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1st – 5th October, 2017
Barcelona, Spain
10th World Congress OF CHEMICAL ENGINEERING
11th European Congress OF CHEMICAL ENGINEERING
4th European Congress OF APPLIED BIOTECHNOLOGY
10th World Congress of Chemical Engineering
Promoters: WCEC World Chemical Engineering Council, EFCE, ESBES
Organized by EFCE-Spain Group: ANQUE, Enginyers Industrials de Catalunya, SEQUI, AIQS
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Trends and Challenges in Chemical Engineering Education in China

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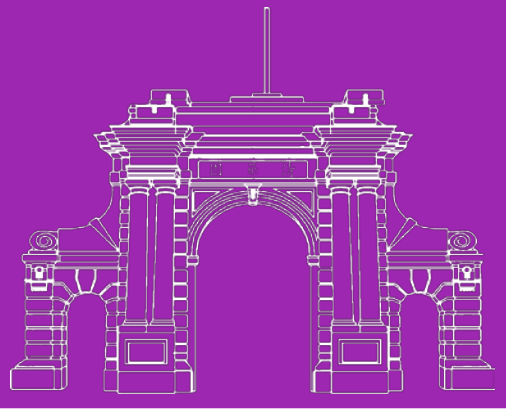


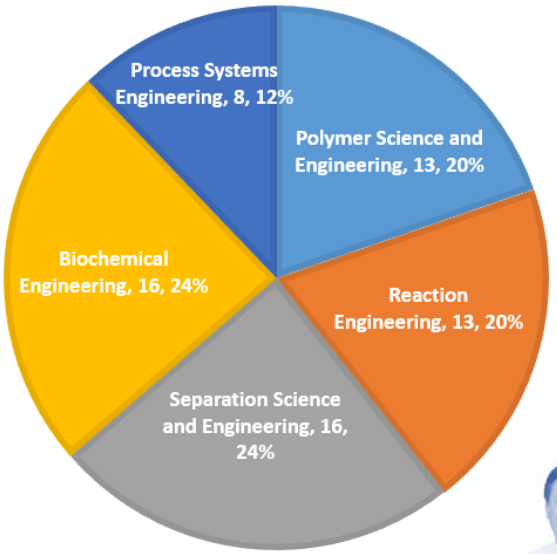
Chemical Engineering Education in China

- Number of Chemical Engineering departments
  - Abo 360 ChemE departments
- Number of ChemE undergrad students
  - About 120,000 undergraduate students on campuses
    - About 30,000 undergrads/year enrolled in chemical engineering

- 9.4 million high school students attended the National College Entrance Examination
- 2.0 million people applied for various graduate programs

Introduction of THU-ChemE

Faculty



69 faculty members with
37 full professors and
24 associate professors.

All of them got ChemE(or similar) degrees (either B.S. or Ph.D. degrees)

Introduction of THU-ChemE

Current Programs Offered by the Department

Two 4-year Undergraduate Programs

1) Chemical Engineering

2) Polymer Materials and Engineering

110-120 undergrad students enrolled per year

50-60 Ph.D. students enrolled per year

20-30 Master students enrolled per year

Introduction of THU-ChemE

WASHINGTON ACCORD

ABET

ENGINEERS JOURNAL

Home Civil Chem Mech Tech Bio Elec News

China signs Washington Accord at latest meeting of the International Engineering Alliance

08 August 2016

The 2016 meetings of the International Engineering Alliance, which works to advance benchmarking and mobility in the engineering profession, took place in Kuala Lumpur in June with the admission of China as a signatory of the Washington Accord a major development

Petronas Twin Towers in Kuala Lumpur

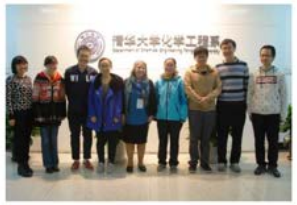
Chemical Engineering Program accredited by the ABET in 2016

ABET Program Evaluator in the lab

ABET PEV with ChemE professors

ABET PEV with ChemE alumni

ABET PEV in the chemistry lab

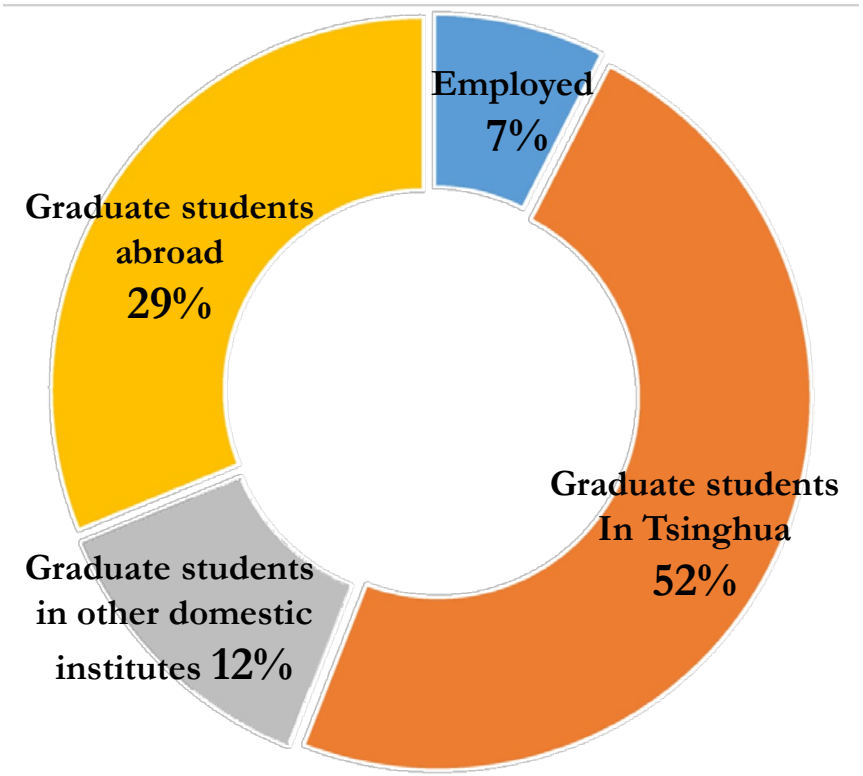


ABET PEV with students

ABET PEV with the lab safety group

Introduction of THU-ChemE

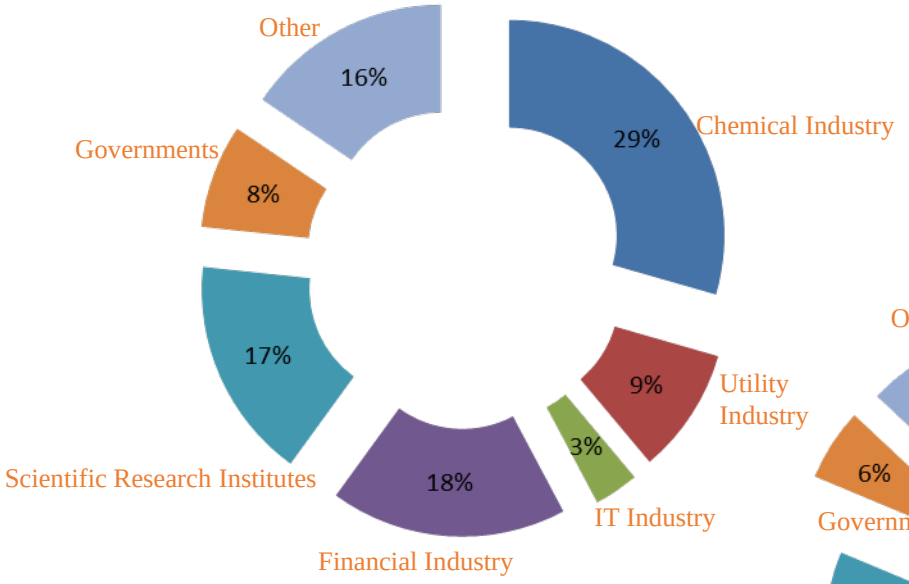
About 90% of the undergraduates go to graduate schools after graduation



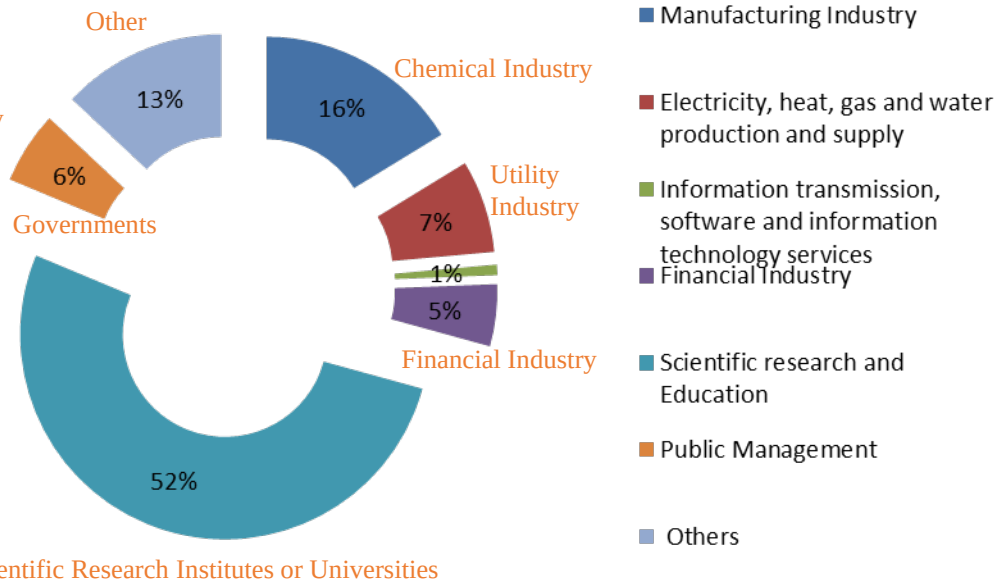
Introduction of THU-ChemE

The job market has a strong need of chemical engineering students

Master graduates form 2012-2016



Ph.D. graduates form 2012-2016



Introduction of THU-ChemE

QS Rankings of THU-ChemE

No. 16, 2013

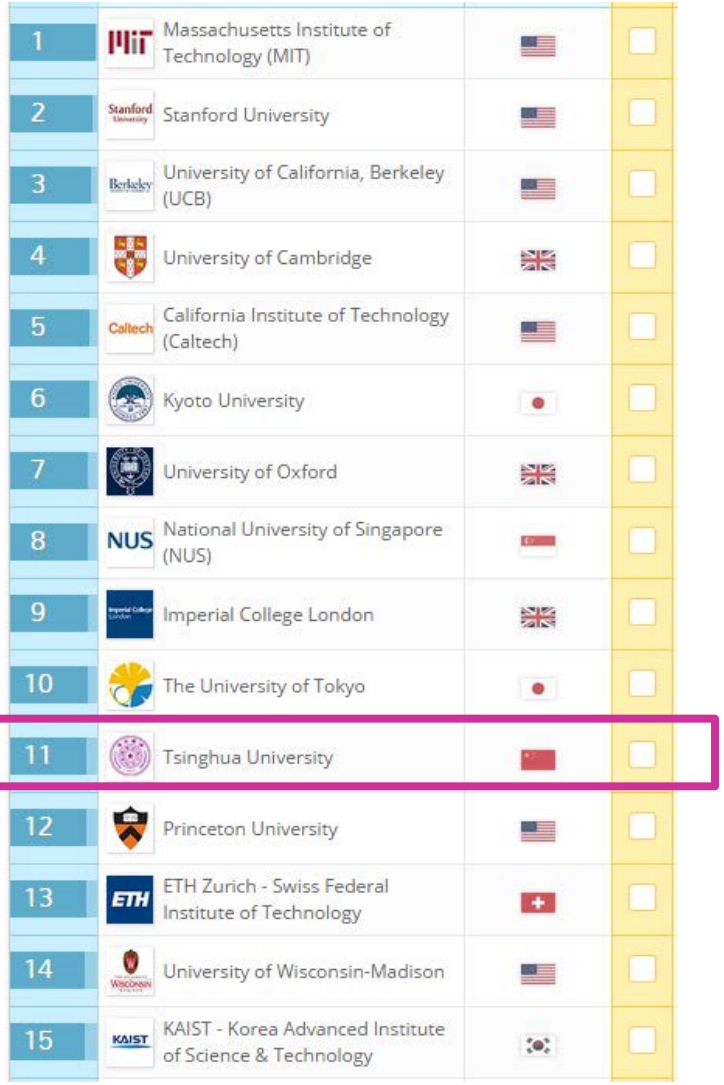
No. 12, 2014

No. 20, 2015

No. 15, 2016

No. 11, 2017

QS WORLD UNIVERSITY RANKINGS by subject — Chemical Engineering



Major Trends in ChemE Education in China

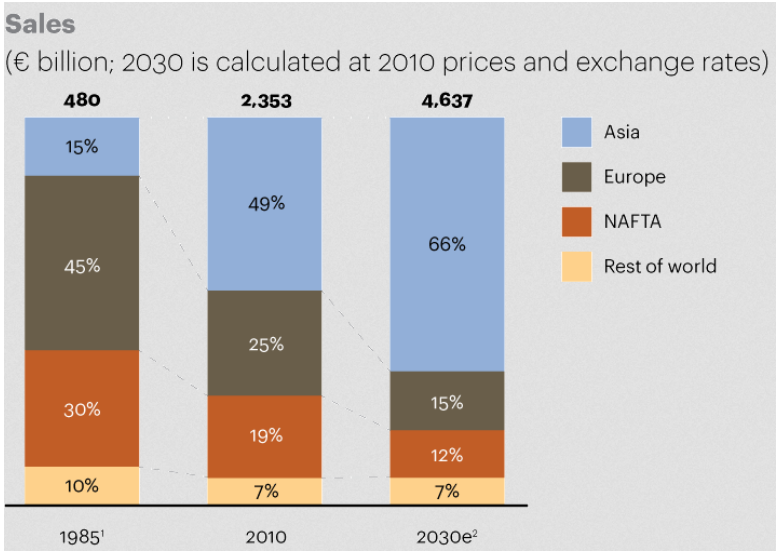
- The center of the chemical industry is shifting to Asia

- By 2030 at least half of the top chemical companies will be Asian or Middle Eastern;

ATKearney

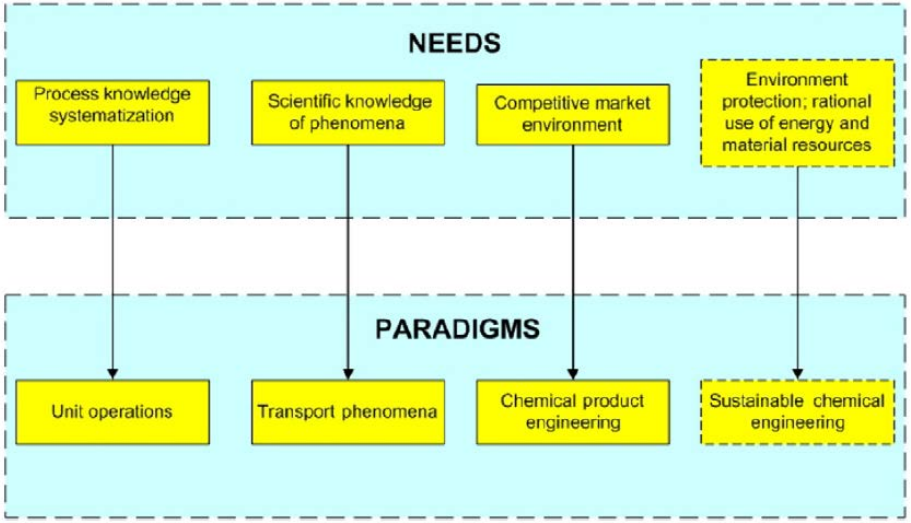
Chemical Industry Vision 2030: A European Perspective

Vision 2030 outlines emerging challenges, analyzes the current positioning, and highlights imperatives for the European chemical industry in positioning itself to stay ahead in the game.



Major Trends in ChemE Education in China

- **Question: How to cultivate chemical engineering talents who would lead the industry/society toward sustainable development in the future?**

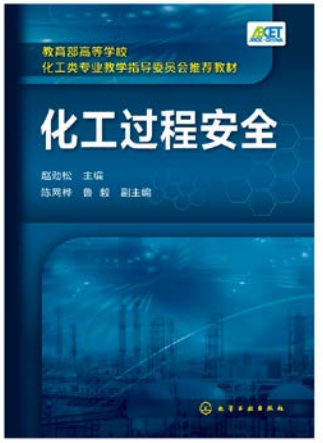


Chinese Journal of Chemical Engineering 24 (2016) 553–557

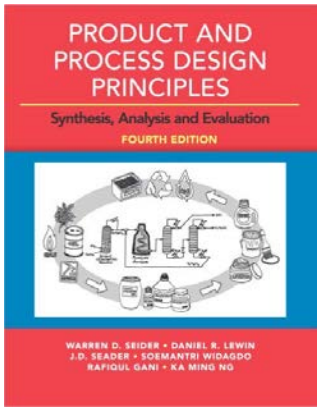
Major Trends in ChemE Education in China

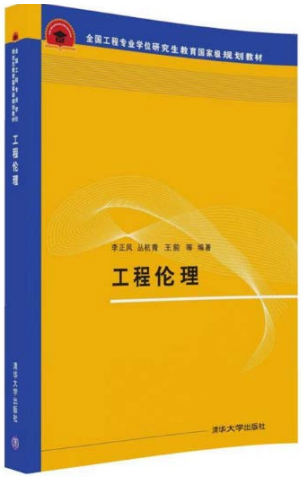
1 Social responsibility related courses being added

a. Process safety becoming required
b. Engineering ethics starts to be taught
c. PSE courses being paid more attentions in the era of Industry 4.0



Not only process synthesis and analysis is taught to undergrads
But also process simulation and optimization theories are taught in both undergrad and grad programs





Major Trends in ChemE Education in China

2 Research & Innovation Highly Valued

Student Research Training Program (SRT)

Supervised by professors

Professors announce research topics to recruit undergraduate students to work with them

Research thesis project

Senior Spring, 15 credits, 1 semester

Not only faculty members, but also industrial experts are invited as members of defense committee for the student Diploma Project (thesis) Defense

Major Trends in ChemE Education in China

3. Practices in the Real World Emphasized

Example: Production Internship

Junior summer: 2 required credits, 3 weeks

Students are divided into several teams, each team led by a professor, participating thoroughly in the research/ development and the production process of chemical companies.

Major Trends in ChemE Education in China

4. Social Services /Volunteers Encouraged

Major Trends in ChemE Education in China

5. Global Vision Encouraged

Various International Exchange Programs

UIUC exchange program

China-France 4+4 program

Tsinghua – Tokyo Tech double degree Program

Campus Asia Program

Opportunities for International communications

Seminars given by experts around the world

Every year, more than 100 experts in chemical engineering, chemistry, biology, materials around the world gave lectures in Chem. Eng. Dept.

Lecture given by President of AICHE, Dr. Phillip R. Westmoreland

Summary

- Chemical industry is one of the pillar industries of China
- Industry 4.0 will definitely reshape the whole industry
  - ChemE education will certainly be affected
- Sustainable development of the chemical industry requires changes of the chemical engineering education paradigm

Thank you!

http://www.chemeng.tsinghua.edu.cn