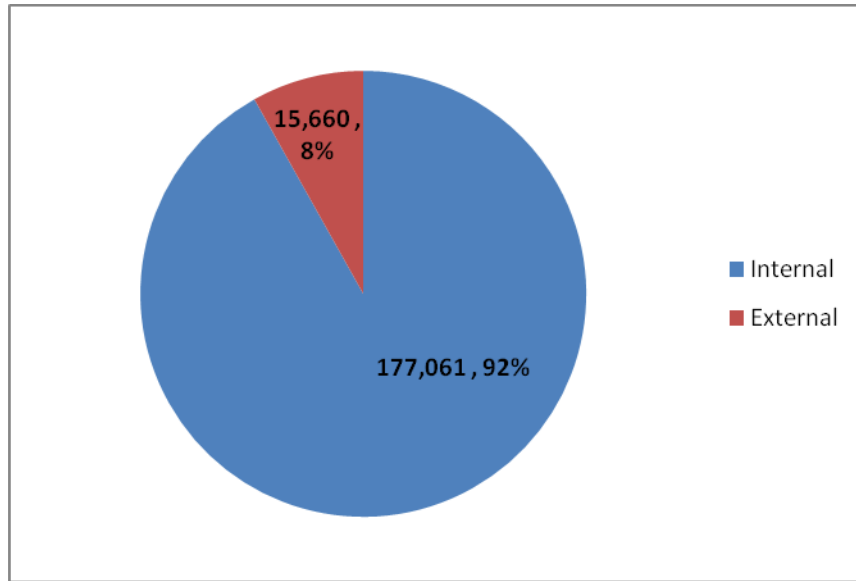
| Payroll Detail for:          | S0083 FY09 |          |           |
|------------------------------|------------|----------|-----------|
|                              |            |          |           |
|                              | Salary     | Fringe   | Total     |
| <i>Cambron, Scott</i>        | 1,588.04   | 118.51   | 1,706.55  |
| <i>Crain, Mark</i>           | 5,763.31   | 1,361.32 | 7,124.63  |
| <i>Desai, Sharvil</i>        | 2,875.00   | 204.64   | 3,079.64  |
| <i>Grothaus, Caitlin C.</i>  | 7,550.18   | 261.80   | 7,811.98  |
| <i>Kieswetter, Ana Marie</i> | 11,793.32  | 4,419.77 | 16,213.09 |
| <i>Putcha, Pavan</i>         | 850.00     | 2.10     | 852.10    |
| <i>Yeager, Joseph</i>        | 1,205.00   | 108.08   | 1,313.08  |
| <i>Workers Comp Ins.</i>     |            | 121.00   | 121.00    |
|                              | 31,624.85  | 6,597.22 | 38,222.07 |

**Figure 1. Internal and External Revenue Generated by Quarter for FY09.**



**Total Amount of Internal Revenue = \$177,061**  
**Total Amount of External Revenue = \$15,660**  
**Total Amount of Revenue = \$192,721**

**Figure 2. Total Internal and External Revenue Generated in FY09**



*Total Amount of Internal Revenue = \$177,061*

**Table 3. Internal Faculty Users in FY09**

|               |           |        |
|---------------|-----------|--------|
| Alphenaar     | ECE       | 2,500  |
| Baldwin       | CHEMISTRY | 3,300  |
| Berfield      | ME        | 3,850  |
| Bradshaw      | ME        | 550    |
| Cohn          | ECE       | 4,100  |
| ECE           | ECE       | 6,170  |
| Gamini        | PHYSICS   | 11,400 |
| Giridharan    | BE        | 896    |
| Harnett       | ECE       | 7,900  |
| Keynton       | BE        | 23,512 |
| Mashuta       | CHEMISTRY | 86     |
| McNamara      | ECE       | 14,800 |
| Mendes        | PHYSICS   | 16,555 |
| Panchapakesan | ME        | 4,400  |
| Sethu         | BE        | 11,050 |
| Stolowich     | CHEMISTRY | 171    |
| Walsh         | ECE       | 59,520 |
| Yazdanpanah   | ECE       | 5,800  |
| Zamborini     | CHEMISTRY | 500    |

Figure 3. Internal Users in FY09

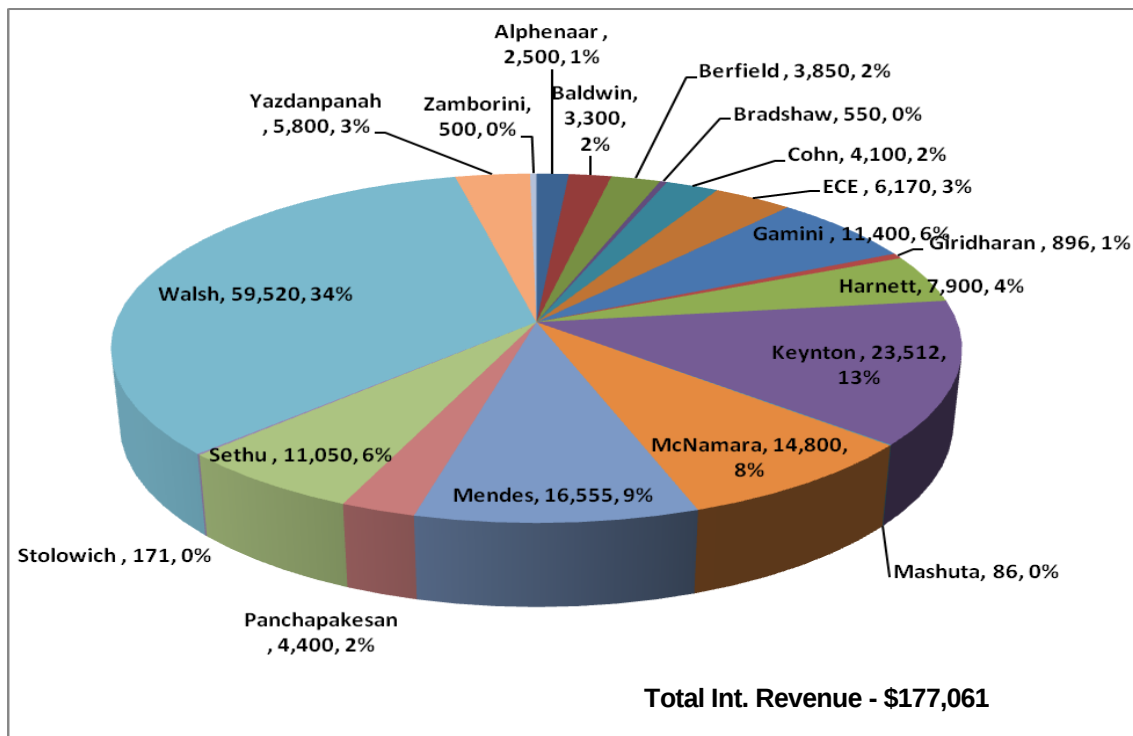


Figure 4. Internal Revenue by Departments in FY09

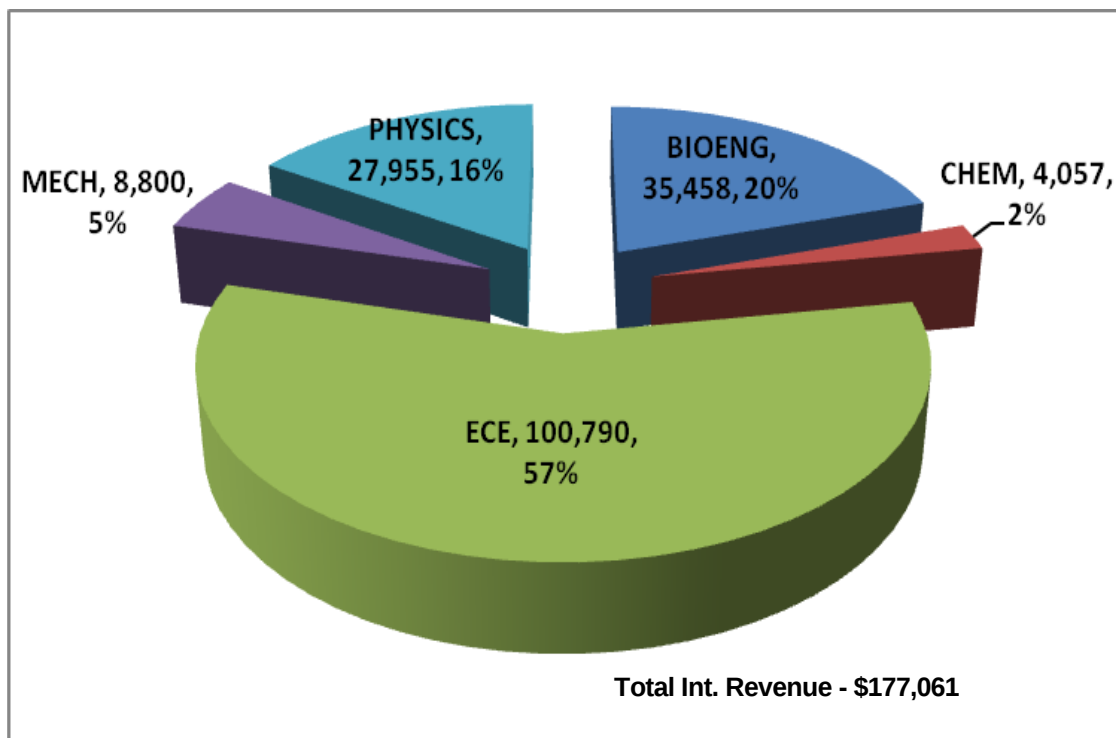
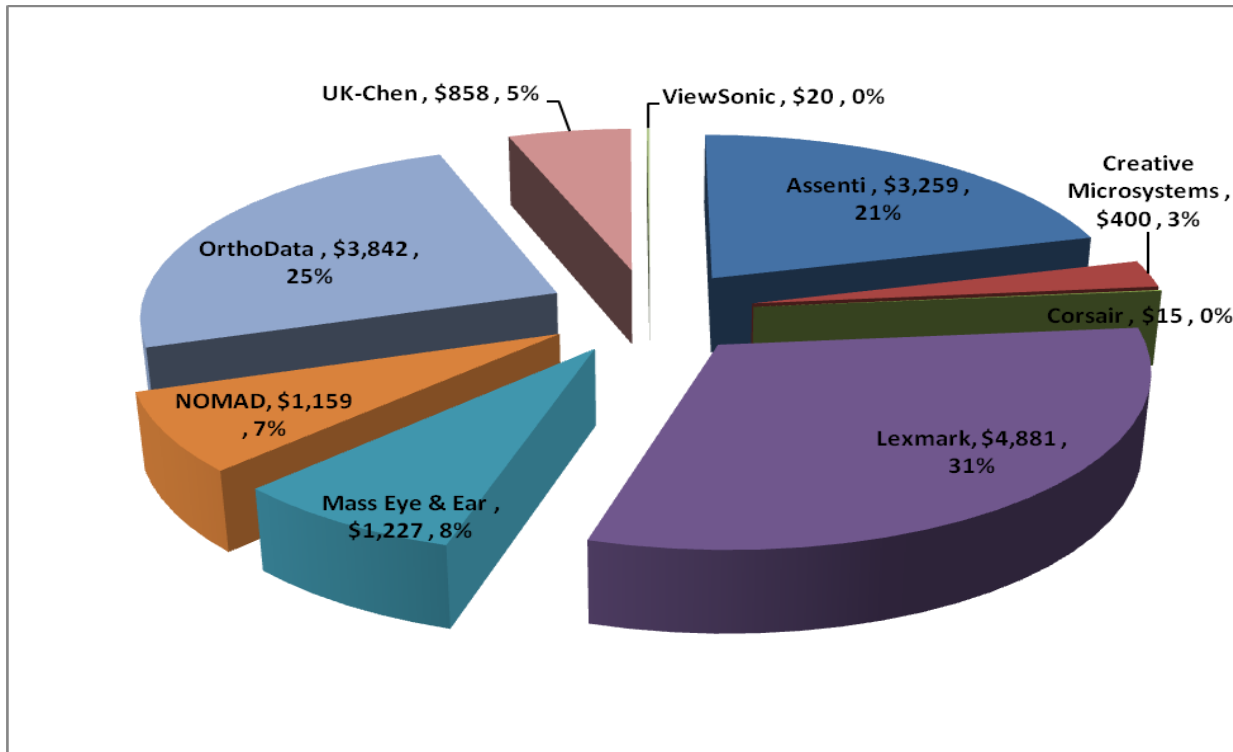


Table 4. External Users in FY09

|                       |       |
|-----------------------|-------|
| Assenti               | 3,259 |
| Creative Microsystems | 400   |
| Corsair               | 15    |
| Lexmark               | 4,881 |
| Mass Eye & Ear        | 1,227 |
| NOMAD                 | 1,159 |
| OrthoData             | 3,842 |
| UK-Chen               | 858   |
| ViewSonic             | 20    |

*Total Amount of External Revenue = \$15,660*

Figure 5. External Users in FY09



**Table 5. FY 09 Internal Cleanroom Clients**

| Faculty Advisors         | Students/Post Docs/Researchers |              |
|--------------------------|--------------------------------|--------------|
| Dr. Bruce Alphennar      | Aebersold                      | Julia        |
| Dr. Richard Baldwin      | Ahern                          | Keith        |
| Dr. Thomas Berfield      | Arva                           | Sreenath     |
| Dr. Roger Bradshaw       | Aslan                          | Mustafa      |
| Dr. Robert Cohn          | Bansal                         | Tanesh       |
| Dr. Xiaoan Fu            | Berry                          | Scott        |
| Dr. Cindy Harnett        | Byard                          | Courtney     |
| Dr. Robert Keynton       | Cambron                        | Scott        |
| Dr. Shamus McNamara      | Carrol                         | Susan        |
| Dr. Sergio Mendes        | Chen                           | Jubin        |
| Dr. Balaji Panchapakesan | Cooper                         | Nick         |
| Dr. Palaniappan Sethu    | Crain                          | Mark         |
| Dr. Gamini Sumanasekera  | Croley                         | Shawn        |
| Dr. Kevin M. Walsh       | Davis                          | Paul         |
| Dr. Mehdi Yazdanpanah    | Day                            | Shawn        |
| Dr. Francis Zamborini    | Desai                          | Sharvil      |
|                          | Dong                           | Huihang      |
|                          | Dorairaj                       | Rathissh     |
|                          | Faiz                           | Abderrazzak  |
|                          | Foreman                        | James        |
|                          | Frederick                      | Paul         |
|                          | Goessling                      | Brian        |
|                          | Gordon                         | Timothy      |
|                          | Gowrishetty                    | Usha         |
|                          | Grothaus                       | Caitlin      |
|                          | Hewaparakrama                  | Kapila       |
|                          | James                          | Alexander    |
|                          | King                           | Benjamin     |
|                          | Lake                           | Joseph       |
|                          | Lin                            | Ji-Tzuoh     |
|                          | Martin                         | Michael      |
|                          | McKenna                        | Curt         |
|                          | Medepallivenkata               | Nara         |
|                          | Mohite                         | Aditya       |
|                          | Moiseeva                       | Evgenia      |
|                          | Moore                          | Emmett       |
|                          | Nagabhirava                    | Bhaskar      |
|                          | Nguyen                         | Dung         |
|                          | Pabba                          | Santosh      |
|                          | Paranyon                       | Tereza       |
|                          | Pharas                         | Kunal        |
|                          | Porter                         | Daniel       |
|                          | Putcha                         | Pavan        |
|                          | Senousy                        | Yehya        |
|                          | Shah                           | Hemant       |
|                          | Shupe                          | Rion         |
|                          | Snatchko                       | Bryan        |
|                          | Trada                          | Hiren        |
|                          | Velasco                        | Vanessa      |
|                          | Wang                           | Ni           |
|                          | White                          | William      |
|                          | Wiederkehr                     | Rodrigo      |
|                          | Williams                       | Stuart       |
|                          | Yamarthy                       | Chakravarthy |

Figure 6. Comparison of Income for FY04 Through FY09

Total Internal Income = \$722,109  
Total External Income = \$208,917

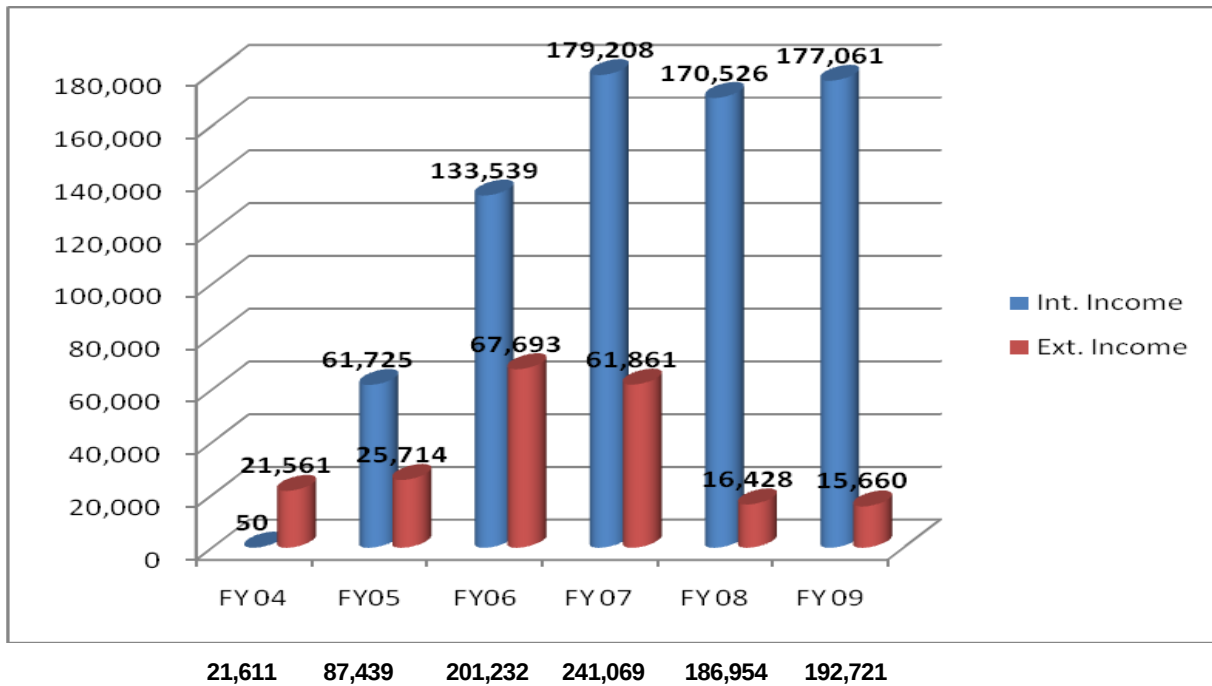


Figure 7. Comparison of Expenses for FY04 Through FY09

Total Expenses = \$630,200  
Total Salary = \$299,717

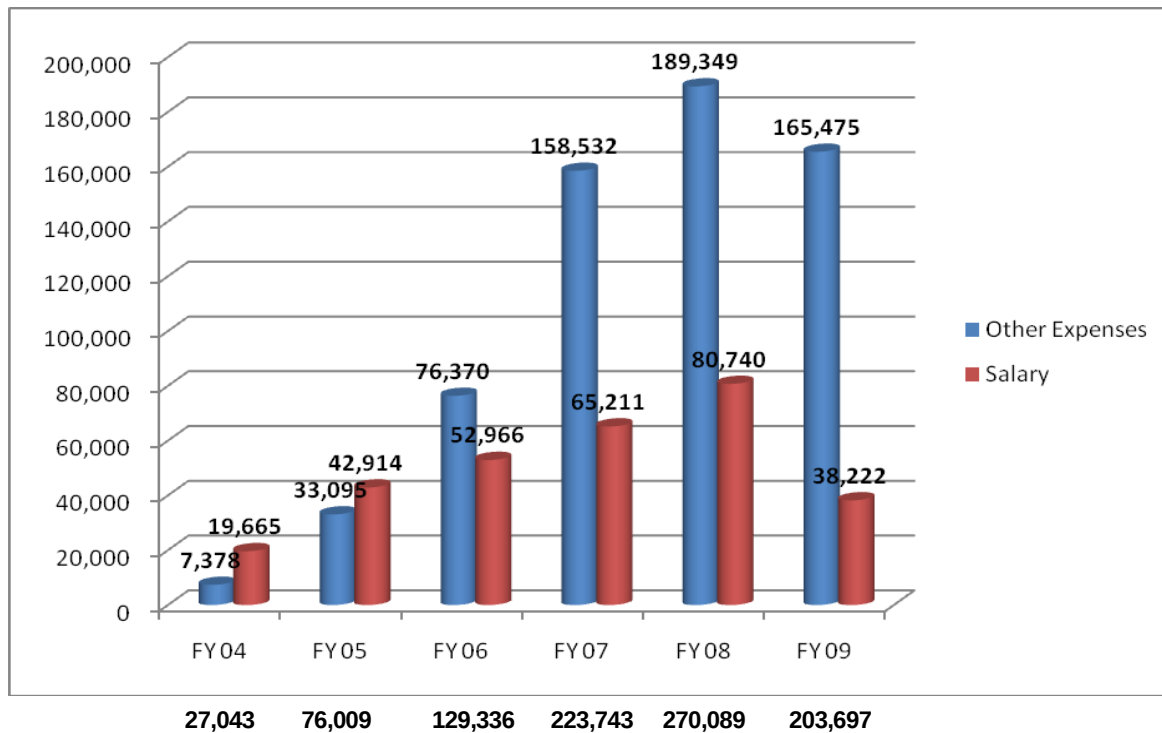


Figure 8. Cumulative Income for Internal Users since FY 2004

Total Internal Income = \$845,179

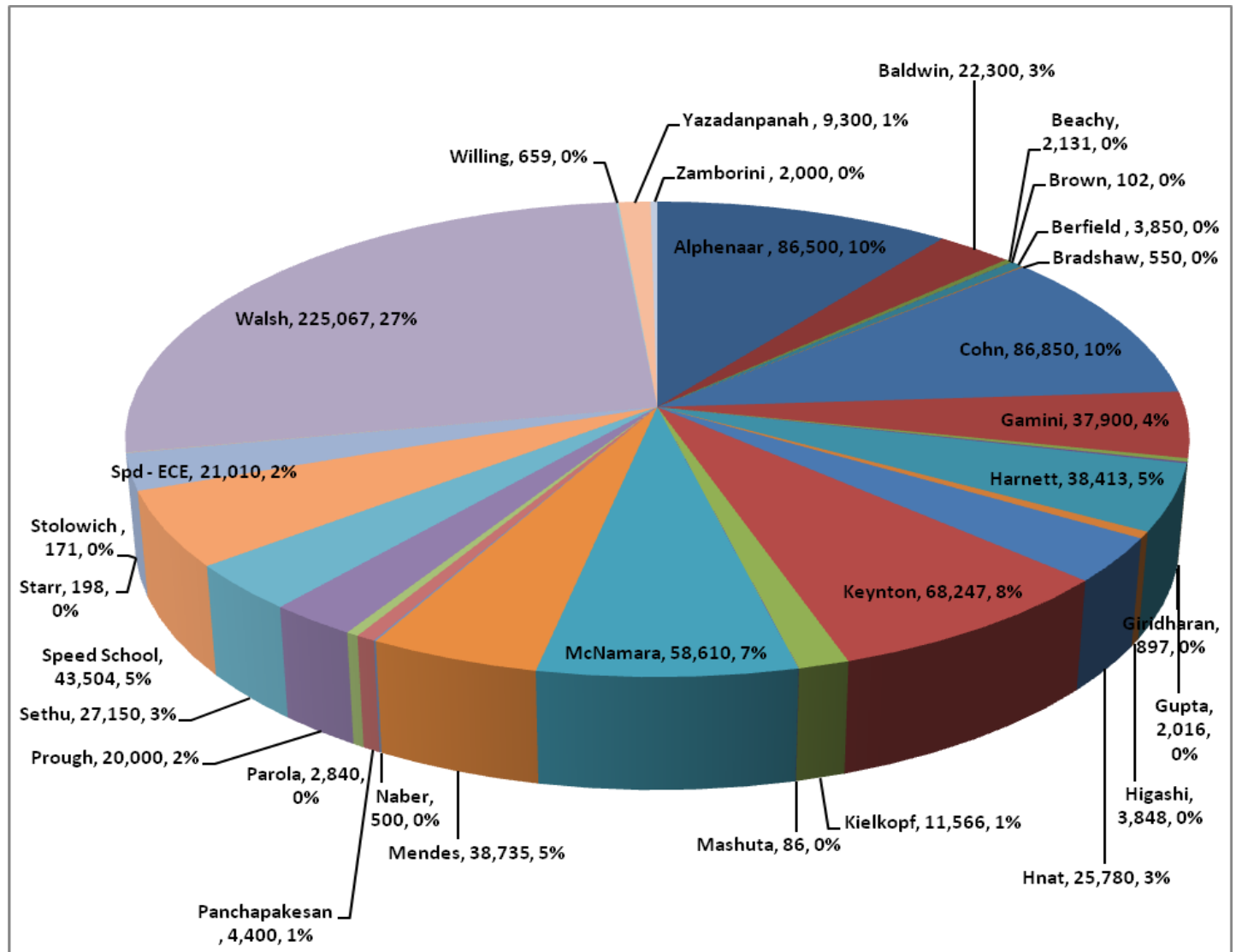


Figure 9. Cumulative Internal Income by Department since FY2004

Total Internal Income = \$845,179

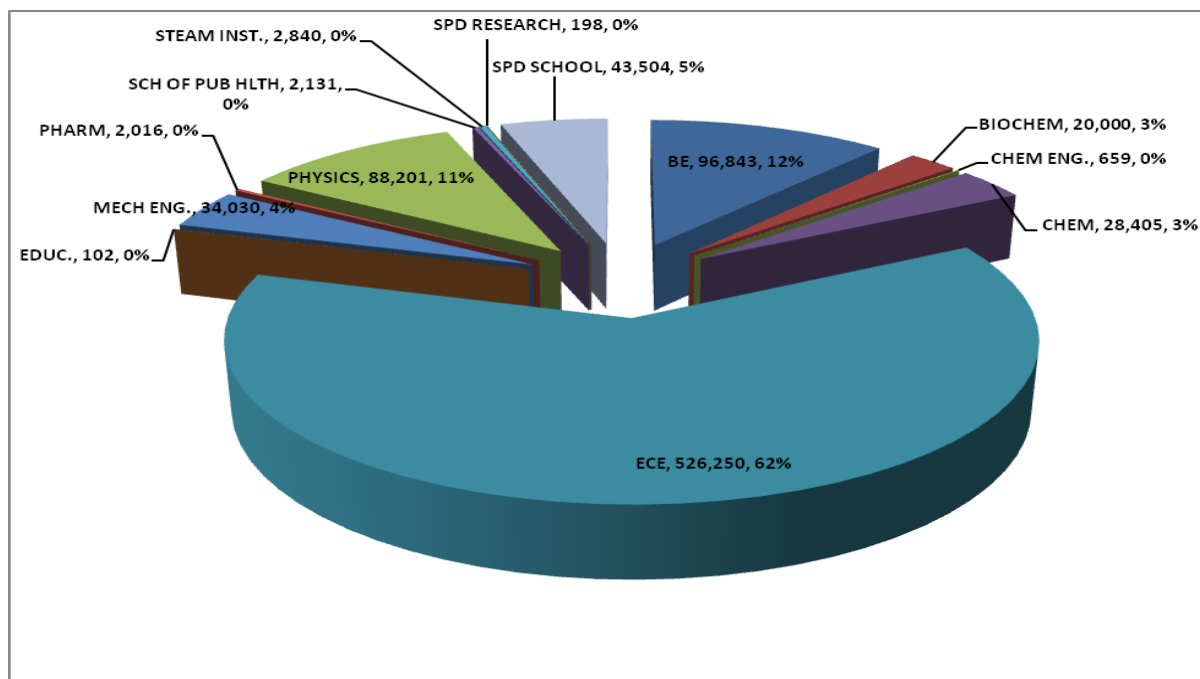


Figure 10. Cleanroom Access since FY06

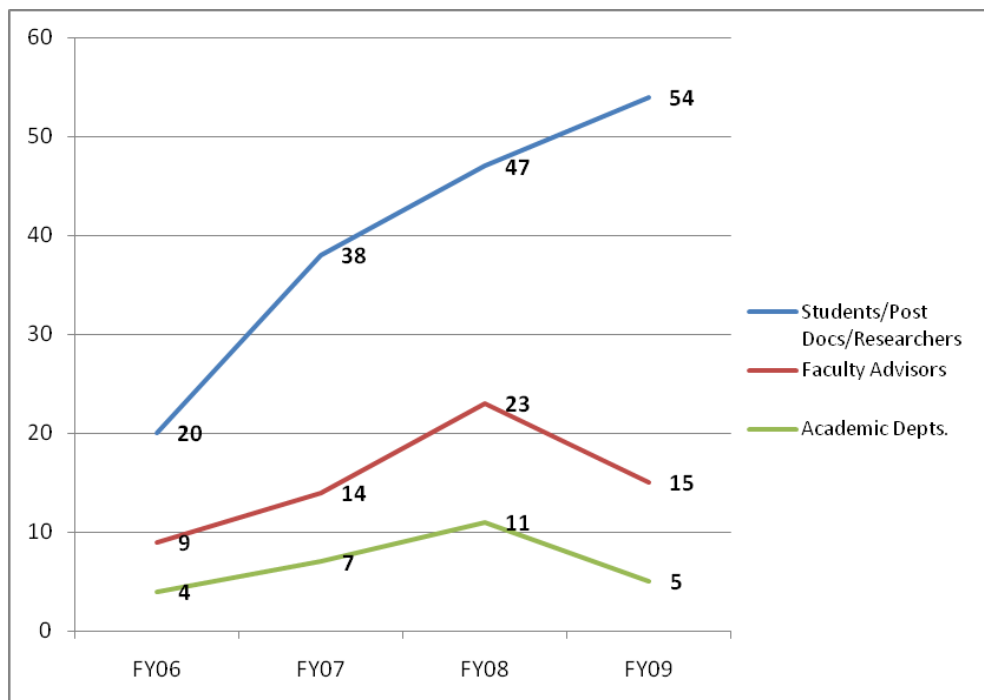


Figure 11. Total Grant Dollars that have used the Cleanroom since October 2001

Total grant dollars = \$36,019,400

