CV
Curriculum vitae

Mukhametuly Bagdaulet

Date and place of birth: November 27, 1987

Citizenship: Republic of Kazakhstan

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Scientific biography

2005 – 2010	Bachelor's degree at Al-Farabi KazNU, Faculty of Physics and Technology
2010-2012	Master's degree at Al-Farabi KazNU, Faculty of Physics and Technology
2012 – 2016	PhD's degree at Al-Farabi KazNU, Faculty of Physics and Technology
2011 – 2017 **2017- 2022** **2022 – 2023** **2023 - current time**	Junior Researcher, FLNP JINR Researcher, FLNP JINR Senior Researcher, FLNP JINR Head of Group “GRAINS”, FLNP JINR
2016 – current time **2018 – 2021** **2022 – current time**	Acting Associate Professor at Al-Farabi KazNU, Faculty of Physics and Technology Group leader; Neutron Research Group, Laboratory of Atomic Energy Safety Problems, INP ME RK Deputy Chief Engineer of CRR WWR-K INP ME RK

2016 – defense of a dissertation on the topic

"Neutron diffraction studies of the microstructure of iron-based functional materials".

Awarded Doctor of Philosophy degree in Nuclear Physics (PhD)

SCIENTIFIC INTERESTS

- Study of the structure and properties of new functional materials
- Non-destructive testing of internal stresses in industrial products and structural materials

MAIN RESULTS

- A new experimental installation for neutron radiography and tomography TITAN has been created on the 1st channel of the WWR-K research reactor at the Institute of Nuclear Physics of the Ministry of Energy of the Republic of Kazakhstan.
- A new neutron reflectometry installation has been created on the 4th channel of the WWR-K research reactor at the Nuclear Physics Institute of the Ministry of Energy of the Republic of Kazakhstan.
- A modern instrument for microfocus X-ray tomography has been created at the Institute of Nuclear Physics of the Ministry of Energy of the Republic of Kazakhstan.
- The processes of phase formation and the patterns of behavior of hardness and the FCC crystal lattice parameter for N26Kh5T3 steel during annealing are described, and the appearance of the γ' phase is observed using a high-resolution diffractometer.
- A nonlinear dependence of anisotropy relative to the deformation of dispersion-hardened steels was experimentally discovered, which is considered by the dislocation anisotropy factor by the Williamson-Hall method.
- Functional Fe-27Al alloys with a reversible order-disorder transition sequence D03 → B2 → A2 of the 2nd order have been studied.

MAIN PUBLICATIONS

1. G. D. Bokuchava, I. V. Papushkin, V. V. Sumin, D. Aznabayev, **B. Mukhametuly**, A. M. Balagurov, D. V. Sheptyakov, Microstrain in Dispersion-Hardened Steels// Physics of Particles and Nuclei Letters.-2013.-Vol.10.-P. 157-161.
2. A.M. Balagurov, I.A. Bobrikov, **B. Mukhametuly**, S.V. Sumnikov, I.S. Golovin. Coherent cluster ordering of atoms in Fe-27Al intermetallic compound. Letters to ZhETF. 104 (2016), issue 8, p. 560-567.
3. K..M. Nazarov, **B. Muhametuly**, E.A. Kenzhin, S.E. Kichanov, D.P. Kozlenko, E.V. Lukin, A.A. Shaimerdenov. New neutron radiography and tomography facility TITAN at the WWR-K reactor, Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment 982 164572.
4. **Mukhametuly, B.,** Bobrikov, I.A. Balagurov, A.M. «Neutron diffraction analysis of the microstructure of dispersion-hardening steels» Physics of Metals and Metallography Volume 117, Issue 10, 1 October 2016, Pages 1047-1053. (https://doi.org/10.1134/S0031918X16100045).
5. Balagurov, A.M., Bobrikov, I.A. **Mukhametuly, B.**, Sumnikov, S.V., Golovin, I.S. Coherent cluster atomic ordering in the Fe-27Al intermetallic compound. JETP Letters Volume 104, Issue 8, 1 October 2016, Pages 539-545. (https://doi.org/10.1134/S0021364016200078).
6. **Mukhametuly, B.,** Bokuchava G.D., Papushkin I.V., Sumin V.V., Aznabayev D. Microstrain in Dispersion-Hardened Steels. Physics of Particles and Nuclei Letters Volume 10, Issue 2, March 2013, Pages 157-161. (https://doi.org/10.1134/S1547477113020040)
7. **B. Muhametuly**, S. E. Kichanov, E. A. Kenzhin, D. P. Kozlenko, K. M. Nazarov, A. A. Shaimerdenov, E. Bazarbaev, E. V. Lukin. Concept of the Facility of Neutron Radiography and Tomography at the Research Reactor WWR-K in Almaty, Kazakhstan Journal of Surface Investigation: X-ray, Synchrotron and Neutron Techniques. 13, 877–879 (2019). (https://doi.org/10.1134/S1027451019050082).
8. Bauyrzhan A.B., Koltochnik S.N., Aitkulov M.T., **Mukhametuly B**., Burtebaev N.T., Neutron-physical parameters at the outlet of the WWR-K reactor beam tube, Eurasian Journal of Physics and Functional Materials, 2019, 3(3), стр. 219–225. https://doi.org/10.29317/ejpfm.2019030303
9. K.M.Nazarov, **B.Mukhametuly**, S.E.Kichanov, T.K.Zholdybayev, A.A.Shaimerdenov, K.B.Karakozov, D.S.Dyussambayev, M.T.Aitkulov, M.Yerdauletov, P.Napolskiy, M.Kenessarin, E.K.Kalymkhan, N.A.Imamverdiyev, S.H.Jabarov, Non-destructive analysis of materials by neutron imagin gat the TITAN facility, Eurasian Journal of Physics and Functional Materials, 2021, 5(1), стр. 6–14. DOI:10.32523/ejpfm.2021050101.
10. K.Nazarov, **B.Muhametuly,** E.A.Kenzhin, S.E.Kichanov, D.P.Kozlenko, E.V.Lukin, A.A.Shaimerdenov. New neutron radiography and tomography facilityat theWWR-K reactor, Nuclear Instruments and Methodsin Physics Research Section A. 2020, V.982,164572. (https://doi.org/10.1016/j.nima.2020.164572).
11. **B.Muhametuly**, D.P.Kozlenko, E.A.Kenzhin, S.E.Kichanov, E.V.Lukin, A.A.Shaimerdenov, K.Nazarov, B.N.Savenko. The First Scientific Results Obtained Using the Experimental Setup for Neutron Radiography and Tomography at the WWR-K Reactor, JINR News, 2020, No.1, p.20-23. DOI: 10.13140/RG.2.2.15838.38721

MAIN PUBLICATIONS

12. K. M. Nazarov, S. E. Kichanov, E. V. Lukin, I. Yu. Zel, D. P. Kozlenko, T. K. Zholdybayev, **B. Muhametuly**, M. Kenessarin, A. V. Rutkauskas, A. Yskakov, M. O. Belova., A comparative study of promising filter materials for neutron imaging facilities, Eurasian Journal of Physics and Functional Materials, 2021, Vol 5, No 4 стр. 169–180.
13. Torezhanova N., Myakisheva O., **Mukhametuly B.,** Kenessarin M., Baitugulov R., Bekbayev A.K., Nazarov K.M. Neutron-tomographic study of the structural features of a bronze mirror found in the Akterek burial complex. *Eurasian Journal of Physics and Functional Materials*. 2022; 6(4):266-274.
14. D.S. Dyussambayev, M.T. Aitkulov, A.A. Shaimerdenov, **B. Mukhametuly,** K. Nazarov, A. Kaestner, N. Pessoa Barradas, D.S. Sairanbayev, A.S. Dikov, E.M. Bazarbayev, Nuclear Instruments and Methods in Physics Research Section A. 2022, V. 1039, 167078.
15. Yerdauletov, M.S.; Nazarov, K.; **Mukhametuly, B.;** Yeleuov, M.A.; Daulbayev, C.; Abdulkarimova, R.; Yskakov, A.; Napolskiy, F.; Krivchenko, V. Characterization of Activated Carbon from Rice Husk for Enhanced Energy Storage Devices. Molecules 2023, 28, 5818.

REPORTS AT CONFERENCES AND SEMINARS

1. The first neutron imaging experiments on reactor IBR-2 (Berlin, 2013).
2. Determination of microstrains in dispersion-hardened steels (St. Petersburg, 2016);
3. Neutron radiography for the analysis of processes in electrochemical current sources (Almaty, 2015);
4. Neutron diffraction study of microdeformation in precipitation hardened steels (Dubna, 2015);
5. Study of microdeformation in steels and alloys, FLNP, Dubna.
6. Neutron radiography and tomography, INP RK, Almaty.
7. 2014-2016: Conference "Farabi alemi", Section "Theoretical and nuclear physics of KazNU named after al-Farabi - Scientific Secretary
8. II International Scientific Forum "Nuclear Science and Technology" June 24-27, 2019, Almaty, Republic of Kazakhstan - Organizing Committee

Head of scientific projects

Grants of the PP RK in JINR:

- "Creation of a neutron reflectometer based on the WWR-K reactor" No. 411 of 05/05/2023
- "Creation of a modern neutron diffractometer based on the WWR-K reactor for structural studies of materials" No. 03-4-1128-2017/2022.
- “Investigation of the microstructure of lithium-ion batteries at the IBR-2 reactor of the FLNP together with the WWR-K reactor of the INP in solving the problems of studying lithium-ion batteries on the new radiography instrument” No. 04-4-1121-2015/2020.
- "Neutron radiography and tomography station at the WWR-K reactor" No. 03-4-1128-2017/2019

Participant of scientific projects in the Republic of Kazakhstan:

- PCF "Conducting reactor research aimed at ensuring the safe and efficient operation of advanced nuclear and thermonuclear power plants" 2023-2025.
- PCF "Development of new scientific research in the field of radiation materials science, design materials, nanomaterials at the VVR-K research reactor" 2023-2025.
- Grant "Comprehensive fundamental research in nuclear and radiation physics, high energy physics and cosmic rays for atomic energy" 2022-2024.