

杨嘉谟 包传平 余卫华 吴元欣 编

化学化工专业英语

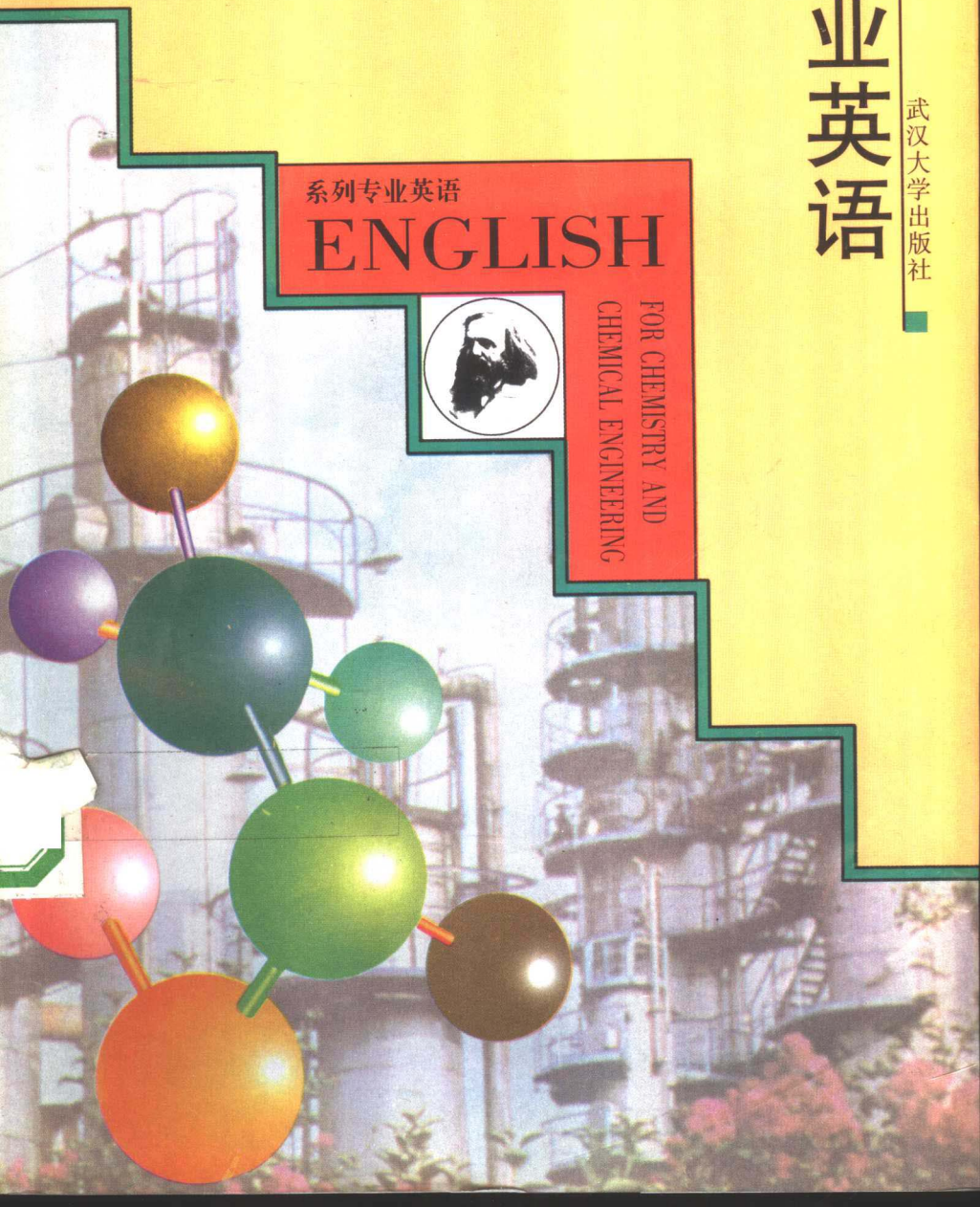
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FOR CHEMISTRY AND
CHEMICAL ENGINEERING



化学化工专业英语

杨嘉谟 包传平 编
余卫华 吴元欣

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前 言

本书第一版(原名《现代化学化工专业英语教程》)出版迄今已近六年。在这六年中,化学化工类各专业的学习内容和学生英语水平都有了较大变化,对专业英语的要求也有相应的提高,同时,本书的许多读者也提出了不少宝贵的建议。因此,为了满足化学化工类专业英语教学的需要,拓宽学习的专业面以适应市场经济对人才的需求,我们对本书第一版作了较大增删和修改。

根据化学化工类专业内容的变化以及近几年来教学经验的总结,修订版特别注意了专业英语内容的更新和扩充,增加了石油、生物、环境、催化、化肥、硫酸、磷酸等化学化工方面的内容。每一单元的 Text B 和 Text C 均附有参考译文,便于教师的讲授和学生的学习。

全书仍分 12 个单元。每个单元的 Text A 为精讲部分,由教师进行讲授,并附有一定量的练习以便学生复习掌握所学内容;Text B 为泛读课文,可训练学生的阅读理解能力;Text C 为课外阅读材料,为学有余力的学生增强自修能力及拓宽英语专业面所用。每单元附带的“专业知识介绍”有助于培养学生写作能力和训练国际学术交流英语基本技能。附录给出“科技英语句子翻译技巧”、“美国《化学文摘》简介”、“常用数学符号及一些数学式的读法”以及“希腊字母表和化学元素表”供学生和科技人员参考。

本书可作为大学高年级化学化工类各专业学生的专业英语教

材,也可供化学化工专业的技术人员及中等英语水平的其他人员自修参考。

本书在修订过程中参阅了大量国内外有关资料和文献,在此我们向这些资料和文献的原作(编)者致以诚挚的谢意。并对本书第一版的刘尚文、吴元欣、余卫华、游长松四位编者所做的大量基础工作表示感谢!

本书由武汉化工学院化工系杨嘉谟、包传平、吴元欣合编。杨嘉谟编写第1至第6单元;包传平编写第7至第12单元,由杨嘉谟副教授对全书进行统稿,吴元欣教授审阅定稿。余卫华副教授参与了部分工作。我们诚恳希望广大读者在使用本书的过程中,能对书中的不足之处予以批评指正,以便此教材进一步完善。

编 者

1997年2月于武汉

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Unit One

Text A

What Is Chemistry about

The different kinds of matter that compose the universe are termed materials. Iron is one material, water another. Each material has its own distinguishing characteristics, otherwise it is termed its properties. These properties enable the material to be recognized or separated from other materials. Iron has the property of rusting in moist air; water, the property of dissolving sugar; sugar, the property of being dissolved by water.¹

Note that size, shape and weight are not properties of materials, but attributes of particular objects (samples of matter).

The study of materials is the joint concern of chemistry and physics. These two sciences are so closely related that no one can learn very much about either without considerable training in the other². In many of their applications it is hard to tell where the one science leaves off and the other begins.

Roughly stated³, physics is concerned (1) with the general properties and energy and (2) with events which results in what are termed physical changes. Physical changes are those in which materials are not so thoroughly altered as to be converted into other materials distinct from those present at the beginning.⁴

Chemistry, by contrast, is chiefly concerned (1) with properties that distinguish materials from one another and (2) with events

which result in chemical changes. Chemical changes are those in which materials are transformed into completely different materials. Who but a chemist would ever guess that⁵ common salt can be dissolved into a greenish gas and silvery metal? Or that two odorless gases, nitrogen and hydrogen, can be combined to form ammonia? Or that ordinary air and water can be converted into nitric acid? Or that coal tar contains ingredients that can be transformed into dyestuffs and perfumes?

Such thoroughgoing transformations, in which all the properties of a material are altered, so that a completely different material is obtained, are called⁶ chemical transformations, chemical changes or chemical reactions.

Chemistry as an art is concerned with identifying, separating and transforming materials, in applying them to definite uses.

Chemistry as a science is a manner of thinking about transformations of materials which helps us to understand, predict and control them. It furnishes directing intelligence in the use of materials.

New Words

1. greenish[*g'ri:nɪʃ*] *adj.* 浅绿色的
2. silvery[*'sɪlvəri*] *adj.* 银一般的; 银色的
3. odorless[*'ɒdələs*] *adj.* 没有气味的
4. nitrogen[*'naɪtrədʒən*] *n.* 氮; 氮气
5. hydrogen[*'haɪdrədʒən*] *n.* 氢; 氢气
6. ammonia[*ə'məʊniə*] *n.* 氨; 阿摩尼亚
7. dyestuff[*'daɪstʌf*] *n.* 染料
8. perfume[*'pɜ:fju:m*] *n.* 香料; 香水; 香味; 芬芳

Phrases and Expressions

1. separate from... 和...分离;从...中分离出
2. leave off 停止;脱去
3. result in... 导致;引起;产生;结果形成
4. convert into... 转化为...;变为...
5. distinguish...from... 把...和...区别开
6. be transformed into 被转变成
7. be concerned with 涉及;与...有关
8. think about 思索;考虑

Notes

1. Iron has the property of rusting in moist air; water, the property of dissolving sugar; sugar, the property of being dissolved by water. 铁有在潮湿空气中生锈的特性;水有溶解糖的特性;糖有被水溶解的特性。of 后的 being 表示被动语态。

2. These two sciences are so closely related that no one...in the other... 这两门学科被如此紧密地联系在一起以致于没有一个人能够不通过其中一门学科有效的训练而很好地学习另一门学科。“so...that”引导结果从句,作“这么(如此)……以致于”之意,在 so 后面可跟形容词、副词或分词。e. g. An atom is so small that no one can see it. 原子如此之小以致没有人可以看见它。

3. Roughly stated 一般说来。又作“Roughly speaking”。

4. Physical changes are those in which materials are not so thoroughly altered as to be converted into other materials distinct from those present at the beginning. 物理变化是指在这些变化中,物质并不彻底改变成为与初始状态截然不同的其他物质。so...as to (接不定式动词)表示:如此地……以致……,一般作结果状语。in which 中的 which 代表前面的 those,即“这些变化”。

5. Who but a chemist would ever guess that...? 除了化学家谁能推测出...?

6. ...are called 被叫做。e. g. This process is called evaporation. 这种过程称之为蒸发。

Exercises

I . Try to answer the following questions in your own words according to the text.

1. What is the definition of materials?
2. What sciences are concerned with in the study of materials?
3. What do you know about physics?
4. What do you know about chemistry?
5. How could we express physical change correctly?
6. What is chemical change?
7. Could you give some examples of chemical changes in the text?
8. What is concerned with when chemistry as an art?
9. What is a manner of thinking about when chemistry as a science?
10. What did the passage mainly talk about?

II. Choose the one which is the closest in meaning to the words and expressions underlined

1. They have made the oil and water separate from each other.
A. disperse
B. decompose
C. isolate
D. break up
2. The experiment leads to the conclusion that unlike charges attract each other.
A. resign
B. result in
C. express
D. make known

3. An engine that converts into mechanical work by heat energy is called a heat engine.

- A. passes on B. makes up
C. transforms into D. turn

4. The energy is concerned with electric charges and their movements.

- A. membership B. related to
C. regarded as D. depended

5. He does nothing but to think about it.

- A. thank for B. talk about
C. desire D. consider

6. Flour and fat are the most important ingredients.

- A. compositions B. members
C. materials D. ingratiates

III. Translate the second paragraph of the text into the Chinese.

IV. Translate the following Sentences into English.

1. 在石油加工过程中, 几种馏分被相互分离开来。(separate from...)
2. 我们必须明辨是非。(distinguish...from)
3. 这个液体中含有大量的化学成分。
4. 能量可由一种形式转变为另一种形式。(convert...into)
5. 他一直在思考化学实验中出现的问题。(think about)

Text B

The Study of Chemistry

Chemistry has two main aspects: *descriptive chemistry*, the discovery and tabulation of chemical facts; and *theoretical chemistry*, the formulation of theories that, upon verification¹, unify these facts and combine them into a system.

It is not possible to obtain a sound knowledge of chemistry simply by learning theoretical chemistry. Even if a student were to learn all the chemical theory that is known he would not have a knowledge of the science², because a major part of chemistry (many of the special properties of individual substances) has not yet been well incorporated into chemical theory. It is accordingly necessary for the student to learn a number of the facts of descriptive chemistry simply by memorizing them. The number of these facts that might be memorized is enormous, and increases rapidly year by year, as new discoveries are made. In this book a selection from the more important facts is presented. You should learn some of these facts by studying them, and by frequently referring to them and renewing your knowledge of them. You should also learn as much about chemistry as possible from your own experience in the laboratory and from your observations of chemical substances and chemical reactions in everyday life.

A special effort has been made in this book to present the subject of chemistry in a logical and simple manner, and to correlate de-

scriptive chemistry³ with the theories of chemistry. It is therefore necessary that the theoretical sections of the book be carefully studied and thoroughly understood⁴. Read each chapter with care. Examine the arguments to be sure that you understand them.

The broad field of chemistry may also be divided in other ways. An important division of chemistry is that into the branches: organic chemistry and inorganic chemistry⁵. Organic chemistry is the chemistry of the compounds of carbon, especially those that occur in plants and animals. Inorganic chemistry is the chemistry of the compounds of elements other than carbon. Each of these branches of chemistry is in part descriptive and in part theoretical. Many other branches of chemistry, which in general are parts of organic chemistry and inorganic chemistry, have also been given names: for example, analytical chemistry, physical chemistry, biochemistry, nuclear chemistry, industrial chemistry. Their nature is indicated by their names.

New Words

1. descriptive[dis'kriptiv] *adj.* 描述的, 叙述性的
2. tabulation[,tæbjʊ'leɪf(ə)n] *n.* 制成表格, 整理, 分门别类
3. theoretical[θiə'retik(ə)l] *adj.* 理论的
4. verification[,verɪfɪ'keɪf(ə)n] *n.* 验证
5. formulation[,fɔ:mju'leɪf(ə)n] *n.* 制订, 形成
6. unify['ju:nɪfai] *vt.* 统一
7. incorporate[in'kɔ:pəreɪt] *vt.* 纳入, 结合
8. accordingly[ə'kɔ:dɪŋli] *adv.* 因此
9. correlate['kɔ:reɪlɪt] *vt.* 使……相联系
10. organic[ɔ:'gænik] *adj.* 有机的
11. analytic(al)[,ænə'lɪtɪk(əl)] *adj.* 分析的
12. biochemistry['baɪə'kemɪstri] *n.* 生物化学