



# SCH0704 ภาษาอังกฤษสำหรับนักเคมี

## English for Chemists

ประจำภาคเรียนที่ 1/2563

**ผู้รับผิดชอบรายวิชา** ดร. ชุติมา เสพย์ธรรม

**อาจารย์ผู้สอนรายวิชา**

ดร.ชุติมา เสพย์ธรรม E-mail: [chutima.sep@sru.ac.th](mailto:chutima.sep@sru.ac.th)

ผศ.ดร. รัตนา วงศ์ฐพันธ์ E-mail: [rattana.won@sru.ac.th](mailto:rattana.won@sru.ac.th)

ผศ.ดร. มาริส่า อินทวงศ์ E-mail: [marisa@sru.ac.th](mailto:marisa@sru.ac.th)

Pre-Test: Translate the following vocabulary terms into Thai.

- 1) Matter.....
- 2) Volume.....
- 3) Mass.....
- 4) Weight.....
- 5) Density.....
- 6) physical properties.....
- 7) Gas.....
- 8) Solid.....
- 9) Evaporation.....
- 10) Condensation.....

- 11) Melting.....
- 12) Freezing.....
- 13) physical changes.....
- 14) chemical changes.....
- 15) Mixture.....
- 16) Solution.....
- 17) Solubility.....
- 18) Dissolve.....
- 19) Suspension.....
- 20) law of conservation.....

## WARM UP

**Make pairs.**

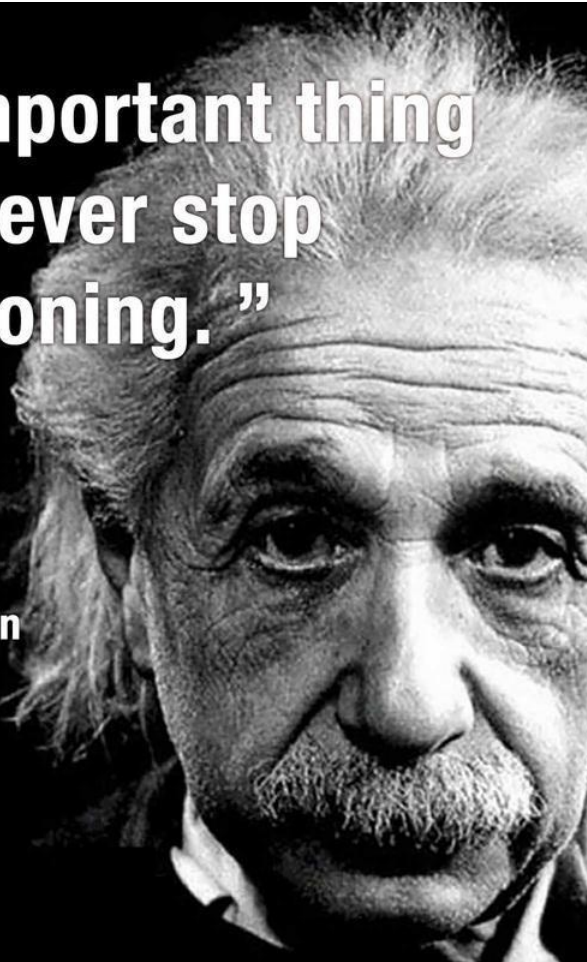
**Introduce yourself to your partner. Include your name, school department, specialization, your likes and dislikes, where you live, your background and any other information you want to add. Your partner will then briefly introduce you to the rest of the class and vice versa.**



## Discuss the following quotes about science:

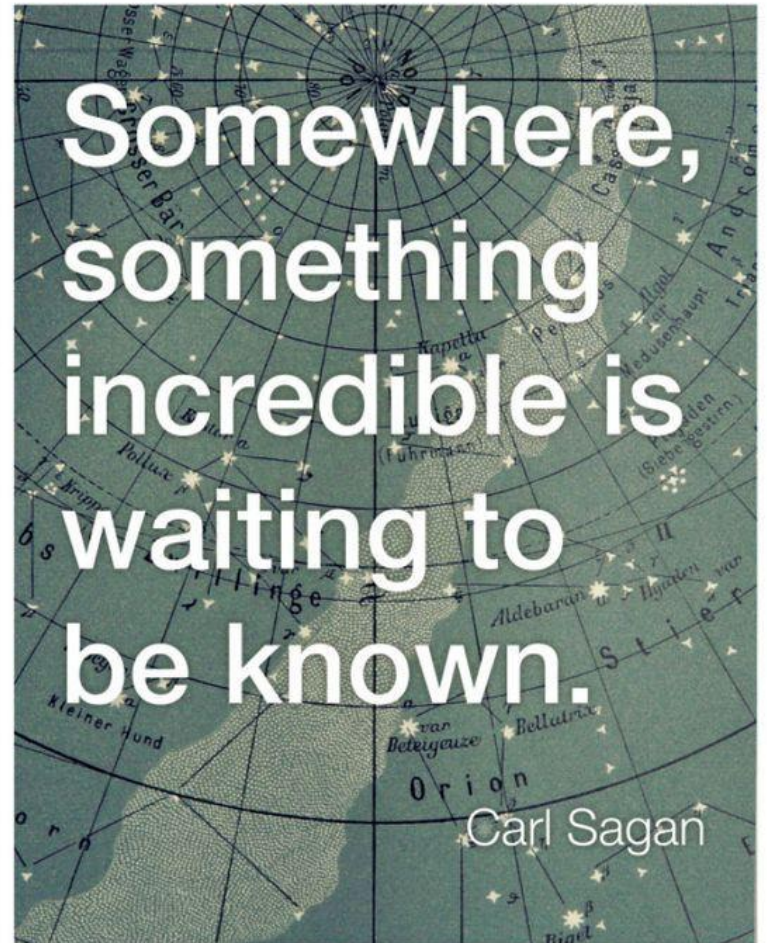
**“ The important thing  
is to never stop  
questioning. ”**

**Albert Einstein**



**Somewhere,  
something  
incredible is  
waiting to  
be known.**

**Carl Sagan**



**Discuss the following quotes about science:**

“

**Everything is  
theoretically impossible,  
until it is done.**

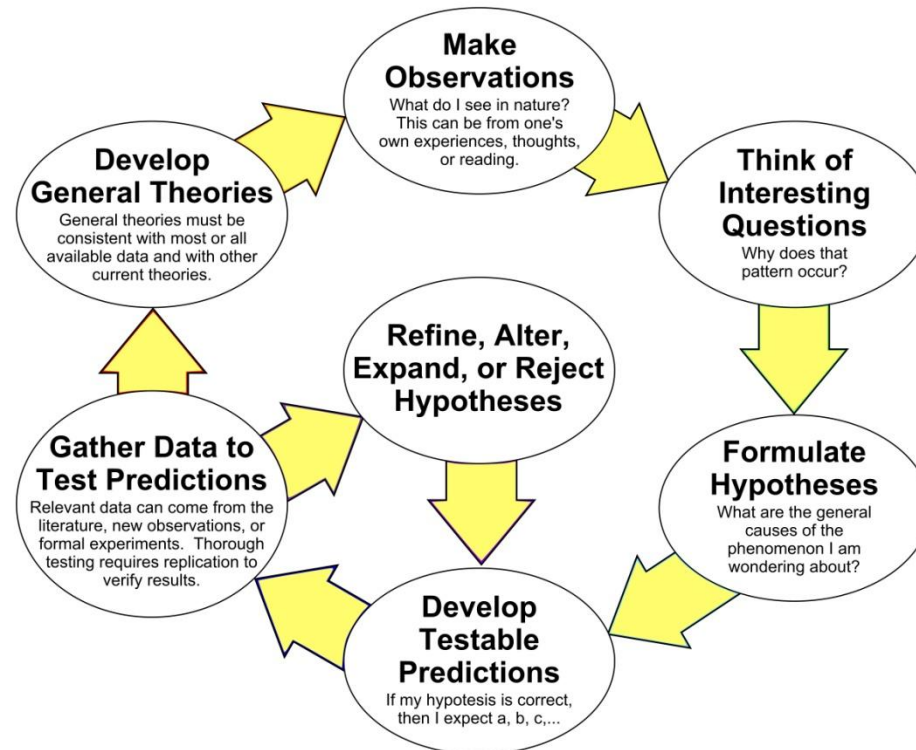
Robert A. Heinlein

∴ **hello**bio.

**Task 1:** Write the science quotes at least 3 quotes.

# What is science?

**Science:** any system of knowledge that is concerned with the physical world and its phenomena and that entails unbiased observations and systematic experimentation. In general, a science involves a pursuit of knowledge covering general truths or the operations of fundamental laws.



# Branches of Science

**Which branches of science study each of these areas?**

environment

human mind and behavior

language

numbers, quantities and shapes

people, society and culture

substances and their reactions

weather

political systems

living things

matter and forces

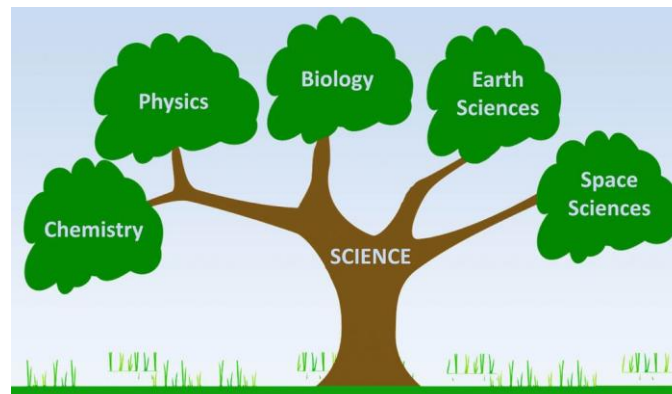
money, industry and trade

celestial objects

water

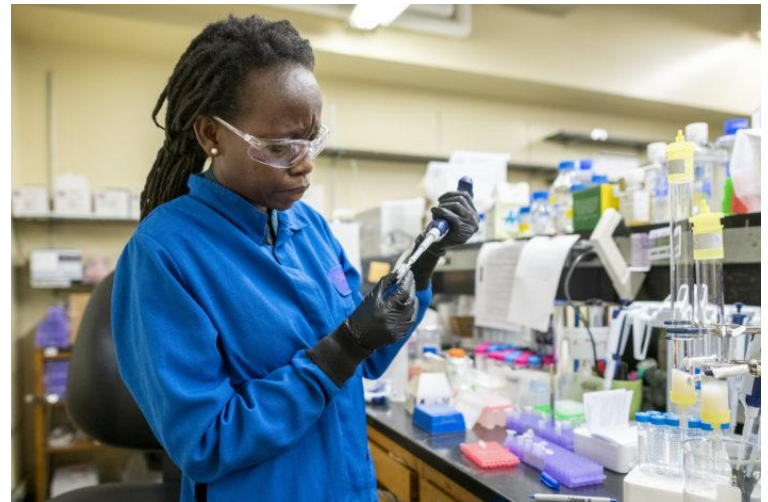
rocks and soil

society and social behaviour



**Task 2:** How do we call the scientists who specialise in the following fields of study? How are the names formed?

ecology ..... anthropology .....  
psychology ..... chemistry .....  
linguistics ..... meteorology .....  
biology ..... sociology .....  
physics ..... political science .....  
economy ..... mathematics .....  
astronomy .....

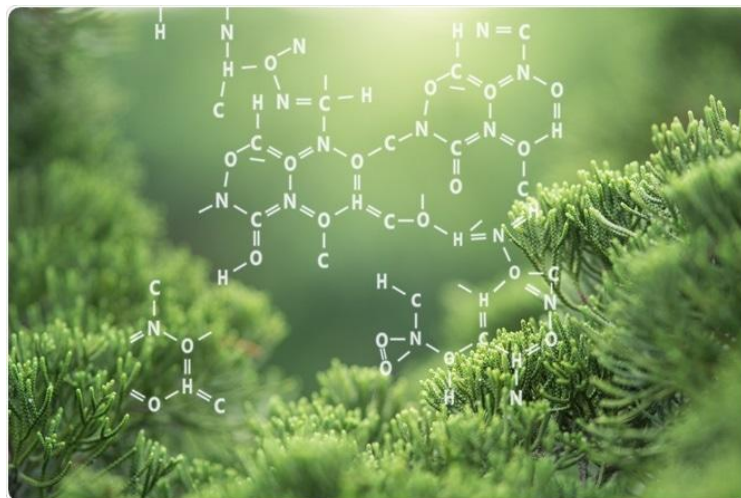




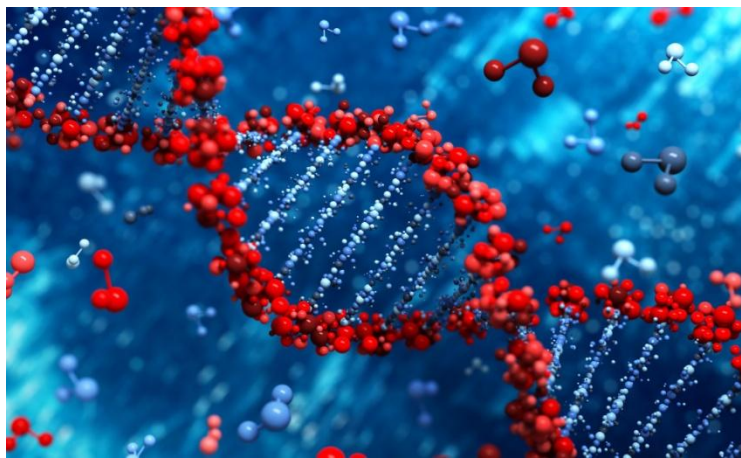
# BRANCHES OF CHEMISTRY

**Chemistry is divided into several** main sub-disciplines.

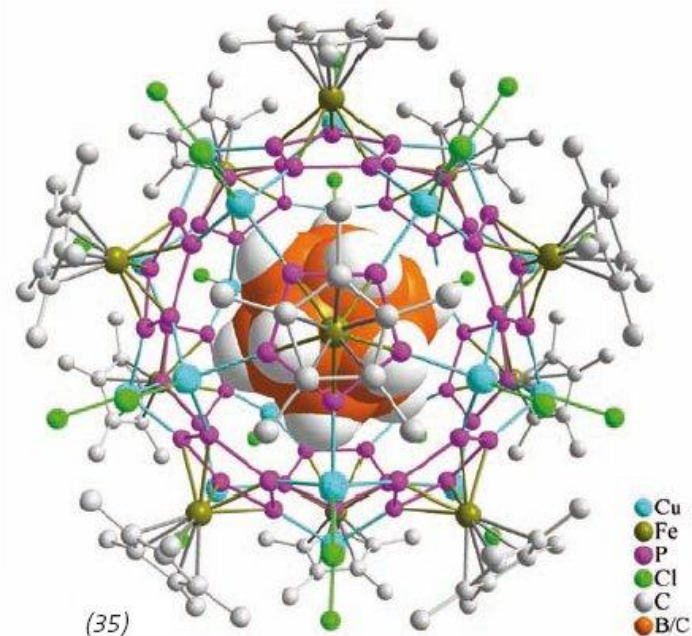
**Organic chemistry is the study** of the structure, properties, composition, mechanisms and reactions of organic compounds, which are compounds based on a carbon skeleton. In other words, organic chemistry is the study of the chemistry of life.



**Biochemistry is the study of the** chemicals, chemical reactions and chemical interactions that take place in living organisms. Biochemistry and organic chemistry are closely related. Biochemistry is also associated with molecular biology and genetics.



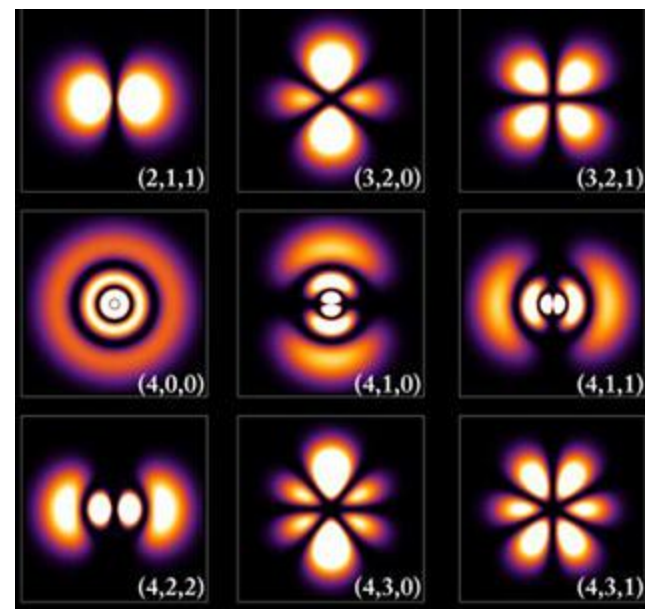
**Inorganic chemistry is the study of properties** and reactions of compounds which do not contain a carbon-hydrogen bond. Many inorganic compounds are those which contain metals. The distinction between organic and inorganic disciplines is not absolute and there is much overlap.



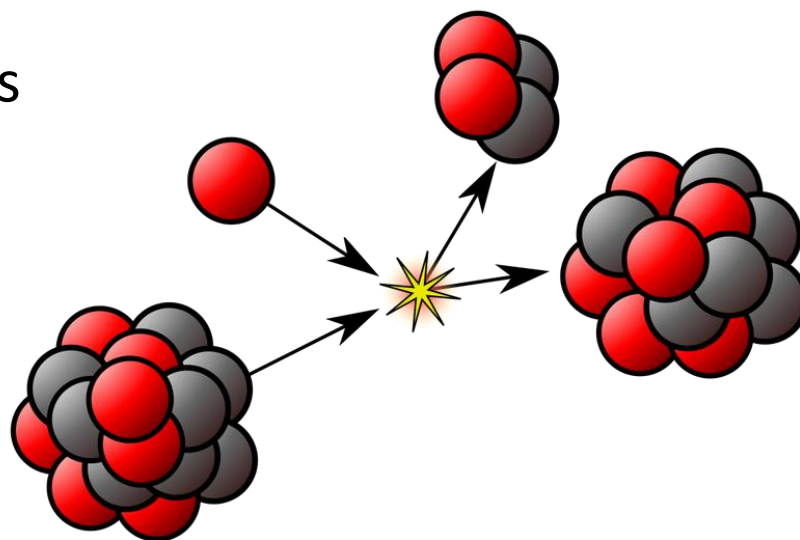
**Analytical chemistry is the analysis of substances** to gain an understanding of their chemical composition and structure. It is divided into two main branches: **qualitative analysis** and **quantitative analysis**. **Qualitative analysis** identifies the types of elements and compounds that make up substances. **Quantitative analysis** measures the amounts of the different chemicals that make up substances.



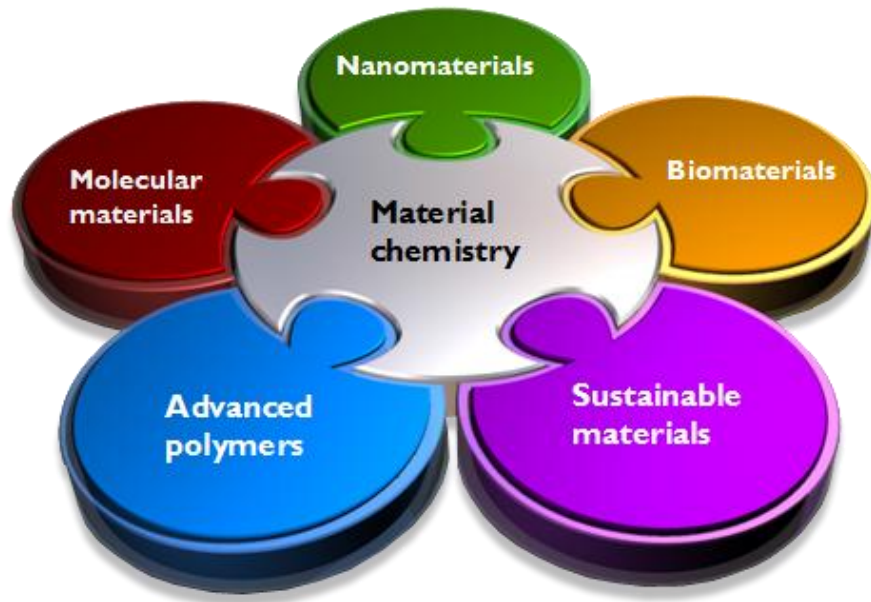
**Physical chemistry is the branch of chemistry that applies physics to the study of chemistry.** Important areas of study include chemical thermodynamics, chemical kinetics, electrochemistry, statistical mechanics, and spectroscopy. Physical chemistry is usually associated with quantum chemistry and theoretical chemistry.



**Nuclear chemistry deals with radioactivity, nuclear processes and nuclear properties.**



**Materials chemistry is an inter-disciplinary** field which consists of studying the structure and properties of existing materials, creating and characterizing new materials. It uses advanced techniques to predict structures and properties of materials that have not yet been realized.



#### GLOSSARY



- amount: quantity
- bond: link
- branch: subdivision
- to deal with: to treat
- field: area
- to gain: to obtain
- to make (made-made) up: to form
- overlap: connection
- to predict: to anticipate what will happen

Natural Sciences include Physical Sciences and Life Sciences. Tick the fields of Physical Sciences you are interested in and/or the ones you study at school. Compare your choices with your classmates'.

## PHYSICAL SCIENCES

## Interested in

## School subject

Physics

Chemistry

• Organic Chemistry

• Inorganic Chemistry

• Analytical Chemistry

• Physical Chemistry

• Nuclear Chemistry

• Biological Chemistry

Earth Sciences

Join the heads and tails into a summary of the reading passage.

### Heads

- |   |   |   |
|---|---|---|
| a. <input type="checkbox"/> Organic chemistry   | d. <input type="checkbox"/> Analytical chemistry  | g. <input type="checkbox"/> Physical chemistry  |
| b. <input type="checkbox"/> Biochemistry        | e. <input type="checkbox"/> Qualitative analysis  | h. <input type="checkbox"/> Nuclear chemistry   |
| c. <input type="checkbox"/> Inorganic chemistry | f. <input type="checkbox"/> Quantitative analysis | i. <input type="checkbox"/> Materials chemistry |

### Tails

1. deals with the identification of the constituents of a substance.
2. determines the constituents of substances.
3. determines the amount of each constituent present in the substance.
4. is concerned with the physical properties of chemical substances and includes the applications of thermodynamics and quantum mechanics to chemistry.
5. is the preparation, classification, and understanding of substances with a useful function.
6. is the study of carbon and its compounds.
7. is the study of chemical processes that occur inside living organisms.
8. is the study of chemical substances that do not contain carbon-to-carbon bonds.
9. studies nuclear reaction and its products.

## Explain the jokes about chemists and chemistry.

**question:** Why are chemists good at solving problems?

**answer:** They have all the solutions.

**question:** If H-two-O is the formula for water, what is the formula for ice?

**answer:** H-two-O cubed.

**teacher:** “What is the formula for water?”

**student:** “H,I,J,K,L,M,N,O”

**teacher:** “That’s not what I taught you! ”

**student:** “But you said the formula for water was H – to – O. ”

A chemist walks into a pharmacy and asks the pharmacist:

“Do you have any acetylsalicylic acid?”

“Do you mean aspirin?” asked the pharmacist.

“That’s it, I can never remember the word.” answered the chemist.