



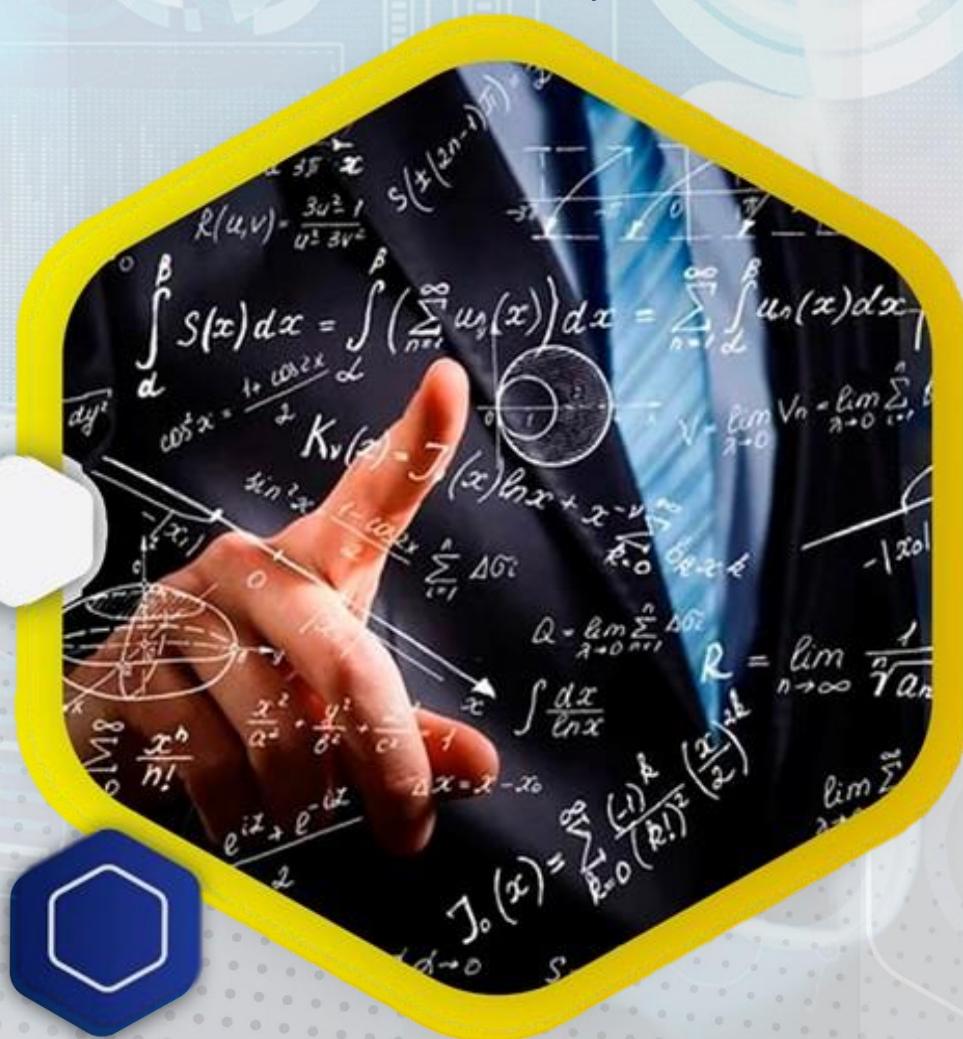
O'ZBEKISTON RESPUBLIKASI
OLIY TA'LIM, FAN VA INNOVATSIYALAR
VAZIRLIGI



BUXORO
DAVLAT
UNIVERSITETI
1930

"FIZIKA, MATEMATIKA VA SUN'IY INTELLEKT TEXNOLOGIYALARINING DOLZARB MUAMMOLARI"

XALQARO ILMIY-NAZARIY ANJUMAN MATERILLARI



BUXORO-2025



**O'ZBEKISTON RESPUBLIKASI
OLIY TA'LIM, FAN VA INNOVATSIYALAR
VAZIRLIGI**



CURRENT PROBLEMS OF PHYSICS, MATHEMATICS AND ARTIFICIAL INTELLIGENCE TECHNOLOGIES

**INTERNATIONAL SCIENTIFIC AND THEORETICAL
CONFERENCE**

(May 16-17, 2025)

Bukhara-2025

UDC: 530+51+004.8

LBC: 22.1 + 22.16 + 32.81

A92

ISBN: 978-6206-800-31-9

ORGANIZING COMMITTEE

Chairman:	
Khamidov O.Kh	Professor, rector of Bukhara State University
Vice-chairman:	
Samiyev K.A.	Professor, vice-rector of Bukhara State University
Jurayev H.O.	Professor, dean of the Faculty of Physics, Mathematics and Information Technologies, Bukhara State University
Members of the organizing committee	
Sharipov M.Z.	Professor, head of the Department of Bukhara State University
Jalolov O.I.	Docent, head of the Department of Bukhara State University
Shafiyev T.R.	Docent, head of the Department of Bukhara State University
Dilmurodov E.B.	Docent, head of the Department of Bukhara State University
Kodirov J.R.	Docent, head of the Department of Bukhara State University
Durdiev U.D.	Docent, head of the Department of Bukhara State University
Eshonkulov H.I.	Docent, IT Advisor to the Rector of Bukhara State University
Bakayev I.I.	Docent, Senior Specialist at the Center of Excellence for Science and Education, Bukhara State University
Nuriddinov J.Z.	Docent, deputy dean of the Faculty of Physics, Mathematics and Information Technologies
Ubaydullayev A.N.	Docent, deputy dean of the Faculty of Physics, Mathematics and Information Technologies
Rasulov X.R.	Docent, Bukhara State University
Fayziyev Sh.Sh.	Docent, Bukhara State University

PROGRAM COMMITTEE

Chairman:	
Rasulov T.H.	Professor, Head of the Center of Excellence for Science and Education, Bukhara State University
Members of the organizing committee	
Mukimov K. M.	Academician of the AS RUZ
Durdiev D.K.	Professor, head of Bukhara branch of the Institute of Mathematics named after V.I.Romanovsky
Mutti-Ur Rehman	Professor, Asia International University
Ikromov I.A.	Professor, head of Samarkand branch of the Institute of Mathematics named after V.I.Romanovsky
Shadimetov X.M.	Professor, Tashkent institute of railway transport engineers
Ravshanov N.	Professor, Digital Technologies and Artificial Intelligence Development Research Institute
Hayotov A.R.	Professor, V.I. Romanovsky Institute of Mathematics of the Academy of Sciences of Uzbekistan
Muminov B.B.	Professor, Tashkent State University of Economics
Muminov Z.E.	Professor, Tashkent State University of Economics
Muminov M.E.	Professor, Samarkand State University
Jurayev D.R.	Professor, Bukhara State University
Kaxxorov S.K.	Professor, Bukhara State University
Jiemuratov R.E.	Professor, dean of the Faculty Physics-Mathematics, Nukus State Pedagogical Institute
Prenov B.B.	Docent, head of the Department Nukus State Pedagogical Institute
Otepbergenov J.S.	Docent, head of the Department Nukus State Pedagogical Institute
Seitnazarov K.K.	Docent, head of the Department Nukus branch of Tashkent university of Information Technologies
Tursunov I.G.	Professor, dean of the Faculty Physics and Chemistry, Chirchik State Pedagogical University

Secretariat:***Atamuradov J.J., Khudayarov S.S., Xazratov F.X.***© ***Bukhara state university***

Рис.5. Изменения безразмерной влажности по слоям дыни по времени. 1- при $\bar{x} = 0,2$; ,
2- при $\bar{x} = 0,4$; 3- при $\bar{x} = 0,6$; 4- при $\bar{x} = 0,8$; , 5- при $\bar{x} = 1$;

Исследование зависимостей на рис.2 показывает, что при таких условиях пока не наблюдается в сечениях то, что концентрация выравнивается в каком-то промежутке сечения.

Из проведенного исследования следует, что созданная камера позволяет увеличить долю радиации, которое поступает из солнца, тем самым накапливать тепло внутри. А это в свою очередь позволяет ускорению углубления тепла внутри слоя, тем самым уменьшению влажности.

Использование экспериментальных данных в качестве граничных условий при моделировании позволило точнее вычислить процесс увеличения температуры и тем самым уменьшения влаги внутри дыни. Выявлено, что в конце дня в связи с уменьшением температуры экстремум температуры и влаги немного проникает внутрь.

Список использованной литературы:

1. Muhamad, N. & Mohd Redzuan, N. A. (2019). Effects of different drying methods and quality parameters on dried manis Terengganu melon (Cucumis melo). Journal of Agrobiotechnology, 10(1S), 46-58
2. Rodrigues, S., & Fernandes, F. A. N. (2007). Use of Ultrasound as Pretreatment for Dehydration of Melons. Drying Technology, 25(10), 1791–1796.
3. Лыков А.В. Теория сушки. М.: Энергия, 1968. 472 с.
4. Mirzayev Sh.M., Jumayev J., Qodirov J. Simulation of natural convection in a solar collector//2023 J. Phys.: Conf. Ser. 2573 012024

KUCHSIZ MAGNETIKDA YORUG'LIKNING YUTILISHI

Nasirova Nargiza Gayratovna,
BuxDU doktoranti,
e-mail: n.g.nasirova@buxdu.uz,
Fayziyev Shaxobiddin Shavkatovich
BuxDu Fizika kafedrası dotsenti
e-mail: s.s.fayziyev@buxdu.uz.

Annotatsiya. Ushbu maqolada kuchsiz ferromagnit material tarkibi aniqlandi. Olingan namunada 190-1100 nm to'liqin sohasida yutilishi haqida batafsil ma'lumot berildi, bu esa ilmiy izlanishlar va amaliy qo'llanishlar uchun muhim ma'lumot manbai hisoblanadi.

Kalit so'zlar: Kuchsiz magnit materiallar, yorug'likning moddada yutilishi, spektrometr, to'liqin uzunligi, ultrabinafsha, fluoressent spektrometr.

Аннотация. В данной статье определяется состав слабого ферромагнитного материала. Полученный анализ об образце предоставил подробную информацию о его поглощении в диапазоне длин волн 190–1100 нм, что является важным источником информации для научных исследований и практических приложений.

Ключевые слова: Слабые магнитные материалы, поглощение света в веществе, спектрометр, длина волны, ультрафиолет, флуоресцентный спектрометр.

Abstract: This paper determines the composition of a weak ferromagnetic material. The obtained analysis of the sample provides detailed information on its absorption in the wavelength range of 190–1100 nm, which is an important source of information for scientific research and practical applications.

Key words: Weak magnetic materials, light absorption in matter, spectrometer, wavelength, ultraviolet, fluorescence spectrometer.

Kirish. Kuchsiz magnit materiallarni magneto-optik xususiyatlarini o'rganish bizga quyidagi imkoniyatlarni beradi. Kuchsiz magnit materiallar kvant mexanikasi, spintronika va magnit o'zaro ta'sirlarning nozik mexanizmlarini tushinishda muhim. Bu fundamental bilimlarni kengaytiradi. Kuchsiz magnit xususiyatlarga ega materiallar ma'lumot saqlash, sensorlar va kvant hisoblash kabi sohalarda qo'llaniladi. Ularning past energiya sarfi va yuqori sezuvchanligi yangi qurilmalarni ishlab chiqishda foydalidir. Kuchsiz magnit maydonlar MRT(magnit-rezonans tasvirlash) kabi tibbiy texnologiyalarda va biomagnit signallarni o'rganishda muhim rol o'ynaydi. Kuchsiz magnit materiallar ko'pincha kam energiya talab qiladi, bu esa ekologik jihatdan barqaror texnologiyalarni rivojlantirishga yordam beradi. Kuchsiz magnit maydonlar sayyoralar, yulduzlar va Yer magnit maydonini tushinishda muhim ma'lumot beradi.

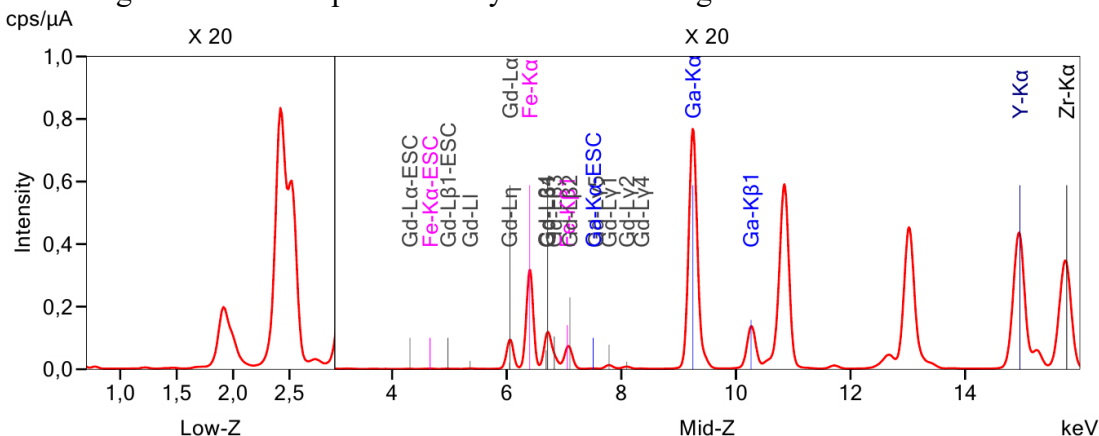
Shuning uchun ham juda ko'plab olimlar tomonidan kuchsiz magnit materiallar tadqiq qilib kelinmoqda.

Yorug'likning moddada yutilishi – bu yorug'lik energiyasining modda molekulalari yoki atomlari tomonidan so'rilishi jarayoni. Bu hodisa elektromagnit nurlanishning modda bilan o'zaro ta'sirida ro'y beradi va quyidagi asosiy jihatlarga ega:

Absorbsiya mexanizmi: Yorug'lik fotonlari moddaning elektronlari bilan o'zaro ta'sirlashadi. Agar foton energiyasi elektronning energiya sathlari o'rtasidagi farqqa mos kelsa, elektron bu energiyani yutadi va yuqori energiya sathiga o'tadi.

Moddaning xususiyatlari: Yutilish moddaning kimyoviy tarkibi, tuzilishi va yorug'lik to'lqin uzunligiga bog'liq.

Kuchsiz magnit material tarkibi Yaponiyada ishlab chiqarilgan Rigaku NexDE VS energiya dispersion rentgen fluorescent spektrometri yordamida amalga oshirildi.

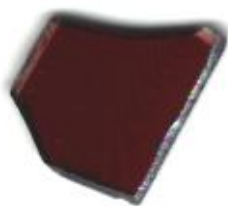


1-rasm. Rigaku NexDE VS energiya dispersion rentgen fluorescent spektrometri yordamida olingan spektr tasviri.

Tahlil qilingan natija (FP usuli)

No.	Komponent	Natija	Birlik	LLD	LLQ	Element chizig'i	Intensivlik(cps/μA)
1	Fe	32,4	mol%	0,0086	0,0258	M:Fe-Kα	64,26858
2	Zr	7,05	mol%	0,0023	0,0070	M:Zr-Kα	110,37104
3	Ga	39,8	mol%	0,0074	0,0223	M:Ga-Kα	186,53715
4	Gd	11,4	mol%	0,0112	0,0336	M:Gd-La	21,47931
5	Y	9,41	mol%	0,0030	0,0089	M:Y-Kα	136,97269
6	Tc	ND	mol%				

Rigaku NexDE VS energiya dispersion rentgen fluorescent spektrometri yordamida tahlil natijasida kuchsiz magnit materialning tarkibi $\text{Fe}_3\text{Ga}_4\text{GdYZr}$ ekanligi aniqlandi.



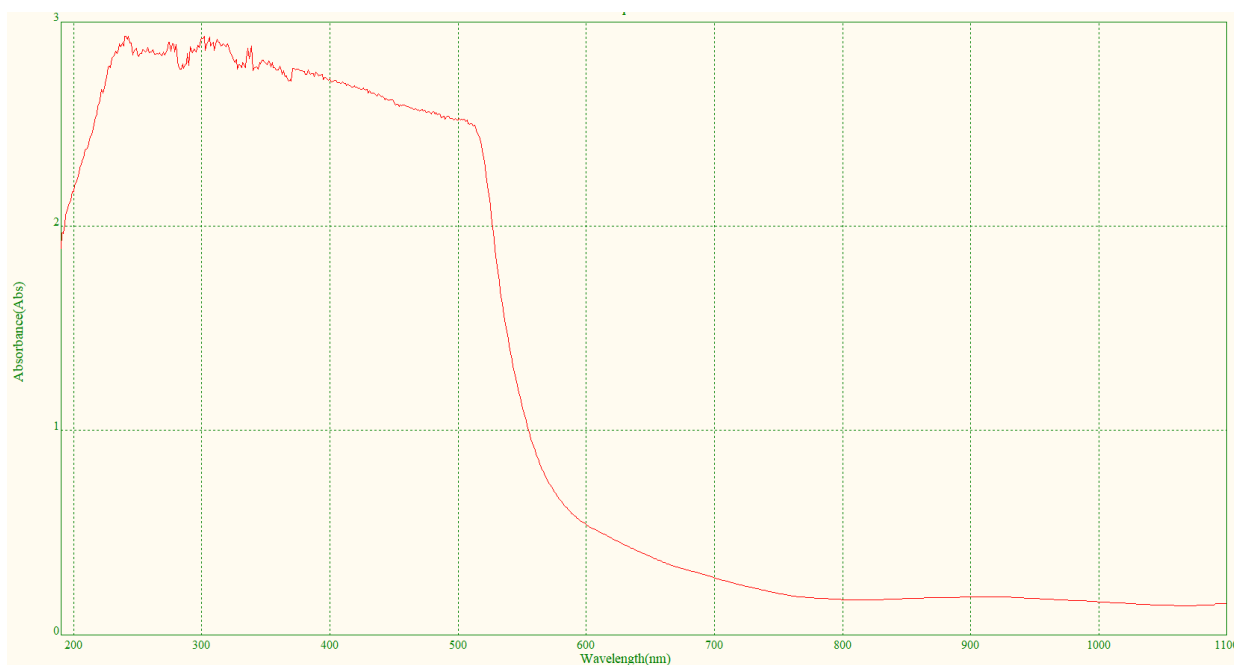
2-rasm. Kuchsiz magnit material(kristall)ning ko'rinishi.

Ushbu kuchsiz magnit material shaffof bo'lib yorug'likni o'tkazadi. Rangi esa jigarrang ko'rinishga ega.



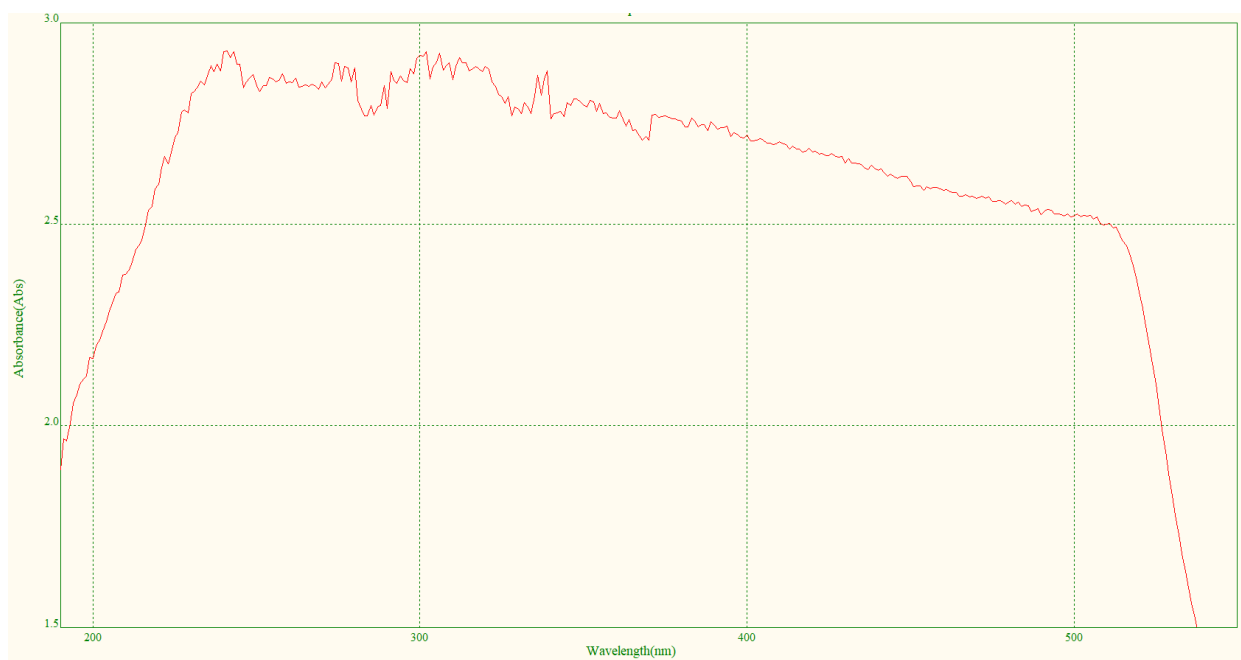
3-rasm. UV-visible spectrophotometer EMC-61PC

EMC-61PCS-UV — bu **UV-VIS (ultrabinafsha va ko'rinadigan spektr)** diapazonida ishlovchi spektral fotometr bo'lib, u turli to'lqin uzunliklarida moddalarning yutilishini (absorbtsiyasini) aniqlab beradi. Ushbu ishda shu qurilma yordamida $\text{Fe}_3\text{Ga}_4\text{GdYZr}$ kuchsiz magnit materialda turli to'lqin uzunlikdagi nurlarni yutilishini o'rgandik.



4-rasm. $\text{Fe}_3\text{Ga}_4\text{GdYZr}$ kristallda yorug'lik yutilishini to'lqin uzunligiga bog'liqligi.

4-rasmdan ko'rinib turibdiki asosiy natijalar 200-500 nm to'lqin uzunlik oralig'ida.



5-rasm. $\text{Fe}_3\text{Ga}_4\text{GdYZr}$ kristallda yorug'lik yutilishini to'liqin uzunligiga bog'liqligi.

5-rasmdan aytishimiz mumkinki asosiy piklar quyidagi to'liqin uzunliklarida aniqlangan. 199nm; 222nm; 228nm; 233; 249nm; 254nm; 274nm; 280nm; 320nm; 375nm; 404nm; 410nm; 433nm; 492nm; 513nm.

Xulosa qilib aytadigan bo'lsak, $\text{Fe}_3\text{Ga}_4\text{GdYZr}$ kuchsiz magnit kristali asosan ultrabinafsha nurlarni yaxshi yutar ekan. Ko'zga ko'rinadigan yorug'ikni qisman yutar ekan. $\text{Fe}_3\text{Ga}_4\text{GdYZr}$ kuchsiz magnit moddasi ultrabinafsha nurlarni C kategoriyasi kamroq yutib, B kategoriyasini o'tkazib yuboradi. Buni ahamiyatli jihati shundaki, inson quyoshdan kelayotgan ultrabinafsha nurlanishning B kategoriyasi orqali asosan D vitaminini qabul qiladi.

Foydalanilgan adabiyotlar ro'yxati:

1. Nasirova N. G., Fayziyev Sh. Sh. "Effect of magnetic field on weak magnets". Web of Scientists and Scholars: Journal of Multidisciplinary Research, (2024)
2. Nasirova N. G., Fayziyev Sh. Sh. "Tashqi ta'sir natijasida kuchsiz ferromagnetiklarning spektral tahlilini o'rganish". Ta'lim innovatsiyasi va integratsiyasi, (2024)
3. Nasirova N.G. "Kuchsiz magnitlar va magnit maydonlardan tibbiyotda foydalanish" International journal of scientific researchers (2024)
4. Nasirova N. G. "Tibbiy qayd qilgichlarda ferritlarning o'rni", PEDAGOGIK TADQIQOTLAR JURNALI, № 4, Fevral, 2025
5. Born, M., & Wolf, E. (1999). Principles of Optics: Electromagnetic Theory of Propagation, Interference and Diffraction of Light (7th ed.). Cambridge University Press.
6. Fox, M. (2010). Optical Properties of Solids (2nd ed.). Oxford University Press.
7. Kittel, C. (2004). Introduction to Solid State Physics (8th ed.). Wiley.
8. Ashcroft, N. W., & Mermin, N. D. (1976). Solid State Physics. Holt, Rinehart and Winston.
9. Zvezdin, A. K., & Kotov, V. A. (1997). Modern Magneto-optics and Magneto-optical Materials. Institute of Physics Publishing.
10. Osgood, R. M. (2009). Physics of Light and Optics. Cornell University Press.

UDK.621.311.243

Туркменов Х.И., Маликов К.Х, Очилов О., Кулматова Г.А. Экваториальный эффект керра на трёхслойной магнитной структуре	322
Kamalova Dilnavoz Ixtiyorovna, Shomurodova Shaxzoda Akbar qizi Fizikadan “o‘tkazgichning solishtirma qarshiligini aniqlash” bo‘yicha laboratoriya ishini bajarish metodikasi	324
SECTION 7: PROBLEMS OF USING ALTERNATIVE ENERGY SOURCES AND PROMISING SOLUTIONS IONS	
Kamolov J Issiq polli isitish tizimining o‘zgaruvchilarini tahlil qilish	329
Kamolov Jo‘rabek Jalol o‘g‘li Paraboloid quyosh konsentratorlarini binolar issiqlik samaradorligini oshirishda qo‘llash.	332
Saidov Qurbon Sayfullayevich, Sattorova Gulandom Hamroqulovna “Elektrodinamika” bo‘limidan muammoli mazmundagi masalalarni tanlash	335
С. Хакимова, Ж. Жумаев, Ж. Кодиров, Ш. Мирзаев Математическая модель предварительной обработки сушки дынь	337
Nasirova Nargiza Gayratovna, Fayziyev Shaxobiddin Shavkatovich Kuchsiz magnetikda yorug‘likning yutilishi	340
Raxmatov Ilhom Ismatovich Quyosh fotoelektrik stansiyalarining samaradorligini oshirish	344
Temirov Sohob Amonovich Parabolik quyosh konsentratorini isiiqlik va texnik parametrlarini modellashtirish.	347
Maxmudova Marjona Maxsud qizi Fazaviy o‘tuvchi materiallardan foydalanib quyoshenergiyasini akkumulyatsiya qilish imkoniyatlari	349
A.B. Nusratov. U.X. Ibragimov, J.R., Qodirov Kombinatsiyalashgan quyosh quritgichlarini ishlab chiqish bo‘yicha ilmiy-tadqiqotlarning ilmiy-texnikaviy tahlili	350
Qodirova Xamidaxon Nurmuxamadovna Oliy ta‘lim tizimida “muqobil energiya manbalari ta‘minoti” fanini oqitish samaradorligini oshirish	353
Иноятова Комола Лавзаровна, Гулахмадов Аминжон Абдужаббарович Использование SWAT моделирования: для прогнозирования оценки эрозии грунта при расчёте наносов бассейне реки зарафшан	354
J.R., Qodirov, U.X. Ibragimov, A.B. Nusratov Quyosh quritgich qurilmalarining konstruksiyalari tahlili	357
Mirzayev Shavkat Mustaqimovich, Ibragimov Salim Safarovich Uzum mahsulotini tabiiy usulda (quyosh energiyasi asosida) quritish texnologiyalari	362
Mirzayev Shavkat Mustaqimovich, Ibragimov Salim Safarovich Uzum mahsulotini botanik xususiyatlari va uni quyosh energiya asosida quritish texnologiyalari	368
SECTION 8: NEW PEDAGOGICAL TECHNOLOGIES IN TEACHING PHYSICS, MATHEMATICS AND INFORMATION TECHNOLOGY	
Qunnazarov Amangeldi Quatbayevich Pedagogik dasturiy vositalar va ulardan foydalanish metodikasi	372
Kamolova Dilnavoz Ixtiyorovna, Nabiyeva Firuza Odil qizi, Idiboyeva Sevinch Bahodir qizi Fizikadan “bio-savar-laplas qonuni” mavzusiga doir masalalar yechish metodikasi	373
Kamalova Dilnavoz Ixtiyorovna, Nabiyeva Firuza Odil qizi, Tilavova Dilara Ikromjon qizi Fizikadan “elektr energiyasi. joul–lens qonuni” mavzusiga doir masalalar yechish metodikasi	275
Axmedov Axat Axrorovich Fizika fani o‘qituvchilarini tayyorlashning metodologik omillari	378
G‘apporov Umidjon Abdurashid o‘g‘li, Xusenov Murodjon Zohirovich Sun‘iy intellektga asoslangan o‘quv platformalarining talabalarning kasbiy kompetentligiga ta’siri	380
Amonova Sharofat Nurmaxmatovna Matematika darslarida raqamli texnologiyalardan foydalanishning metodik asoslari	382