

МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ РФ  
ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ  
БЮДЖЕТНОЕ ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ  
ВЫСШЕГО ПРОФЕССИОНАЛЬНОГО ОБРАЗОВАНИЯ  
«ВОРОНЕЖСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ»

## **CHEMISTRY WITH A PURPOSE**

*Учебно-методическое пособие*

Составители:  
И. С. Карпенко,  
Е. И. Клименко,  
В. И. Федосова

Воронеж  
Издательский дом ВГУ  
2015

## Пояснительная записка

Настоящее учебно-методическое пособие подготовлено на кафедре английского языка естественно-научных факультетов факультета РГФ Воронежского государственного университета и предназначено для студентов второго курса химического факультета.

Цель данного пособия – формирование профессиональной иноязычной компетенции студентов; развитие интегративных коммуникативных умений получать из различных источников, систематизировать, обобщать и интерпретировать необходимую информацию в ситуациях профессионального общения.

Пособие состоит из 11 тематических модулей. Каждый модуль содержит аутентичный учебный материал и широкий спектр упражнений и заданий, направленных на пополнение словарного запаса студентов, развитие навыков устной и письменной речи, совершенствование умений высказывать свое мнение в форме минимонологии и диалога-обмена мнениями, а также на формирование навыков систематизации и обобщения получаемой информации и на формирование творческих речевых умений посредством вовлечения обучаемых в мир профессиональной тематики. Текстовый материал пособия позволяет тренировать различные виды чтения (просмотровое, поисковое, детальное), а также развивать навыки диалогической и монологической речи.

Каждый раздел содержит предтекстовые упражнения, тексты для аудирования и/или видео; послетекстовые упражнения, направленные на проверку понимания и усвоение лексики; блок упражнений на обсуждение информации, полученной из текстов; а также упражнения, направленные на формирование и развитие навыков письменной речи.

Пособие предназначено для практических занятий по английскому языку и может быть использовано как на аудиторных занятиях, так и в ходе самостоятельной работы студентов.

### III. Reading

#### a. Read the text and translate it

##### Text A

### **An introduction to chemistry**

Chemistry is the central science, as it connects all other sciences. While mathematicians calculate the world, physicists explain it and biologists say what lives in it, chemistry looks at everything in the world and explains how it is made and what it can do. Chemistry began with fire. Burning changes things and ancient man must have wondered what happened to the wood he burnt. It was by burning things that ancient man discovered iron and glass, combining different substances in the fire and seeing how they combined. Once gold was found, the false science of alchemy was born. People believed they could change ordinary metals like iron into gold. Though the idea was wrong, the alchemists discovered many of the chemical processes that are in use today.

The origin of modern chemistry comes from the work of Antoine Lavoisier. He formulated the idea of the conservation of mass: that is, even though substances can be changed, their quantity or mass remains the same always. Although Lavoisier was the first to publish his ideas, in Russia, Mikhail Vasilyevich Lomonosov had reached the same conclusions some years earlier. Both men were interested in the nature of combustion and this was the first breakthrough in our understanding of chemistry.

The second great development in chemistry came later and concerned the nature of matter itself: how it was made up and what its parts were. In the early part of the 19th century, the British scientist, John Dalton stated that all matter was made up of atoms of different elements and that these could not be broken down into smaller parts.

The third development in chemistry was made by Dmitri Mendeleev. He took Dalton's theory of atomism and arranged the elements by their atomic weight and by their chemical properties. So accurate was his classification of the elements, that he was able to predict the properties of undiscovered ones to fill the gaps in the table. Mendeleev's table is one of the most useful and important generalizations of chemistry and of all science. These three developments give us the definition of chemistry. It is the science of the composition, structure and properties of substances and how they can be transformed.

**b. Look through the text and complete the summary. Use the words from the text.**

Chemistry is the science which (1) ... all other sciences. Through chemistry, we can study how things are made and what they can do. Alchemists discovered a lot of chemical (2)... before chemistry developed properly. There are three main areas of study in modern chemistry. The first is about how (3) ... change when something happens to them. The second is about how things are made, and looks at the atomic (4) ... of elements. The third is to look at the (5) ...of elements.

**c. Find English equivalents to the following Russian words and phrases:**

*алхимики, сохранение массы, вычисление (подсчет), сжигание, прорыв (в науке), атомная масса, заполнить пробел.*

**d. Complete the sentences below with the words from the box:**

conservation of mass	matter	combustion
quantity	accurate	breakthrough
alchemists	properties	

1. It is a fact that substances cannot change their ....
2. ... means that no matter how a substance is changed, what it is made up of it will always stay the same.
3. When scientists make a ... they succeed after trying very hard.
4. Without oxygen there cannot be ...- things cannot burn.
5. ... is what physical objects are made of.
6. All classifications in chemistry need to be ....
7. ... believed that they could turn iron into gold.
8. Mendeleev's table classifies the elements found in nature according to their ....

#### IV. Speaking

**Give a short summary of the text, signifying all the stages of the development of chemistry.**

#### V. Reading

**a. Guess if the following statements are true or false. If they are false correct them.**

1. Chemistry can be divided into two branches. T/F
2. Organic chemistry is the chemistry of the compounds of carbon. T/F
3. Inorganic and organic chemistry don't have any differences. T/F
4. Chemical reaction is a process. T/F
5. General chemistry is the introduction to the entire science. T/F
6. An acid is a liquid. T/F
7. Biochemistry is the chemistry of industrial processes. T/F

#### Text B

### Chemistry and its branches

The science that we can define as the study of formation, composition, structure and reactions of the chemical elements and their compounds is called chemistry. An element is a chemical unit that can't be broken down. Each element is represented by a chemical symbol and has a set of properties that distinguishes it from other elements. All elements are made of atoms. An atom is the smallest particle of an element that retains the characteristics of that element.

All elements combine to form different substances with new properties. Such substances made from elements combined chemically are called compounds. Acids and bases are common groups of compounds. An acid is a substance that releases hydrogen ions when mixed with water. A base is a substance which separates in water forming ions that react with hydrogen ions.

The process by which elements react to form new compounds can be described as chemical reaction. There are two types of chemical reactions. In some reactions the breaking of bonds absorbs more energy, in others the breaking of bonds absorbs less energy.

Most chemical reactions occur more easily when the reacting substances are in water solution. Water is a key component of cells and provides the medium through which nutrients enter and wastes exit a living cell. A solution is a class of mixtures in which individual molecules of substances are distributed. The forma-