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高职高专行业英语 ESP

机械英语（第2版）

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内 容 提 要

本书为高职高专行业英语系列丛书，是一本结合高职高专机械工程类专业实际的教材。本书共八个单元，分别介绍了工程材料、机械零件、加工工艺、加工机床、自动化、计算机辅助设计（CAD）和计算机辅助制造（CAM）以及常用软件的英文标识、数控机床和数控操作、柔性制造系统和工业机器人。教材编写以校企合作、工学结合培养高技能人才的要求为目标，注重能力本位的原则，内容具有较强的应用性和针对性。本书即可作为高等职业院校机械工程类专业学生学习行业英语的教材，也可作为其他专业读者了解机械原理的辅助读物。

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前　言

进入 21 世纪以来,随着世界范围内全球化进程的加快和中国经济的迅猛发展,许多国外的知名企业纷纷进驻中国,与此同时,国内许多实力雄厚的大公司也陆续走向世界。在这种形势下,大企业和公司对中高级技术人才的英语交际能力提出了新的更高的要求。传统的单向教学方式以及相对单一的英语教学环境等问题影响了高职高专院校英语教学的质量,行业英语课堂教学不能很好地激发学生自发应用所学知识,教学效果和职业教育的培养目标不相符合。现有的相关行业英语教材不管从难易程度还是从内容层次上大多不太适应高职高专行业英语的教学目标,教材编写的结构体系偏重理论性;练习活动设计单一,缺乏多维性;内容编写上缺乏实例性的讲解和对工作场景的模拟,不能反映一线岗位对相应知识和技能的要求。本教材是在目前高职高专倡导"就业导向"和"工学结合"理念指导下组织编写的,它根据机械工程专业大类的职业技能需要,结合高职高专院校学生的特点和学习需要,参考中外有关机械制造、数控加工和机械设备使用与维修专业的英语教材编写而成。

本教材面向机械工程专业大类全体学生专业英语学习和相关岗位人员培训,根据"实用为主,够用为度"的原则,从多方面灵活地讲授机械英语,激发他们的学习兴趣,提高他们的英语水平,为今后工作中的相关工作需要以及岗位可持续学习和发展打下扎实的基础。因此,本课程在教材的编写上力求打破传统的学科教材模式,采用生动、内容直观呈现为主的形式突出职业特点,不强调专业的系统性和完整性,部分文章主题和情景设置、课后练习和活动与机械行业的相关工作范围和流程密切相关,形式新颖、实用,从应用的角度学习词汇和语法,各章节内容选取符合时代特点,适当增加了相关领域的新知识和新技术。

本教材是一本通过校企联合编写的工学结合的教材。教材编写以校企合作、工学结合培养高技能人才的要求为目标,注重能力本位的原则,内容具有较强的应用性和针对性。教学采用理论教学(教室)+现场教学(实训中心)的方式,可适当利用校内实习基地条件,使学生具有感性认识,调动他们学习英语的积极性。

为了帮助教师更好地使用本书,在此提供以下建议:

1.Listening and Speaking,对机械工程相关专业的学生英语口语的训练要求不能太高。可以允许学生按照他们的实际程度和已经掌握的语言结构来开展活动。能听懂中等难易程度的、语速适中的相关场景中的对话,让学生做 Role play,模仿并熟练掌握相关场景中的英语交流技巧,并按照所给的情景或自己设计的情景进行对话训练。这样有利于在没有压力的环境下培养他们的自信心和口语能力。

2.Text 和 Supplementary Reading,每个单元通过阅读有关机加工和相关行业知识的 500~

600 词左右的两篇文章,使学生掌握相关词汇,熟悉本专业英语文体的特点。根据教学要求和学生水平情况,本部分可以采用泛读形式,部分习题可放在课后学生自行练习,每个学生应该对理解性问题写出准确、完整的书面回答。部分练习和活动尽量放在课堂进行,学生可以成对或分组比较并讨论他们的答案。

3.Grammar and Translation, 共分为两部分。总结科技英语文体中常见语法现象并通过专项语法练习使学生能够学会基本的表达方式,能够基本读懂相关产品的英文说明书和使用维修手册。教师可灵活使用这些练习,让学生在课堂上做,也可作为课后作业。

本书由重庆大学出版社组织,重庆工业职业技术学院和成都电子机械高等专科学校共同编写,由方艺、朱成华担任主编, 由周进民、王付军、方锐担任副主编,张晓妮、卿瑜等参加编写,在此一并表示衷心的感谢!

由于编者试图体现一种新的编写思想,因此在编写中,难免会有不当和疏漏之处,恳请使用者不吝赐教,惠予指出,便于我们及时修改。

编　者

2014 年 9 月

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Unit 1 Engineering Materials

Part 1 Listening and Speaking

The Process of Interview

Place: Personnel Manager's Office in a company

Characters: (A: Interviewer) Mike Anderson, personnel manager of the company

(B: Applicant) Chen Zhuo

A: Come in, please. Good morning, I am Mike Anderson, personnel manager of our company.

B: How do you do? My name is Chen Zhuo.

A: Sit down please and make yourself at home.

B: Thank you very much.

A: As I know, you have applied to work in our company. Would you please introduce yourself?

B: I'm 23 years old and was born in Huangshi. I can speak and write English fluently and know how to operate the computer and NC machines. I have been an assistant engineer for half a year in a famous company since one year ago. So, I am sure that I am quite efficient in technical work, like NC programming, operation, maintenance and debugging.

A: OK, I would infer that you are an excellent student in your college. Could you tell me more details about your major and English courses?

B: All right. Though I am a student in the Department of Mechanical and Electrical Engineering, I studied many English courses including English Reading and Comprehension, Oral English, English Writing and Professional English. Most of the courses are taught in English, some are even taught by foreign teachers.

A: By the way, do you have any experience as a leader at the school?

B: Yes, I was the monitor of our class. I have organized many social activities.

A: Besides all these, what do you like to do in your spare time?

B: I have a great interest in travel, reading and sports such as swimming, tennis and so on.

A: I am very glad to hear that. Travel and sports are also my hobbies. Why do you choose our company?

B: Your company is one of the largest NC machine manufacturers in East China. As you see in my resume, I specialized in CAD/CAM in college, so I expect to develop my capabilities in your company. On the other hand, the position for which I applied is quite challenging. That's the reason why I like to come to your company. I hope to display my talents fully here.

A: If I accept you, how much do you expect to be paid?

B: At least ￥1,500 a month.

A: That will be no problem.

B: OK. When can I get the reply about my application?

A: I think you will know the final result within a week. It's my pleasure to have a talk with you.

B: Me too. It takes your much time. Goodbye.

A: Goodbye.

◆ NEW WORDS AND EXPRESSIONS

NC = Numerical Control			数字控制
NC programming			数控编程
maintenance	/ˈmeintinəns/	*n.*	维护,维修
debug	/diːˈbʌg/	*v.*	调试
challenging	/ˈtʃælindʒiŋ/	*a.*	具有挑战性的

◆ PRACTICE

1. Role play: make a dialogue with two students acting the parts of A and B.
2. Discuss the question: What's the important matter when you want to apply a job?

Part 2 Text

Learning about Engineering Materials

All products that come out of industry consist of at least one and often many types of materials. The most obvious example is the automobile. A car contains a wide variety of materials, ranging from glass to steel to rubber, plus numerous other metals and plastics.

The number of materials which are available to the engineer in industry is almost infinite. The various compositions of steel alone run into the thousands. It has been said that there are more than equally great. In addition, several hundred new varieties of materials appear on the market each month. This means that individual engineers and technicians cannot hope to be familiar with all the properties of all types of materials in their numerous forms. All he can do is try to learn some principles to guide him in the selection and processing materials.

The properties of a material originate from the internal structure of that material. This is analogous to saying that the operation of a TV set spends on the components and circuits within that set. The internal structures of materials involve atoms, and the way atoms are associated with their neighbors into crystals, molecules, and microstructures.

It is convenient to divide materials into three main types: (1) metals, (2) plastics or polymers and, (3) ceramics.

Characteristically, metals are opaque, ductile, and good conductors of heat and electricity. Plastics (or polymers), which usually contain light elements, and therefore have relatively low density, are generally insulators, and are flexible and formable at relatively low temperatures. Ceramics, which contain compounds of both metallic elements, are usually relatively resistant to severe mechanical, thermal, and chemical conditions.

Metals are divided into ferrous and non-ferrous metals. The former contain iron and the latter do not contain iron. Certain elements can improve the properties of steel and are therefore added to it. For example, chromium may be included to resist corrosion and tungsten to increase hardness. Aluminum, copper, and the alloys, bronze and brass, are common non-ferrous metals.

Plastics and ceramics are non-metals; however, plastics may be machined like metals. Plastics are classified into two types—thermoplastics and thermosets. Thermoplastics can be shaped and reshaped by heat and pressure but thermosets cannot be reshaped because they undergo chemical changes as they harden. Ceramics are often employed by engineers when materials which can withstand high temperatures are needed.

◆ NEW WORDS AND EXPRESSIONS

variety	/vəˈraiəti/	*n.*	种类,品种
infinite	/ˈinfinit/	*a.*	无限的,无穷的,无边的
composition	/kɔmpəˈziʃən/	*n.*	合成(物)
property	/ˈprɔpəti/	*n.*	性能
principle	/ˈprinsəpl/	*n.*	原则,法则,准则
originate	/əˈridʒineit/	*v.*	起源,发生
internal	/inˈtəːnl/	*a.*	内部的,内在的

analogous	/əˈnæləgəs/	*a.*	类似的,相似的
component	/kəmˈpəunənt/	*n.*	零件,元件
crystal	/ˈkristl/	*n.*	晶体,石英
molecule	/ˈmɔlikjuːl, ˈməu-/	*n.*	分子,微小颗粒
microstructure	/ˌmaikrəuˈstrʌktʃə/	*n.*	微结构
convenient	/kənˈviːnjənt/	*a.*	方便的,合适的
polymer	/ˈpɔlimə/	*n.*	聚合物
ceramics	/siˈræmiks/	*n.*	陶瓷
characteristically	/ˌkæriktəˈristikəli/	*ad.*	特有地,表示特性地
opaque	/əuˈpeik/	*a.*	不透明的,无光的
ductile	/ˈdʌktail/	*a.*	有韧性的
conductor	/kənˈdʌktə/	*n.*	导体
insulator	/ˈinsjuleitə/	*n.*	绝缘体
flexible	/ˈfleksəbl/	*a.*	柔性的,易弯曲的
formable	/ˈfɔːməbl/	*a.*	易成型的
compound	/ˈkɔmpaund/	*n.*	化合物
metallic	/miˈtælik/	*a.*	金属的,金属性的
thermal	/ˈθəːməl/	*a.*	热(性)的
ferrous	/ˈferəs/	*a.*	铁的,含铁的
chromium	/ˈkrəumjəm/	*n.*	铬
corrosion	/kəˈrəuʒən/	*n.*	腐蚀
tungsten	/ˈtʌŋstən/	*n.*	钨
aluminum	/əˈljuːminəm/	*n.*	铝
thermo-	/θə:mə/		[构词成分]heat
consist of			由……组成
range from… to			[范围]从……至
run into			多达
associate with			与……相关
the former			前者
the latter			后者

◆ POST-READING

Comprehension questions.

1.There are ________ varieties of glass and plastics.

A.hundreds of B.more than 10,000
C.thousands of D.more than 20,000

2.There are about as many varieties of plastics as those of ________.
A.steel B.glass C.materials D.rubber

3.Which of the following is not a material?
A.Metal. B.Plastics. C.Automobile. D.Glass.

4.A material has certain properties because of its ________.
A.components B.circuits C.neighbors D.internal structure

5.According to the passage, materials are divided into three main types. They are ________.
A.ceramics, polymers or plastics, and metals
B.atoms, crystals or molecules, and microstructures
C.metals, plastics or ceramics, and polymers
D.internal structure, atoms or molecules, and metals

6.Plastics are generally insulators because ________.
A.they are flexible and formable
B.their elements are of low density
C.they contain both metallic and nonmetallic elements
D.their internal structures involve atoms

7.To make a steel harder, ________ should be added to it.
A.aluminum B.chromium C.tungsten D.ceramics

8.The material resistant to high temperatures and corrosion is ________.
A.polymers B.ceramics C.metals D.plastics

Part 3 Supplementary Reading

Iron-Carbon Alloys

Iron is by far the least expensive of all metals and, next to aluminum, the most plentiful. Iron and its many alloys constitute about 90 percent of the world's production of metals. Pure iron itself is used only for a relative few special applications. Most iron is used in the form of plain-carbon steels, which are alloys of iron and carbon with small amounts of other elements. The reasons for the importance of worked, machined, and heat-treated to a wide range of properties. Unfortunately, plain-carbon steel has poor atmospheric corrosion resistance. But it can easily be protected by painting, enameling, or galvanizing. No other engineering material offers such a desirable combination of properties at such a low cost as plain-carbon steel does.

Elemental Iron

Very pure iron is produced only in small quantities and is used principally for research purposes. By zone refining, it can be made more than 99.99 percent pure. The yield strength of this pure iron is very low, being about 7, 500 psi. Small quantities of elements such as carbon, manganese, phosphorus, and sulfur produce great increase in the strength of elemental iron.

Pure iron exists in three allotropic forms: alpha (α), gamma (γ), and delta (δ). Fig.1-1 shows an idealized cooling curve for pure iron, indicating the temperature ranges over which each of these crystallographic forms are stable at atmospheric pressure.

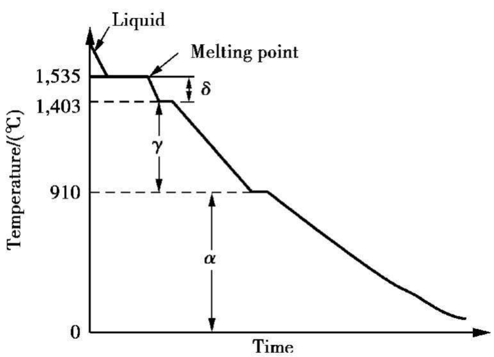

Fig.1-1 Idealized Cooling Curve for Pure Iron at Atmospheric Pressure

The Fe-Fe_3C Alloy System

Fe-C alloys containing about 1.2% carbon and with only minor amounts of other elements are termed plain-carbon steels.

Fe-Fe_3C Phase Diagram

The phases present at various temperatures for very slowly cooled Fe-C alloys with up to 6.67% C are shown in the phase diagram of Fig. 1-2.This phase diagram is not a true equilibrium diagram since the intermetallic compound iron carbide (Fe_3C), or cementite as it is called, is not a true equilibrium phase. Under certain conditions cementite will decompose into the more stable phases of graphite and iron. However, once Fe_3C is formed, it is for all practical purposes very stable and therefore can be treated as an "equilibrium" phase. For this reason, the phase diagram shown in Fig. 1-2 is a metastable phase diagram.

Solid Phases in the Fe-Fe_3C Phase Diagram

The Fe-Fe_3C phase diagram contains four solid phases:

α Ferrite. The solid solution of carbon in α ferrite, or simply ferrite. This phase has a BCC (Body-Centered Cubic) crystal structure, and at 0% C it corresponds to α iron. The phase diagram indicates that carbon is only slightly soluble in ferrite since the maximum solid solubility of carbon in

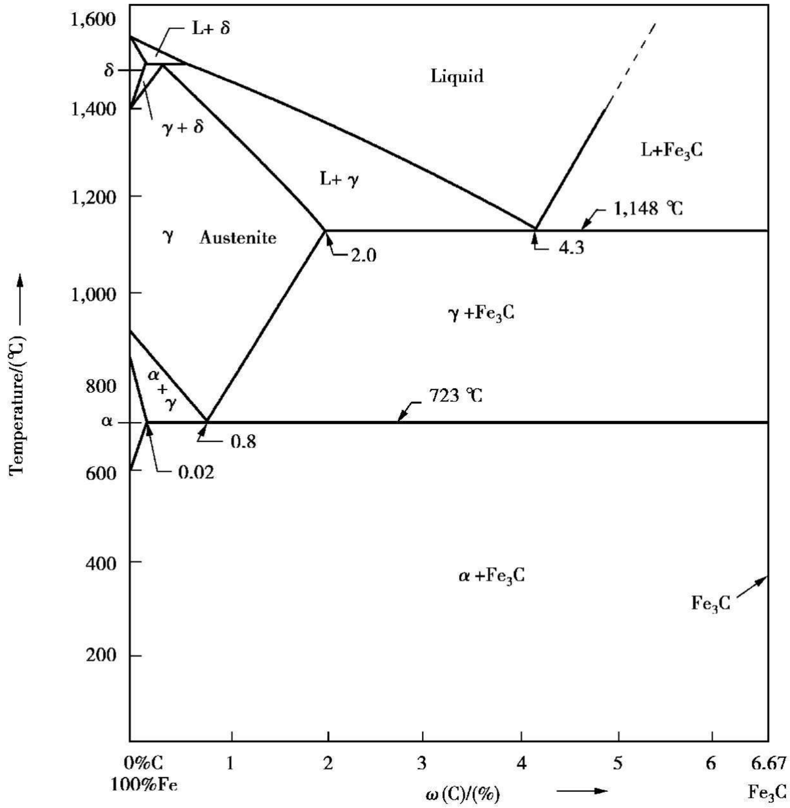

Fig.1-2 The Fe-Fe_3C Metastable System

α ferrite is 0.02 percent at 723 ℃. The solubility of carbon in α ferrite decreases with decreasing temperature until it is about 0.008 percent at 0 ℃. The carbon atoms, because of their small size, are located in the interstitial spaces in the iron crystal lattice.

Austenite. The solid solution of carbon in γ iron is designated austenite. It has a FCC (Face-Centered Cubic) crystal structure and a much greater solid solubility for carbon than α ferrite. The solubility of carbon in austenite reaches a maximum of 2.08 percent at 1,148 ℃ and then decreases to 0.8 percent at 723 ℃. As in the case of α ferrite, the carbon atoms are dissolved interstitially, but to a much greater extent in the FCC lattice. This difference in the solid solubility of carbon in austenite and α ferrite is the basis for the hardening of most steels.

Cementite. The intermetallic Fe-C compound Fe_3C is called cementite. Iron carbide (Fe_3C) has negligible solubility limits and contains 6.67% C and 93.3% Fe. Cementite, which is a hard and brittle compound, has an orthorhombic crystal structure with 12 iron atoms and 4 acrbon atoms per unit cell.

δ Ferrite. The solid solution of carbon in δ iron is called δ ferrite. It has a BCC crystal structure, but with a different lattice parameter than α ferrite. The maximum solid solubility of carbon in δ ferrite is 0.09 percent at 1,495 ℃.

Invariant Reactions in the Fe-Fe_3C Phase Diagram. The Fe_3C phase diagram has three invariant reactions, each of which occurs at constant temperature and involves three phases. These reactions are peritectic, eutectic, and eutectoid.

Peritectic Reaction. At the peritectic reaction point, liquid of 0.53% C combines with δ ferrite of 0.09% C to produce γ austenite. This reaction can be written as

$$\text{Liquid}\ (0.53\%\ \text{C}) + \delta(0.09\%\text{C}) \xrightarrow{1,495\ ℃} \gamma(0.17\%\text{C})$$

Since this reaction occurs at such high temperatures, no δ ferrite will normally be present in plain-carbon steels at room temperature.

Eutectic Reaction. At the eutectic reaction point, liquid decomposes to produce γ austenite with 2.08% C and the intermetallic compound Fe_3C (cementite) with 6.67% C.This reaction can be written as

$$\text{Liquid}\ (4.3\%\text{C}) \xrightarrow{1,148\ ℃} \gamma\ \text{austenite}(2.08\%\text{C}) + Fe_3C(6.67\%\text{C})$$

Since plain-carbon steels do not contain more than about 1.2% C, the eutectic reaction will not be treated in steel. This reaction will, however, be important in the study of cast irons, which contain above 2% C.

Eutectoid Reaction. At the eutectoid reaction point, solid austenite of 0.8% C decomposes into α ferrite with 0.02% C and cementite with 6.67% C.This reaction can be written as

$$\gamma\ \text{austenite}\ (0.8\%\text{C}) \xrightarrow{723\ ℃} \alpha\ \text{ferrite}\ (0.02\%\text{C}) + Fe_3C(6.67\%\text{C})$$

Critical Temperatures. The temperature of 723 ℃ is the critical temperature above which cementite becomes unstable when slowly heated under conditions approaching equilibrium. It is designated the A_1 line in Fig.1-3.The symbol A is derived from the thermal arrests which are observed upon heating and cooling pure iron. If high-purity plain-carbon steels with less than 0.8% C are heated above the A_3 line, all the ferrite in the steel is transformed into homogeneous austenite. Similarly, if high-purity plain-carbon steels with more than 0.8% C are heated above the A_{cm} line, all the cementite is transformed into homogeneous austenite.

When plain-carbon steels are heated or cooled through the transformation temperatures at faster than equilibrium rates, the transformation temperatures are displaced as indicated in Fig.1-3. The thermal hysteresis (lag) which occurs upon rapid heating is indicated by the subscript c from the French word "chauffage" for heating. The thermal hysteresis which occurs on cooling is indicated by the subscript r from the French word "refroidissement" for cooling.

For example, the designation A_{r3} indicates the transformation temperature on rapid cooling a plain-carbon steel through the A_3 transformation temperature. Thermal hysteresis is common in the

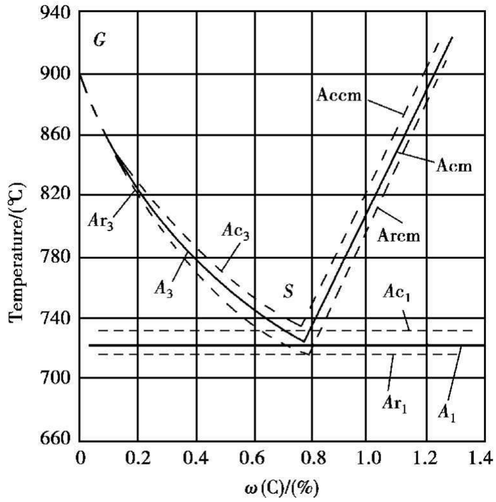

Fig.1-3 Transformation Temperatures in High-purity Iron-carbon Alloys

industrial heat treatment of steel since the rapid heating and cooling of steels is frequently practiced.

Eutectoid, Hypoeutectoid, and Hypereutectoid Plain-carbon Steels. A plain-carbon steel containing 0.8% C is termed a eutectoid steel since the eutectoid transformation of austenite to cementite and ferrite occurs at this composition. If the proportion of carbon in the steel is less than 0.8%, it is designated a hypoeutectoid steel. Most steels produced commercially are hypoeutectoid steels.

Steels containing more than 0.8% C are called hypereutectoid steels. Hypereutectoid steels with up to about 1.2% C are produced commercially. When the proportion of carbon in the steel goes beyond 1.2 percent, the steel becomes very brittle, and thus few steels are made with more than 1.2% C.In order to increase the strength of steels, other alloying elements are added to increase the strength as well as maintaining ductility and toughness.

◆ NEW WORDS AND EXPRESSIONS

plain-carbon steel			普通碳素钢
enameling	/iˈnæməliŋ/	*n.*	上釉
galvanizing	/ˌgælvəˈnaiziŋ/	*n.*	镀锌
yield strength			屈服强度
allotropic	/ˌæləuˈtrɔpik/	*a.*	同素异形的
metastable	/ˌmetəˈsteibl/	*a.*	亚稳的
cementite	/siˈmentait/	*n.*	渗碳体

interstitially	/ˌintə(ː)ˈstiʃəli/	*ad.*	有空隙地
peritectic	/ˌperiˈtektik/	*a.*	包晶的
eutectic	/juːˈtektik/	*a.*	共晶的
eutectoid	/juːˈtektɔid/	*a.*	共析的
hysteresis	/ˌhistəˈriːsis/	*n.*	滞后作用,磁滞现象
hypoeutectoid	/ˌhaipəuju(ː)ˈtektɔid/	*a.*	亚共析的
hypereutectoid	/ˌhaipərjuˈtektɔid/	*a.*	过共析的

◆ NOTES

The reasons for the importance of plain-carbon steels is that they are strong, tough, ductile, and inexpensive materials that can be cast, worked, machine, and heat-treated to a wide range of properties. 通常碳素钢的重要性在于它是一种强度高、塑韧性好、价格便宜的材料,易于通过铸造、(塑性)加工、(机)加工和热处理获得许多优良性能。

◆ READING COMPREHENSION

Ⅰ. *Write "T" in front of a statement if it is true and write "F" if it is false according to the text.*

____ 1. Pure iron exists in three allotropic forms: alpha(α), gamma(γ), and delta(δ).

____ 2. When carbon is less than 4%, the melting point of iron-carbon alloy increases with a decrease of its content of carbon.

____ 3. 2% C is the critical point of pypoeutectoid in plain-carbon steels.

Ⅱ. *Match the items in Column A with their Chinese equivalents in Column B.*

A	B
1. allotropic	A. 同素异形的
2. austenite	B. 铁素体
3. cementite	C. 奥氏体
4. eutectic	D. 渗碳体
5. eutectoid	E. 共晶的
6. ferrite	F. 共析的
7. hypereutectoid	G. 亚共析的
8. hypoeutectoid	H. 过共析的

Ⅲ. *Activities.*

According to Fig. 1-2, describe in your own words the changes of the components of iron and carbon with the changes of temperature.

Part 4　Grammar and Translation Skills

科技英语文体的特点

1.词汇特征

科技文体承载着探索自然奥秘、揭示客观事物发展规律的信息,所传递的是客观真理、客观事实,因此必须使用表意准确的专业术语。专业术语是专业领域的概念名词,来源广泛,有来源于日常生活的术语词(也叫准专业术语),但大量的术语主要来源于希腊语和拉丁语的词语,因此其词形固定,词义单一,不容易混淆。同时不同领域的科技术语其语义具有明确的层次结构,简明扼要,相对固定,具有国际通用性。

由于希腊语和拉丁语的词缀丰富,有极强的构词能力,因此以它们为主要来源的科技术语在构词方面也有此特征。如 copper end rings 铜端环(名词+名词),magnetic moment 磁力矩(形容词+名词),alternating current 交流电(ing 分词+名词),field winding 励磁绕组(名词+ing 名词),output 输出(小品词+动词),printed circuit 印制电路(ed 分词+名词),I-cursor I 形光标(大写字母+名词),modern control system 现代控制系统(形容词+名词+名词中心词),autochart 自动流程图(auto-前缀),speedmeter 速度计(-meter 后缀),techicolor 彩色摄影(-i-中缀) 。翻译时把英语和汉语的构词法和语义特性结合起来,采用音译、意译、形译、象译或音意结合的方法,达到准确、简洁、通俗易懂。如在翻译 bi-stable circuit 时,结合汉语的四字结构的表达习惯,翻译成“双稳电路”要比“双稳态电路”简洁。

2.语法、句法特征

科技文献概括事物发展的规律,陈述客观事实的存在,突出所述事实,因此多使用一般现在时和被动语态。为了严密表达事物之间的逻辑和先后、主次关系,多使用带有介词短语、形容词短语、分词短语、不定式短语、同位语从句、定语从句或状语从句等修饰语的长句。为了叙述方便,常使用以 it 为形式主语的句型。如:

The signal levels inside power amplifiers are so much larger than these weak inputs that even the slightest “leakage” from the output back to the input may cause problems.

功率放大器中的信号幅度比微弱的输入信号大得多,即使输出的极微小的泄漏传输到输入端,都会引发一些问题。

For example, it is the convention with loudspeakers that the volume of the sound should be set by the voltage applied to the speaker.

例如,扬声器的音量通常是受所加电压控制。

3.科技英语翻译的标准与原则

科技翻译的对象十分广泛,涉及专著、论文、专利说明书、实验报告和会议记录等各种材料。要想把严谨的英语科技文献准确无误、通顺流畅地翻译成汉语,就要遵循一定的标准和原

则。关于翻译的标准国内外提出了不少理论,国内从严复的“信、达、雅”到鲁迅的“信、顺”,到茅盾的“意境”,傅雷的“神似”,钱钟书的“化境”;国外的有前苏联费道罗夫的“等值”理论,美国翻译家尤金·奈达的“语言学-符号学”翻译理论,美国语言学家 W. Mann 和 S. Thompson 的“语篇分类学说”,韩礼德和哈桑的“衔接”理论。这些翻译理论在科技英语翻译中也适用。权衡概括这些理论,在科技翻译中有人提出了已得到公认的两种标准。

(1)忠实原文

指译者把原文所包含的概念、事理、思想、论点、结论、方法,即原作表达的一切信息包括语言形式、语言意义和思想逻辑忠实、准确地传达出来。

(2)语句通顺流畅、简洁自然,语言通俗易懂、符合译入语规范

由于科技文体重视严密的逻辑性,语言庄重规范,翻译时常采用直译法。但译者一定要仔细研读原文,不能因拘泥于形式而讲究语法、句子成分和语序的完全对等,致使译文晦涩难懂。要根据句子内部的逻辑关系和汉语的表达习惯适当调整语序,必要时增加或省略一些词,用简洁、精炼、通俗易懂的语言再现其思想内容、语体风格和感情色彩。

◆ PRACTICE

Translate the following sentences into Chinese.

1. A bipolar junction transistor (BJT) is a three-layer silicon (or germanium) device consisting of either two p- and one n-type layers of materials (pnp) or two n- and one p-type layers of materials (npn).
2. Since the emitter follower has a high input impedance and a low output impedance, its voltage gain is less than unity and the power gain is normally lower than that obtained from other configurations.
3. The current in a reverse-biased diode is small (typically 10^{-8} A for silicon) and approximately independent of voltage until the breakdown region at high reverse voltages is reached.
4. Most integrated circuits provide the same functionality as “discrete” semiconductor circuits at higher levels of reliability and at a fraction of the cost.
5. Vision is well developed in most snakes, but many burrowing snakes are virtually blind.