

Shirkhan Humbatov

Lecturer & Researcher



Education

- Jan 2016 – Jan 2022 • **Ph.D.**
Baku State University
Dissertation: Physical properties of the systems of liquid crystal-BaTiO₃ nanoparticles
- Sep 2009 – Jun 2011 • **M.Sc.**
Baku State University
Thesis: Investigation of the dielectric properties of agarose gel.
- Sep 2004 – Jun 2008 • **B.Sc.**
Baku State University
Physics

Publications

Series number	Full name of the work	Name and place of the publication where the work was printed or published	Date of scientific publication
1.	The study of BaTiO ₃ nanoparticles effect on threshold properties of Liquid Crystal 5CB	Molecular Crystals and Liquid Crystals, Taylor & Francis Ltd , 2-4 Park Square, Milton Park, Abingdon, England. https://doi.org/10.1080/15421406.2017.1289416	May, 2017
2.	BaTiO ₃ hissəciklərinin smektik A maye kristalının faza keçidlərinə təsirinin tədqiqi	Azerbaijan Journal of Physics "FİZİKA" Azərbaycan Milli Elmlər Akademiyasının Fizika İnstitutu, Bakı	İyul, 2017
3.	Əks işarəli dielektrik anizotropiyalı smektik A maye kristalların dielektrik xassələrinə BaTiO ₃ hissəciklərinin təsirinin öyrənilməsi	Bakı Universitetinin Xəbərləri, fizika-riyaziyyat elmləri seriyası, Bakı Dövlət Universiteti, Bakı Bakı Dövlət Universiteti, Bakı	Dekabr, 2017

4.	Müxtəlif ölçülü BaTiO ₃ hissəciklərinin smektik A maye kristalın astana xassələrinə təsiri	Azerbaijan Journal of Physics "FİZİKA" Azərbaycan Milli Elmlər Akademiyasının Fizika İnstitutu, Bakı	Dekabr 2018
5.	Effect of barium titanate particles on dielectric and electrooptical properties of a smecticA liquid crystal	Russian Physics Journal, Springer , One New York Plaza, Suite 4600, New York, United States https://doi.org/10.1007/s11182-018-1265-1	February, 2018
6.	Effect of ferroelectric BaTiO ₃ particles on the threshold voltage of a smectic A liquid crystals	Beilstein Journal of Nanotechnology, BeilsteinInstitut zur Förderung der Chemischen Wissenschaften Trakehner Straße 79 D60487 Frankfurt am Main Germany https://doi.org/10.3762/bjnano.9.76	March, 2018
7.	Influence of size of small ferroelectric barium titanate particles on dielectric properties of smectic A liquid crystal with a positive dielectric anisotropy	Journal of Low Dimensional Systems, Baku State University, Baku	November, 2019,
8.	Mənfi dielektrik anizotropiyali smektik A maye kristalın elektrooptik xassələrinə BaTiO ₃ hissəciklərinin ölçü effektinin təsiri	Azerbaijan Journal of Physics "FİZİKA" Azərbaycan Milli Elmlər Akademiyasının Fizika İnstitutu, Bakı	Oktyabr, 2020
9.	5CB nematik maye kristalının astana gərginliyinə BaTiO ₃ nanohissəciklərinin təsiri	BDU-nun Fizika Problemləri İnstitutunun yaradılmasının 10 illiyinə həsr olunmuş «Opto, nanoelektronika, kondensə olunmuş mühit və yüksək enerjilər fizikası» Beynəlxalq konfransı, Bakı Dövlət Universiteti, Bakı	25-26 dekabr, 2015
10.	The study of BaTiO ₃ nanoparticles effect on threshold properties of Liquid Crystal 5CB	26th International Liquid Crystal Conference, Kent State University, USA	31 July- 5 August 2016
11.	Smektik A fazalı maye kristalda faza keçidlərinə BaTiO ₃ nanohissəciklərinin ölçü effektinin təsiri	Fizikanın aktual problemləri IX Respublika elmi konfransı, Bakı Dövlət Universiteti, Bakı	22 dekabr 2016
12.	Влияние частиц титаната бария на диэлектрические свойства смектического А жидкого кристалла	International Conference «Modern Trends in Physics», – Baku State University, Baku	20-22 April 2017
13.	Seqnetoelektrik barium titanat hissəciklərinin smektik A maye kristalının dielektrik xassələrinə təsiri	I International scientific conference of young researchers dedicated to the 94th Anniversary of the National leader of Azerbaijan, Heydar Aliyev, Baku Engineering University, Baku	05 – 06 May, 2017

14.	Effect of ferroelectric BaTiO ₃ particles on threshold voltage of smectic A liquid crystal	14th European Conference on Liquid Crystals, Moscow State University, Moscow, Russia	June 25-30, 2017
15.	Size effect of small ferroelectric BaTiO ₃ particles on dielectric properties of a smectic A liquid crystal with negative dielectric anisotropy	Modern Trends in Physics" International Conference, Baku State University, Baku	May01-03, 2019
16.	Mənfi dielektrik anizotropiyalı smektik A maye kristalin dielektrik xassələrinə barium titanat hissəciklərinin ölçü effektinin təsiri	Azerbaijan Journal of Physics "FİZİKA" Azərbaycan Milli Elmlər Akademiyasının Fizika İnstitutu, Bakı	İyul, 2019
17.	BatiO ₃ hissəciklərinin müsbət dielektrik anizotropiyalı smektik A maye kristalin faza keçidlərinə təsiri	Azerbaijan Journal of Physics "FİZİKA" Azərbaycan Milli Elmlər Akademiyasının Fizika İnstitutu, Bakı	Dekabr, 2019
18.	Impact of BaTiO ₃ nanoparticles of different particle sizes on phase transitions insmectic A liquid crystal	2nd JTACC and 7th V4 Thermoanalytical Conference	18-21, June 2019;
19.	Dielectric hysteresis in submicron barium titanate particles	7th International Conference MTP-2021: MODERN TRENDS IN PHYSICS, Baku State University, Baku, Azerbaijan	15-17 December 2021
20.	Dielectric hysteresis in submicron barium titanate particles	7th International Conference MTP-2021: MODERN TRENDS IN PHYSICS PROCEEDINGS, Baku State University, Baku, Azerbaijan	15-17 December 2021
21.	Effects of BaTiO ₃ ferroelectric nanoparticles size on dielectric and phase transition properties of smectic A liquid crystal	28th International Liquid Crystal Conference, NOVA School of Science and Technology, Lisbon, Portugal	24-29 July 2022
22.	Ferromaqnit Fe ₃ O ₄ nanohissəcikləri və maye kristal əsaslı kompozitlərin antiradar sistemlərində tətbiq imkanlarının təcrübi və nəzəri tədqiqi	44 GÜNLÜK VƏTƏN MÜHARİBƏSİNDƏ QAZANILAN QƏLƏBƏNİN 2-Cİ İLDÖNÜMÜNƏ HƏSR OLUNMUŞ RESPUBLİKA ELMİ-PRAKTİK KONFRANS, Milli Müdafiə Universiteti, Bakı	2–3 noyabr 2022-ci
23.	Size effect of submicron barium titanate particles on dielectric properties of smectic a liquid crystal 4-	Liquid crystal (2.676 (2021) Impact Factor and Q2 Impact Factor Best Quartile). doi:10.1080/02678292.2023.2265340	15 October 2023

	nitrophenyl 4'-decyloxy benzoate		
24.	Size effects of ferroelectric BaTiO ₃ nanoparticles on threshold properties of smectic A liquid crystal	International Conference "Fundamental and Applied Problems of Modern Physics", dedicated to 80 th Anniversary of Uzbekistan Academy of Sciences (UzAS) and Physical-Technical Institute of UzAS, and 30 th Anniversary of IMS of UzAS, Tashkent, Uzbekistan	19-21, October 2023

Academic connections

Turkey *Ege University, Yildiz Technical University*

Russia *Lomonosov Moscow State University*

UK *The University of Manchester*

Portugal *NOVA University of Lisbon*

Poland *Military University of Technology*

Israel *Ben-Gurion University of Negev*

USA *Advanced Materials and Liquid Crystal Institute, Kent State University*

Research Experience

Jan 2016 –2
Present

- **Researcher**
Baku State University
To study the effect of different submicron size ferroelectric barium titanate particles on the physical properties of smectic A liquid crystal.
 - Mastering the technological derivation of stable smectic A liquid crystal colloids based on BaTiO₃ particles;
 - Improvement of homogeneous planar and homeotropic orientation methods of smectic A liquid crystal molecules in an electrooptical cell;
 - Study of the effect of BaTiO₃ particles of different sizes on frequency dependence and electric current of dielectric conductivity of smectic A liquid crystal with both positive and negative dielectric anisotropy;
 - Study of the effect of BaTiO₃ particles on the electro-optical properties of smectic A liquid crystal;
 - Study of the effect of BaTiO₃ particles on the thermal properties of smectic A liquid crystal.

16-27 June 2014 "4th International Workshop on Cleanroom Training for Critical and Sustainable Technologies - Sensors"

National Nanotechnology Research Center, Bilkent University, Ankara, Turkey

09-29 June 2013 •

Experiment program organized for young scientists

Joint Institute for Nuclear Research, Dubna, Russia Federation

Teaching Experience

Sep 2015 – Present ●

Lecturer

Baku State University

- Physical basis of solid-state electronics
- Physical basis of optoelectronics
- General physics
- Atomic physics
- Structure of matter
- Solving problems according to the taught topics

Sep 2023- Present

Lecturer

Khazar University

- Microsystems and nanoelectronics
- Physics-1
- Physics-2
- Electroacoustic and acoustic electronic devices

Sep 2020 -July 2021

Sep 2022- July 2023

Lecturer

Police Academy

- General Physics

Lecturer

Azerbaijan State Pedagogical University

- STEAM

May 2011- Sep 2020

Tutor (Academic advisor)

Baku State University

- To manage the research work of master's students
- To provide regular scientific research training to master's students
- Teaching graduate students to write thesis and article
- To teach graduate students how to apply to international conferences and internship programs

Conferences

31 July-5 August 2016	Humbatov, Sh.A., Ramazanov, M.A., Imamaliyev, A.R. The study of BaTiO ₃ nanoparticles effect on threshold properties of Liquid Crystal 5CB // 26th International Liquid Crystal Conference, Kent State University, USA (Online)
25-30 June 2017	Humbatov, Sh.A., Ramazanov, M.A., Imamaliyev, A.R., Effect of ferroelectric BaTiO ₃ particles on the threshold voltage of smectic A liquid crystal // 14th European Conference on Liquid Crystals, Moscow State University, Moscow, Russia
24-29 July 2022	Humbatov, Sh.A., Imamaliyev, A. R Effects of BaTiO ₃ ferroelectric nanoparticles size on dielectric and phase transition properties of smectic A liquid crystal//28th International Liquid Crystal Conference, NOVA School of Science and Technology, Lisbon, Portugal
19-21, October 2023	Humbatov, Sh.A., Imamaliyev, A. R Size effects of ferroelectric BaTiO ₃ nanoparticles on threshold properties of smectic A liquid crystal// International Conference "Fundamental and Applied Problems of Modern Physics", dedicated to 80 th Anniversary of Uzbekistan Academy of Sciences (UzAS) and Physical-Technical Institute of UzAS, and 30th Anniversary of IMS of UzAS, Tashkent, Uzbekistan

Awards

01 February 2022	Grant: Advanced Materials & Liquid Crystal Institute (AMLCI), Kent State University, Payment of the registration fee for the 28 th International Liquid Crystal Conference.
15 October 2015	Grant: № 080-303, Russia, Dubna (MITCNT CIS) "The development of new colloidal LC nanocomposites based on ferroelectric BaTiO ₃ nanoparticles and smectic liquid crystals"
01 February 2020	Grant: № 03-104, Russia, Dubna (MITCNT CIS) "Study of the effect of BaTiO ₃ particles of different sizes on the phase transitions of smectic A liquid crystal using the DSC method".

Skills

Languages

Azerbaijani-native language; English-C1; Turkish: good; Russian: good.

Computer -Microsoft Office, Origin lab, LabVIEW, Python, Zemax Optic Study

References

Associate Professor with Habilitation of FCT/UNL Maria Helena Godinho

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Associate Professor Abbas Imamaliyev

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