

Virtual Local Section Agenda

Item	EST	CST	MST	PST
YP Meeting	8:00 pm	7:00 pm	6:00 pm	5:00 pm
Sound Check	8:45 pm	7:45 pm	6:45 pm	5:45 pm
Chair Welcome	9:00 pm	8:00 pm	7:00 pm	6:00 pm
Chief Information Officer	9:05 pm	8:05 pm	7:05 pm	6:05 pm
Speaker Introduction	9:10 pm	8:10 pm	7:10 pm	6:10 pm
Keynote Speaker	9:11 pm	8:11 pm	7:11 pm	6:11 pm
Questions and Answers	9:45 pm	8:45 pm	7:45 pm	6:45 pm
Closing Comments	9:55 pm	8:55 pm	7:55 pm	6:55 pm

Neil Yeoman

“NASA and other stories”

A presentation to YPs

AIChE Virtual Local Section

Dec 20, 2012



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Welcome

Dan Lambert, VLS Chair

Questions and Comments

- Ask your question or make comment any time
- “Raise your hand” if you want to ask a question
 - We will call your name so you can ask your question
 - We unmute you (people will see you if webcam is on)
 - Please let us know where you are from and work
 - We will answer your question
- Send a chat message to Amanda Robben or Dan Lambert if you have a question
 - We will read the question for you
 - We will answer your question

Raise Hand


virtuAIChE

Cisco WebEx Meeting Center - WebEx Test

File Edit Share View Audio Participant Meeting Help

Quick Start Meeting Info DryRun New Whiteboard

12: Welcome From ()



Welcome From Chair

Dan Lambert, chair
Thursday, January 27, 2011


virtuAIChE.org

8

Full Screen 87% View

Participants Chat Notes PPT N...

Participants



Dan Lambert

Dan Lambert (me) Dan Lambert (Host)

Make Presenter Raise Hand Audio

Chat

Send to: Everyone

Select a participant in the Send to menu first, type chat message, and send... Send

A blue arrow points from the word "Raise Hand" in the title to the "Raise Hand" button in the WebEx interface.

Chat


virtuAIChE

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Chief Information Officer Update

Dan Lambert, VLS Chair

VLS Election Results

- Noah Meeks elected 2013 VLS vice chair (2014 Chair elect)
- Laura Gimpelson re-elected VLS secretary (2013-2014)
- Anthony Fregosi, Ben Herzog and Shannon Brown elected to the VLS Board of Directors. (2013-2015)

2013 VLS Leadership Team

virtuAIChE

Amanda Robben
Vice Chair



Noah Meeks
Director



Neil Yeoman
Treasurer



Laura Gimpelson
Secretary



David Eckhardt
Director
2011-13



Bill Doumas
Director
2011-13



George Andrew Huttick
Director
2012-14



Deb Grubbe
YP Chair



Amanda Scalza
Membership
Chair



Gwen Barnhardt
Social
Networking Chair



Yangzi "Isabel" Tian
Newsletter
Editor



Ben Herzog
2013-15
Director



Anthony Fregosi
2013-15
Director



Shannon Brown
2013-14
Director



Dan Lambert
Past Chair



UPCOMING CONFERENCES

virtuAIChE

<http://www.aiche.org/resources/conferences>

- **4th ICBE—International Conference on Biomolecular Eng**
 - Hyatt Regency Pier 66, Fort Lauderdale, FL
 - January 13-16, 2013
- **SBE's 3rd International Conference on Accelerating Biopharmaceutical Development**
 - February 24-27, 2013
 - Coronado Island Marriott, Coronado Island, CA
- **2013 Spring Meeting & 9th Global Congress on Process Safety**
 - Hyatt, San Antonio, Texas
 - April 28 - May 2, 2013

UPCOMING WEBINARS

<http://www.aiche.org/resources/webinars>

Safety in LNG Value Chain

Strategies for Addressing ABET Safety Curriculum Requirements

- **Wednesday, February 6, 2013, 2:00pm-3:00pm EST**
- **Presented by Thomas Spicer and Kimberly Ogden**

Leadership Is Everyone's Responsibility

- **Presented by Greg Shaffer**
- **Wednesday, February 20, 2013, 2:00pm-3:00pm EST**

New in VLS

4th Thursday 9:00 pm EDT

virtuAIChE

- **Entering a New Golden Age of Chemical Engineering**
 - Phil Westmoreland, 2013 AIChE President
 - Thursday, January 24, 2013
- **Using Credentials to Establish "Your Cred"**
 - by Deborah Grubbe, PE
 - Thursday, February 28, 2013 9:00 pm
- **Great Inventions that Changed the World**
 - James Wei, Professor Emeritus at Princeton
 - Thursday, March 28, 2013 at 9:00 pm
- **WebEx Meeting link**

VLS Accomplishments

- **130 2013 Dues paying Members**
 - **39 new members**
 - **91 renewing members**
- **24th monthly meeting**
- **Great leadership team recruited**
- **Google Translator on web page to allow web page in users language of choice**



HAPPY HOLIDAYS!

SALE!

F. NITE...CAGLE CARTOONS.COM
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Speaker Introduction

Dan Lambert, VLS Chair



Keynote Speaker Dr. John Anderson

virtuAIChE

- President of the Illinois Institute of Technology
- Served as provost of Case Western Reserve University from 2004 until joining IIT in 2007.
- Served for 28 years at Carnegie Mellon University
 - Eight years as dean of the College of Engineering.
 - Chaired Chemical Engineering Department for eleven years
 - Director of its biomedical engineering program.
- Cornell University faculty for five years
- Bachelor's degree from the University of Delaware
- Ph.D. from the University of Illinois at Urbana-Champaign

Disclaimer

- ***Neither the American Institute of Chemical Engineers (AIChE), the presenters and author(s) of this work, their employer, nor their employers' officers and directors, warrant or represent, expressly or by implication, the correctness or accuracy of the content of the information presented. As between (1) the AIChE, the presenter and author(s) of this work, their employers, and their employers' officers and directors, and (2) the user/viewer of this work, the user/viewer accepts any legal liability or responsibility whatsoever for the consequence of its use or misuse.***

*Changing How We Promote the
Chemical Engineering
Profession?*

John L. Anderson

Illinois Institute of Technology

December 20, 2012

Why do we care how many students major in Chemical Engineering?

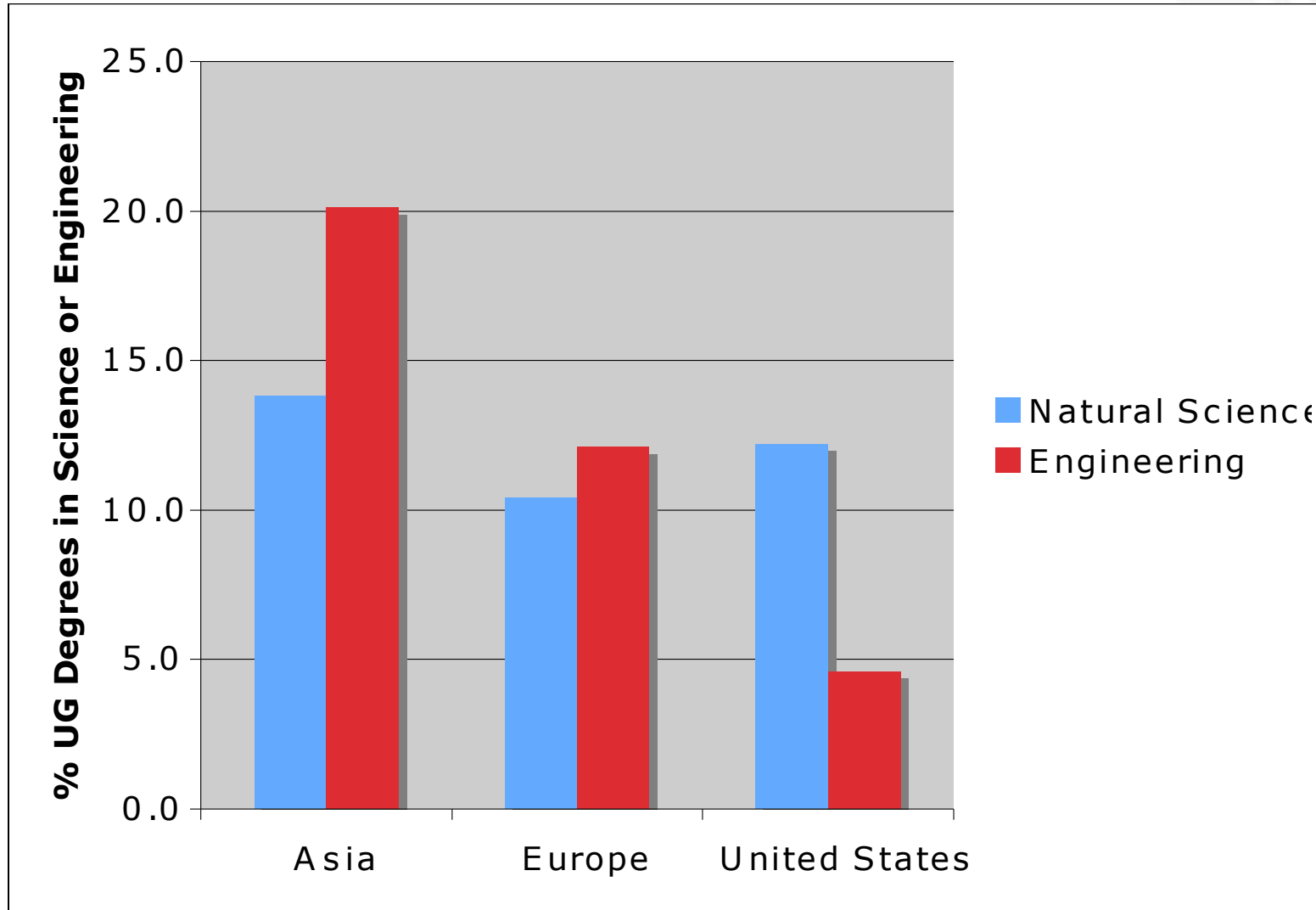
- Believe that our field is important
- ChE is a positive driver of technology development and business applications
- It is the broadest engineering discipline
- [Faculty positions depend on it!]

Premise: Engineers drive development of the physical infrastructure and economy

What's the problem?

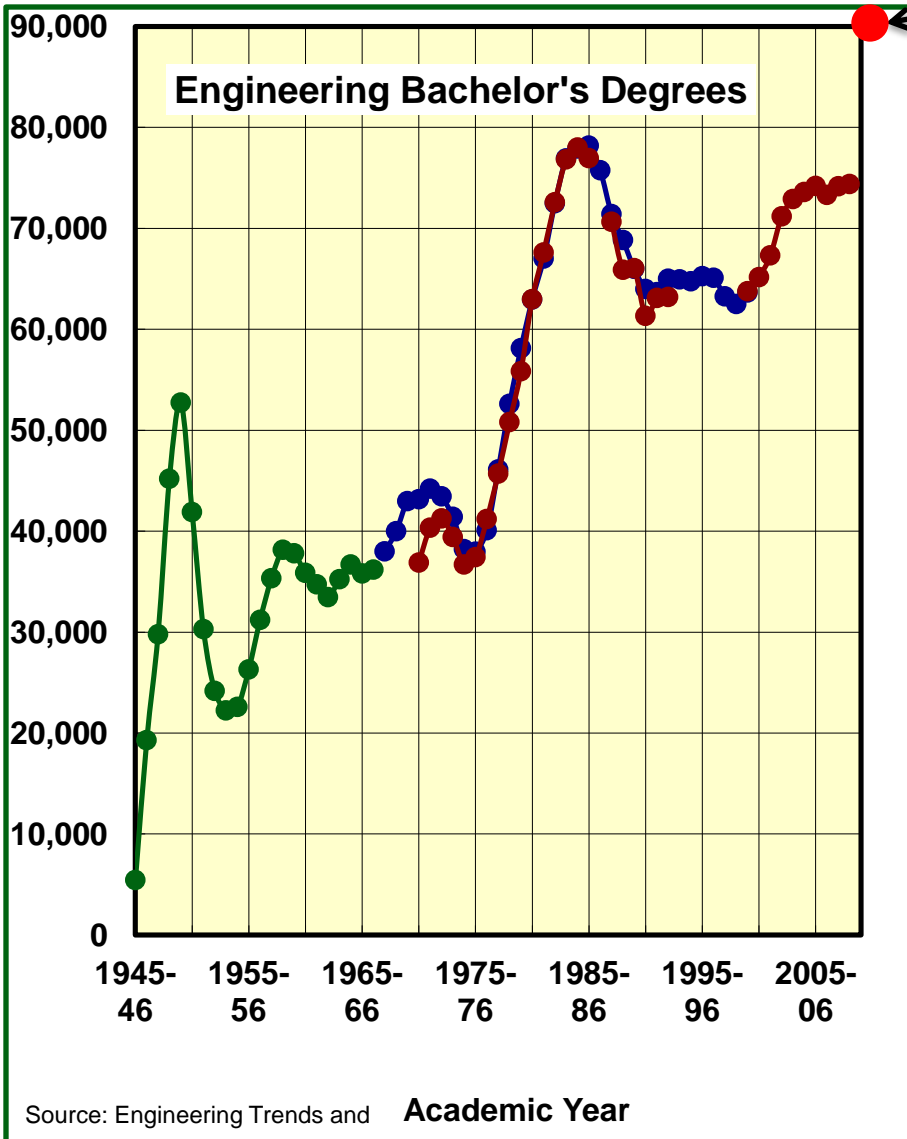
- Engineering has a low market share of college students in the US.
- Chemical Engineering has a low market share of Engineering students

Engineering is undervalued in the US



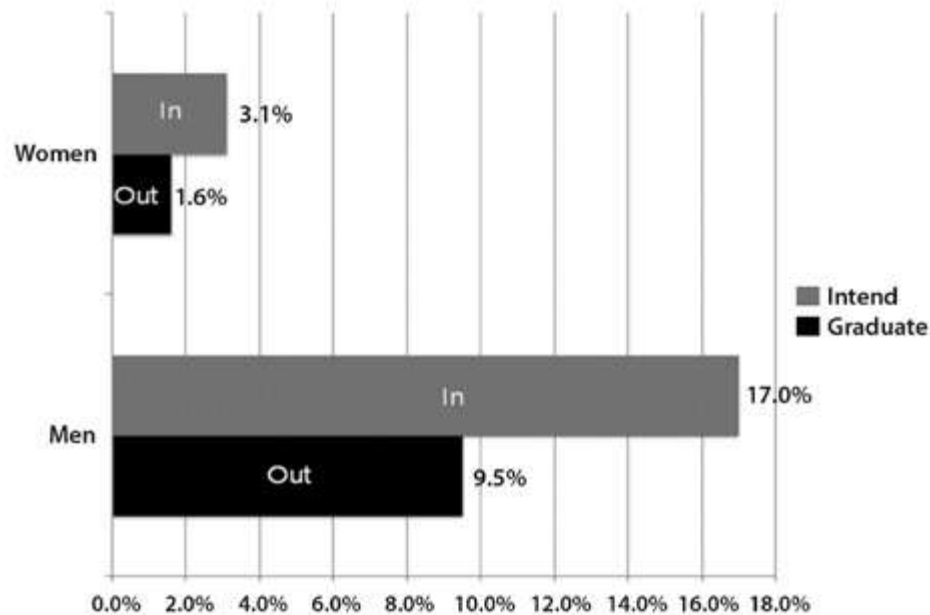
Source: NSF Science and Engineering Indicators 2008

89,500 in 2010-11



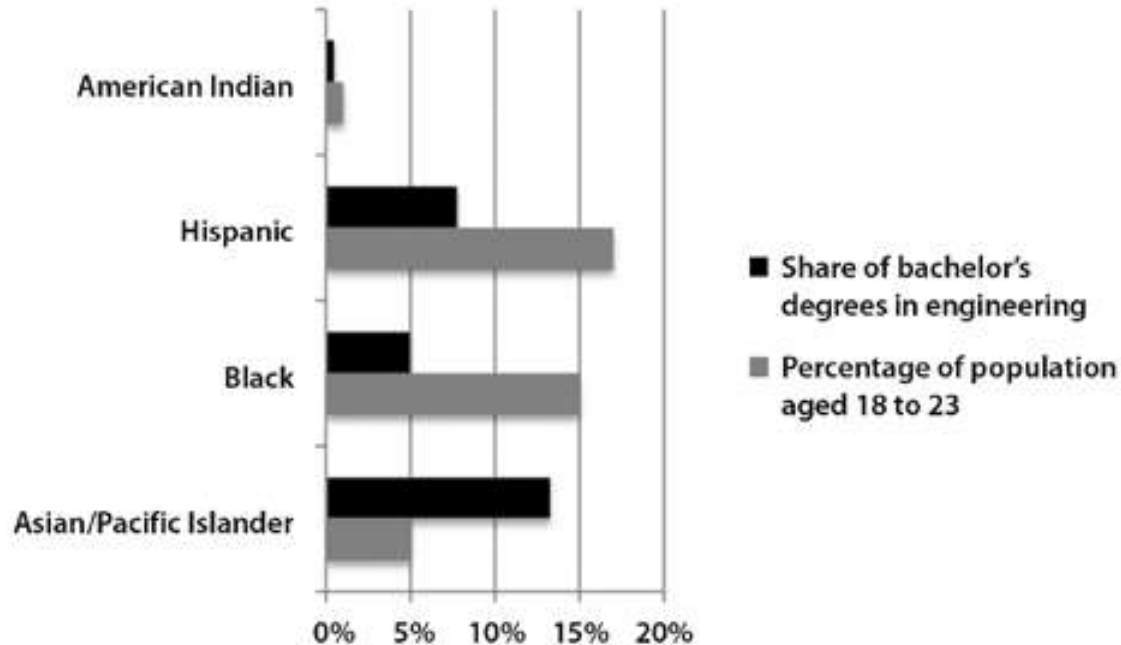
Engineering has lost market share of higher education!

Year	BS + BAs	% W
1960	392,400	35%
1980	935,100	50%
2000	1,237,900	57%
2010	1,538,000	60%



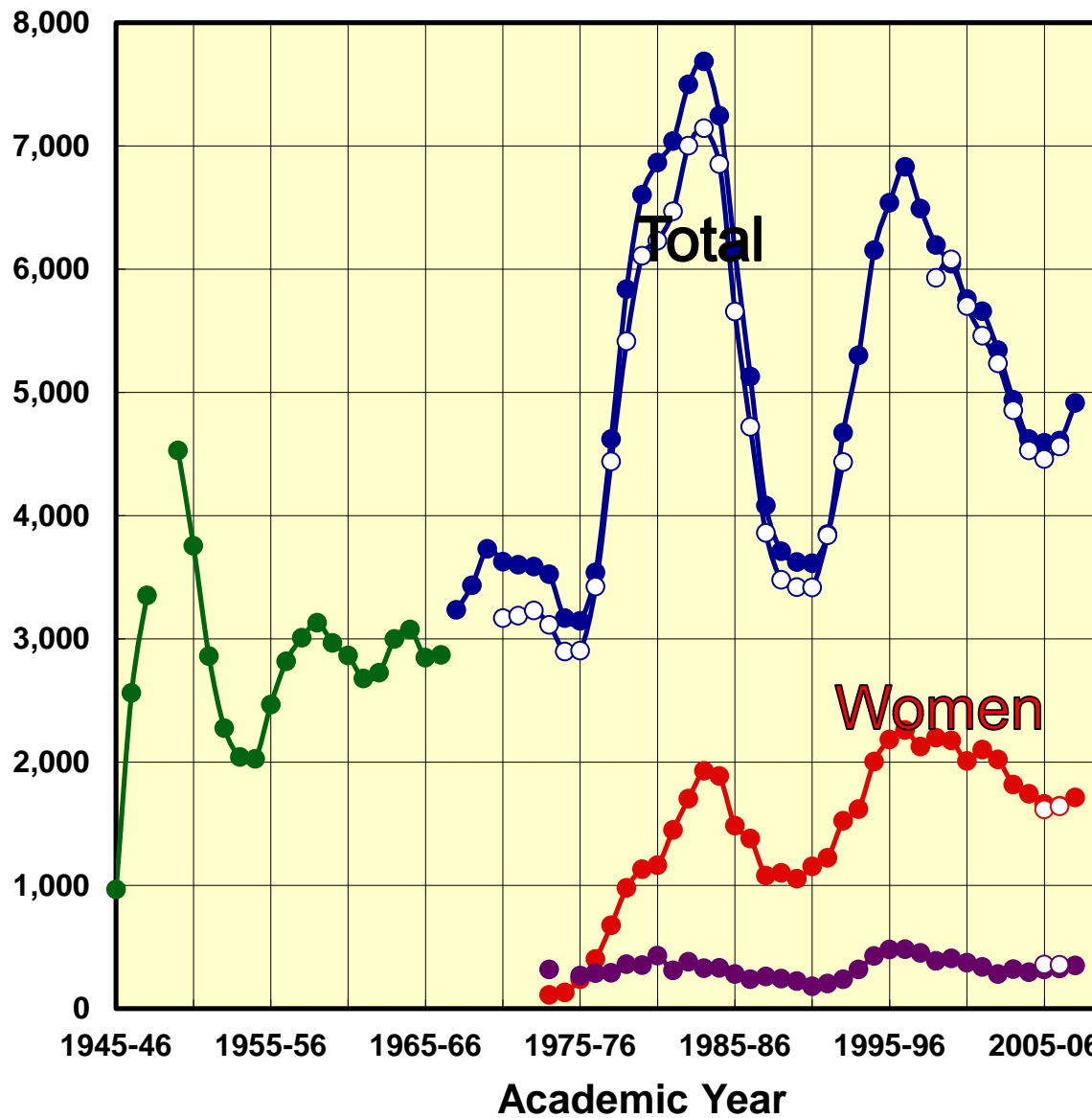
Comparison of the percentages of college-bound students who intend to major in engineering and the percentages of engineering bachelor degrees awarded in the United States in 2007. From *The Bridge*, NAE, Summer 2011.

Percentages of total bachelors degrees in engineering earned by ethnic groups.



From The Bridge, NAE, Summer 2011.

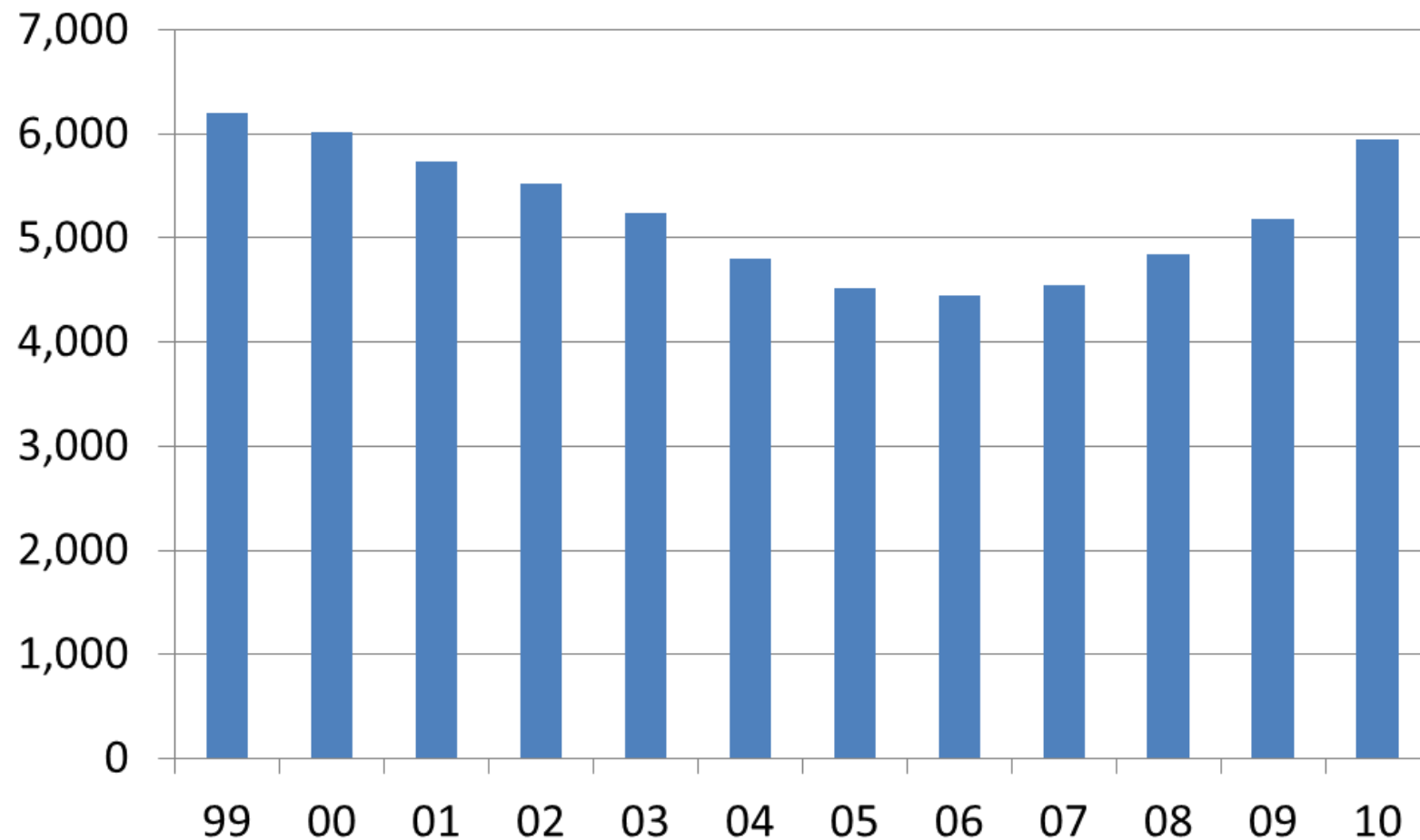
Chemical Engineering Bachelor's Degrees



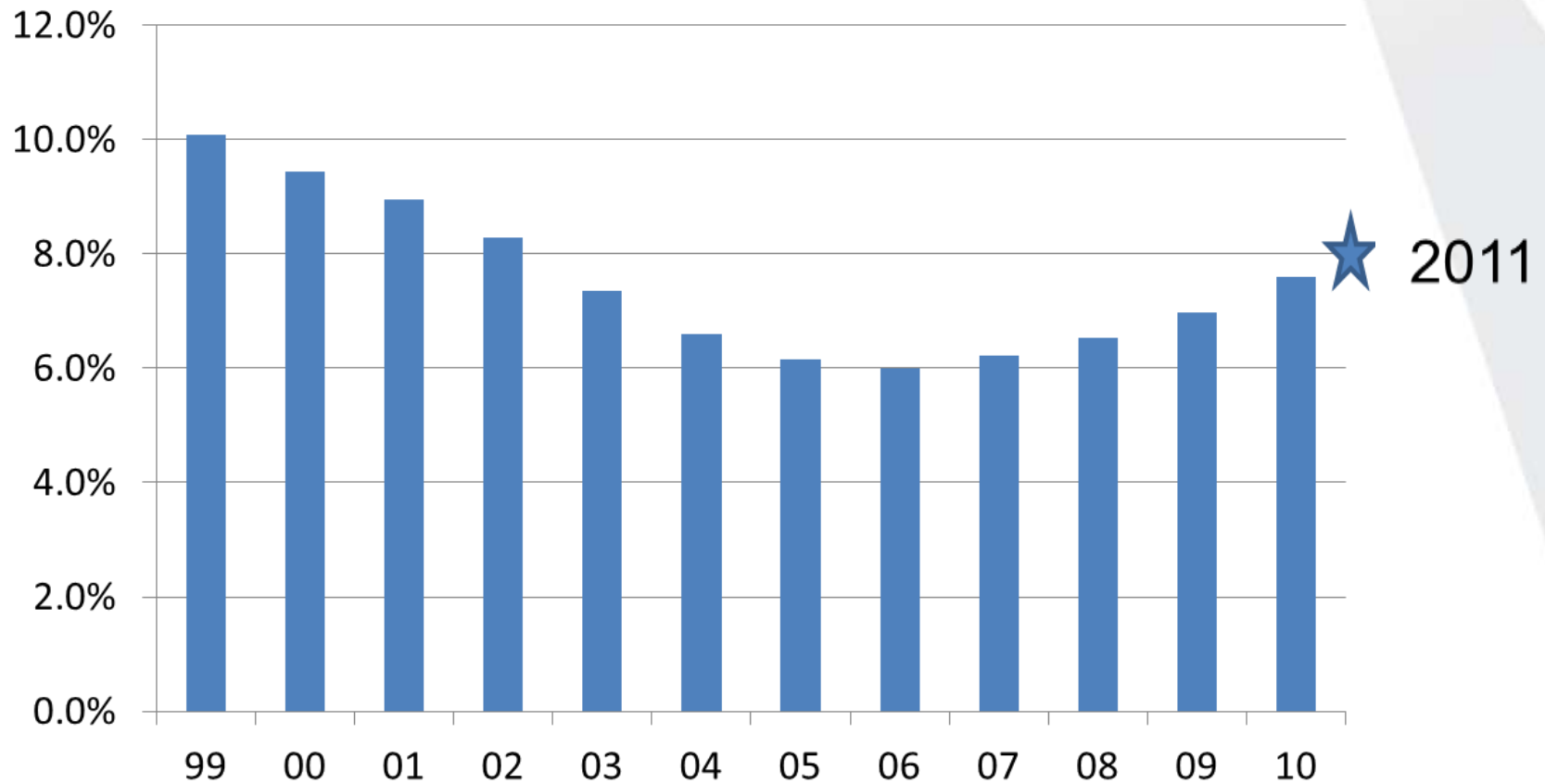
Foreign
Nationals

BS ChE Degrees 1999-2011

★ 7200 in 2011



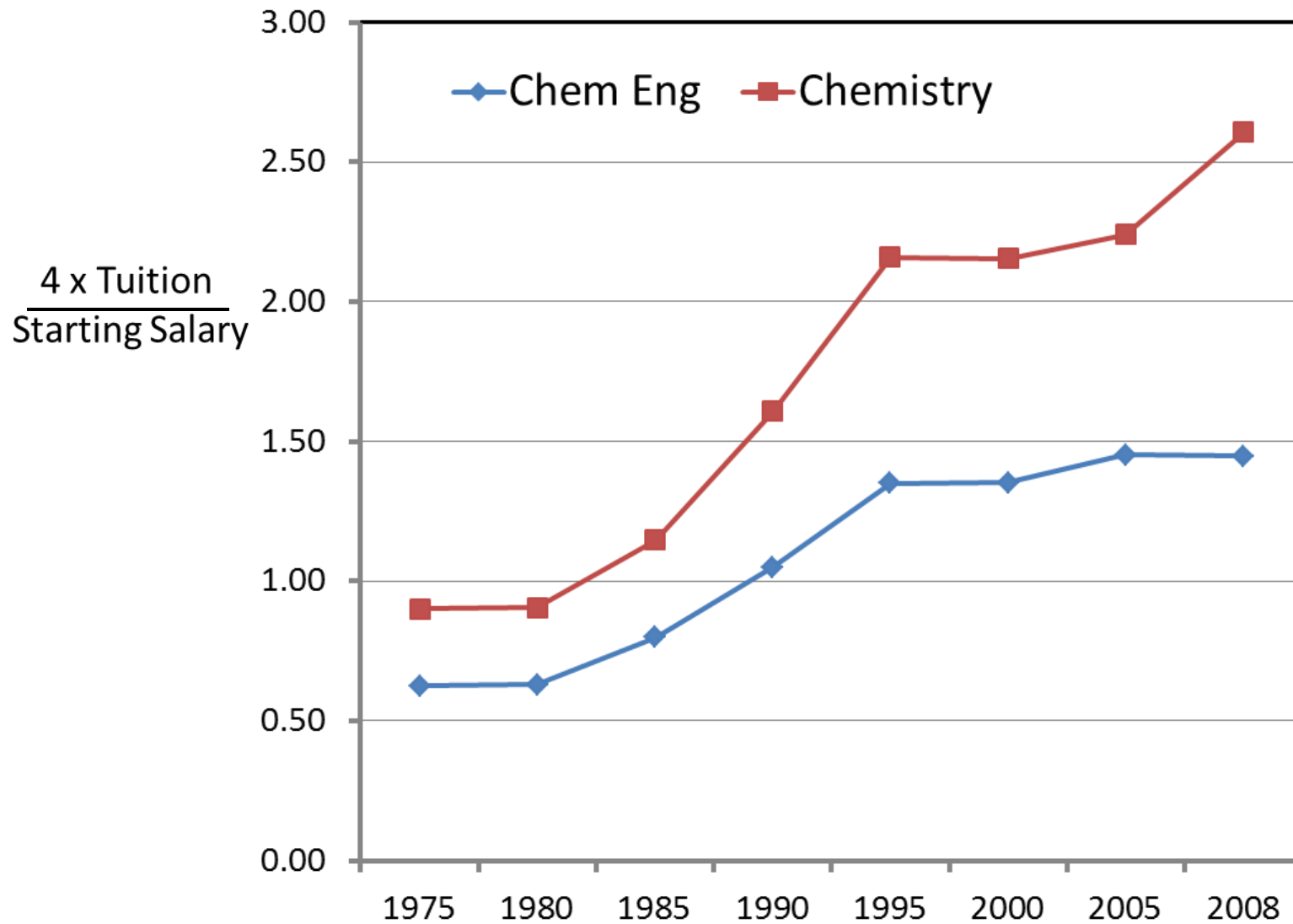
% of BS Engr Graduates in ChE 1999 - 2010



Median Income by Engineering Major (2009) Terminal Degree BS

Petroleum	\$120,000
Aero	\$ 87,000
Chemical	\$ 86,000
Electrical	\$ 85,000
Mechanical	\$ 80,000
Civil	\$ 78,000
All Engr Majors	\$ 75,000
Biomedical	\$ 68,000

Return on Tuition Investment



So, if career opportunities are good for ChE, why aren't we attracting more young persons into our profession?

Image Problem of (Chemical) Engineering

“To put it bluntly, by sticking to existing models, we are losing the battle for the imaginations of young people.”

- Gretchen Kalonji, University of Washington, *Educating the Engineer of 2020 (NAE pub)*

Limited attractiveness of undergraduate engineering is due to

- It's hard, and you must like (?) math
- Perceived lack of relevance to helping society
- Narrow
 - Less people oriented
 - Emphasis on problem solving/process design, less on invention/creation

Engineering versus Science

“Scientists discover the world that exists; engineers create the world that never was.”

- *Theodore von Karman*

- Do we ever use the word “create” in publicizing our profession?
- Do we stress “entrepreneurship” and “innovation” as much as other disciplines do?
- Do we neglect the “E” in Chemical Engineering?

Interesting Comments (NAE Bridge, Summer 2011)

- “Past messaging has emphasized academic skill requirements and largely ignored messages associating engineering with social benefits.”
- “*Engineers don’t have to love math any more than physicians have to love organic chemistry.*”
- “On average, girls and women tend to prefer working with people, whereas boys and men tend to work with things.... young girls preferentially select images of women *doing engineering*, whereas boys select images of *things* that represent engineering. ”

Definition of Chemistry

Whitesides & Deutch

Nature **469**, 21–22 (2011)

“Chemistry is the science that connects the relative simplicity of atoms and molecules to the complexity and function of macroscopic matter and life.”

Definition of Chemical Engineering

AIChE Constitution (Article III)

“Chemical Engineering is the profession in which knowledge of mathematics, physics, chemistry and biology, along with economics, gained by study, experience, and practice, is applied with judgment to develop economic and safe ways of using energy and materials to benefit mankind.”

Definition of "Chemical Engineering"

"Chemical engineering is what chemical engineers do."

- *Robert Pigford explaining it to John Anderson*

"The Image Problem for Engineering"

Charles Vest, President, NAE

The Bridge Summer 2011

- Need better messaging of the Engineering profession to attract students, and recognize differences in appeal between girls and boys.
- Must inspire and broaden appeal, not narrow the boundaries of the profession.
- Messaging that *invokes science to illustrate the value of engineering* is the least appealing.
- Changing the Conversation website:

www.engineeringmessages.org

Promoting Chemical Engineering



Critical Point

“Fundamentals” (skill set) defines the academic major but not the profession of ChE.

Make ChE more appealing to young persons:

- Define ChE by what a chemical engineer does, not studies (Pigford definition)
- Stress broad career opportunities
 - Law, Business and Finance are not criminal activities
- Get to K-6 to generate interest of students and teachers
 - Balance emphasis on analysis with creativity – von Karman definition
- Keep up interest through senior year in college – retention
 - Open up the curriculum – less constraints
 - Entrepreneurship

Discussion

What do you think?



Closing Comments

Dan Lambert, VLS Chair

Thank you John!

- Thank you for speaking tonight
- As our way of saying thanks, we have shipped you a coffee cup



Thank everyone for attending

- Thank you!!
- VLS meeting next month
 - Entering a New Golden Age of Chemical Engineering
 - Phil Westmoreland, 2013 AIChE President
 - Thursday, January 24, 2013