

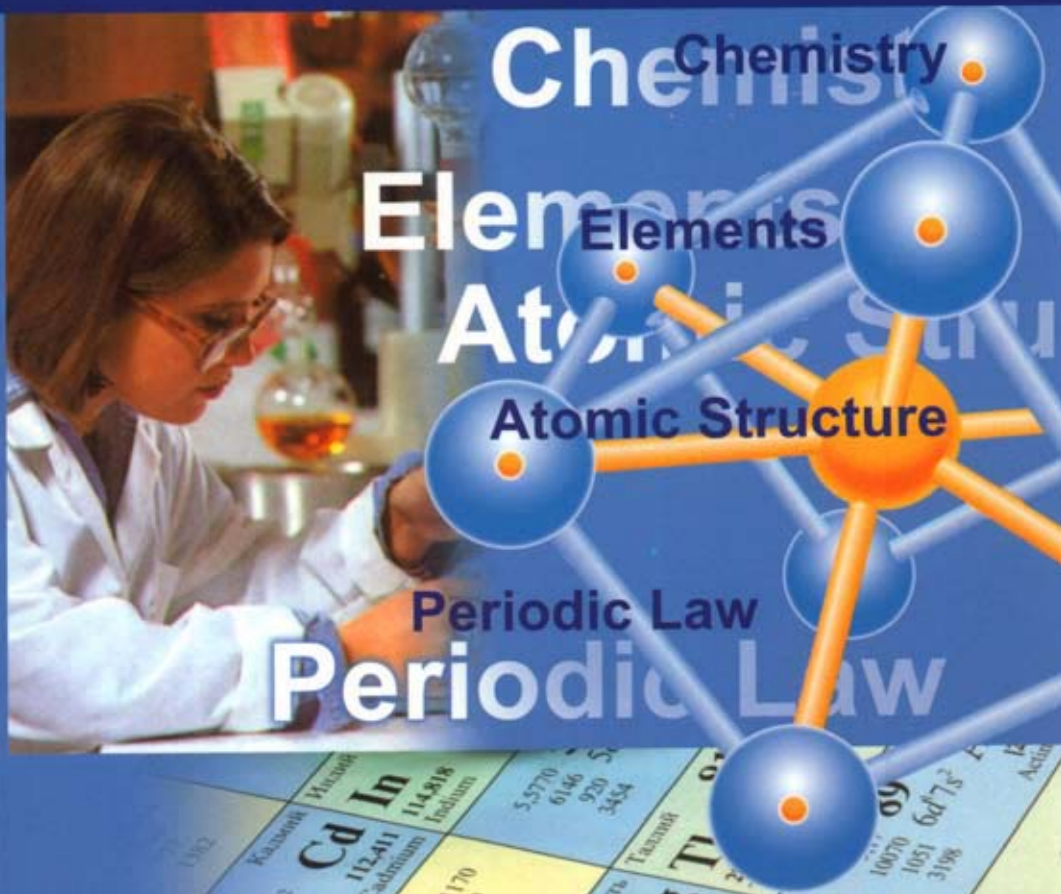


Н. А. Степанова

Практический курс английского языка для студентов-химиков

ABOUT THE FOUNDATIONS OF CHEMISTRY

A Practical Course of English for the First Year Chemistry Students



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учебных заведений, обучающихся по направлению
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Р е ц е н з е н т ы: кандидат филологических наук, доцент *И. В. Панасюк* (Санкт-Петербургский государственный университет, факультет филологии и искусств); кандидат педагогических наук, доцент *Т. Н. Крепкая* (Санкт-Петербургский государственный политехнический университет, факультет иностранных языков)

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Пособие предназначено для студентов 1-го курса химических специальностей, продолжающих изучать английский язык в вузе, а также лиц, заинтересованных в приобретении навыков чтения научно-технической литературы на английском языке.

Цель издания — научить студентов-химиков читать и понимать литературу по специальности, развить речевые навыки активного владения научно-химической лексикой в рамках, предусмотренных программой по английскому языку для неязыковых специальностей вузов.

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UNIT 1

SECTION 1

GRAMMAR: 1. THERE + BE. 2. INDEFINITE PRONOUNS.
3. THE SIMPLE TENSE FORMS (PRESENT, PAST, FUTURE).
4. QUESTIONS FORMATION

(There + be) and Indefinite Pronouns

Study and remember the following chart

Affirmative	Interrogative	Negative
some	any	not any, no
There are some books on the table	Are there any books on the table?	There are no (not any) books on the table
<i>Derivatives of some, any, no</i>		
somebody someone something	anybody anyone anything	nobody, no one not anybody not anything nothing
Примечание. Местоимение <i>any</i> , а также его производные могут употребляться в утвердительных предложениях. В этих случаях местоимение <i>any</i> имеет значение <i>любой</i> .		

1. Translate the sentences into Russian.

1. There are many complicated problems in chemistry.
2. What up to date instruments are there in your laboratory?
3. Yesterday there was a very interesting lecture on organic chemistry.
4. She was there yesterday.
5. There are some test-tubes there on the laboratory bench.
6. There were some new words in the text.
7. There will be many difficulties in your work.
8. There is no absolute motion and no absolute rest.
9. There are some characteristics common to all metals.
10. Anybody can explain you this grammar rule.
11. He knows nothing about it.
12. You may take any dictionary to translate the text.
13. There are no classes on Sunday.
14. Nothing special happened yesterday.
15. The laboratory is empty. No students are in the evening there.

16. There are some articles on that subject in the magazine.
17. Are there any changes in your plan?
18. There are no substances which have absolutely the same properties.
19. There are many ways to prove that a substance is an element.
20. There is an enormous number of factors that influence the reaction rate.
21. There is a strong correlation between experimental results and theoretically estimated values.
22. There is only one electron in the hydrogen atom.
23. There are some elements which don't occur in nature, scientists obtained them in laboratory.
24. Originally there were fewer elements in the Periodic Table.
25. There is a great demand for petroleum in the world today.
26. There is a need for further research on this topic.
27. There is not enough evidence to support this hypothesis.
28. There were a lot of books on the shelves along the walls.

2. Suggest Russian equivalents to the following English sayings.

1. There is no smoke without fire.
2. There is a skeleton in every house.
3. There is no rule without exception.
4. There is always room for perfection.
5. While there is life, there is hope.
6. There is plenty more fish in the sea.
7. There is more to something than meets eye.
8. There is no rose without a thorn.

3. Use English equivalents for the Russian words in brackets.

1. Do you have (какие-нибудь) English books on chemistry?
2. (Любой) young man or woman having secondary education may apply to the University.
3. I know (никого) in this group.
4. Does (кто-нибудь) know the answer?
5. I did not hear (ничего) about this phenomenon.
6. He does not know (никакого) foreign language.
7. (Ни один) student of this group can speak French.

The Simple Tense Forms (Present, Past, Future). Questions Formation

Simple Present

We study chemistry — Do you study chemistry?
She studies chemistry — Does she study chemistry?

General Questions

Do you get to the University by underground? —
Yes, I do. — No, I do not (don't).
Does he speak English? — Yes, he does. —
No, he does not (doesn't).

4. Put general questions to the sentences.

1. Chemistry deals with the study of substances and their transformations.
2. Our classes start at 9.30.
3. They carry out a lot experiments every month.
4. Water boils at 100 °C under normal conditions.
5. We always take notes on the lectures.

5. Give the 3-rd person singular of the following verbs and divide them into 3 groups according to the rules of the pronunciation.

teach, undergo, change, get, ask, introduce, watch, observe, state, suggest, study, live, increase, hope, learn, pronounce, spend, want

[z]	[s]	[ɪz] (or [əz])
undergoes	asks	teaches
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Present Simple	Present Progressive
1. He studies chemistry at the University. 2. Water boils at 100 °C. 3. He often conducts experiments in the laboratory of organic chemistry.	1. He is studying inorganic chemistry now. 2. Water in the kettle is boiling. 3. He is conducting an experiment with corrosive substances.
Always, seldom, often, occasionally	Now, at the moment

Special Questions

0	1	2	3	4
When	do	classes	start	at the University?
Where	do	you	study?	
How much time	do	you	spend	in front of your computer every day?
How often	do	you	work	in the laboratory?
How many books	do	you	read	every month?
Where	does	your brother	study?	
What	does	he	do?	
When	does	the library	start to work?	

Questions to the subject

Who studies at the University? I do (My friend does).
 Whose sister studies at the University? My sister does.
 What science studies chemical changes? Chemistry does.

Disjunctive questions

Chemistry studies substances and their transformations, doesn't it?
 Chemistry doesn't study elementary particles, does it?

Alternative questions

Does chemistry study chemical or physical changes?

6. Put all possible questions to the following sentences.

1. Chemistry plays an important part in the development of many fields of science.
2. A chemical change involves changes in composition and in properties.
3. Matter exists in three states: solid, liquid and gaseous.
4. The process of evaporation requires the addition of heat to the liquid.
5. A metal replaces hydrogen in an acid.
6. Chemistry creates new materials with necessary properties.
7. Organic chemistry deals with the transformations of carbon compounds.

Simple Past

Affirmative	Interrogative	Negative
They studied inorganic chemistry last year. He attended all the lectures last month.	Did they study inorganic chemistry last year? Did he attend all the lectures that month?	They did not study inorganic chemistry last year. He did not attend all the lectures last month.

7. Put the following verbs into 3 groups according to the pronunciation of the suffix ed.

created, changed, translated, passed, carried, used, transformed, suggested, stated, worked, asked, lived, studied, hoped, played, entered, looked, tried, reteated, stopped, reminded

[d]

[t]

[id] (or [əd])

Simple Future

He will translate the article next week.	Will he translate the article next week?	He won't translate the article next week.
--	--	---

8. *Open the brackets choosing the correct form of the verb.*

1. The scientist (to work) in the field of the chemistry of solids.
2. He (to start) his experiments very soon.
3. She always (to bring) us interesting journals.
4. They (to obtain) interesting results last time.
5. We (to study) this law next term.
6. They (to finish) their work last month.
7. Chemistry (to play) an important role in the development of industry and science.
8. They (attend) the next conference on nanotechnology.
9. Science (use) research and experiments to explain various phenomena.

SECTION 2

CHEMISTRY

1. *Tuning in.*

1. What does chemistry study?
2. What fundamental terms are used in chemistry?
3. What outstanding scientists made a great contribution to the development of chemistry?
4. Scan the text below and fill in the following table.

Century	Famous scientists	What are the scientists famous for?
17-th	Boyle	Boyle's law, that states the quantitative relationship between volume of a gas and the external pressure upon it
...	La...	
...	D...	
19-th	A...	
...	M...	

Share your information with your fellow students.

5. Do you know other outstanding scientists who played an important part in the development of chemistry?

Match the names of scientists and their contribution to the development of chemistry.

Make sentences according to the model.

Model: Mari Curie is famous for (is given the credit for) the discovery of radium and polonium.

Names of the scientists	Their contribution to the development of chemical science
1. Mari Curie	1. introduction of structural theory of organic chemistry
2. N. Borh	2. the theory of chain reactions
3. F. A. Kekulle	3. discovery of the artificial radioactivity
4. Joseph Priestly	4. the theory of dissociation in water solutions
5. S. Arrhenius	5. the discovery of radium and polonium
6. A. M. Butlerov	6. the structural formula for benzene
7. H. M. Semenov	7. the discovery of oxygen
8. Irene Curie and Frederic Joliot	8. the orbital model of an atom

2. Pronounce the following words.

advantage [əd'vɑ:ntɪdʒ]

acid ['æsid]

alchemy ['ælkəmi]

ancient ['eɪnf(ə)nt]

approach [ə'prəʊtʃ]

characteristic [ˌkærɪktə'rɪstɪk]

chemistry ['kemɪstri]

composition [kəm'pəzɪʃn]

concept ['kɒnsept]

deal with ['di:l'wið]

determine [dɪ'tɜ:mɪn]

discovery [dɪ'skʌv(ə)rɪ]

equal [ˈi:kwəl]
frontier [frʌnˈtɪə]
geology [dʒiːˈɒlədʒi]
interdisciplinary [ɪntəˈdɪsɪplɪnəri]
introduce [ɪntrəˈdju:s]
measurement [ˈmeʒəmənt]
observation [ɒbzəˈveɪʃn]
occur [əˈkɜ:]
particle [ˈpɑ:tɪkl]
phenomenon [fəˈnɒmɪnən]
pressure [ˈpreʃə]
property [ˈprɒpəti]
proportional [prəˈpɔ:ʃnəl]
radioactivity [ˈreɪdɪəvækˈtɪvəti]
regularity [ˈregjuˈlærəti]
relation [rɪˈleɪʃn]
require [rɪˈkwaɪə]
research [rɪˈsɜ:tʃ]
science [ˈsaɪəns]
structure [ˈstrʌktʃə]
successfully [ˈsəkˈsesfli]
synthesize [ˈsɪnθəˌsaɪz]
type [ˈtaɪp]
undergo [ˌʌndəəˈgəʊ]
volume [ˈvɒlju:m]

T e x t 1

Chemistry

Chemistry can be defined as the science that deals with substances and changes that they undergo. Chemists are engaged in activities as diverse as examining the fundamental particles of matter, determining the relation between the properties of materials, their composition and structure, synthesising and formulating new materials of all types with required characteristics.

Chemistry is one of the fundamental sciences. Most of the phenomena that occur in the world around us involve chemical changes where one or more substances transform into the other substances.

In course of its development chemistry had several stages. Since ancient times humans have used chemical changes to their advantage.