Colorado School of Mines

Founded in 1874
A public, state supported university of science and engineering
6000 total students
   4600 undergraduates
   1400 graduate students
15:1 student to faculty ratio
Chemical Engineering PhD Program

Chemical Engineering Core

Advanced Thermodynamics (CHEN509)

Transport Phenomena (CHEN516)

Advanced Kinetics (CHEN518)

Introduction to Chemical Engineering Research and Teaching (CHEN568)

Additional Curriculum

6 hours (2 courses) chemical engineering electives

12 hours (4 courses) additional electives

CBEN605 colloquium every semester

Thesis research credits

Minimum of 72 credit hours total
Chemical Engineering Graduate Program Statistics

Degrees Offered

Chemical Engineering – M.S. & Ph.D.

Fall 2016 Enrollment

<table>
<thead>
<tr>
<th>Degree</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ph.D.</td>
<td>51</td>
</tr>
<tr>
<td>Master’s</td>
<td>19</td>
</tr>
</tbody>
</table>

Minority 5%
Female 29%
International 46%

Admissions Statistics:

Average accepted GRE Quantitative 84%
Average accepted GRE Verbal 69%
Average accepted GPA 3.78
% applicants accepted 26.9%
Research

Approximately $7 million in annual research awards.

Research area include bioengineering, conventional energy conversion, hydrates, renewable energy, simulation and modeling, soft materials, and electronic materials.

Strong collaboration and research opportunities with National Renewable Energy Laboratory, Children's Hospital Colorado.
Bioengineering (Boyle, Cash, Krebs, Marr, Neeves)

Human trabecular meshwork cells seeded on collagen scaffolds

Microfluidic model of vascular injury

Biosensors
Diagnostics
Drug delivery
Metabolic engineering
Microfluidics
Tissue engineering

Nanosensors for in vivo monitoring of metabolites

Metabolic engineering of photosynthetic organisms
Colloids, Polymers, and Complex Fluids
(Dorgan, Marr, Neeves, Samaniuk, D. Wu, N. Wu)

- Magnetically actuated colloid pump and valves
- Bionanocomposites: carbon nanoparticles and polylactide
- Bioplastics
- Polymer composites
- Self assembly
- Viscoelastic fluids
- Polymer dynamics
- Cardiovascular fluid mechanics

Colloidal molecules assembled by electric fields
Computational Science
(Dorgan, Gomez–Gualdron, Sum, D. Wu)

Golden Energy Computing Organization
CSM/NREL/NCAR
Targeting energy research
>20 teraflops

Clathrate Hydrates

Biomembranes

Cell7B (Endo-Cellulase) on a cellulose micro fibril
Fuel cells (Herring, Way)

Solid oxide fuel cells
Proton exchange membrane fuel cells
Kinetics and transport in fuel cells

Design and simulation of proton exchange membranes
Hydrates (Koh, Sum, D. Wu)

**Hydrates in Flow Assurance**

**Hydrates in Science**

**Hydrates in Nature**

Hydrates in flow assurance
Hydrates in science
Hydrates in nature
Membranes and Catalysis
(Carreon, Way, Wilcox)

Nano-structured supports
Catalytic membrane reactors
Zeolite membranes
Hydrogen purification
Solar and Electronic Materials (Agarwal, Wolden, N. Wu)

Plasma synthesis of silicon nanocrystals

CuSbS$_2$ solar absorber

Thin film synthesis
Plasma processing
Colloidal synthesis

Atomic layer deposition
Benefits

PhD graduate research fellowship
- Annual stipend $27,000
- Fully paid tuition, fees, health insurance
- Total value: >$55,000/year
Location, Location, Location

15 miles from downtown Denver...

...minutes from world class outdoor recreation
Application

- Fall Application Deadline – December 15th for priority consideration for financial support
  (no Spring enrollment)
- Apply online at http://www.mines.edu/gradschoolapp/onlineapp.html
- Application Requirements
  - Undergraduate transcript
  - Graduate Record Exam (GRE) (revised General test)
  - 3 letters of recommendation
  - Statement of purpose
Questions? Contact

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