

**ГОСУДАРСТВЕННОЕ ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ
ВЫСШЕГО ПРОФЕССИОНАЛЬНОГО ОБРАЗОВАНИЯ
«САМАРСКИЙ ГОСУДАРСТВЕННЫЙ АЭРОКОСМИЧЕСКИЙ
УНИВЕРСИТЕТ имени академика С. П. КОРОЛЁВА
(НАЦИОНАЛЬНЫЙ ИССЛЕДОВАТЕЛЬСКИЙ УНИВЕРСИТЕТ)»**

**РАЗВИТИЕ НАВЫКОВ УСТНОЙ РЕЧИ
ПО ТЕМАМ: «НАНОТЕХНОЛОГИИ»,
«ЛАЗЕРЫ», «ЛОНДОН»**

САМАРА 2011

МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ РОССИЙСКОЙ ФЕДЕРАЦИИ

ГОСУДАРСТВЕННОЕ ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ
ВЫСШЕГО ПРОФЕССИОНАЛЬНОГО ОБРАЗОВАНИЯ
«САМАРСКИЙ ГОСУДАРСТВЕННЫЙ АЭРОКОСМИЧЕСКИЙ
УНИВЕРСИТЕТ имени академика С. П. КОРОЛЁВА
(НАЦИОНАЛЬНЫЙ ИССЛЕДОВАТЕЛЬСКИЙ УНИВЕРСИТЕТ)»

РАЗВИТИЕ НАВЫКОВ УСТНОЙ РЕЧИ
ПО ТЕМАМ: «НАНОТЕХНОЛОГИИ»,
«ЛАЗЕРЫ», «ЛОНДОН»

*Утверждено Редакционно-издательским советом университета
в качестве методического указания*

САМАРА
Издательство СГАУ
2011

УДК
ББК

Рецензент А.Г. Лещенко

Составитель *Е.Л. Зимакова*

Развитие навыков устной речи по темам: «Нанотехнологии», «Лазеры», «Лондон»: метод. указания по англ. языку / сост. *Е.Л.Зимакова*. - Самара: Изд-во СГАУ, 2011. - 16 с.

Данные лабораторные работы предназначены для развития навыков устной речи в группах VI факультета по специальности “Прикладная математика и физика” (уровень “intermediate”). Две из них относятся непосредственно к тематике данной специализации (“Laser, Nanotechnology”), а третья носит страноведческий характер: “London”. Последняя лабораторная работа записана на магнитофон и все упражнения основаны на работе студентов в режиме “Listen to and say...”

THE CITY OF LONDON

I. Memorise the meaning of the following words:

- 1) men of letters – летописцы;
- 2) mighty – мощный;
- 3) theme – тема;
- 4) situation upon – расположение на ...;
- 5) to face something – выходить фасадом на ...;
- 6) marshlands – болото;
- 7) to ply – курсировать;
- 8) tug – буксир;
- 9) timber – лесоматериал;
- 10) landmark – ориентир;
- 11) fortress – крепость;
- 12) approaches to the city – подход к городу;
- 13) to come to the throne – восходить на трон;
- 14) ancient – древний;
- 15) fame and evil – зд. – добро и зло;
- 16) to earn – зарабатывать;
- 17) bend – изгиб;
- 18) to come into view – появляться в поле зрения;
- 19) dome – купол;
- 20) revival of art – возрождение искусства;
- 21) Cleopatra's Needle – игла Клеопатры;
- 22) coal – уголь;
- 23) essence – суть, сущность.

II. Listening Activity.

1. Do you know any sights of London? What are they?
2. Listen to the text any say what other sights (in addition to those named by you) were described by the speaker?
3. Listen to the text once more and match the following sentences (A-G) with the number of the paragraph.

Sentences (A-G)	Paragraph number (I-VII)
<p>A. One tower having been very important not only in the history of London but also Great Britain.</p> <p>B. The Egyptian trophy.</p> <p>C. Almost all British features are concentrated in London.</p> <p>D. On what great river was London founded?</p> <p>E. London suburb which zero meridian runs through.</p> <p>F. London is an industrial centre of all Great Britain.</p> <p>G. The river Thames hasn't become less important than it was earlier.</p>	

VI. Read the following text “The City of London” and say whether the following statements are true or false.

	T	F
1. London was founded on this very place due to the fact that the river Thames flows into the sea here.		
2. Water traffic on the river Thames is not very heavy.		
3. The Tower of London was the palace and the prison for noble Englishmen at the same time.		
4. Workmen of London live mainly in the West End of London.		
5. Cleopatra’s Needle is the name of the granite embankment on the right bank of the Thames.		
6. Big Ben is the name of the chimes clock, situated at the top of a tall tower.		
7. London was earlier and is also now the centre of various business activities.		
8. London can resemble you many English places: Manchester or York, Wales or Norfolk.		

The Text

The City of London

I

The story of growth of London on the banks of the Thames¹ has been told many times by geographers, historians, and men of letters. Though each writer has his own tale to tell, one mighty theme sounds above all. That is the situation of the city upon the small, but great river. It is the place where land and sea meet.

II

The Thames plays a living role in the life of London and its regions. The Houses of Parliament called the government offices in Westminster stand upon the river's edge, while facing them rise the massive offices of County Hall. Along the former marshlands of the Thames-side stand industrial plants, and through the heart of London ply the tugs bringing coal, oil and timber. The port of London remains the main port of the British Isles.

III

One of the landmarks of London is the Tower of London. It is nine hundred years old. The Tower was founded by William the Conqueror in the 11th century as a fortress controlling the approaches to the city by the river. The Tower in its time was a royal palace and a state prison. Among the most famous prisoners were Thomas More, who wrote "Utopia", Walter Raleigh, who was a great seaman, and Princess Elizabeth who was also a prisoner there before she came to the throne in 1558. Now as if laughing from across the river at ancient fame and evil, a huge electric sign advertizing a soup says "Only Oxo".

IV

London's dockland is situated beyond the Tower. This is the East End of London. The streets and houses here are different from what is found in the West End. Here workmen live who earn their daily bread by hard work.

Round the next bend in the river Greenwich come into view and then St. Paul's Cathedral which was designed by Christopher Wren. The dome of St. Paul's Cathedral is so high that it seems to join the low clouds. Upriver we can see modern Royal Festival Hall which was built in 1951 to celebrate the postwar revival of art.

V

A dark granite column on the Thames Embankment is Cleopatra's Needle brought from the Egyptian desert and raised beside the river when imperial Britain took what it wanted from many parts of the world.

Well up the river, often seen through the rain which is so common in London, the famous Clock Tower with Big Ben at the top is seen above the massive Houses of Parliament.

VI

It was thought that the pressure of population and the increasing distances would bring to a halt the growth of London. But London has continued to grow. Industries that are of national importance are mostly found in London. London is also a place of numerous international conferences.

VII

People in London tell the foreigner not to stay in London but to visit the villages of Norfolk, to go to industrial Manchester, to ancient York or to the coal towns of Wales. They say that all these places characterize Britain better than London. They are right and wrong, for London contains much of the essence of England, and indeed of all Britain.

III. Find answers to the following questions in the text. Read them and translate into Russian.

1. What does the author mean when he says about "one mighty theme"?
2. What is situated on the right-hand and on the left-hand banks of the Thames river?
3. What people were imprisoned in the Tower of London?
4. Which is the tallest protestant cathedral in London?
5. Where do people who earn their daily bread by hard work live in London?
6. When is Big Ben situated?
7. Is London decreasing in size?
8. If you visit Norfolk or Manchester can you get full impression of what is Gr. Britain?

Лабораторная работа на тему: «NANOTECHNOLOGY»

I. Read and memorize the meanings of the new words:

- 1) to refer to – относиться к чему-либо;
- 2) unifying – объединяющий;
- 3) matter – материя, вещество;
- 4) on atomic scale – на атомном уровне;
- 5) to constitute – составлять;
- 6) to lie within – находиться в пределах;
- 7) multidisciplinary – междисциплинарный;
- 8) supramolecular chemistry – надмолекулярная химия;
- 9) noncovalent bonding – нековалентная связь;
- 10) to result from – являться результатом чего-либо;
- 11) extension into – развитие, углубления до ...;
- 12) to recast – видоизменяться;
- 13) “bottom - up” – “восходящий”;
- 14) to assemble oneself – формироваться;
- 15) entities – структурные единицы;
- 16) surface science – наука о физических свойствах
поверхностей тел;
- 17) in bulk form – в виде блока;
- 18) chip layout – топология кристалла;
- 19) stain resistant clothing – одежда с пятнозащитным
покрытием.

II. Переведите следующие словосочетания, учитывая особенности перевода левых определений.

1. Scale – molecular scale – atomic and molecular scale-atomic and molecular scale control;
2. Field – multidisciplinary field – highly multidisciplinary field;
3. Approach – assembly approach – “bottom-up” assembly approach – molecular components “bottom-up” assembly approach;
4. Control – atomic-level control – entities atomic-level control – large entities atomic-level control;
5. Layout – chip layout – computer chip layout – up-to-date computer chip layout.

6. Clothing – stain-resistant clothing – water and stain-resistant clothing

III. Read the text consisting of 5 paragraphs .All first sentences of them are missing. Looking through the following ones (A-E), find the appropriate one for each paragraph.

A – Examples of nanotechnology in modern use are the manufacture of polymers based on molecular structure, and the design of computer chip layouts based on surface science.

B – It is a highly multidisciplinary field, including many fields.

C – Two main approaches are used in nanotechnology.

D – Nanotechnology refers to science and technology whose main theme is the control of matter on the atomic scale.

E – Nanotechnology is developed not only as a pure theoretical subject.

The Text

Nanotechnology

I

First it resulted in the birth of cluster science and the invention of the scanning tunneling microscope (STM). This development led to the discovery of fullerenes in 1986 and carbon nanotubes a few years later/ In another development, the synthesis and properties of semiconductor nanocrystals was studied, This led to a fast increasing number of metal oxide nanoparticles of quantum dots. The atomic force microscope was invented six years after the STM was invented.

II

In constitutes normally 1 to 100 nanometers, and the fabrication of devices with critical demensions that lie within that size range.

III

They are applied physics, material science, supramolecular chemistry (which refers to the area of chemistry that focuses on the nanocovalent bonding interaction of molecules), self-replicating machines

and robots, chemical engineering. Much speculation exists as to what may result from these lines of research. Nanotechnology can be seen as an extension of existing sciences into the nanoscale, or as a recasting of existing sciences using a newer, more modern term.

IV

In the “bottom-up” approach materials and devices are built from molecular components which assemble themselves chemically by principles of molecular recognition. In the “top-down” approach, nano-objects are constructed from larger entities without atomic level control.

V

Despite the great promise of numerous nanotechnologies such as quantum dots and nanotubes, real commercial application have mainly used the advantages of colloidal nanoparticles in bulk form, such as suntan lotion, cosmetics, protective coatings, drug delivery and stain resistant clothing.

I. Answer in short:

1. What units do applied science and technology use in nanotechnology approach?
2. Is nanotechnology a new science having appeared quite recently?
3. How does chemistry participate in building nanostructures?
4. Are nanotubes widely used in engineering and domestic equipment?
5. What led to increasing number of metal oxide nanoparicles of quantum dots.

II. What can you tell about nanotechnology to a layman?

Лабораторная работа на тему: «LASER»

I. Read and memorize the meaning of the new words:

amplification – усиление;	ablation – абляция (унос массы каким-либо потоком);
stimulated – стимулированный, индуцированный;	to sneak over – распространяться на...;
to emit smth – a) in – излучать;	to disperse – рассеивать; рассредоточивать;
b) over – испускать	bulk – основная масса;
defined – определенный, установленный:	to evaporate – испарять(ся);
a) in – в виде;	divergence – отклонение, дивергенция.
b) over – на каком либо расстоянии;	

incandescent light bulb – электрическая лампа накаливания;

widespread – широко распространенный;

bar code – штрих-код;

reader – считывающее устройство;

pointer – указка;

to inscribe – записывать;

duration – продолжительность;

internal surgery – хирургия внутренних органов;

train – серия волн;

population inversion – обращение заселенности (уровень энергии);

to lase – излучать когерентный пучок;

to pump – накачивать лазер;

alternate – чередующийся, сменяющий др. (alternate current – переменный ток).

II. Find the following:

- How many nouns, verbs, adjectives and participles are there on the list of the new words?
- Pick up 3 most difficult verbs, nouns and 2 most difficult adjectives (or participles).

- Make up an example of your own in which you can use at least 3 of the most confusing words.

III. Translate the following nouns with “chains” of the left – hand attributes:

1. beam – monochromatic beam – low-divergence monochromatic beam – narrow low divergence monochromatic beam;
2. industry – laser industry – multi-billion industry;
3. wavelength – laser wavelength – well-defined laser wavelength;
4. mode – operation mode – wave operation mode – continuous wave operation mode;
5. source – pump source – laser pump source – steady –laser pump source;
6. periods – “off” periods – “on” and “off” periods – alternating «on» and “off” periods;
7. identification – target identification – military target identification – laser military target identification;
8. readers – bar-code readers – laser bar-code readers;
9. devices – storage devices – optical storage devices – laser-optical storage devices.

IV. Read text A and say:

Which of the paragraphs deals with:

- lasers depositing enough energy for evaporation;
- general definition of what is laser;
- laser operation requiring a steady pump source;
- the most common laser application;
- laser use in science and military fields.

V. Read the text A again and find key-sentence in paragraphs (I-V). Translate them into Russian. Think of the title for each paragraph.

Text A.

I

The term “laser” is an acronym for Light Amplification by Stimulated Emission of Radiation. A typical laser emits light in a narrow, low-divergence monochromatic beam with a well-defined wavelength. In this way, laser light is in contrast to a light source such as the incandescent light bulb, which emits light over a wide area of a wide spectrum of wavelengths.

II

A laser may either be built to emit a continuous beam or a train of short pulses. This makes fundamental differences in construction, usable laser media, and applications.

In the continuous wave(CW) mode of operation, the output of a laser is relatively consistent with respect to time. The population inversion required for lasing is continually maintained by a steady pump source.

III

In the pulsed mode of operation, the output of a laser varies with respect to time, typically taking the form of alternating ‘on’ and ‘off’ periods. In many applications one we can aim to deposit as much energy as possible at a given place in as short time as possible. In laser ablation for example, a small volume of material at the surface of work piece might evaporate if it gets the energy required to heat it up enough in very short time. If, however, the same energy is spread over a longer time, the heat may have time to disperse into the bulk of the piece, and less material evaporates. There are a number of methods to achieve this.

IV

The first working laser was demonstrated in May 1960 in Hughes Research Laboratories. Recently, lasers have become a multi-billion dollar industry. The most widespread use of lasers is in optical storage devices such as compact disc and DVD players, in which the laser (a few millimeters in size) scans the surface of the disc.

Other common application of lasers are bar-code readers and laser pointers.

V

In industry, lasers are used for cutting steel and other metals and for inscribing patterns (such as the letters on computer keyboards). Lasers are also commonly used in various fields in science, especially spectroscopy, typically because of their well-defined wavelength or short pulse duration in the case of pulsed lasers. Lasers are used by the military for target identification and illumination for weapons delivery. Lasers used in medicine are used for internal surgery and cosmetic applications operations.

VI. Read Text B and C. Decide, which paragraphs of Text A (I-V) can they be included in? Why?

Text B

In a Q-switched laser, the population inversion (usually produced in the same way as CW operation) is allowed to build up by making the cavity conditions (the ‘Q’) unfavorable for lasing. Then, when the pump energy stored in the laser medium is at the desired level, the ‘Q’ is adjusted (electro- or acousto-optically) to favorable conditions, releasing the pulse. This results in high peak powers as the average power of the laser is packed into a shorter time frame.

Text C

Some of the other laser applications include:

Medicine: Bloodless surgery, laser healing, surgical treatment, kidney stone treatment, eye treatment, dentistry.

Industry: Cutting, welding, material heat treatment, marking parts.

Defense: Marking targets, guiding munitions, missile defense, electro-optical countermeasures (EOCM), RADAR alternative.

Research: Spectroscopy, laser ablation, Laser annealing, laser scattering, laser interferometry, LIDAR.

Product development/commercial: laser printers, CDs, barcode scanners, thermometers, laser pointers, holograms.

VII. Be ready to speak on the topic “What is laser? Where is it applied?”

СПИСОК ЛИТЕРАТУРЫ

1. Economist, №17, 2005.
2. G. Doty and J. Ross. Language and life in the USA and Great Britain. – New-York, 1997.
3. A. Montagu. The American Way of life.

СОДЕРЖАНИЕ

1. THE CITY OF LONDON.....	3
2. NANOTECHNOLOGY.....	8
3. LASER.....	11

Учебное издание

Зимакова Елена Львовна

**РАЗВИТИЕ НАВЫКОВ УСТНОЙ РЕЧИ
ПО ТЕМАМ: «НАНОТЕХНОЛОГИИ», «ЛАЗЕРЫ», «ЛОНДОН»**

Методические указания

Редактор А.В. Ярославцева
Доверстка А.В. Ярославцева

Подписано в печать 22.04.11. Формат 60x84 1/16.
Бумага офсетная. Печать офсетная.
Печ. л. 1,0. Тираж 100 экз. Заказ . Арт. С - М15/2011.

Самарский государственный аэрокосмический университет
имени академика С. П. Королёва.
443086 г. Самара, Московское шоссе, 34.

Изд-во Самарского государственного аэрокосмического университета.
443086 г. Самара, Московское шоссе, 34.