

# Department of Organic Synthesis and Nanotechnology

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**PROPOSAL PREPARED FOR:**  
ENTRANTS OF TECHNICAL COLLEGES AND UNIVERSITIES

Proposal Issued:  
**10.02.2017**

Proposal Valid To:  
**01.09.2017**



National Technical University  
"Kharkiv Polytechnic Institute"



## KRICHKOVSKA LIDIYA

Head of Department  
Doctor of Biological Sciences, Professor

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I greet you on behalf of the Department of organic synthesis and nanotechnology NTU "KPI". Our department has long-term experience (more than 130 years) in training of engineers, chemists and technologists. And since 1885, i.e., since it was founded, we steadily follow the principles of qualitative training of students for topical and perspective specializations.

The presentation that you hold in your hands is not just data about us, it is our modern history. Learn about who we are and what we do. Good luck in training. See you again (soon)!



**01.**

# Contents

We present this presentation to you in order to demonstrate our high quality standards and professionalism



#### Address

Department of Organic Synthesis  
and Nanotechnology NTU «KhPI».  
Technical Corps building, 3rd floor,

Kirpicheva str., 2, Kharkiv,  
Ukraine, 61002



#### Phones and Email

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Phone: +380 (96) 791-03-64

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Email: [info@nanochem.com.ua](mailto:info@nanochem.com.ua)



#### We Online

[web.kpi.kharkov.ua/nanochem](http://web.kpi.kharkov.ua/nanochem)

[fb.com/nanochem.department.ua](https://fb.com/nanochem.department.ua)

[vk.com/nanochem](https://vk.com/nanochem)

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02.

# About Us

We proud to tell you that our department  
can offer great higher education



## OUR HISTORY

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*Department, as well as University, was founded in 1885 year. More than 2200 graduating seniors received their degrees of bachelor or master.*



## FORMS OF EDUCATION

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*We offer full-time education; tuition by correspondence; secondary higher education in Ukraine and also distance education.*



## EMPLOYMENT

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*Our graduates are chemical processing engineers, research engineers and design engineers.*



## SPECIALTY

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*Organic Chemistry and Engineering -161*



## SPECIALISATION

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- 1. Chemical Technologies of organic substances.*
- 2. Chemical Technologies of food additives and cosmetics.*



## DIPLOMAS

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*Postgraduate students obtain bachelor's and master's degree of international standard.*



03.

# Our Specializations

**Our education - is combination of experience and innovative educational technologies**



## CHEMICAL TECHNOLOGIES OF ORGANIC SUBSTANCES

Students in the range of this specialty have special training in such fields of knowledge as:

- technology of alcoholic production;
- technology of organic dyes and luminophores;
- technology of pharmaceutical production;
- technology of organic substances;
- methods of organic substances analysis;
- projection of chemical plants.



## CHEMICAL TECHNOLOGIES OF FOOD ADDITIVES AND COSMETICS

Students in the range of this specialty have special training in such fields of knowledge as:

- technology of food additives and their application;
- technologies of makeup preparations;
- cosmetic ingredients: classification and application;
- methods of cosmetics and food additives constituent analysis;
- projection and organization of production.



### LECTURES

*By means of lectures, students receive basic theoretical knowledge in those questions which they would apply in practice.*



### LABORATORY WORKS

*Laboratory works occupy a special place in training process. Thanks to them, students practice theoretical knowledge, gain experience and skills.*



### PRACTICE

*Practice is a final stage of training. Students use knowledge and experience, which were obtained earlier, during work practice on factories and enterprises.*



04.

# Employment perspectives

Our mission –  
training of successful personnel in the field of organic  
synthesis and allied industries

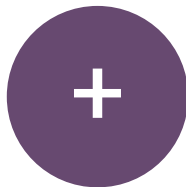
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$$x_2 - 1,05 * x_1 * x_1 + 0,0257 * x_1 * x_2 - 0$$

Час перебігу реакції, год



## ALUMNI OF THE DEPARTMENT WORK IN THE FIELD OF CHEMICAL, FOOD, COSMETIC INDUSTRY AND SCIENCE



### CHEMICAL TECHNOLOGIES

Speciality is fundamental for organic and petrochemical synthesis industries – basis for production activity of Ukrainian chemical industry. Serious prospects are opening up in the area of scientific research works of our department.



### FOOD TECHNOLOGY

In the range of this speciality students have special training in production technologies of food additives and their application, obtain experience in methods of food additives constituents analysis, organization of industrial production of previously mentioned products.



### COSMETIC TECHNOLOGIES

In the range of this speciality students have special training in production technologies of makeup preparations, ability to know much about wide spectrum of cosmetic ingredients, obtain experience in methods of cosmetics constituents analysis, organization of industrial production of previously mentioned products.



## ENGINEERS AND PRODUCTION TECHNOLOGIES

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*Since 1885 we train engineers, chemical technologists. We are proud of our graduates, which represent us in the chemical, food and cosmetic companies.*



## CHEMISTS IN LABORATORIES

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*We prepare chemists, and they work in different laboratories of private and public enterprises.*



## SCIENTISTS

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*Our graduates work in scientific research institutions in the field of chemistry, food and cosmetic products.*



And this is not all.  
See more on the next page



**DURING THE LAST  
5 YEARS ALUMNI  
OF THE  
DEPARTMENT OF  
ORGANIC  
SYNTHESIS AND  
NANOTECHNOLOGY  
WORK IN THIS  
COMPANIES**





# 4 Steps to Education

05.

ENTRANCE > STUDY > PRACTICE > GRADUATION

// 01



### Entrance

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The most important step for admission to the University is the choice of specialization. After that you have to concentrate one's attention on preparing and submission of documents.

// 02



### Study

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Education in our department consists of three main parts: lectures, laboratory work and practical training. During the training you will receive knowledge and skills by our speciality.

// 03



### Practice

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Practice is the final stage of training at our University. At this stage you will be able to apply your knowledge and skills.

// 04



### Graduation

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Traditionally, qualifying challenge for our graduates is presentation of graduation projects. After this challenge, you get a diploma.



**This is our University**

National Technical  
University "Kharkiv  
Polytechnic Institute"



**TAKE A LOOK AT OUR GALLERY:** <http://web.kpi.kharkov.ua/nanochem/departement-of-organic-synthesis-and-nanotechnology/instagram-gallery>



### **Laboratory works** Third-year students

*Analytical Chemistry Lab*



### **Laboratory works** Flowers in polystyrene

*During labs we work with synthetic compounds and natural samples*



### **Laboratory works** Chemistry is beautiful!

*Solutions of dyes*



### **Laboratory works** and our students

*In the process of education we attend maximum time to laboratory work and practice*





**Our graduates**  
Presentation of graduation  
projects

*Like these ones!*  
*It is our chemical engineers-technologists.*





06.

# Our Science

Science and education are closely connected in the process of learning at our department



## **GROWTH-STIMULATING**

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*Development of growth-stimulating and protective agents for crops and agricultural seeds based on nanocomponents in different forms*



## **LUMINOPHORS & DYES**

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*Fine organic synthesis. Technologies of obtaining luminophores & dyes*



## **COSMECEUTICAL PROPERTIES**

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*Technologies of obtaining cosmetic products with cosmeceutical properties for different age groups*



## **BIOLOGICALLY ACTIVE SUBSTANCES (BAS)**

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*We study technologies of food enrichment via BAS (Biologically Active Substances) with antioxidant properties. We also investigate BAS preparation technology for treatment and prevention of cancer.*



## **METHODS OF QUALITY CONTROL**

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*Application of modern methods of quality control for pharmaceuticals, cosmetics and food stuffs.*



## **SAFETY OF NANOPRODUCTS**

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*Joint development of methods for determining safety of nanoproducts.*

## Some scientific publications

Department of Organic Synthesis and Nanotechnology

**1. Investigation of natural antioxidants for inhibition of peroxidation processes.** L.V. Krichkovskaya, A.R. Grycyk, L.S. Myronenko, S.V. Zhirnova, T.P. Mandzii, A.S. Shumakova, K.Y. Fedorenko. The Pharma Innovation Journal, Vol.3 (2015), P.55-57.

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**2. 7-Hydroxyflavone Revisited. II. Substitution Effect on Spectral and Acid-Base Properties in the Ground and Excited States.** Serdiuk I.E., Roshal A.D. Journal of Physical Chemistry A, 119 (2015), N°51, P.12672-12685.

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**3. Synthesis and studies of 1,8-naphthalendicarboxylic acid derivatives as fluorescent probes in medical biological investigations.** Distanov V., Roshal A., Dyubko T., 4. Falaleeva T. / in: Modern directions in chemistry, biology, pharmacy and biotechnology. (2015), Lviv: Lviv Polytechnic Publishing House.– P. 57-64.

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**4. Textures of BSA films with different concentrations of sodium halides and water state in solution.** Glibitskiy G.M., Glibitskiy D.M., Gorobchenko O., Nikolov O., Roshal A.D., Semenov M., Gasan A. Nanoscale Research Letters, 10 (2015), N°1, id.155, P.1-10.

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**5. Technogenic nanoparticles from coal carbonization products.** Shmalko V., Zelensky O., Rudkevich M. Chemistry&Chemical technology, Vol. 7, No. 3, (2013). P.359-364.

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**WE INVOLVE STUDENTS TO PERFORM RESEARCH WORK**  
**RESULTS ARE PRESENTED IN THE ARTICLES, THESES AND PATENTS**



07.

# Numbers

Numbers shows real value of our education process and profit results for our students



+ 23 %

## INCREASING NUMBER OF MATRICULANTS

*Results of 2016 introductory campaign:  
The Ministry of Education and Science of Ukraine  
has increased the a request of matriculant  
Number, learning both our specialization.*

+ 10

## TUTORIALS FOR 2016

*During past year, team of department published 10 textbooks and teaching materials.*

2200 +

## PREPARED BY GRADUATES

Department, as well as University, was founded in 1885 year. More than 2200 graduates received their degrees. Among them there are engineers, technologists, chemists, researchers and design engineers.



08.

# Our Team

Professionals is a most valuable resource in any industry  
and we hire only best of them



### **LIDIYA KRICHKOVSKA**

Head of Department,  
Professor

*Nanotechnology of Carbon  
Compounds in Chemistry and Biology  
Toxicological chemistry of food and  
cosmetic production*



### **SERGEY PETROV**

Associate Professor

*Basics of Technological Design  
& Equipment for Manufactures  
of Organic Synthesis, Food  
and Cosmetics*



### **ANNA BELINSKAYA**

Associate Professor

*Technology of Food  
Production  
Foundations of  
Biochemistry*



### **VITALIY DISTANOV**

Associate Professor

*Chemistry and Technology of  
Luminophores  
Absorption and Luminescence  
of Aromatic Compounds*



**ALEKSANDR  
ROSHAL**

Associate Professor

*Chemistry, Technology & Use of  
Biologically Active Substances  
Physical analysis techniques of  
organic compounds*



**ELENA  
MICHEDKINA**

Associate Professor

*Chemistry and Technology of  
Saturated and Unsaturated  
Hydrocarbons  
Research Methods of Studying  
Organic Reactions*



**TATYANA  
FALALEEVA**

Senior Lecturer

*Chemistry and Technology of  
Aromatic compounds  
Technology of Surfactants in  
Food and Cosmetic Industries*



**SVETLANA  
ZHIRNOVA**

Senior Lecturer

*Metrology, Standardization and  
Certification in Chemical Industry  
General Chemical Technology of  
Organic Substances*



**VLADIMIR  
DUBONOSOV**

Senior Lecturer

*Instrumental Methods of  
Chemical Analysis in the Field  
Methodology and organization  
of scientific researches*



**VALERIYA  
ANANIEVA**

Head of the laboratory

*Analytical Quality Control of  
Food Products and Additives  
Technology of  
Pharmaceuticals*



**LILIYA  
MYRONENKO**

Senior Lecturer

*Theory of Chemical Engineering  
Processes of Organic Synthesis  
Technology of Organic Substances  
in Food and Cosmetic Industries*



**VALERIYA  
MARCHENKO**

Conference Secretary

*Quality control of cosmetic  
products and semi-  
products  
Technology of Cosmetics*



**OLEG ZELENSKIY**

Senior Lecturer

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*Nanotechnology of Carbon  
Compounds in Chemistry  
and Biology*



**ANTONINA  
MAIZELIS**

Senior Lecturer

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*Chemistry and Technology of  
Organic Dyes  
Mathematical Modeling and  
Computer Application in  
Chemical Technology*



**TATYANA  
OVSYANNIKOVA**

Senior Lecturer

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*Microbiology  
Technology of Water Treatment at  
Food & Cosmetic Factories*



**IRINA  
PERETYATKO**

Assistant

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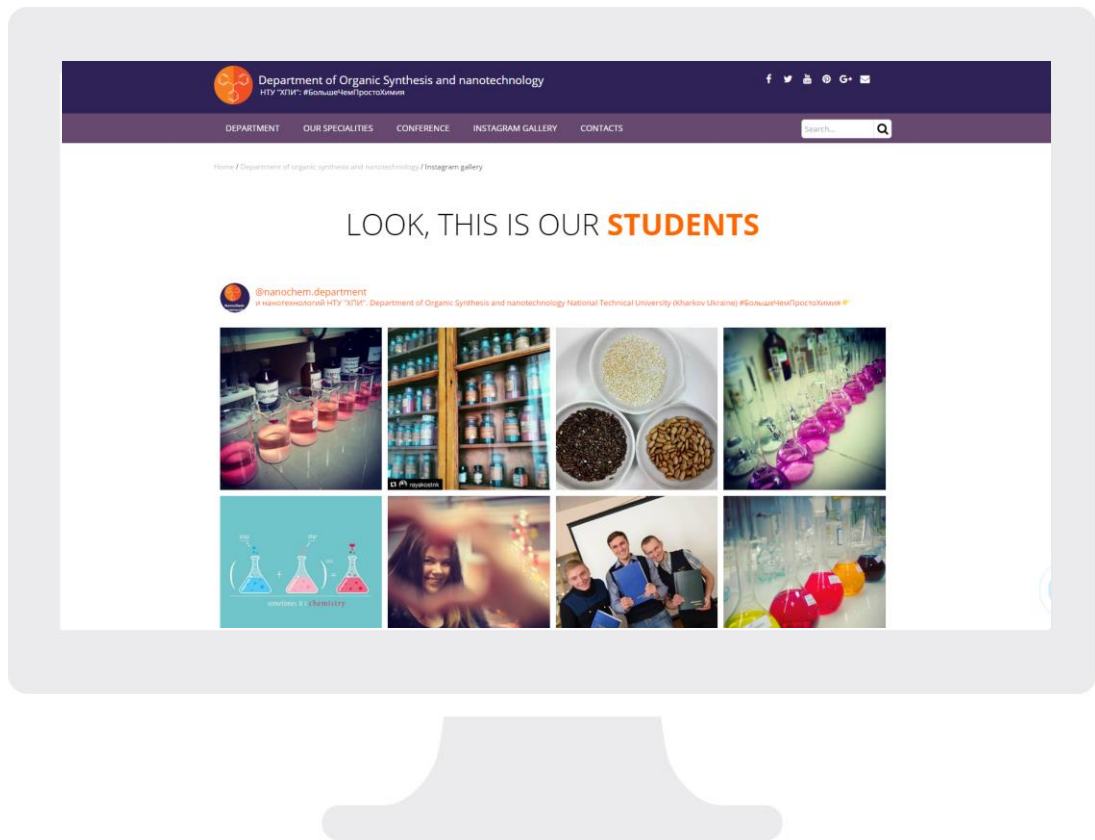
*Chemistry and Technology  
of Food Additives*



09.

# Case Study

See what else we're doing for the convenience of study  
and popularization of science



## ONLINE FEATURES

for education of our students



Web sites of the Department:

- <http://web.kpi.kharkov.ua/nanochem>
- <https://nanochem.com.ua>



Distance learning courses:

<http://dl.khpi.edu.ua/login/index.php#section-0>



Social networks:

1. [facebook.com/nanochem.department.ua](https://facebook.com/nanochem.department.ua)
2. [instagram.com/nanochem.department](https://instagram.com/nanochem.department)
3. [youtube.com/user/NanochemDepartment](https://youtube.com/user/NanochemDepartment)
4. [vk.com/nanochem](https://vk.com/nanochem)

## GET IN TOUCH

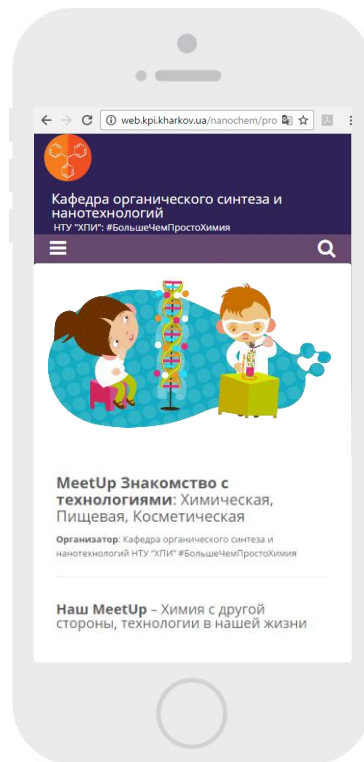


# WE WORK WITH FUTURE GENERATIONS. SCIENCE FOR KIDS: MEETUP AND SCIENTIFIC WORKS COMPETITIONS



For children We carry out MeetUp "Introduction to Technology: Chemical, food, cosmetics." Matriculants were introduced with trendy specialties such as "Chemical technology of organic substances" and "Technology of food supplements and cosmetics." They will learn what is the essence of profession. MeetUp includes: laboratory work, workshops, interesting lectures and excursion to our University.

We participate in the national competition of the Minor Academy of Sciences of Ukraine scientific research for high school students. The competition is held to create an intellectual development of children, training them in spirit of patriotism and democratic values, create conditions for formation of intellectual potential of our nation. The Department of organic synthesis and nanotechnology in 2016 performed research work, which won a prize in Kharkiv region.





10.

# Conference

**International Scientific Conference  
"Chemistry, Bio- and Nanotechnology, Ecology and  
Economics in Food and Cosmetic Industries"**



## INTERNATIONAL SCIENTIFIC AND PRACTICAL CONFERENCE

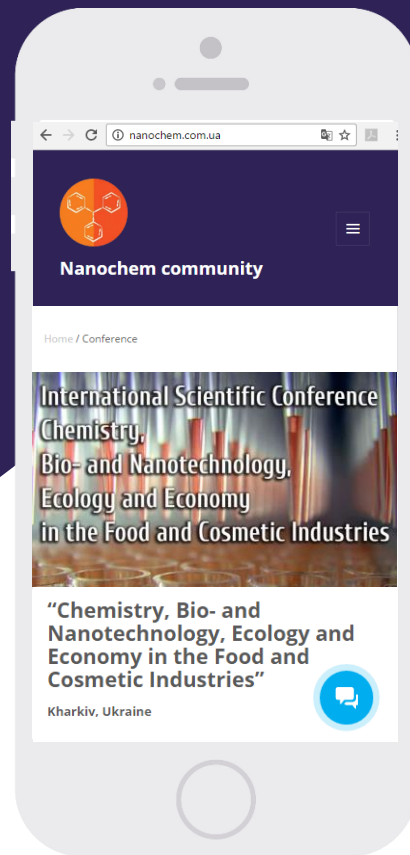
Dear colleagues! We invite you and your team to participate in the International Scientific-Practical Conference "Chemistry, Bio- and Nanotechnology, Environment and Economics in food and cosmetic industries", which is usually held in autumn in Kharkiv.

We hope that conference will be one of the largest scientific meetings in Ukraine under the patronage of the State Agency of Science, Innovation and Informatization of Ukraine and the Ukrainian State Agency for Management of State Corporate Rights and Property.

You will be given the opportunity to establish business and creative contacts with colleagues; opportunity to make a presentation of works and services to participants of the conference. There are representatives of the leading world companies, domestic enterprises and universities among them. We are sure that your knowledge and experience will be useful and interesting for the participants of our conference. Participation in this event is a good advertisement for activities of your institution and the basis for establishment of mutually beneficial cooperation..



**"CHEMISTRY, BIO- AND NANOTECHNOLOGY, ECOLOGY AND ECONOMICS IN FOOD AND COSMETIC INDUSTRIES"**





## MAIN TOPICS OF THE CONFERENCE

Chemistry, Bio- and  
Nanotechnology, Ecology,  
Economics in Food and  
Cosmetic Industries



### DESIGN

New products, based on  
biologically active substances of  
synthetic and natural origin.



### RESEARCH

Search for new types of biological,  
chemical and nanocompounds for  
Food and Cosmetic industries.



### TECHNOLOGY

Solving of technical, ecological and  
economic al problems in  
introducing of new products.

**SEE MORE AT:** <http://web.kpi.kharkov.ua/nanochem/conference>



# From the Life of the Department

11.



### **MeetUp** Introduction with technology

*Event for children  
carried out by our students*



### **Conference** International Scientific Conference

*Our annual conference with participation of  
outstanding scholars and students*

*See more at:*

<http://web.kpi.kharkov.ua/nanochem/conference>



International Scientific Conference  
Chemistry,  
Bio- and Nanotechnology,  
Ecology and Economy  
in the Food and Cosmetic Industries

**8-10 December 2014**

National Technical University "Kharkiv Polytechnic Institute"  
Kharkiv, Ukraine

*Submit your abstracts!*



### **Luminophores!** Things to see

*This is real magic!  
But we will tell you how it works  
See more at:*  
<http://web.kpi.kharkov.ua/nanochem/o-kafedre/fotogalerei/>



### **Our chemical Christmas tree**

*We are engineers, chemists,  
and we enjoy our profession*





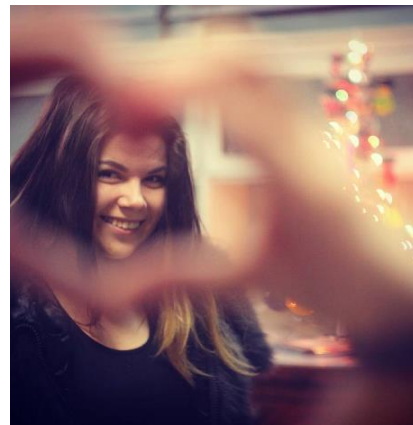
**Best time**  
New friends and  
unforgettable memories

*It is impossible to describe in words. This is  
better to see once than to hear 100 times.  
Seeing is believing.*



**The Spirit of University**  
est. in 1885

*The largest University in Kharkov.  
The leading Ukrainian University*





12.

# General academic disciplines

for the students of our department

### Some Disciplines Studied During process of Preparation Bachelors

Analytical Chemistry and Instrumental Methods of Analysis

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Control and Management of Chemical Engineering Processes

---

General Chemical Technology of Organic Substances

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Research Methods of Organic Reactions

---

Nanotechnology of Carbon Compounds in Chemistry and Biology

---

Basics of Technological Design & Equipment for Manufactures of Organic Synthesis

---

Chemistry and Technology of Saturated Hydrocarbons & Aromatics

---



## **BACHELORS OF** CHEMICAL TECHNOLOGIES OF ORGANIC SUBSTANCES

### Some Disciplines Studied During process of Preparation Bachelors

Basics of Technological Design & Equipment for Manufactures of Food and Cosmetic Industry

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Analytical Quality Control of Food Additives and Cosmetics

---

General Chemical Technology of Organic Substances

---

Technology of Surfactants in Food and Cosmetic Industries

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Basics of Biochemistry

---

Nanotechnology of Carbon Compounds in Chemistry and Biology

---

Research Methods of Organic Reactions

---



**BACHELORS OF**  
CHEMICAL TECHNOLOGIES OF FOOD ADDITIVES AND COSMETICS

### Some Disciplines Studied During process of Preparation Masters

Chemistry and Technology of Organic Dyes

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Investigation of Products from Chemical and Pharmaceutical Enterprises

---

Introduction of New Technologies into Chemical and Pharmaceutical Industries

---

Chemical Technology of Organic Substances

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Chemistry and Technology of Intermediate Products

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Catalytic Processes in Technology of Organic Compounds

---

Equipment and Design of Chemical Enterprises for Organic Synthesis

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**MASTERS OF**  
CHEMICAL TECHNOLOGIES OF ORGANIC SUBSTANCES

### Some Disciplines Studied During process of Preparation Masters

Implementation of New Technologies in Perfume and Cosmetics Industry

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Modern Application Directions of Food Additives

---

Expert Evaluation of Food Products and Cosmetics

---

Technology, Equipment & Design of the Production of Chemicals and Cosmetics

---

Research Methods of Chemical Technology Systems and Processes

---

Technology of Food Production

---

Chemistry, Technology & Use of Biologically Active Additives

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**MASTERS OF**  
CHEMICAL TECHNOLOGIES OF FOOD ADDITIVES AND COSMETICS



**13.**

# Timeline

Period of study for full-time education and postal tuition

## YEARS OF STUDY

1

2

3

4

5

6

// 01

BACHELOR (full-time education)



// 02

MASTERS (full-time education)



// 03

BACHELOR (postal tuition)



// 04

MASTERS (postal tuition)





# Terms & Conditions

14.

Important information for applicants



## INFORMATION FOR FOREIGN STUDENTS

- Ⓢ NTU "KhPI" Rector for foreign students
- Ⓢ Tuition of studying
- Ⓢ Contract Sample
- Ⓢ National Technical University "Kharkiv Polytechnic Institute" Presentation video



<http://www.kpi.kharkov.ua/eng/study/information-for-foreign-students/>

<http://www.kpi.kharkov.ua/eng/for-future-students/>



## IMPORTANT INFORMATION FOR FUTURE STUDENTS

- Ⓢ Admissions criteria
- Ⓢ Coming to Ukraine to study
- Ⓢ Crossing the Ukrainian border
- Ⓢ Migration requirements to international students



<http://www.kpi.kharkov.ua/eng/for-future-students/important-information-for-future-students/>



## REQUIREMENTS FOR ADMISSION

- Ⓢ How to get an invitation for study?
- Ⓢ How to receive the "Entrance visa"?
- Ⓢ Documents required for admission



<http://www.kpi.kharkov.ua/eng/for-future-students/online-application-for-study-at-ntu-khpi/>

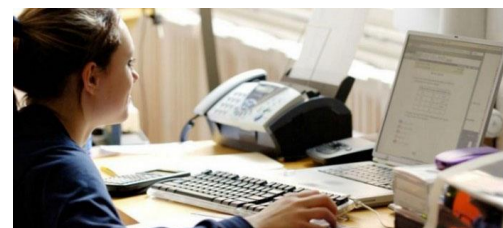


## ONLINE APPLICATION FOR STUDY

On admission, remember that you are interested in the **Department of Organic Synthesis and nanotechnology**.

**Our specialty is "161 - Chemical technology and engineering".**  
Our specializations:

- Ⓢ "Chemical technology of organic substances"
- Ⓢ "Chemical technology of food additives and cosmetics"



<http://www.kpi.kharkov.ua/eng/for-future-students/online-application-for-study/>

# Thank You

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## Address

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Synthesis and Nanotechnology  
NTU «KhPI».  
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Email: [info@nanochem.com.ua](mailto:info@nanochem.com.ua)

## We Online

[web.kpi.kharkov.ua/nanochem](http://web.kpi.kharkov.ua/nanochem)  
[fb.com/nanochem.department.ua](https://fb.com/nanochem.department.ua)  
[vk.com/nanochem](https://vk.com/nanochem)



National Technical University  
"Kharkiv Polytechnic Institute"