

Swanson School Update

November 17, 2014

along with ECE and the Electric Power Initiative

Bill Stanchina, Chairman
Dept. of Electrical and Computer Engineering



Mission

- To produce highly qualified engineers and useful, creative research and technology

Primary School Priorities

- Quality in undergraduate education
- Quality in MS & PhD pgms
- Innovative Research

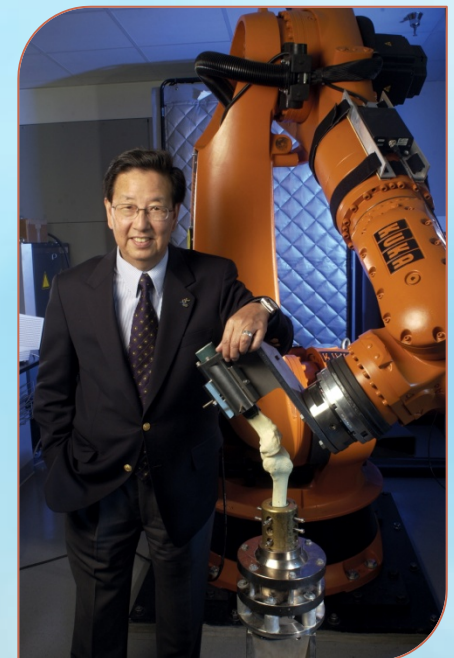
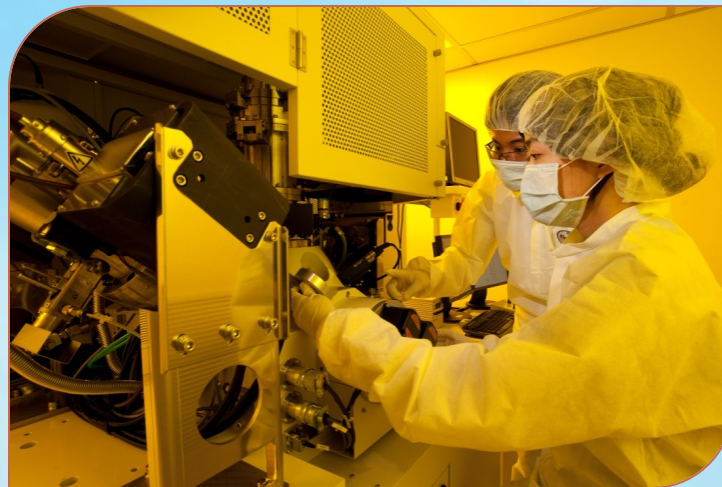
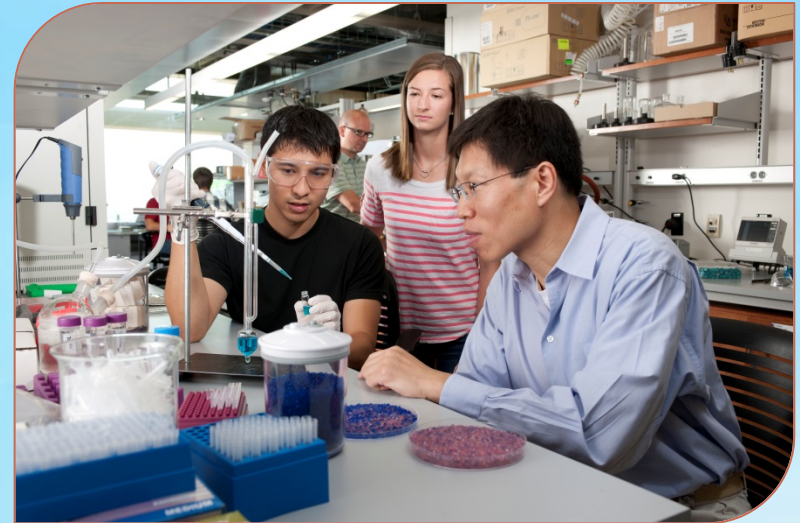


Supporting Priorities

- Revenue
- Diversity

Our Brand

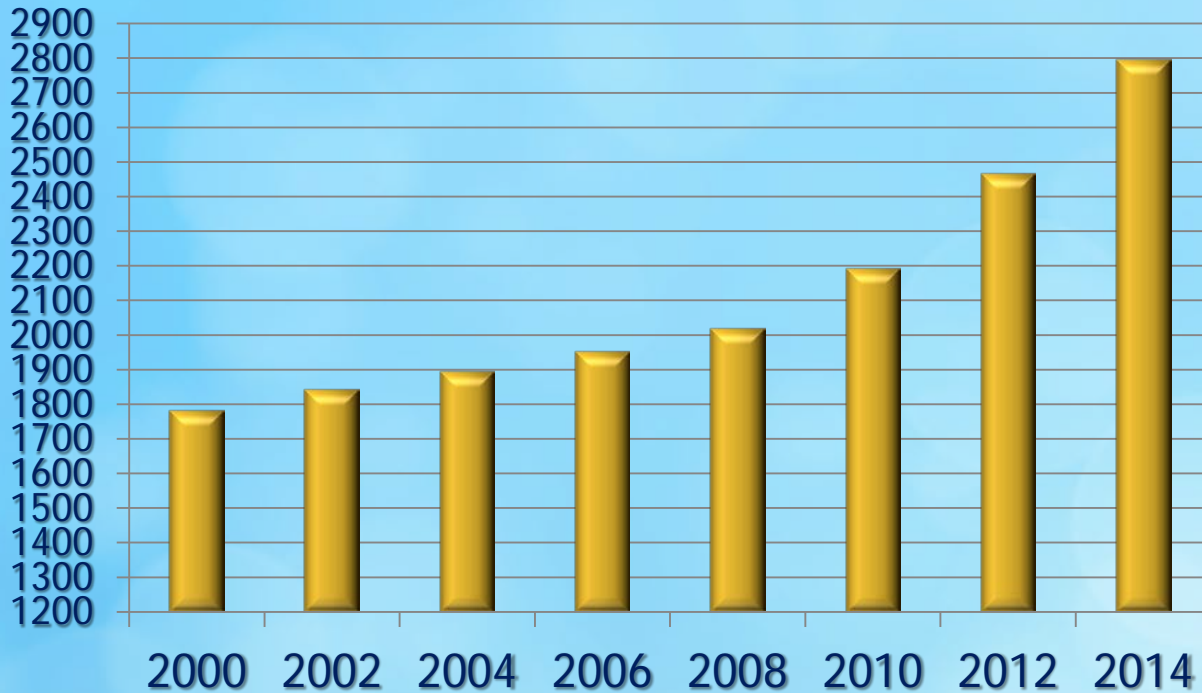
- *Energy and Sustainability*
- *Bioengineering*
- *Advanced Manufacturing*
- *NanoEngineering*
- *Innovation*
- *International Opportunities*
- *Industrial Collaborations*



Sichuan University Pittsburgh Joint Inst. (SCUPI)

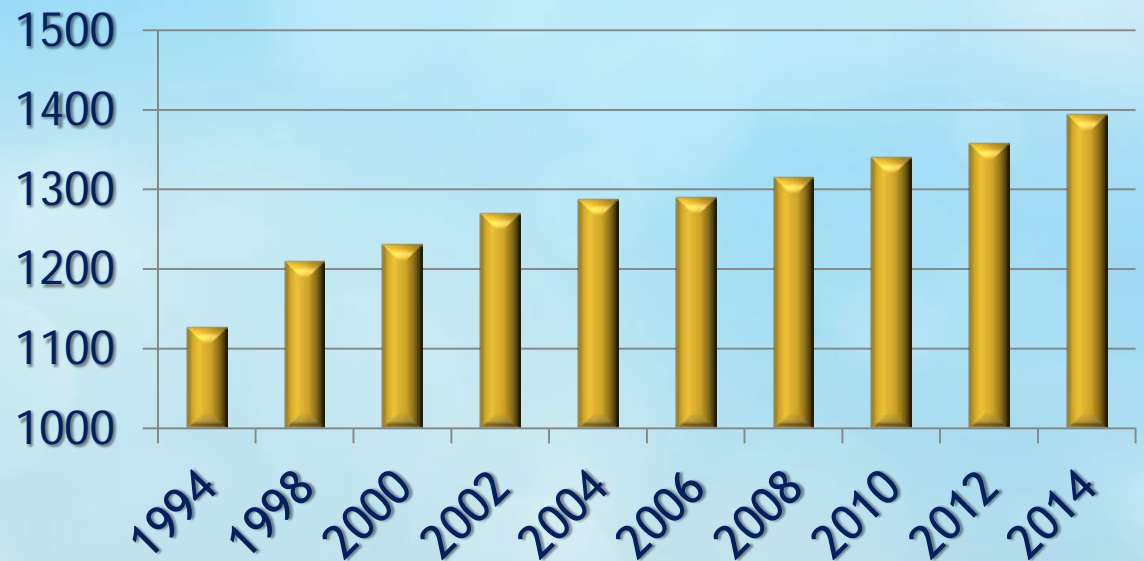


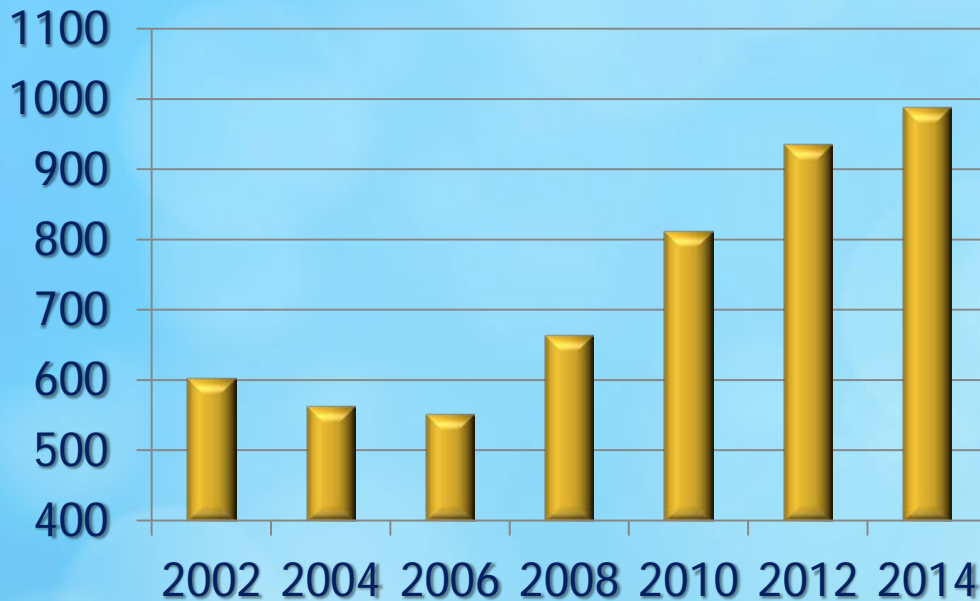
- Minking Chyu named Dean
- Inaugural Board Meeting and Ground Breaking in July 2014.
- First Freshmen in September 2015
- 1600 Engineering Students-200 to Oakland
- Pitt Curriculum-English Language
- Goal is to create globally competent engineers
- Other schools with similar programs include Duke, Michigan, NYU, CMU



Undergraduate Enrollment

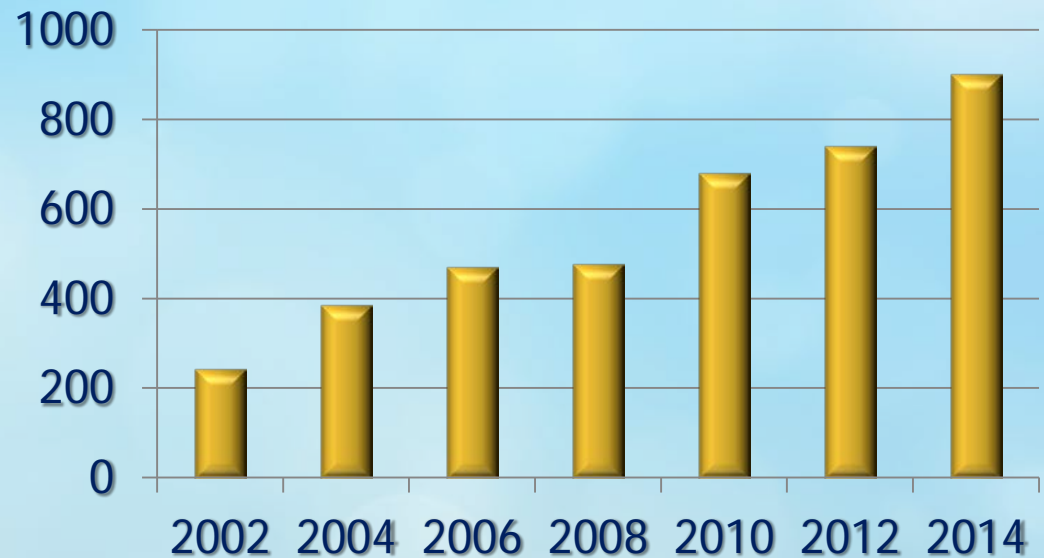
SAT Scores of entering freshmen



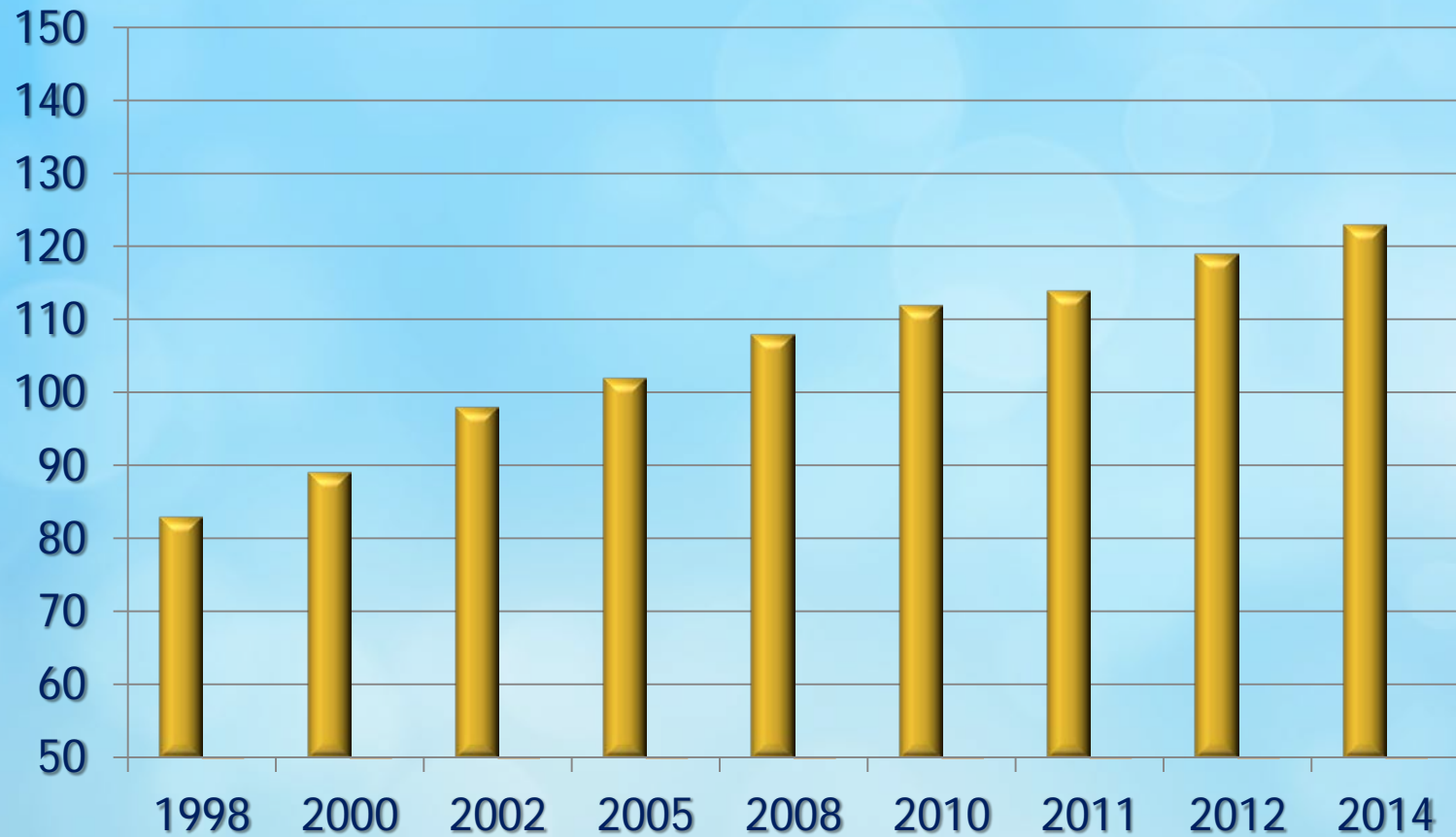


Graduate Enrollment

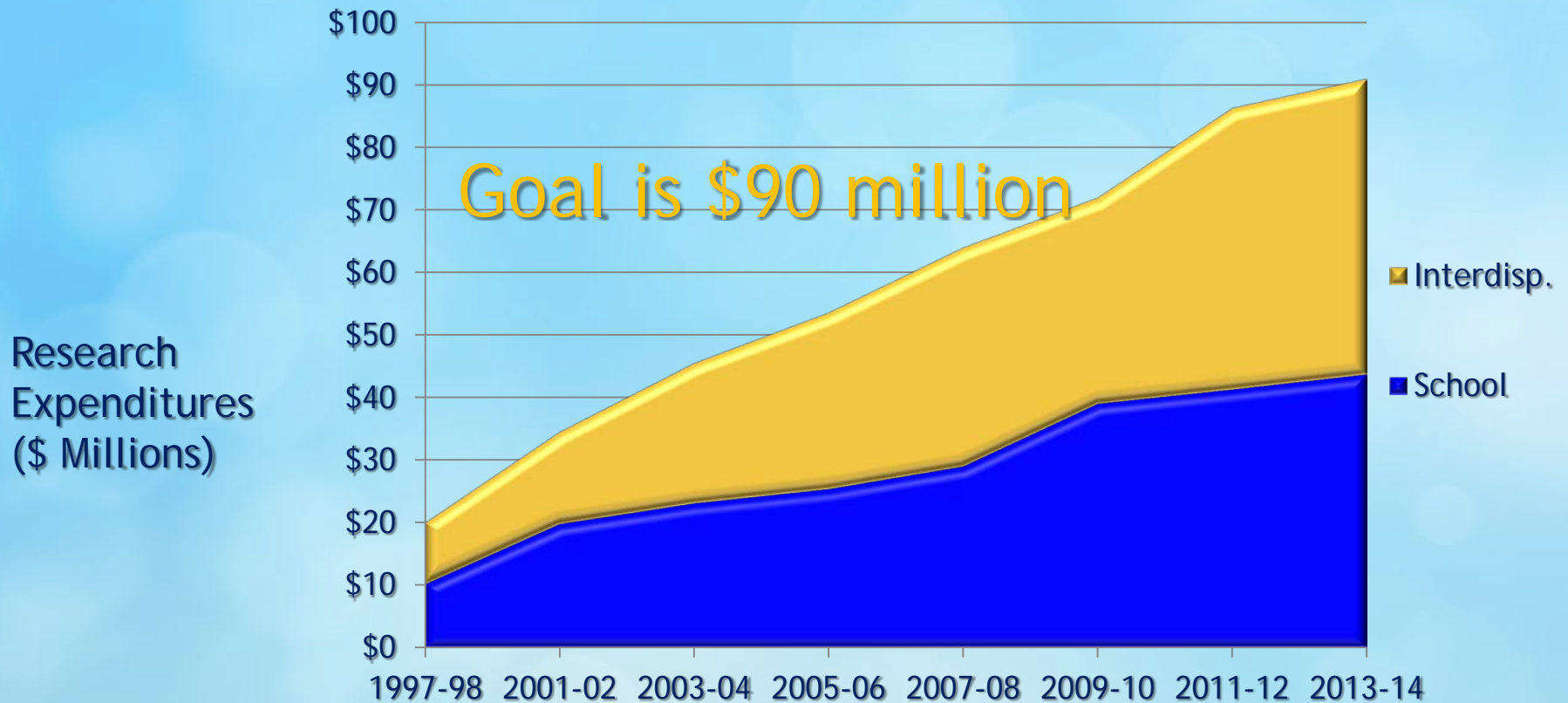
Journal
Publications
→ Research



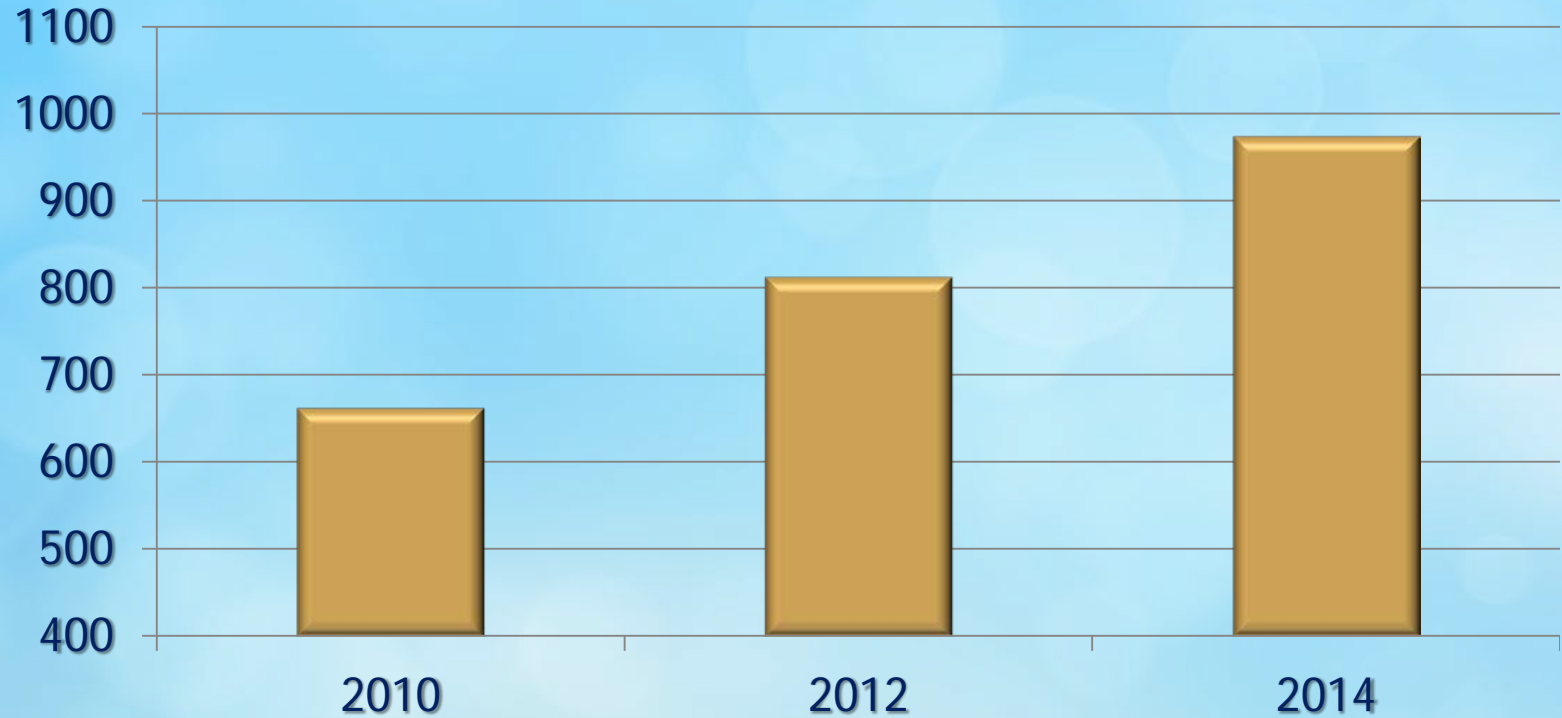
Full Time TTS Faculty Size



Research Productivity in the Swanson School



Cooperative Education Placements



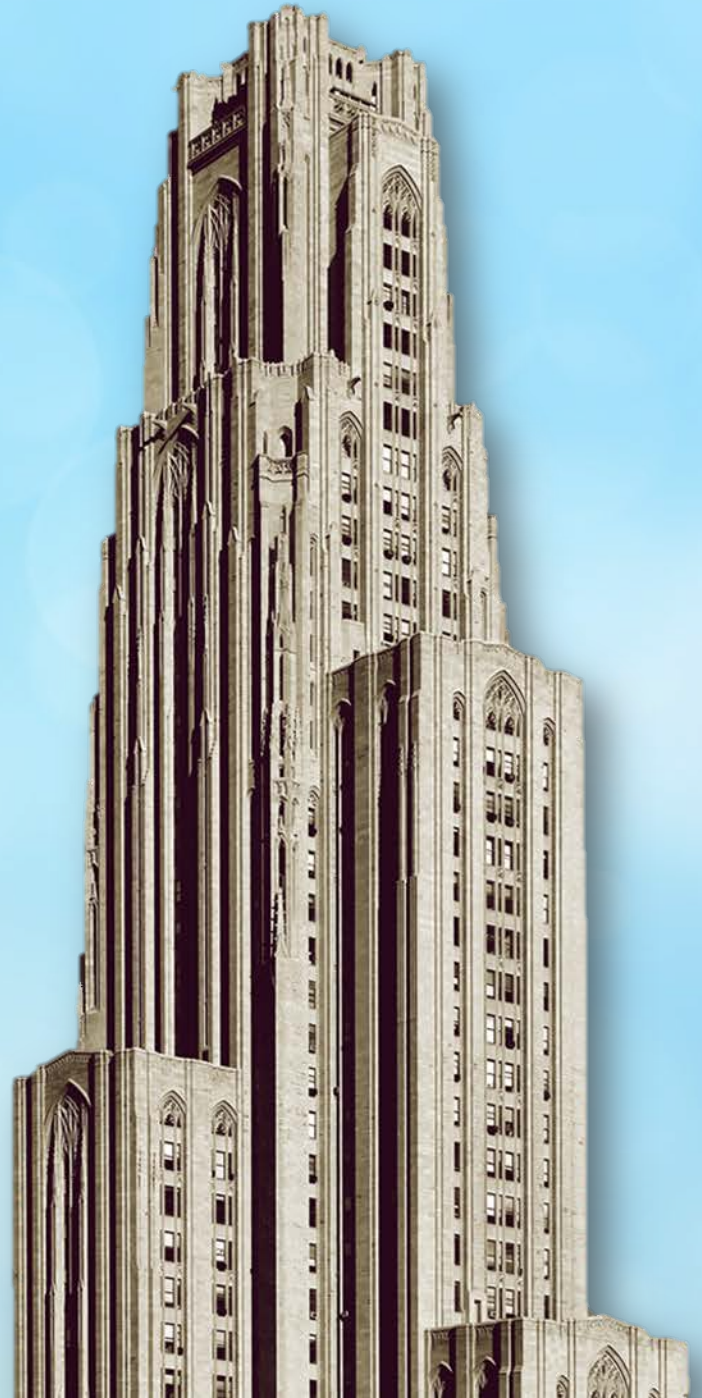


Ranked 43th among all engineering schools

Ranked 22th among AAU public institutions

Highest in School history

*Electrical and
Computer
Engineering*



- 1890 Among the First EE Departments in the U.S.
- 1893 First degrees in EE awarded
- 1906 First Voice Radio Broadcast (Reginald Fessenden)
- 2015 Pitt Radio Club will celebrate 100 years (continuous)

ECE Department in 2014

25 Full-Time Faculty
~ 5 Adjunct Faculty

405 Undergraduate Students
(Soph-Sr)
EE = 189
COE = 216

162 Graduate Students (Fall)

Electrical Engineering
BS, MS, PhD

Computer Engineering
BS, MS, PhD

ABET Accredited



HALLMARK AREAS OF FOCUS

- Bio/Medical Signal Processing and Electronics
- Electric Power Systems incl. Power Electronics, DC Grid, & Renewables
- Computation Systems and Technologies incl. Novel Memory tech.
- Nanotechnology (nano - photonics/electronics)

...and continuing our strengths in
RFID & Wireless Systems & Tech.
Photonic / Fiber Technologies
Mixed Technology Microsystems
Control Theory and Systems

.....

New ECE Faculty Members



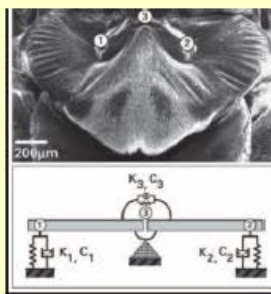
Dr. Murat Akcakaya
Northeastern Univ.
PhD – Wash, U. -St. Louis



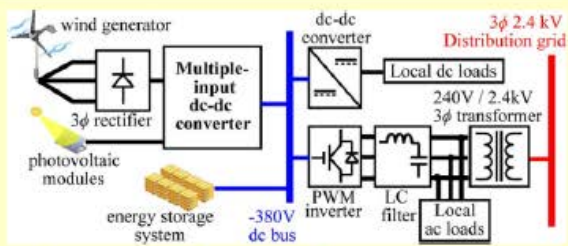
Dr. Alexis Kwasinski
(R.K. Mellon Faculty Fellow)
Univ. of Texas, Austin
PhD – U. of Illinois U-C



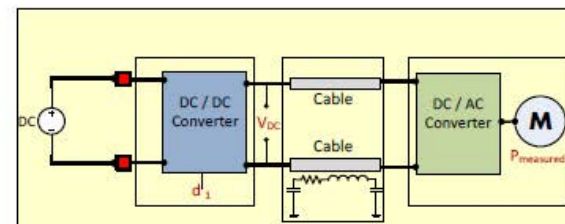
Dr. Brandon Grainger
PhD – Univ. of Pittsburgh



**Statistical
signal
processing and
machine
learning –
biomed and
radar
applications**



**Power electronic systems;
microgrids; grid reliability**



**DC micro-grids; MW scale
power electronics**

Technical Groups

- Computer Engineering Group

- Low power computer architectures, software engineering, parallel processing architectures, biomedical applications, energy harvesting, analysis and control of robotic manipulators, VLSI design, embedded computing, EDA, microsystems, MEMRISTOR

- Y. Chen, A. Jones, S. Levitan, H. Li, K. Mohanram, J. Yang

- Signals and Systems Group

- Communications, control theory, biomedical image processing and compression, wavelets, pattern recognition, time-frequency analysis and applications, speech processing, power systems and analysis

- Akcakaya, El-Jaroudi, Grainger, Kusic, Kwasinski, Jacobs, I. Jones, C.C. Li, Mao, McDermott, Reed, Sejdic

- Electronics & Photonics Group

- Photonic & electronic nano-devices and micro-devices, nano-sensors, nano-robotic characterization techniques, high frequency device fabrication and analysis, organic photovoltaics, power electronics

- Chen, El Nokali, Kim, G. Li, Stanchina, Tan, Yun

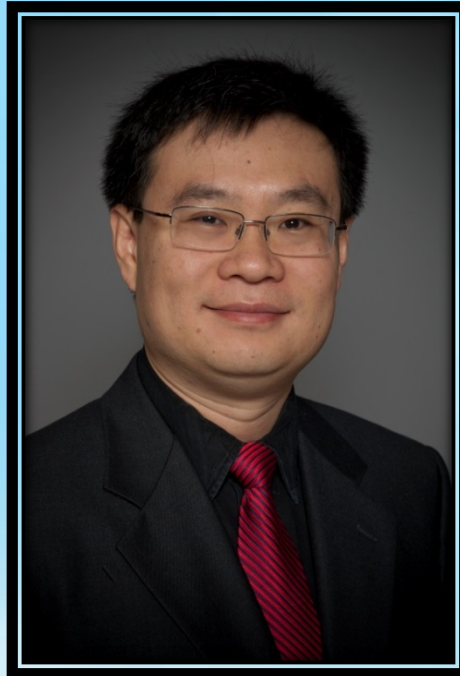
Some Faculty Honors

Thomas McDermott



**Fellow, Institute of
Electrical and
Electronics Engineers**

Yiran Chen



**Outstanding New
Faculty Award from
ACM SIGDA**

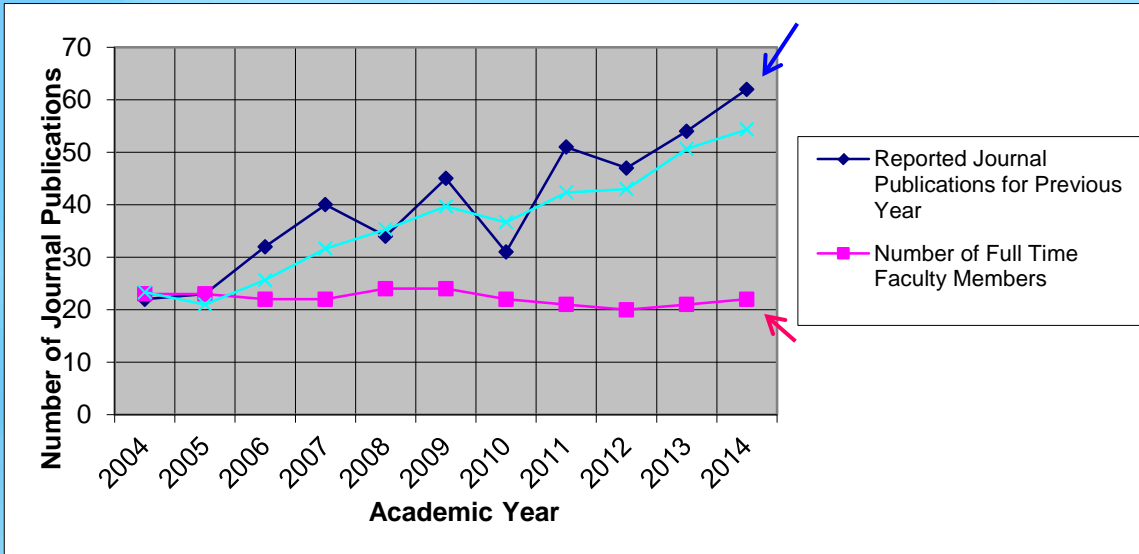
Steven Levitan



**Chancellor's
Distinguished Teaching
Award**

The Numbers (some) -- Grad

Annual Journal Publications

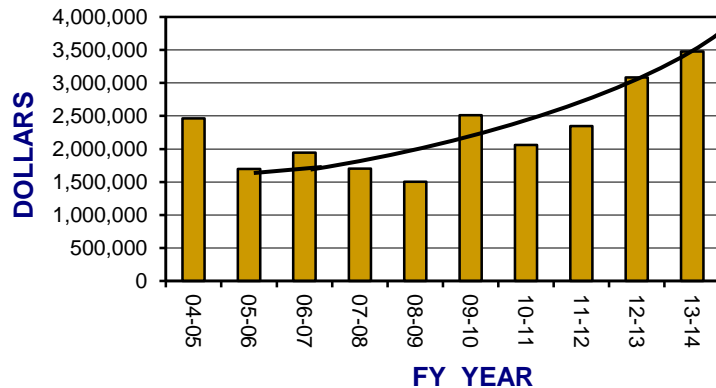


Recent graduations
AY2014:

- PhD = 10
- MS = 45

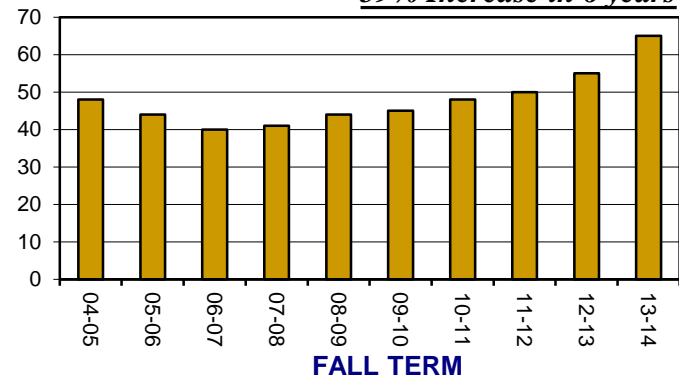
**New: Distance Learning
Post-Baccalaureate
Certificate in Electric Power
Systems**

RESEARCH EXPENDITURES



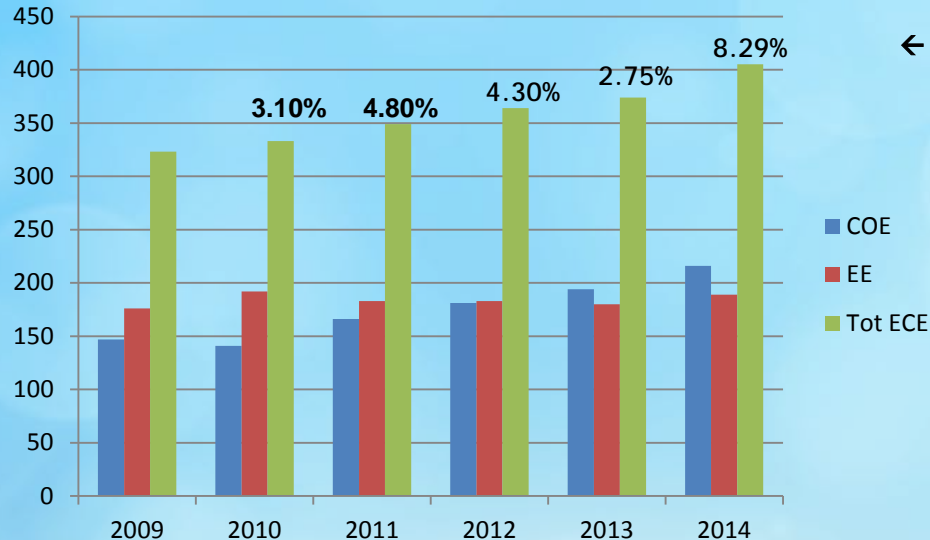
PHD ENROLLMENT

59% Increase in 6 years



ECE Undergraduate Fall Term Enrollment

- Electrical Engineering Program
- Computer Engineering Program



AY 2014 Graduations

- BS(EE)=61 (**1/3 in power**)
- BS (COE) = 36

← Annual Growth Rate

2014 Goldwater Scholarship

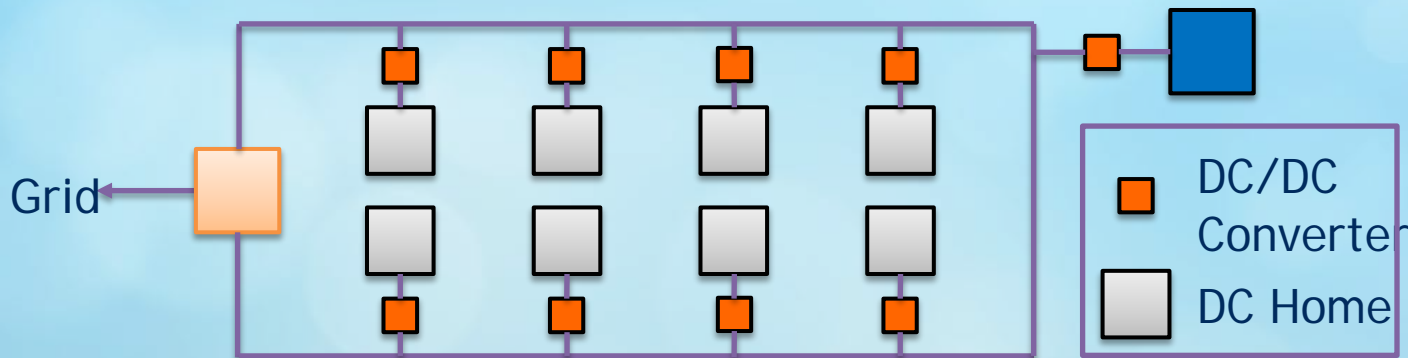


Emily Crabb
Computer Engr. & Physics

Dedication of Electric Power Systems Lab



Launch of Distance-Enabled Learning Post-Baccalaureate Certificate



Hillman Family Foundation Grant: "DC-AMPS"

In Energy

- **PI = Kevin Chen (collaborators:** Westinghouse and Corning); DOE (NEUP) Grant to develop radiation-hard, multi-functional, distributed fiber optical sensor networks to improve safety and operational efficiency in nuclear power reactors and fuel cycle systems.

In Nanotechnology

- **PI = Guangyong Li** and Prof. G. Hutchison (Co-PI, Chemistry); NSF grant for: “Multiscale Modeling, Simulation and Optimization for Designing Organic Solar Cells.”
- **PI = Minhee Yun:** “Characterization of Thermal Conductivity of Nanomaterials and their Hybrid Structures using SiN Membrane,” Sungkyunkwan Univ. and Inst. of Basic Science (So. Korea)

In Computation Systems and Technology (only US university with 2 GRO grants from Samsung):

- SAMSUNG: **Yiran Chen** (PI, 100%), “ECC Designs for High-Performance High-Reliable STT-MRAM.”
- SAMSUNG: “Constructing Scalable, Energy Efficient and Reliable Main Memory with STT- MRAM,” **Alex Jones** (Co-PI) with R. Melhem (PI).

The message: We’re looking to, and succeeding in, collaboration with faculty across campus, with companies, and around the world.

Thank you !

