

**O‘ZBEKISTON RESPUBLIKASI OLIY VA O‘RTA MAXSUS
TA‘LIM VAZIRLIGI**

BUXORO DAVLAT UNIVERSITETI

**“KOORDINATSION BIRIKMALAR KIMYOSINING
HOZIRGI ZAMON MUAMMOLARI”
MAVZUSIDA XALQARO ILMIY-AMALIY
KONFERENSIYA
MATERIALLARI TO‘PLAMI**



**2022-yil 22-23-dekabr
Buxoro**

**МИНИСТЕРСТВО ВЫСШЕГО И СРЕДНЕГО
СПЕЦИАЛЬНОГО ОБРАЗОВАНИЯ РЕСПУБЛИКИ
УЗБЕКИСТАН**

БУХАРСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ

**«СОВРЕМЕННЫЕ ПРОБЛЕМЫ ХИМИИ
КООРДИНАЦИОННЫХ СОЕДИНЕНИЙ»**

Материалы международной научно-практической
конференции



22-23 декабря 2022 г.
г. Бухара, Республика Узбекистан

**MINISTRY OF HIGHER AND SECONDARY SPECIAL
EDUCATION OF THE REPUBLIC OF UZBEKISTAN**

BUKHARA STATE UNIVERSITY

**INTERNATIONAL SCIENTIFIC AND PRACTICAL
CONFERENCE ON
"CURRENT PROBLEMS OF THE CHEMISTRY OF
COORDINATION COMPOUNDS"**



**22-23-december
Bukhara, Uzbekistan – 2022**

“Koordinatsion birikmalar kimyosining hozirgi zamon muammolari” mavzusida xalqaro ilmiy-amaliy anjumani materiallari. Buxoro – 2022. - 734 bet

Buxoro davlat universitetida O'zbekiston Respublikasi Vazirlar Mahkamasining 2022 yil 7 martdagi 101-f-sonli farmoyishi bilan tasdiqlangan O'zbekiston Respublikasida 2022 yilda xalqaro va respublika miqyosida o'tkaziladigan ilmiy va ilmiy-texnik tadbirlar rejasida belgilangan tadbirlarning bajarilishi maqsadida 2022 yil 22-23 dekabr kunlari **“Koordinatsion birikmalar kimyosining hozirgi zamon muammolari”** mavzusidagi xalqaro ilmiy-amaliy anjumani bo'lib o'tadi.

Mas`ul muharrir:

Umarov Baqo Bafayevich – kimyo fanlari doktori, professor

Tahrir hayati:

O`M. Mardonov, M.Ya. Ergashov, H.T. Avezov, N.G. Sevinchov, E.D. Niyozov, Q.G`Avezov, M.A. Tursunov, S.F. Abduraxmonov, Z.A. Sulaymonova, F.M. Nurutdinova, D.A. Hazratova, Sh.Sh. Xudoyberdiyev, Z.K. Qodirova, E.A. Xudoyorova, D.B. Mutalipova, G.Q. Xoliqova, S.A. Karomatov

Maqolalarni to'plovchi va nashrga tayyorlovchilar Organik va fizkolloid kimyo kafedrasi mudiri, k.f.f.d. S.F. Abduraxmonov, kafedra o`qituvchisi B.Sh. Ganiyev.

Ushbu xalqaro ilmiy-amaliy konferensiya materiallari to'plamiga bakalavr va magistrantlar, ilmiy tadqiqot ishlarini olib borayotgan izlanuvchi va tadqiqotchilar, katta ilmiy xodim-izlanuvchilar, ilmiy-tadqiqot institutlari olimlari va oliy o'quv yurtlari professor-o'qituvchilari hamda kimyo sohalari xususan koordinatsion birikmalar kimyosi sohasida tadqiqot olib borayotgan mutaxassislarning ilmiy ishlari kiritilgan.

Mazkur to'plamga kiritilgan materiallarning mazmuni, undagi statistik ma'lumotlar va me'yoriy hujjatlar sanasining to'g'riligiga hamda tanqidiy fikr mulohazalarga mualliflarning o'zlari mas'uldir.

“Koordinatsion birikmalar kimyosining hozirgi zamon muammolari”

“Koordinatsion birikmalar kimyosining hozirgi zamon muammolari” mavzusidagi xalqaro ilmiy-amaliy anjumanining tashkiliy va dasturiy qo‘mita a‘zolari

Obidjon Xafizovich Xamidov	Buxoro davlat universiteti rektori, i.f.d., prof.
To‘lqin Husenovich Rasulov	Buxoro davlat universiteti ilmiy ishlar va innovatsiyalar bo‘yicha prorektori, f-m.f.d., prof.
Abdulhat Turobovich Djalilov	TKTITI direktori, k.f.d., akademik.
Sayyora Shrofovna Rashidova	O‘zR FA Polimerlar kimyosi va fizikasi instituti direktori, k.f.d., akademik.
Abbasxan Sobirxanovich To‘rayev	O‘zR FA BKI direktori, k.f.d., akademik.
Baxtiyor Sobirjonovich Zokirov	O‘zR FA UNKI professori, k.f.d., akademik.
Quvondiq Sanoqulovich Sanoqulov	NKMK direktori, t.f.d., prof.
Aziz Baxtiyarovich Ibragimov	O‘zR FA UNKI direktor o‘rinbosari, k.f.d., prof.
Shaxnoza Abduxalilovna Kadirova	O‘zMU Kimyo fakulteti dekani, k.f.d., prof.
Sergey Zubarovich Vatsadze	M.V. Lomonosov nomidagi MDU professori, k.f.d., prof.
Vadim Viktorovich Minin	Rossiya FA N.S. Kurnakov nomidagi UNKI yetakchi ilmiy xodimi, k.f.d., prof.
Vadim Vitalievich Negrebetsky	N.I.Pirogov nomidagi Rossiya MTTU Kimyo kafedrası mudiri, k.f.d., prof.
Suriya Irekovna Gilmanshina	Qozon federal universiteti professori, p.f.d., prof.
Savash Kaya	Sivas davlat universiteti professori
Mohd Nadeem Bukhari	Handwara davlat kolleji, PhD, associate professor.
Xamdani Ikromovich Akbarov	O‘zMU professori, k.f.d., prof.
Abdullo Murodovich Nasimov	SamDU professori, k.f.d., prof.
Xayit Xudonazarovich To‘rayev	TerDU Kimyo fakulteti dekani, k.f.d., prof.
Shaxobiddin Xasanboyevich Avdullayev	ADU professori, k.f.d., prof.
Shavkat Vohidovich Avdullayev	NamDU professori, k.f.d., prof.
Zuxra Chingizovna Kadirova	O‘zbekiston – Yaponiya yoshlar innovatsiya markazi, k.f.d., prof.
Olim Ruzimuradov	Toshkent shahridagi Turin politexnika universiteti professori, k.f.d., prof.
Jamshid Mengnorovich Ashurov	O‘zR FA BKI yetakchi ilmiy xodimi, k.f.d., prof.
Baqo Bafoevich Umarov	BuxDU professori, k.f.d., prof.
Muxtar Raxmatovich Amonov	BuxDU professori, t.f.d., prof.
MansurYarashevich Ergashev	BuxDU professori, k.f.n., prof.
Murod Amonovich Tursunov	BuxDU O‘quv-uslubiy departament boshlig‘i, k.f.f.d., PhD, dots.
Erkin Dilmurodovich Niyozov	BuxDU Tabiiy fanlar fakulteti dekani, t.f.n., dots.
O‘ktam Mardonovich Mardonov	BuxDU dotsenti, k.f.n., dots.
Hasan Tillayevich Avezov	BuxDU dotsenti, k.f.n., dots.
Qahramon Shayimovich Husenov	NDKTU dotsenti, k.f.n., dots.
Nemat Gulboyevich Sevinchov	BuxDU dotsenti, k.f.n., dots.
Qozoqmurod Asadovich Ravshanov	BuxDU dotsenti, k.f.n., dots.
Hasan Qalandarovich Razzoqov	BuxDU dotsenti, t.f.n., dots.
Sayfullo Ibodulloevich Nazarov	BuxDU Umumiy va noorganik kimyo kafedrası mudiri, t.f.n., dots.
Sayfiddin Fayzullayevich Abduraxmonov	BuxDU Organik va fizkolloid kimyo kafedrası mudiri, k.f.f.d., PhD.
Quvondiq G‘iyosovich Avezov	BuxDU dotsenti, k.f.f.d., PhD, dots.
Gulbahor Akiyevna Xudonazarova	BuxDU dotsenti, k.f.n., dots.
Muzaffar Samandarovich Sharipov	BuxDU dotsenti, n.f.n., dots.
Shuxrat Shamsiddinovich Xudoyberdiyev	BuxDU dotsenti, k.f.f.d., PhD.

Dasturiy qo`mita

Feruza Muidinovna Nurutdinova	BuxDU dotsenti, t.f.f.d., PhD.
Dilshoda Azamovna Hazratova	BuxDU dotsenti, k.f.f.d., PhD.
Zilola Abduraxmonovna Sulaymonova	BuxDU dotsenti, k.f.f.d., PhD.
Batirbay Smetovich Torambetov	O'zMU dotsenti, k.f.f.d., PhD.
Baxtiyor Shukrulloevich Ganiyev	BuxDU assistenti
Zulfiya Kobilovna Qodirova	BuxDU katta o'qituvchisi
E'tibor Ahadovna Xudoyorova	BuxDU assistenti
Diloromxon Baxtiyor qizi Mutalipova	BuxDU assistenti
Gulyayra Qo'ldoshevna Xoliqova	BuxDU assistenti
Sardor Aminovich Karomatov	BuxDU assistenti
Norov Ilg'or Ilhom o'g'li	BuxDU assistenti

ADVANTAGES OF ELECTRONIC TEXTBOOKS IN INCREASING THE EFFICIENCY OF LABORATORY LESSONS IN CHEMISTRY

PhD, Nurutdinova F., Khafizov U., Saidov O., Tuxtayev S.
Bukhara State University

Abstract. Today, at the main stage of reforming education, it is very important to create a new generation of educational literature that meets the requirements of modernity. In our time, new modern information technologies open up a lot of opportunities. For example, computer, printer, scanner, multiplication, animation presentation and so on. This, in turn, simplifies the creation of an active learning system and e-books. As a result, it is possible to organize modern informative lectures, practical and experimental laboratories.

Key words: innovative technologies, animation, audio-sounds, video lessons, ICT.

The national personnel training program is one of the urgent and priority tasks of our time in preparing young people for a new social environment, educating them in the spirit of the times. In our country, the application of modern pedagogical information technologies to the educational process is developing in order to organize the educational process on a scientific basis, speed it up and increase efficiency. The use of modern information technologies in the organization of chemistry lessons gives good and effective results compared to the traditional method. Reforming and improving the education system of Uzbekistan in the 21st century is one of the priority tasks. This, in turn, requires our chemical scientists to update the educational literature on academic subjects, taking into account modern requirements and the latest achievements of science, to introduce innovative and educational technologies into the educational process [1].

The application of information and communication technologies (ICT) opens up new perspectives and opportunities for teaching chemistry. In addition, the development of the ability to read independently, focusing on specific literacy in working with information sources, is a necessary condition for the intellectual development of a student [2].

The purpose of the work is the use of information and communication technologies in chemistry. Homework assignments can be assigned remotely by the teacher, and completed assignments can be checked by the student. ICT is the most convenient way to manage educational material.

Distinctive features of information innovation technologies:

- innovative technologies always increase the interest of schoolchildren and students in science;
- In the process of applying innovative technologies, a culture of communication between schoolchildren and students develops;
- Innovative technologies allow schoolchildren and students to show their talents and knowledge;
- Forms positive qualities and qualities of pupils and students.

An electronic textbook is a software and methodological complex that automatically creates the possibility of teaching a subject or part of it by the teacher himself using a computer.

Electronic textbooks should contain complete information on the subject or topic and should not be reproduced using animation or video images, enriched and filled with audio text. In addition to the use of multimedia technologies, an electronic textbook should be convenient for individual use by the reader or student. It can serve as a ready-made consultation for students. It follows that the electronic textbook should be in a continuous and ordered sequence. Any chosen topic or section can be effective and efficient only if it is supplemented with practical exercises and an exam (test).

The electronic chemistry textbook mainly consists of 5 parts.

1. Display text on the computer.

2. Presentation (multimedia) organization - animations are shown here.
3. Test control - theoretical knowledge on the subject is evaluated.
4. Basic phrases are given for each topic.
5. Scientists who have contributed to the science of chemistry are provided with information.

By creating an e-book, the student can have the following options:

1. Quickly search for the necessary lecture and laboratory work according to the plan (it is difficult to find it in a regular textbook);
2. Audio and video views that are not found in books and textbooks: see and hear the phenomena that occur in experiments - gas separation, combustion of substances, color of the precipitate, its melting on video using live sound, color images and music;
3. Animated viewing of reaction equations and experiments on the topic;
4. Animated viewing of the structure and images of chemical formulas, schemes;
5. Printing the necessary parts of the text on the printer;
6. Consolidation of the knowledge gained at the lecture and a quick check (for example, a test, problem solving, filling out a table);
7. Knowledge of important historical dates in the field of chemistry;
8. They will be able to get acquainted with scientists who conducted research in the field of chemistry, see them, get information about them.

Therefore, it is important to apply new innovative pedagogical technologies using advanced and modern teaching methods for students to master the science of "Physical Chemistry". The student uses electronic textbooks, multimedia and animation to master the subject [3, 4].

In addition to saving the student's time, the electronic textbook allows you to reuse materials that are difficult for students to understand. It follows from this that it is desirable to place hypertexts in the form of an alphabet or in the form of a "tree". In comparison, in a regular textbook, the reference is given to the page number, while in the electronic textbook, it takes a lot of work to enter laboratory exercises and a control type in the text, animation, and video sequence sorting mechanism. The most important issue here is to ensure consistency and continuity. In this case, instructions on how to use the electronic textbook can be given. Instructions may be provided on paper or as a file called "readme", as individual animations, or as HTML, FLASH and other documents.

The database tutorials are mostly developed in Borland Delphi and Visual C++ and contain a very large database. Such textbooks are mainly used in biology, physics, chemistry and similar subjects and fields of science where the database can be widely used. The main goal of our database application is that we can reduce the size of the e-textbook [5].

Most people think of e-textbooks as text written on a computer. But with the use of modern technologies, such an electronic textbook has been created, which is given with the help of sound and moving animation.

E-textbooks in HTML format are among the textbooks that mainly use a lot of text and fewer images and videos [6]. The advantage of electronic textbooks in this form is that they are easy to use and print, and they do not require special instructions. Such textbooks mainly consist of hypertexts and are distinguished by the small size of textbooks, as well as the ability to quickly search for information. Internet Explorer is required to use this guide.

At present, an electronic textbook for laboratory classes in bioorganic chemistry has been created at the Department of Organic and Physical-Colloid Chemistry.

For the first time, methods of using multimedia were developed in order to convey information about visual experiments to students in electronic classes of laboratory chemistry classes, and they were used to consolidate the skills and abilities of students in the classroom. Laboratory electronic textbook of bioorganic chemistry consists of 6 chapters, more than 60 animations (sound and moving), more than 100 tests, 10 slides and glossaries. Figure 1 shows a fragment from the video of the laboratory work on the topic "Protein Denaturation". Such videos

of laboratory work are available in each chapter, it is convenient for students to do their own work [7].



Picture. 1. Fragment from the video of the laboratory work

These electronic textbooks are mainly developed in the form of special programs in the form of HTML, various Web sites, FLASH, Borland Delphi, Visual C ++.

Now, with the help of the above special programs, we have set a goal to create an electronic textbook on physical chemistry.

References

1. Нурутдинова Ф.М., Авезов Х.Т., Ганиев Б.Ш. Лабораторные работы по биоорганической химии. Учебное пособие. №500-046. Дурдона 2021г. 128 с.
2. Нуриддинова, Ф. М. "Использование инновационных технологий по предмету «КОЛЛОИДНАЯ ХИМИЯ»// Ученый XXI века (2016): 16. – С:13-16.
3. Ихтиярова Г.А., Ёриев О.М, Ф.М. Нурутдинова, Н.Ш. Дехканова // “Коллоид кимё” электрон дарслиги. №ДГУ 03374. 2015.
4. Нурутдинова Ф. Использование электронных учебников по физической химии// Центр научных публикаций (buxdu. uz). 2021;8(8).
5. Саидов О.О., Хафизов У.У., Нурутдинова Ф.М. Биоорганик кимё, органик кимё ва физикавий кимё фанларидан инновацион технологиялардан фойдаланиш// Республиканская научно-практическая конференция «Роль биологической химии в современной медицине – вчера, сегодня и завтра». г. Бухара 15-16 апрель 2022 г. 1135-136 с.
6. Нурутдинова Ф., Хафизов Ю., Саидов О. Использование электронных учебников по физической химии// Талим ва ривожланиш тахлили онлайн илмий журналы. 2022 18 мая; 2(5):42-5.
7. Ганиев Б.Ш., Нурутдинова Ф.М. и др. Биоорганик кимёдан лаборатория машғулотлари электрон ўқув қўлланма. №ДГУ 13494. 2021.

ORGANIK KIMYO FANINI O'QITISHDA KIMYOVIY KOMPYUTER DASTURLARIDAN FOYDALANISH.

¹Amrilloev A.A., ²Hazratova D.A., ³Hakimova M.M.

¹Magistrant, ²PhD, dots, ³O`qituvchi

^{1,2}Buxoro davlat universiteti

³Buxoro viloyati Vobkent tumani 32-son maktab

Annotatsiya: Mazkur maqolada umumta'lim maktablarida organik kimyo fanining alkanlar va ularning izomeriyasi mavzusini o'qitishda kimyoviy kompyuter dasturlaridan foydalanish samaradorligi tahlil qilingan.

Kalit so'zlar: “chem draw”, “chem 3D”, optimallashtirish, izomerlar.

xalqaro ilmiy-amaliy anjumani materiallari

Nazarov N.I.	348	Razzoqova S.R.	111, 116, 119
Nazarov S.I.	348	Rejapova M.T.	224
Nishonov G.B.	443	Ro'zimova L.X.	121
Niyazmetov A.R.	103	Ro'zimurodov A.A.	234
Niyazmetova X.G'	301	Ro'zimurodov A.B.	86
No'monov M.A.	664, 667	Ro'zmatov I.	626
Normamatov A.S.	199	Rustamov M.K.	416
Normamatov A.S.	97, 98	Ruzimatov I.M.	362
Nurmetova D.K.	14	Ruzmetov A.Kh.	81, 96
Nurulloev M.O.	145		
Nurutdinova F.	645		S
Nurutdinova F.M.	286, 291, 318		
	O	Sabirov R.Z.	144
		Sabirov V.X.	504
		Sadikova N.A.	651
Olimjonov A.O.	531	Sadullayev X.M.	682
Olimova M.I.	169	Sadullayeva S.	99, 188
Omonbaeva G.B.	552	Saidov O.	645
Ortiqov I.S.	212	Salimov F.G'	229, 231
Otaboyev B.	354, 691	Salimov N.	195
	P	Salimov N.G.	87
		Salimova F.A.	144
		Sapayev F.	411
Pardayev O.T.	86	Sattarov T.A.	224
Polvonov X.M.	686	Savriyeva N.Q.	90
	Q	Saydaliyev Y.Yu.	542
		Sayfullayev I.B.	180
Qodirova D.A.	84	Sergey Z. Vatsadze	13
Qodirova M.X.	651	Sevinchova D.N.	220
Qodirova Z.K.	512	Shakhnoza Kadirova	54
Qosimov SH.	195	Sharifova N.A.	107, 109
Quchqarov M.	195	Shodiyev D.A.	445
Qudratov O.S.	659	Shukrullayev Sh.N.	357
Quldoshev O.E.,	131	Sobirov N.	354, 691
Qurbannazarova R.Sh.	144	Sulaymonova Z.A.	107, 109, 251
Qurbanova Sh.R.	103	Suyariyon K.D.	197
Qurbonov H.A.	445	Suyunova F.Sh.	135
Qurbonov H.G.	416		T
	R	Tashpulatov Kh.Sh.	39
		Tatiana Shmigol	11
Rajabova M.R.	144	Taxirov Y.R.	94
Rajabova Z.F.	84	Tillayeva D.M.	684
Rasulova Yu.Z.	318	To'qsanov I.P.	83, 510
Rasulova Yu.Z.	291	To'lusova N.Z.	87
Raximov K.M.	534	Toirova N.O.	169
Raximov T.X.	731	Tojiboyev A.G'	212
Raximova N.A.	512	Tojimuhamedov H.S.	411
Raximova S.D.	121	Torambetov B.S.	116, 119, 133, 213
Raxmonov O.K.	284	Toshkentboyev A.S.	659
Razzokova S.	188	Toshov A.	116
Razzokova S.R.	99	Toshov A.A.	119
Razzoqov H.Q.	357		