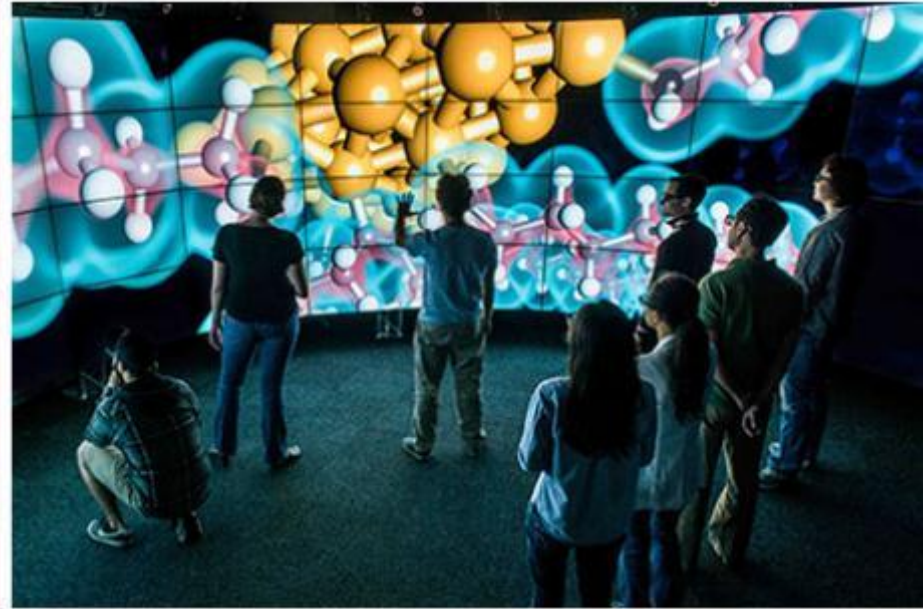


UIC College of Engineering



Peter C. Nelson, Dean
Presentation to the Board of Trustees

January 24, 2013



Six Departments with 10 undergraduate and 18 graduate programs

- ◆ **Bioengineering**
- ◆ **Chemical Engineering**
- ◆ **Civil and Materials Engineering**
- ◆ **Computer Science**
- ◆ **Electrical and Computer Engineering**
- ◆ **Mechanical and Industrial Engineering**

Faculty

- ◆ **129 Faculty in six departments**
57 Professors, 31 Assoc. Prof, 27 Asst. Prof,
7 Lecturers, 7 Active Emeritus



Students

- ◆ 2311 B.S. students enrolled in Fall 2012
14.80% women, 6.58% African American, 19.08% Hispanic
- ◆ 633 Masters students in Fall 2012
- ◆ 445 Ph.D. students in Fall 2012

Research

- ◆ Research expenditures: \$24.5 million for FY2012
- ◆ Publications: 58 books and book chapters, 362 journal papers and 333 conference papers
- ◆ Patents: 31 disclosures, 36 filed, 5 issued

Alumni

- ◆ 22,000 alumni



Outstanding Faculty

- ◆ **53 Fellows of National/International Societies**
- ◆ **26 National Science Foundation Career/PYI awards**
- ◆ **2 Members of the National Academy of Engineering**

Bridge Manufacturing

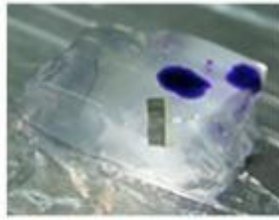




Selected Research Grants/Projects

October 2011 – October 2012

153 active grants totaling \$66,590,383



Dave Eddington (Co-PI)



Dr. Jose Oberholzer (COM PI)



Dr. Yong Wang (COM Co-PI)

mTOR and HIF-1 Signaling of Human
Endothelial and Pancreatic Islet Cells in
Response to Hypoxia and the
Role of Sirolimus

2012 Pfizer ARTS Competition
\$220,000 (09/01/12 - 08/31/14)



Dave Eddington (Co-PI)

Dr. Jose Oberholzer (COM PI)

A Novel Ebta Cell Specific Microfluidic
Perfusion and Imaging Device for
Islet Potency Testing

NIH R01

\$1,657,049

(09/01/11- 08/31/16)





Michael Cho

Investigation of Microcavitation-Induced
Effects Using in Vitro Models for
Traumatic Brain Injury

Office of Naval Research

\$1,010,000 (10/01/12 - 09/30/15)



**Jim Patton & Six other PIs at the
Rehabilitation Institute of Chicago,
Bob Kenyon & Jason Leigh (CS Co-Is)
Daria Tsoupikova (Art and Design)**



Don Hedeker (Biostatistics)

Machines Assisting Recovery from Stroke,
Spinal Cord Injury for Reintegration with Society

**DOE Rehabilitation Engineering Research
Center (RERC) Program**

\$5,000,000

\$800,000 UIC portion (10/01/12 - 09/30/17)





Jie Liang

Computational Assembly of Beta Barrel
Membrane Protein

NIH

\$93,109 Supplement

\$1,479,240 Total funding

(03/01/07 - 08/31/13)





Andreas Linninger

RET in Engineering and Computer
Science Site - Chicago Science
Teacher Research (CSTR) Program

**NSF Research Experiences for
Teachers (RET) program**

\$499,933 (04/01/12 - 03/31/15)





Belinda Akpa

BRIGE: Colloidal Scavengers for the
Reversal of Drug Toxicity

National Science Foundation

\$175,000 (09/01/12 - 08/31/14)





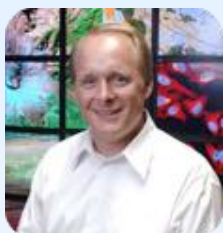
Ludwig Nitsche

Sohail Murad

Peter Nelson

Lewis Wedgewood

Gerald Smith



Scholarship Program for Women
in Chemical Engineering

National Science Foundation

\$599,766

(09/01/11- 08/31/13)





Farhad Ansari (CO-PI)

UMASS-Lowell (PI)

Multi-modal Remote Sensing System
(MRSS) for Transportation Infrastructure
Inspection and Monitoring

Univ. of MA (Lowell)

\$2,564,401

CME's portion: \$535,374

(10/01/11 – 02/31/13)



Kouros Mohammadian

Kazuya Kawamura (CUPPA)

Steve Schlickman (UTC)

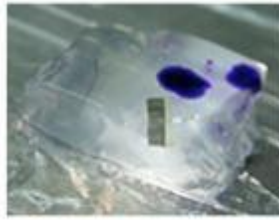
Feasibility Study for the
Chicago - Champaign Link in the
Midwest High-Speed Rail Network

Illinois Department of Transportation

\$1,286,000; UIC share: \$616,000

(07/19/11- 09/30/12)





Alexander Chudnovsky

Plane strain Rock Splitting testing and
morphology Characteration by optical
and SEM microscopy

Shell

\$270,000 Supplement

**\$2,460,019 Total funding
(03/01/12 - 04/30/13)**





Alexander Chudnovsky

Determination of Resistance to Rapid
Crack Propagation of PE Pipes

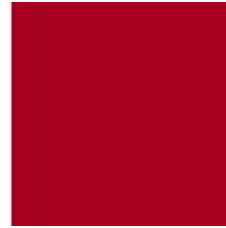
Dow Chemical

\$160,000 Supplement

\$570,000 Total funding

(04/01/12 - 12/31/12)





Krishna Reddy

Sustainable Biocover System for
Methane Oxidation in Landfills

National Science Foundation

\$350,000 (03/01/12 – 02/28/15)





Jakob Eriksson

Sensor Fusion for Multi-modal
Traffic Sensing

**National Science Foundation
CAREER Award**

\$400,000 (03/01/12 - 02/28/17)





Tim Hinrichs (Post-Doc PI)

Lenore Zuck (Co-PI)

Foundations of Application-Sensitive
Access Control Evaluation

National Science Foundation

\$653,000 (09/01/12 - 08/31/15)





Ouri Wolfson
Isabel Cruz
Bo Xu



III: Large: Collaborative Research: Moving
Objects Databases for Exploration of
Virtual and Real Environments

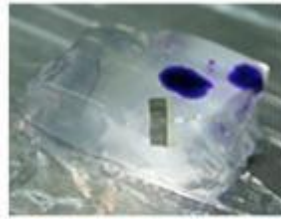
National Science Foundation
\$1.17 million (10/01/12 - 09/30/17)





Peter Nelson & John Dillenburg
Gateway Traveler Information System
and Travel Midwest Website
**IL Dept. of Transportation (IDOT),
\$4,234,028 (2011-2013)**





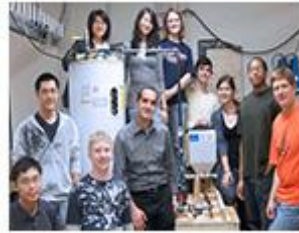
Bhaskar DasGupta

Novel Algorithmic Tools For Analysis of
Biological and Social Networks

National Science Foundation

\$356,222 (09/01/12 - 08/31/15)





Venkat Venkatakrishnan

Robert Sloan (Co-PI)

SFS Scholarships in Cybersecurity
and Information Assurance

National Science Foundation

\$1,968,119 (09/01/12 - 08/31/17)





Venkat Venkatakrishnan
Electronic Security and Privacy:
Technological, Human, Enterprise and
Legal Considerations
National Science Foundation IGERT
\$3.2 Million (2011-2016)

With Information & Decision Sciences (Business),
Communications (LAS),
Biomedical & Health Information Sciences (Applied Health Sciences)





Lenore Zuck

Venkat Venkatakrishnan (Co-PI)

Defensive Optimizing Compilation

DARPA

(Administered by Air Force OSR)

\$1.38 million (06/29/12 - 06/28/15)





Barbara Di Eugenio

Intelligent Learning Environments for
Computer Science Undergraduate
Education

Qatar National Research Fund (QNRF)
\$346,854 UIC portion (10/15/12-10/15/15)





Venkat Venkatakrisnan

Robert Sloan (Co-PI)

Jon Solworth (Co-PI)

Training Grant for 3 MS

Students Over 3 Years

Department of Homeland Security

\$250,000 (09/20/12 - 08/31/15)





Tanya Berger-Wolf

Prof. Joel Brown (UIC Biology)

**INSPIRE: Mingle: Sensing the
Interactions of Animals**

National Science Foundation

\$322,000 (09/01/12 - 08/31/16)

Collaborative research with R. Kravets and
Y. Hu, UIUC, and D. Rubenstein, Princeton.
Total funding: \$800,000





Leilah Lyons

Joshua Radinsky (Co-Pi UIC Curriculum and Instruction)

Andrew A. Beveridge (Co-Pi Queens College Sociology)

INSPIRE: Studying and Promoting Quantitative and Spatial Reasoning with Complex Visual Data Across School, Museum, and Web-Media Contexts

National Science Foundation

\$799,000 (09/12 - 08/15)





Wenjing Rao

Towards the Future of Reliable and
Scalable Nanoelectronic Systems

**National Science Foundation
CAREER Award**

\$450,000 (03/15/12 - 02/28/17)





Danilo Erricolo

Distributed RF systems for
Close-in Sensing and Imaging

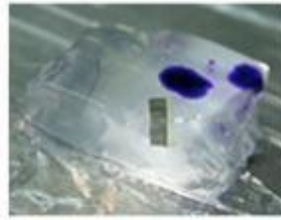
AFOSR

\$544,240 (04/01/12 - 03/31/15)

Research Tasking for RF Tomography

AFRL

\$50,000 (03/21/12 - 03/20/13)



G. Keenan (CON-PI)

D. Wilkie (CON-PI)

Y. Yao

R. Ansari, A. Khokhar, A. Johnson

Describing, Contrasting, and Visualizing
End-of-Life Care in the 21st Century

NIH, \$2,069,041

(9/18/2011- 6/30/2015)





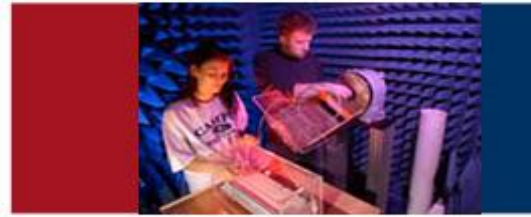
Michael Stroschio

Surface Diagnostics on
the Nanoscale

Novellus Systems Inc.

\$200,000 (10/01/11 – 09/30/15)





Natasha Devroye

CIF Small -- Wireless Relay Networks:
Coding Above Capacity and
Exploiting Structure

National Science Foundation
\$349,884 (01/01/13 - 12/31/15)





Sudip Mazumder
P. R. Kumar at Texas A&M (Co-PI)
CPS: Synergy: Collaborative
Research: Boolean Microgrid
National Science Foundation
\$1,195,567
\$629,256 UIC share (10/01/12-
09/30/15)





Daniela Tuninetti

CIF: Small: Modules as a Framework
for Interference Alignment
in Networks

National Science Foundation
\$315,575 (10/01/12 - 09/30/15)





Alan Feinerman (CO PI)

Prateek Gupta (PI & former CME student of M. McNallan)

SBIR Phase II: Vacuum Insulation Panels
with Tensile Structural Element

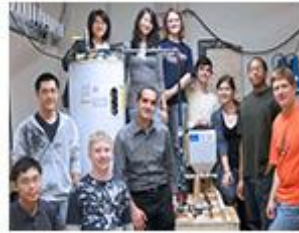
National Science Foundation SBIR

\$500,000

\$87,138 UIC share

(08/15/12 - 08/31/14)





Ahmed Shabana
Farhad Ansari, Mohsen Issa,
Craig Foster, Jason Leigh,
Ouri Wolfson (Co-PIs)



Chris Barkan (PI) UIUC
National University Rail Center
(University Transportation Center)

US DOT/RITA

COE amount, \$460,000 (02/12- 01/14)





Alexander Yarin

Characterization of Rheological
Behavior of Gypsum Slurries

USG

\$150,000 (01/01/12-12/31/12)

Nano-Encapsulated Phase-Change
Materials for Heat Transfer Enhancement

NSF via IL. Inst. of Technology

\$128,470 (09/01/11-08/31/14)



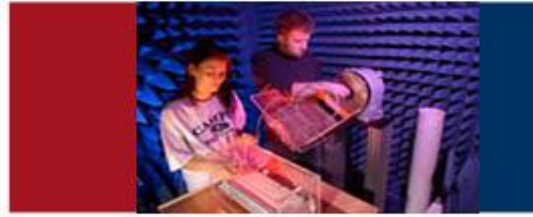
Farzad Mashayek

Simulation of Turbulent Combustion
Interaction in High Speed Flow on
Unstructured Grids

Enabling Energy Systems, Inc.
\$77,059 (04/16/12 - 07/15/14)

Experimental and Computational Studies
to Advance Operability and Performance
of Combustion Systems Adopting
Fluidic Control

Office of Naval Research
\$75,000 (10/01/11-09/30/12)

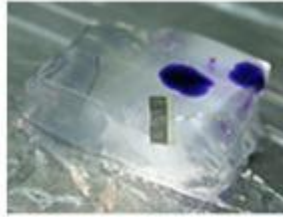


Dino Megaridis

Development of Aqueous Based Nano-Compositions to Surface Treat Substrates Towards Super-Repellency: Phase II

Kimberly-Clark Corp

\$130,507 (07/01/12 - 06/30/13)



Steffen Mueller

Global Warming Impact of Corn Stover
Combusted in Fluidized Bed Boiler

Monsanto Company

\$84,000 (02/27/12 - 02/26/13)

Updating of CCLUB Model with Domestic
and International Land-Use Change
Emissions Factors for Cellulosic
Biofuel Pathways

Argonne National Laboratory

\$45,000 (04/05/12 - 09/30/12)



John Cuttica

Implementation of Illinois Renewable Energy Resources
Biogas and Biomass to Energy Grant Program

\$550,000 (01/11/11 - 12/31/12)

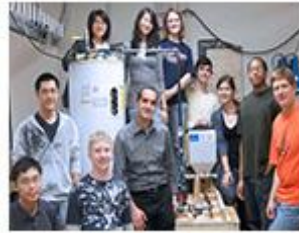
Energy Efficiency Portfolio Standard Market
Transformation Program Support (2012-2013)

\$983,819 (07/01/12-05/31/12)

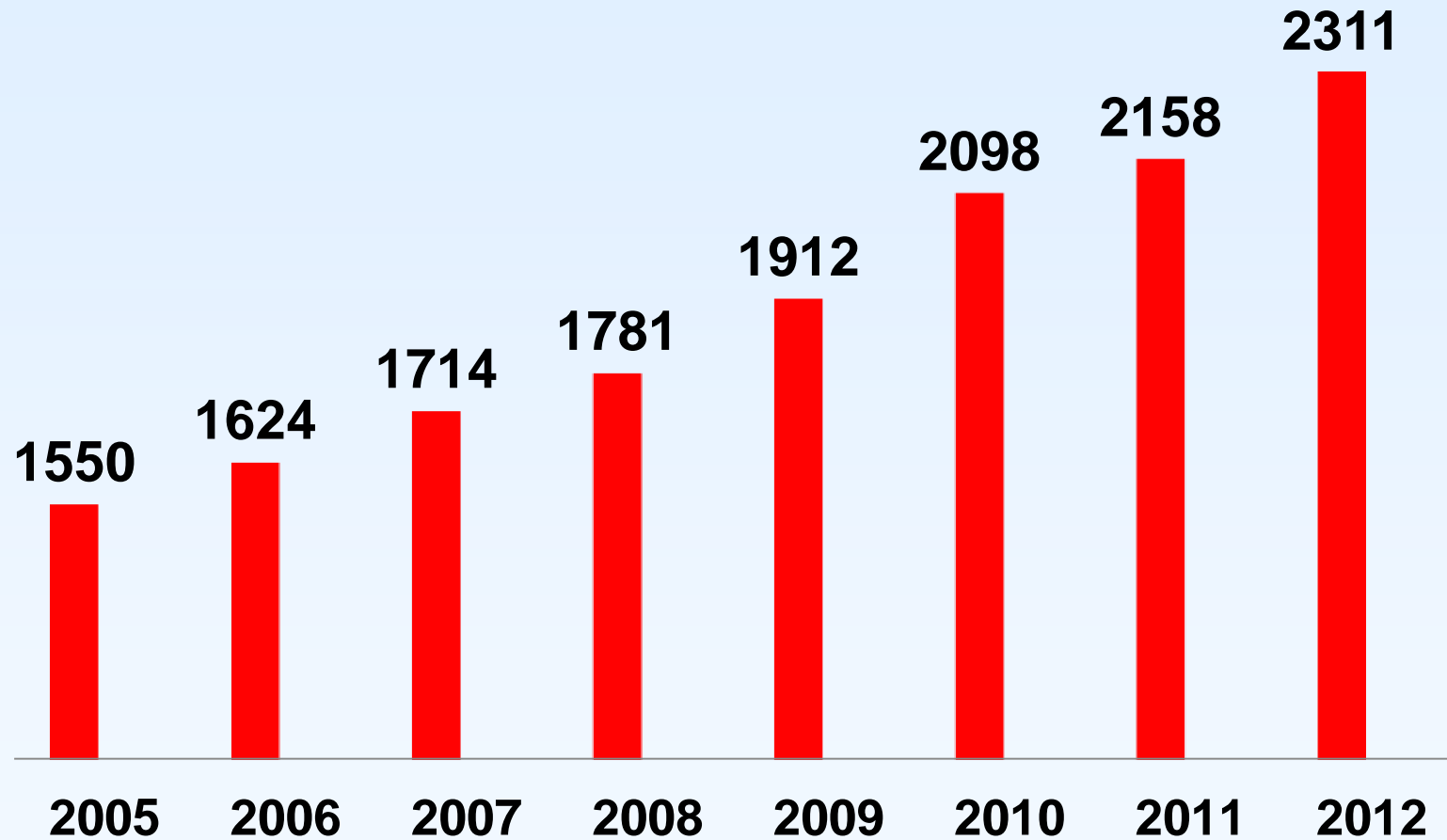
Market Transformation

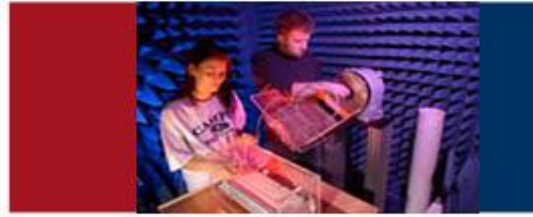
\$120,000 (06/01/11 - 05/31/12)

**IL Dept. of Commerce & Economic
Opportunity (DCEO)**

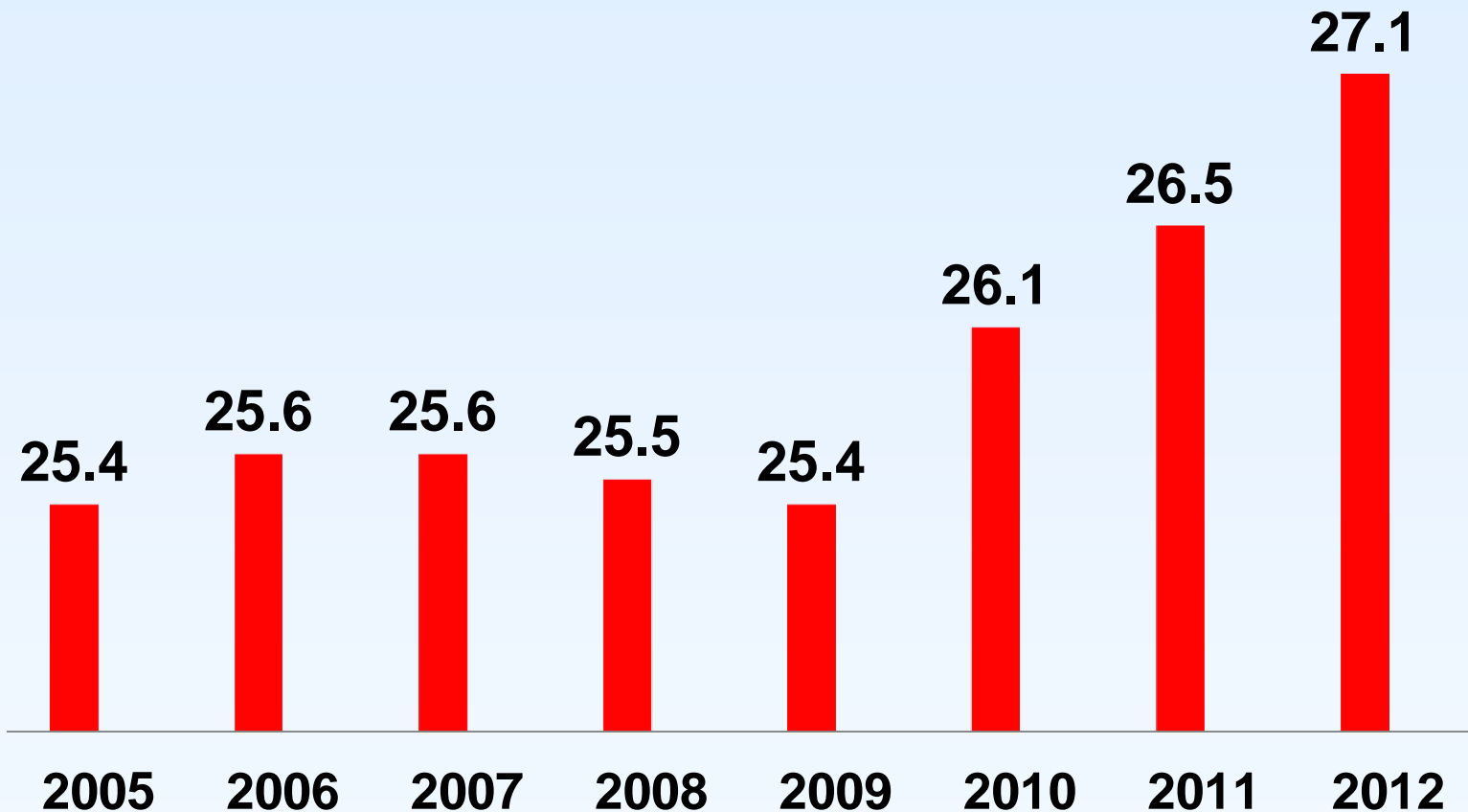


Undergraduate Enrollment Trends



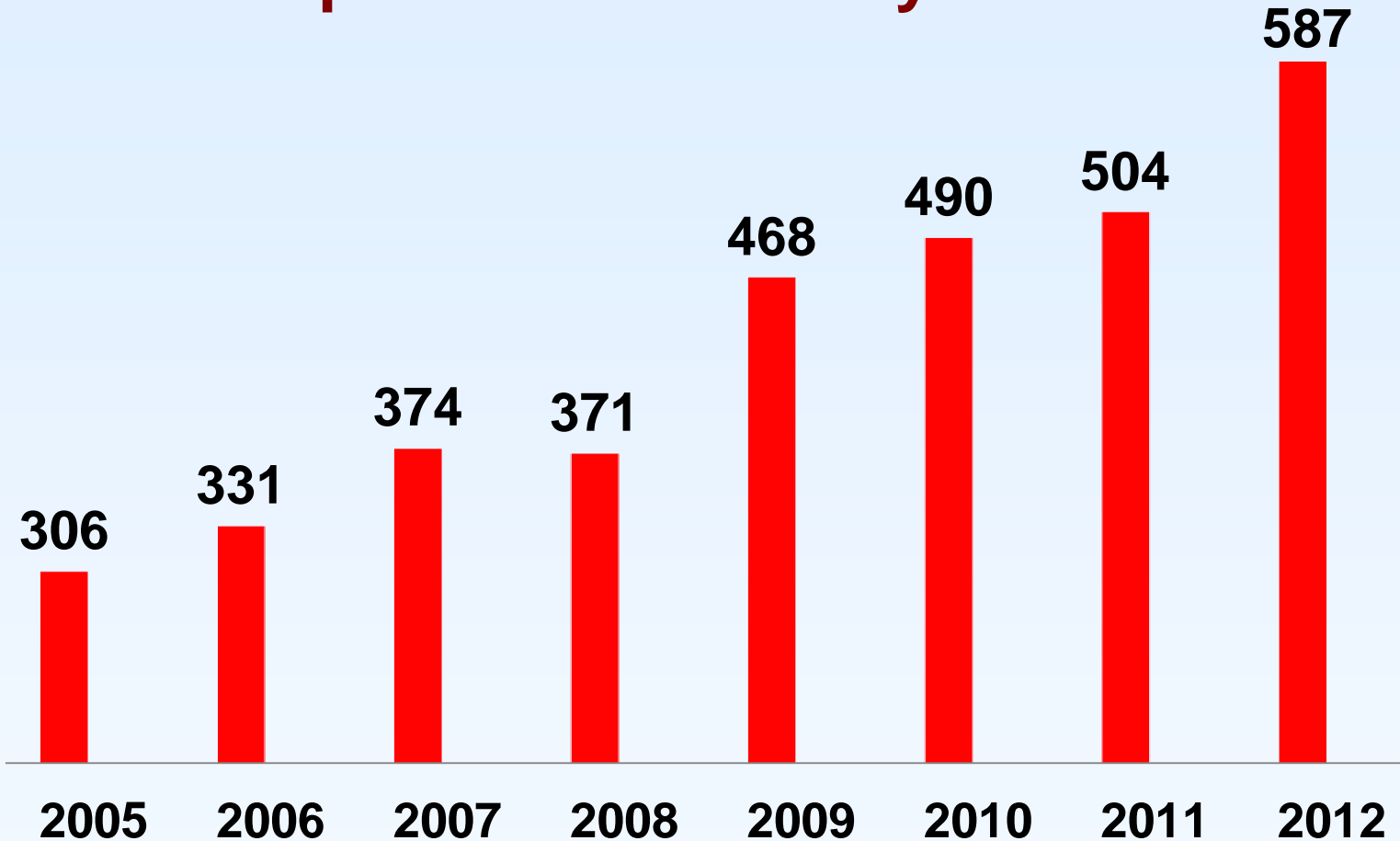


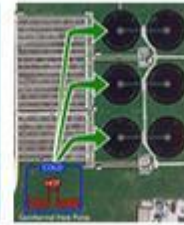
ACT Scores for Entering Freshmen



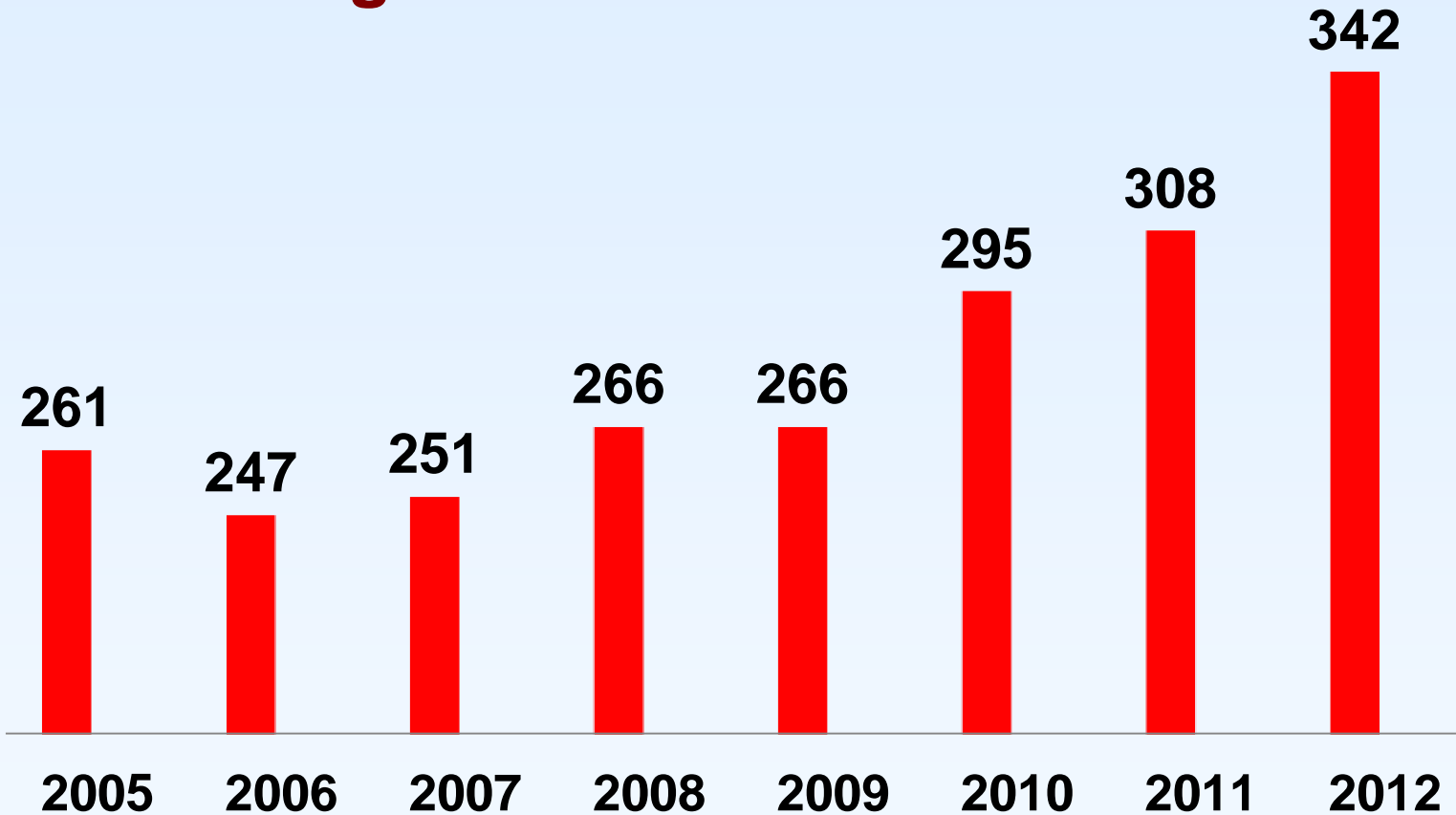


Underrepresented Minority Enrollments





Undergraduate Women Enrollment





Student Development

- ◆ **Strong emphasis on student internships and permanent jobs**
- ◆ **Led by our external Advisory Board**
- ◆ **Over the last academic year over 275 companies hired our students for paid internships and permanent jobs**



275+ Companies Hiring UIC Engineering Students during FY12







TESLA MOTORS









Student Placement Rates

(May 2012 Graduation Survey)

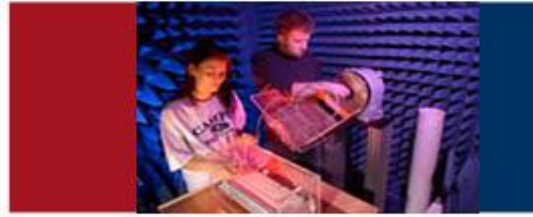
- ◆ **73% were employed within six months**
- ◆ **14% were accepted into graduate school**
- ◆ **13% still seeking employment**



Student Placement Rates

(with internships)

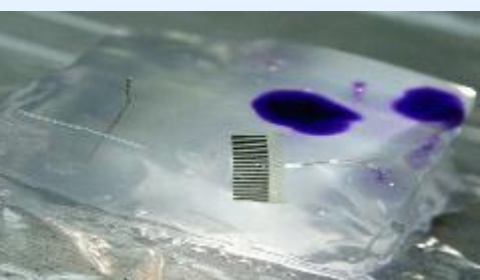
- ◆ **84% of the students who had one or more internships were employed within six months**
- ◆ **100% of the students who had two or more internships were employed within six months**



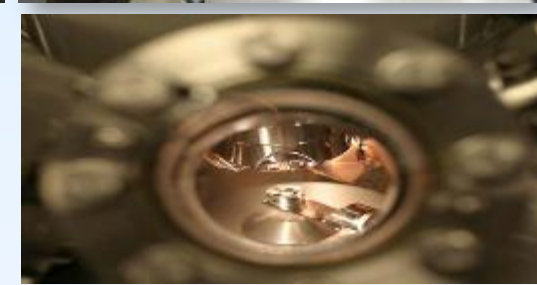
Guaranteed Paid Internship Program

(Freshmen entering in Fall 2013)

- ◆ **Goal is to get early students their first internship early**
- ◆ **Every incoming freshmen meeting the following criteria will be guaranteed a paid internship for summer of 2014**
 - ◆ Complete 24 UIC semester hours with a GPA of 3.0 or greater
 - ◆ Complete Math 180 (Calc I) with a B or higher
 - ◆ Complete at least one additional program specified 100 level Engineering course with a B or higher
 - ◆ Participate in our Engineering Student Success program
- ◆ **Mix of placements between industry and our university research laboratories**
 - ◆ UIC Internships 8 weeks x 32 hours/week x \$10/hour



UIC Department of
Bioengineering
COLLEGE OF ENGINEERING
COLLEGE OF MEDICINE





Strategic Realignment of the Department of Bioengineering

1. **Effective August 16, 2011, the Department of Bioengineering is a department of both the Colleges of Engineering and Medicine.**
2. **B.S. degrees will be granted through Engineering; M.S. and Ph.D. degrees will be granted through the Graduate College.**
3. **Six new faculty members (funded equally from Engineering, Medicine and Campus).**
4. **The department head reports to both deans.**



Department Goals

(from FY11 to FY20)

1. **Develop UIC BioE into one of the top BioE departments in the U.S.**
2. **Increase BioE grant expenditures from FY11 by \$3 million/year to \$7 million/year.**
3. **Increase BioE B.S. graduates from 36 to 108 while increasing average ACT from current 29.1 to 32.**
4. **Increase number of M.S. graduates from 17 to 50.**
5. **Increase number Ph.D. graduates from 18 to 35.**

Fleet Commander

Developed in the Electronic Visualization Laboratory, EUL
by MS graduate candidate Arthur Nishimoto

Thank you for your attention

