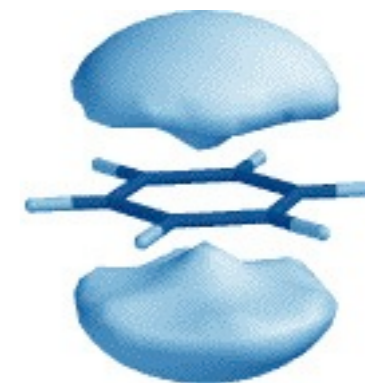


Chem 342



Organic Chemistry II
Spring 2009
Greg Cook
Dunbar 360A

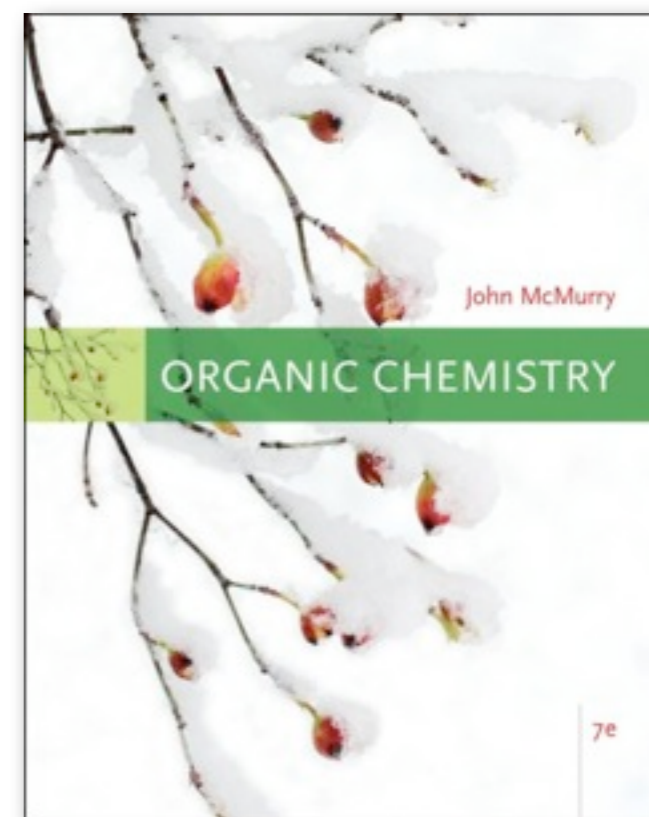
cook.chem.ndsu.nodak.edu/chem342/

Please pick up a syllabus near the entrance

- ▶ Office Hours
 - ▶ Mon, Wed - 9:00-10:00 am or give me a call
- ▶ Dunbar Hall 360A (back of 362 Lab)
- ▶ Phone - 231-7413
- ▶ Email - gregory.cook@ndsu.edu
- ▶ Supplemental Instruction
 - ▶ Andrew Sand - andrew.sand.1@ndsu.edu

- ▶ SI sessions:
Tuesdays 5:00-7:00 pm Minard 219
Thursdays 4:00-5:00 pm FLC 124
- ▶ Your Laboratory TAs (Contact and office hours on the web page)
- ▶ Ganesh Balasubramanian
- ▶ Naveen Dandu
- ▶ Zhiqiang Ji
- ▶ Barry Pemberton
- ▶ Arvin Yu

- ▶ “Organic Chemistry” 7th Edition, J. McMurry
- ▶ Study Guide and Solutions Manual suggested
- ▶ Darling Molecular Models
- ▶ RF PRS transmitter



- ▶ Exams
 - ▶ three midterm exams (60%)
 - ▶ comprehensive final (30%)
- ▶ Quizzes (10%)
 - ▶ daily quiz question
 - ▶ on the screen only at the beginning of class
 - ▶ 2 pts correct answer, 1 pt incorrect answer
 - ▶ we will use PRS
 - ▶ quizzes begin on monday

▶	A	85-100%
▶	B	75-84%
▶	C	60-74%
▶	D	45-59%

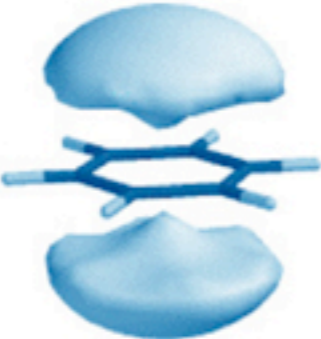
- ▶ Exams will begin at 7:45
- ▶ **All hats, cell phones, PDAs and calculators, ipods must remain stored away during exams.**
- ▶ **Please bring a picture ID to the exam**
- ▶ Arrange to take the exam ahead of time if you will be absent for an authorized school function

Chemistry 342 - Organic Chem II

http://cook.chem.ndsu.nodak.edu/chem342/

SmartMusic email | japan | blogs | NP Opinion | fitness | ASAP | NIH grants | NIH | GB

Chemistry 342 - Organic C...



Chem 342 Organic Chemistry II

Chem 342 Links

- Syllabus
- Lecture Notes
- On-Line MODELS
- Messages

Chem 342 HELP

- O-Chem Links
- Office Hours and TA
- Contact Information

NDSU Links

- Blackboard
- NDSU Chemistry
- NDSU

Contact Dr. Cook

Gregory R. Cook
360A Dunbar Hall
701-231-7413
email me
IChat/AIM
COS
Facebook

Welcome to Chem 342 for 2009

Here you will find resources you need to be successful in Organic Chemistry. Browse the links one the left for lecture notes, exam information, messages from the instructor and useful links to organic chemistry web sites. If you need additional help, you can contact Dr. Cook or make use of the many office hours available by the SI instructor and the TA's.

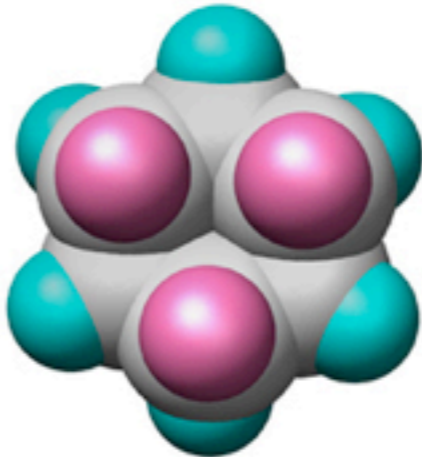
NOTE: Please check the Lecture Notes page for suggested problems and lecture summaries.

For past Chem 342 materials:

- Chem 342 - Spring 2004
- Chem 342 - Spring 2003
- Chem 342 - Spring 2002

for past Chem 341 materials:

- Chem 341 web pages



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North Dakota State University
Fargo, North Dakota 58108-6050

MADE ON A Mac

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HATE

023218

- ▶ Chapter 13 - NMR Spectroscopy
- ▶ Chapter 14 - Conjugation and UV Spectroscopy
- ▶ Chapter 15 - Benzene and Aromaticity
- ▶ Chapter 16 - Electrophilic Aromatic Substitution
- ▶ Chapter 17 - Alcohols
- ▶ Chapter 18 - Ethers and Epoxides
- ▶ Chapter 19 - Aldehydes and Ketones
- ▶ Chapter 20 - Carboxylic Acids
- ▶ Chapter 21 - Carboxylic Acid Derivatives
- ▶ Chapter 22 - Carbonyl Alpha Substitution
- ▶ Chapter 23 - Carbonyl Condensation REactions
- ▶ Chapter 24 - Amines
- ▶ Chapter 25-28 - Biomolecules

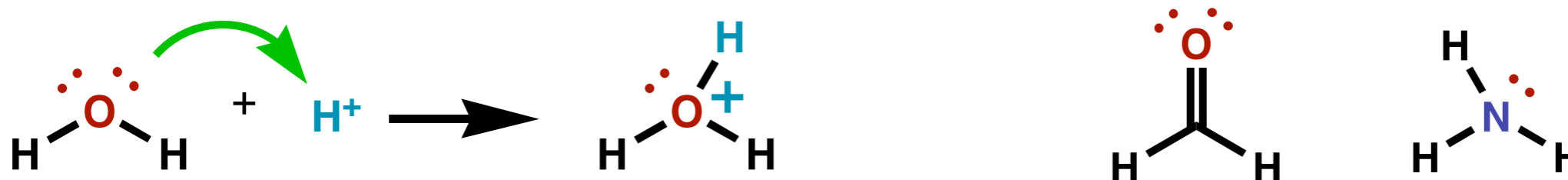
My Philosophy Toward Organic Chemistry

- ▶ Like a foreign language
- ▶ Vocabulary
 - ▶ Terms
 - ▶ Structures
 - ▶ Functional Groups
- ▶ Grammar
 - ▶ Electronic properties
 - ▶ Reactivity
 - ▶ Mechanism



O-Chem is *NOT* about rote memorization

- ▶ If you depend on rote memorization for passing classes, you will most likely not do well in 342.
- ▶ O-Chem is about problem solving.
- ▶ We will build a foundation of knowledge and build on what you learned in 341.
- ▶ I expect you to be able to reach beyond what you have 'memorized' and make new connections with this knowledge.



Tips For Learning Organic Chemistry

- ▶ Read ahead before coming to class
- ▶ **COMETO CLASS**
- ▶ Rewrite your notes
- ▶ Do the suggested problems - do them again
- ▶ Flash cards can help

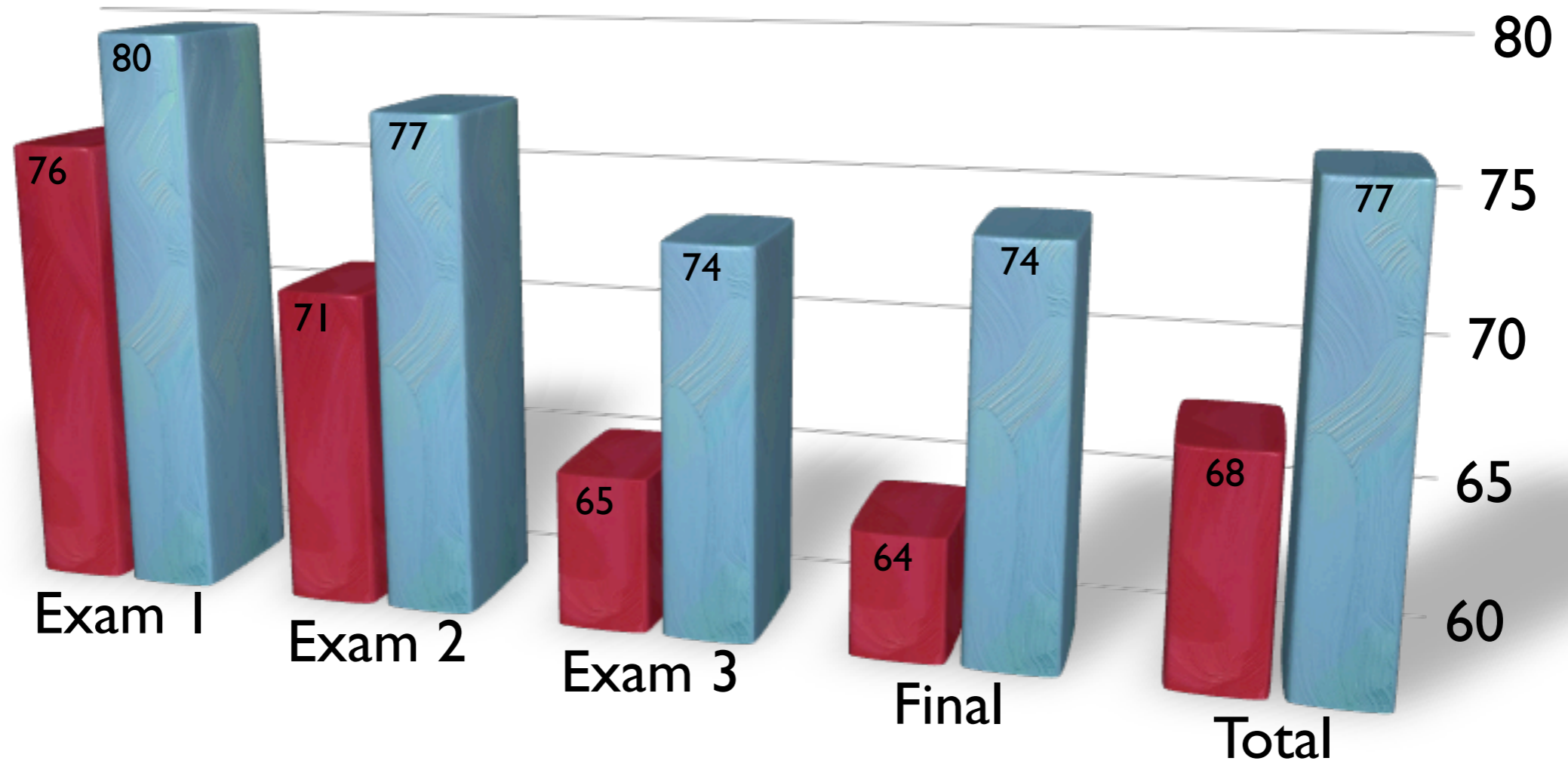


Tips For Learning Organic Chemistry

- ▶ Study with a friend or form a study group
- ▶ A set of molecular models can help
- ▶ DON'T Fall Behind
- ▶ DON'T Fall Behind
- ▶ DON'T Fall Behind
- ▶ Organic Chemistry is an integral part of Materials Science, Biology and Biochemistry.
- ▶ USE SI and TA's

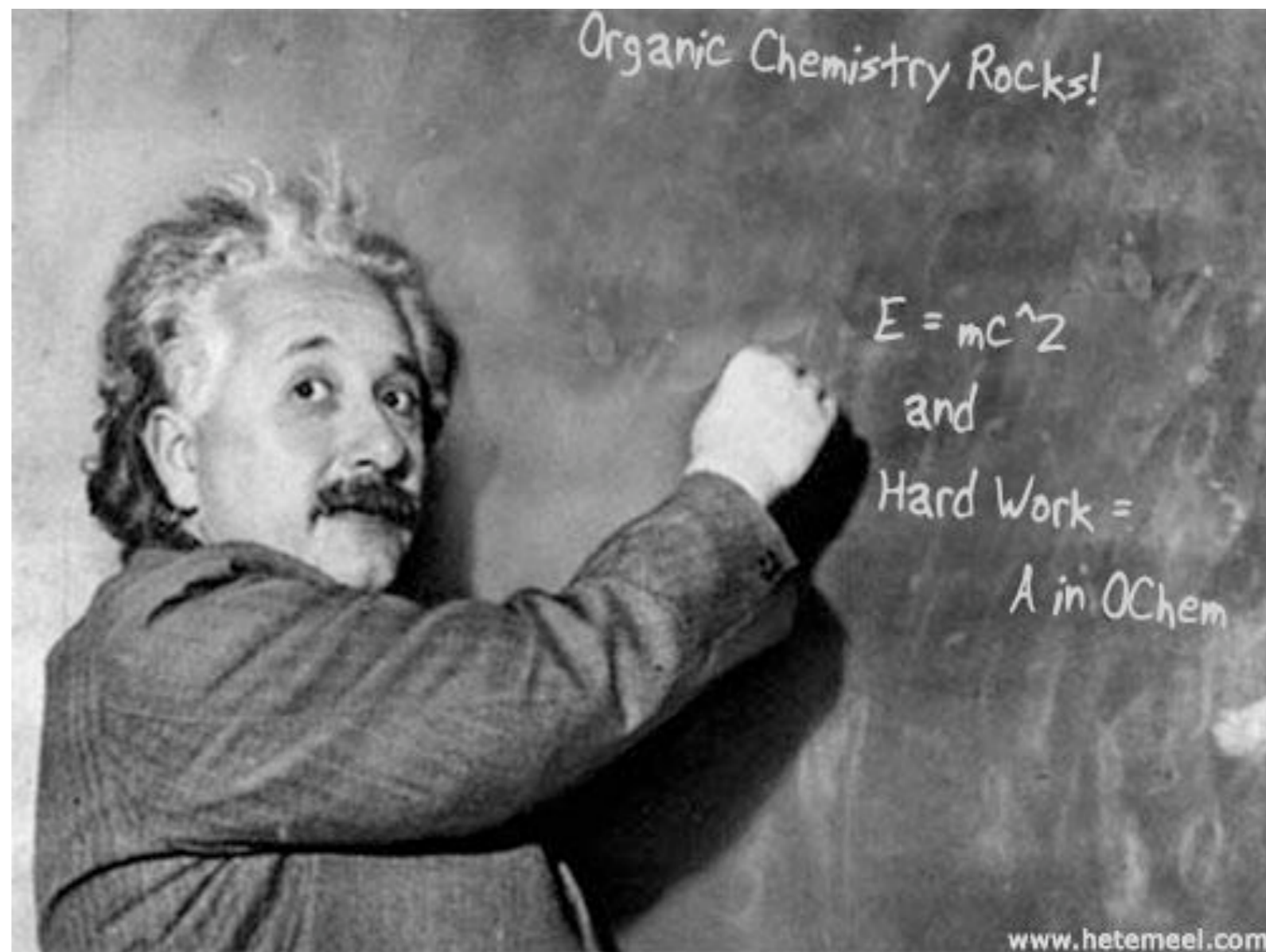
▶ Attendance vs Performance 2004

■ Absent >2 (73 students) ■ Absent <3 (199 students)



O-Chem is a Blackboard Subject

- ▶ I will mostly use the blackboard in lectures.
- ▶ I will write large.
- ▶ If you can't see **MOVE TO THE FRONT OF THE LECTURE HALL**



What Is Organic Chemistry ?

- ▶ Organic

- ▶ Webster's Dictionary 1913

- ▶ Pertaining to, or denoting, any one of the large series of substances which, in nature or origin, are connected with *vital processes*.

- ▶ Chemistry

- ▶ Merriam-Webster WWW Dictionary

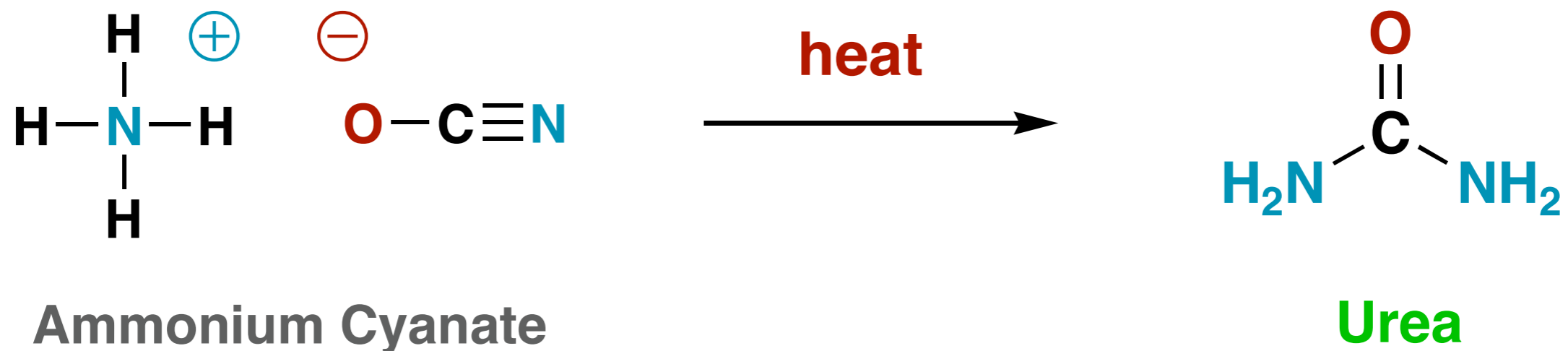
- ▶ A science that deals with the composition, structure, and properties of substances and with the transformations that they undergo.

- ▶ 18th Century
 - ▶ Organic Compounds obtained from Living Organisms which possess the “vital force”
 - ▶ It was thought that Organic Compounds could not be made or manipulated without the influence of this “vital force”

Torbern Bergman 1770

▶ 19th Century

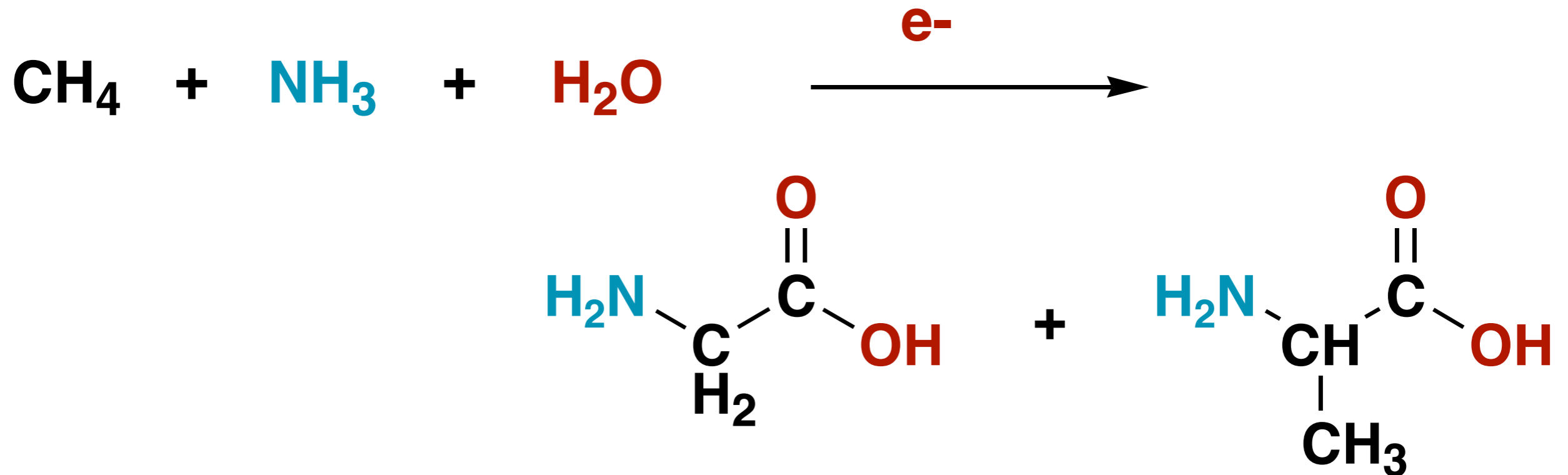
- ▶ It was demonstrated for the first time that an “*organic*” molecule could be synthesized from an inorganic molecule.



Friederich Wöhler 1828

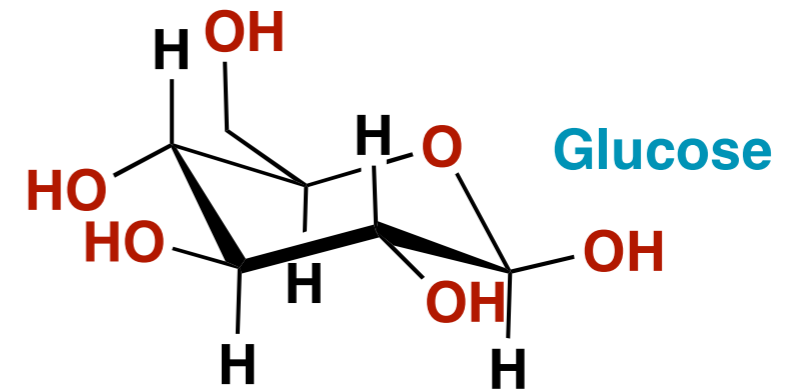
▶ 20th Century

- ▶ Amino Acids, Life's Building Blocks, created from simple materials.

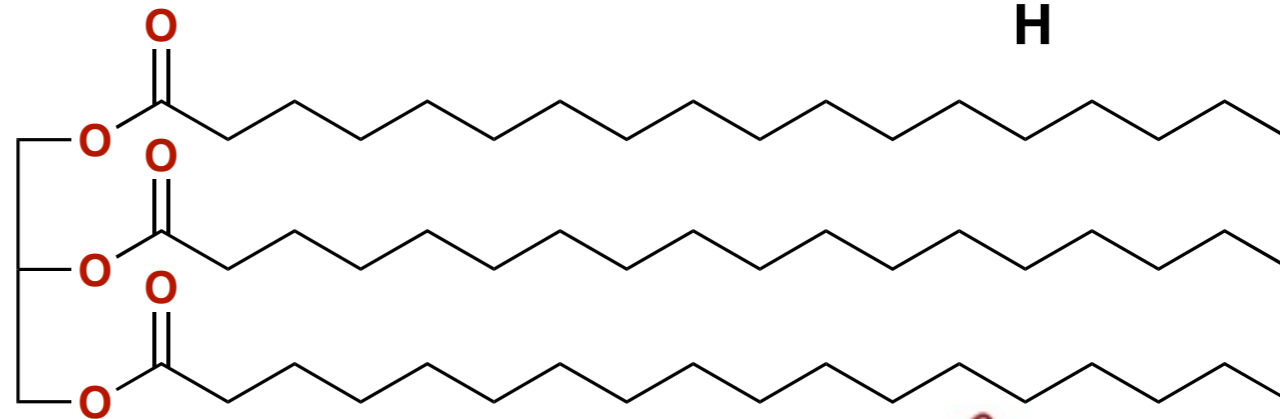


Urey and Miller 1952

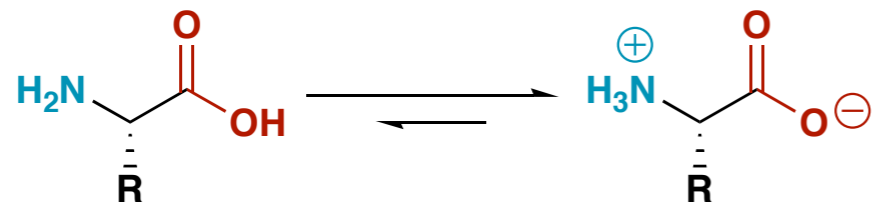
▶ Carbohydrates / Sugars



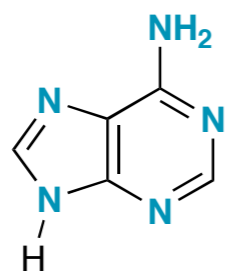
▶ Fats / Lipids



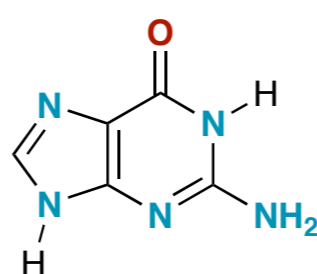
▶ Amino Acids / Proteins



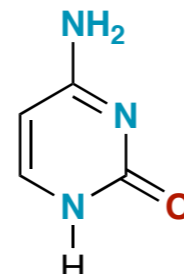
▶ Heterocyclic Bases (DNA)



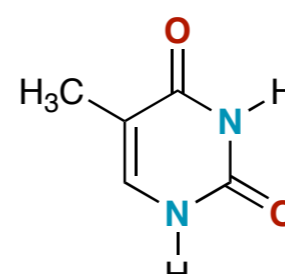
Adenine



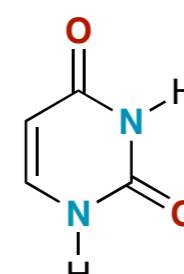
Guanine



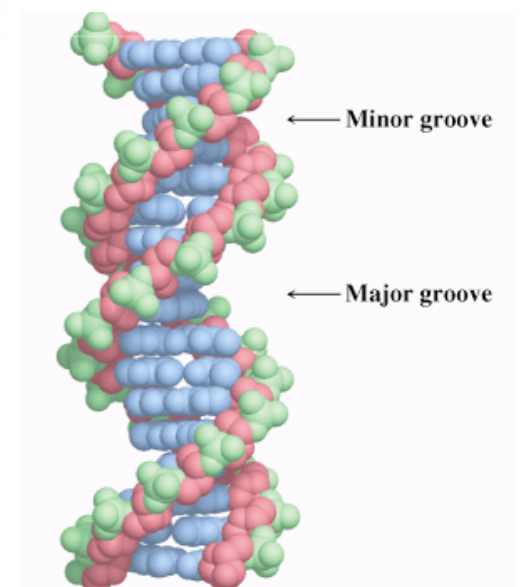
Cytosine



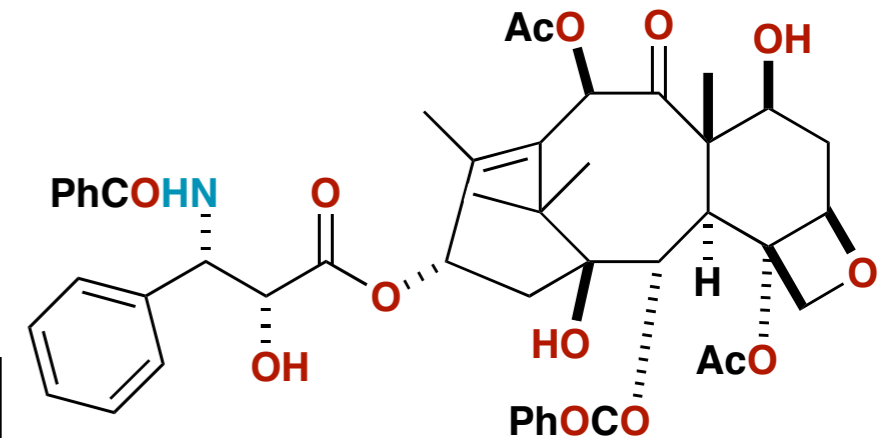
Thymine



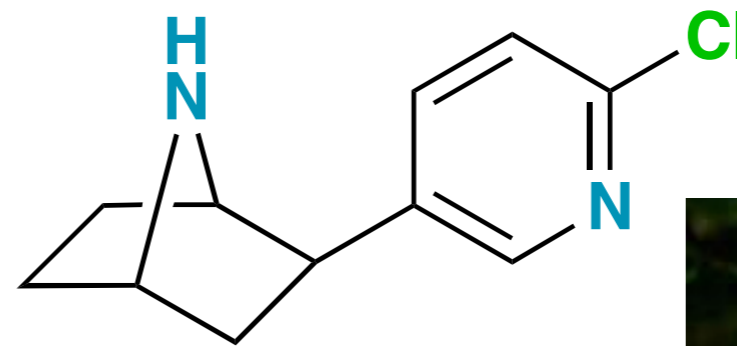
Uracil



- ▶ **Paclitaxel (Taxol™)** anticancer compound isolated from the bark of the pacific yew tree

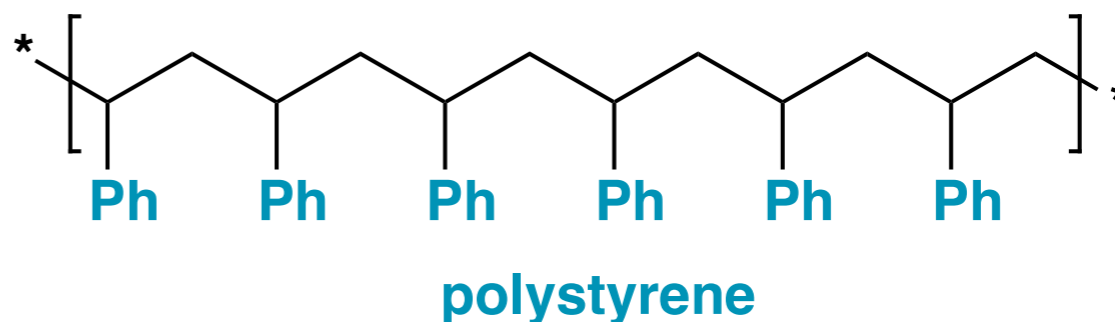


- ▶ **Epibatidine** analgesic compound isolated from the skins of an ecuadorian tree frog

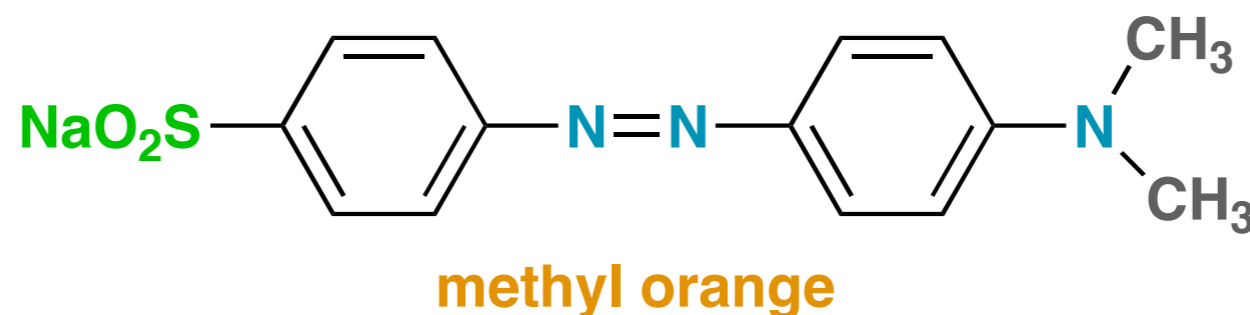


Man-Made (Synthetic) Organic Compounds

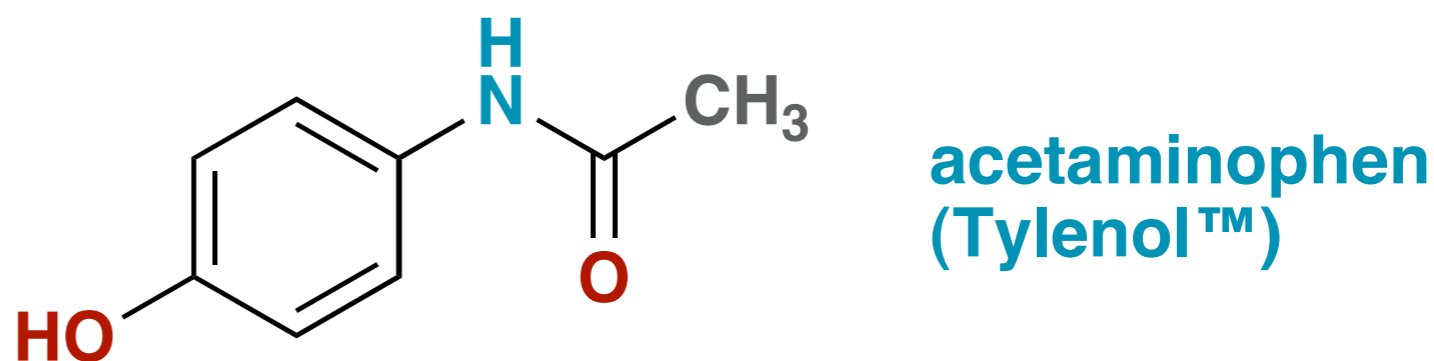
► Polymers



► Dyes



► Pharmaceuticals



- ▶ The Chemistry of Carbon Compounds
- ▶ Challenges for the 21st century
 - ▶ New efficient tools for making organic compounds - *ORGANIC SYNTHESIS*
 - ▶ SELECTIVITY
 - ▶ Chemoselectivity
 - ▶ Regioselectivity
 - ▶ Stereoselectivity

- ▶ “One interesting result of the NIH Roadmap development process came when we surveyed scientists to find out what the stumbling blocks for biological sciences were. *The number one stumbling block turned out to be **synthetic organic chemistry***. I was shocked because I thought the limiting factor was computational biology. So the NIH Roadmap really changed my view of the importance of chemistry and chemical engineering.



Chemical & Engineering News, July 3, 2006