## Report on the work of the dissertation Council

Dissertation Council on metallurgy and materials science at the Kazakh national research technical University named after K. I. Satpayev on specialties (direction of training):

- 6D070900 - Metallurgy;
- 6D071000 – Materials science and technology of new materials.

1. Data on the number of meetings held – 10 meetings.
2. Full name (if any) of members of the dissertation Council who attended less than half of the sessions: none.
3. List of doctoral students indicating the organization of training:

- K. Bedelbekova – KazNRTU named after K.I. Satpayev;
- F. Zhautikov – NJSC "KARIU";
- R. Seisembayev – named after K.I. Satpayev;
- A. Tymbayeva D. – Serikbayev EKTU;
- Ye. Zholdasbay – KazNRTU named after K.I. Satpayev;
- L. Mustafa – KazNRTU named after K.I. Satpayev.

4. Brief analysis of dissertations considered by the Council during the reporting year

| № | Full name of the doctoral student | Topics of work | Code and title of specialty |
|---|---|---|---|
| 1 | Kamshat Bedelbekova | «Simulation of high-dose radiation damages of structural reactor materials by probe Mössbauer atoms» | 6D071000 - «Materials science and technology of new materials» |
| 2 | Farkhat Zhautikov | «Research and development of technology for two-stage steel-making processing for smelting, production, fine-tuning in a ladle furnace of a carbonaceous semi-finished product into steel» | 6D070900 - «Metallurgy» |
| 3 | Ruslan Seisembayev | Extraction technological development of non-ferrous and precious metals from RPS-process from collector matte | 6D070900 - «Metallurgy» |
| 4 | Aigerim Tymbayeva | «Development of the technology on processing arsenic-bearing materials of copper and lead operations with removal of arsenic in the form of low-hazard waste» | 6D070900 - «Metallurgy» |
| 5 | Yerzhan Zholdasbay | « Development of an integrated innovative technology for joint processing of lead intermediates, recyclable materials and high-sulfur copper-zinc concentrate » | 6D070900 - «Metallurgy» |
| 6 | Laura Mustafa | «Development of methods for modifying epoxy resin and carbon fabric to increase the strength properties of carbon fiber reinforced plastic» | 6D071000 - «Materials science and technology of new materials» |

**4.1 The analysis of the subject of work of K. Bedelbekova**. "Simulation of high-dose radiation damages of structural reactor materials by probe Mössbauer atoms", submitted for the Ph.D in specialty 6D071000 - Materials science and technology of new materials.

The dissertation paper of the doctoral student of the K.I. Satpayev KazNRTU Bedelbekova K.A. is devoted to development of the effective and safe methods of irradiation with no induced

radioactivity typical for materials spent in the reactor core and the methods that imply variation of the irradiation conditions and significantly reduce the period of irradiation. In this work, the problem is solved by development of the simulation tests using the high-dose fluxes of $^{57}Fe$ ions. Based on the experiments and calculations, it is concluded that the proposed simulation method of irradiation with $^{57}Fe$ ions makes it possible to simulate (create) radiation damage of the same type as in nuclear decay. In addition, it is possible to control the processes of interaction in the system "implanted atom → irradiated material" at the level of crystal lattices with a change in their structural-orientational structure, elemental or phase composition.

The proposed technique significantly reduces the time of life tests from several years to tens of hours, the duration of the required radiation dose, the cost of purchased protective equipment and following the safety rules during the work with materials irradiated in the nuclear reactor.

Scientific research on the subject of the dissertation paper was performed in the Laboratory of Nuclear Gamma-Resonance Spectroscopy at the Republic State Enterprise "Institute of Nuclear Physics" and in the Department of Atomic Nuclear Physics of the Skobeltsyn D.V. SRIINPh of the Lomonosov M.V. Moscow State University.

Based on the established regularities, it will become possible to determine the resource characteristics of structural reactor materials

**The connection of the topic of the dissertation with the directions of development of science, which are formed by the Higher Scientific and Technical Commission under the Government of the Republic of Kazakhstan in accordance with paragraph 3 of Article 18 of the Law "On Science" and (or) state programs.**

The main results and topics of the directions of the dissertation paper are related to the Scientific and Technical Program "Development of nuclear energy in the Republic of Kazakhstan" of the Sub-Program "Development of the method for simulation of high-dose radiation damage in metals and alloys on the charged particle accelerators using probe nuclei and nuclear-physical studies of the structural-phase state of structural reactor materials", and the State Grant (Grant No.0381/GF4) of the Science Committee of the Ministry of Education and Science of the Republic of Kazakhstan.

**Analysis of the level of implementation of the thesis results in practice.**

According to the results of the dissertation paper of Bedelbekova K.A. 19 scientific papers were published, including: 2 articles in the journals included in the Scopus database; 4 articles in the publications recommended by CCES MES RK for publication of the main results of research in technical sciences; 8 publications in the materials of international and national conferences, 5 articles in the journal included in the RSCI database. The main results of the dissertation paper were reported and discussed at: XV International Conference "Mössbauer Spectroscopy and its Applications", September 10-16, Sochi, Russia; XLIX International Tulin Conference on the Physics of Charged Particles Interaction with Crystals, Lomonosov M.V. Moscow State University, May 28-30, 2019, Moscow, Russia; XXIV International Conference Interaction of Ions with Surfaces "VIP-2019", August 19-23, 2019 Moscow, Russia; IX International Conference "Modern Problems of Nuclear Physics and Nuclear Technologies" September 24-27, 2019, Tashkent, Uzbekistan.

**4.2 The analysis of the subject of work of F. Zhautikov** «Research and development of technology for two-stage steel-making processing for smelting, production, fine-tuning in a ladle furnace of a carbonaceous semi-finished product into steel», submitted for the degree of doctor of philosophy (PhD) in the specialty 6D070900 - Metallurgy.

The dissertation work of the doctoral student KarIU Zhautikov F.B. is devoted to the problems of contamination of sheet metal with oxide non-metallic inclusions. Modern steel production is based on the conversion of metal by a tandem process, where the first unit produces a molten carbonaceous intermediate (SCP), and the second one is refined according to chemical composition (desulfurization, deoxidation, alloying, modification, etc.) and bringing the metal to a predetermined temperature. In this paper, the problem is solved by technological improvement of a two-stage steelmaking process for smelting and releasing carbonaceous intermediates into steel, which allows reducing the carbon monoxide of useful elements by introducing additional devices for cutting off slag, supplying deoxidizers and alloying materials. As a result, technological

methods of smelting carbonaceous intermediates in the converter and finishing in the furnace-ladle unit of carbonaceous intermediates into steel were investigated.

For the first time, methods were developed to increase the absorption of aluminum, manganese and silicon, which are part of the chemical composition of ferroalloys. When using the devices, the carbon monoxide of manganese decreased by 4.2%, silicon by 3.7%, aluminum by 4.4% at the enterprise of JSC ArcelorMittal Temirtau.

New ways of separating slag from metal consisted in the introduction of new innovative additional devices in the initial, intermediate and final period of metal release from the converter. According to the results obtained, the possibility of increasing the degree of assimilation of deoxidizer elements and a significant reduction in the proportion of non-metallic inclusions in steel has been proved. The proposed techniques make it possible to reduce the proportion of non-metallic inclusions by 1.2% and eliminate accidents by definition "breakthrough".

Research on the topic of the thesis was conducted at the Department "metallurgy and material science" and on the basis of educational-scientific-production center of metallurgy of the University, on the basis of the Converter shop of JSC "AMT", and also in the laboratory of the Ural branch of the Russian Academy of Sciences (Ekaterinburg).

On the basis of the results of scientific studies, there is a technology of two-phase steelmaking redistribution smelting, production, debugging in Assembly ladle furnace carbon intermediate in steel.

**The connection of the topic of the dissertation with the directions of development of science, which are formed by the Higher Scientific and Technical Commission under the Government of the Republic of Kazakhstan in accordance with paragraph 3 of Article 18 of the Law "On Science" and (or) state programs.** The topics and research results of the dissertation work correspond to the State Program of Industrial and Innovative Development for 2020-2025 years, the purpose of which is to stimulate diversification and increase the competitiveness of the manufacturing industry..

**Analysis of the level of implementation of the thesis results in practice.**

Based on the results of the dissertation work, Zhautikov F. published 12 publications, including:

- 1 article in a publication with a non-zero impact factor, included in the scientometric Scopus database (percentile 38),
- 3 articles - in scientific publications included in the List of publications recommended by the Committee for Quality Assurance in Education and Science of the Ministry of Education and Science of the Republic of Kazakhstan (QAiES MES RK),
- 8 articles in collections of scientific papers of international conferences.

The novelty of technical solutions is confirmed by 6 patents for the invention of the Republic of Kazakhstan and 2 applications for an invention are under examination at the Eurasian Patent Office at the stage (there is a positive decision on the result of the formal examination).

**4.3 The analysis of the subject of work of R. Seisembayev** "Extraction technological development of non-ferrous and precious metals from RPS-process from collector matte", submitted for the degree of doctor of Ph.D in the specialty 6D070900 - Metallurgy.

Dissertation work Seisembaev R.S. is devoted to the problems of processing complex refractory primary gold ores. Since most of the gold in Kazakhstan is concentrated in such ores, the processing technologies of which are imperfect and do not allow extracting more than 70% of gold into marketable products. To solve this problem, the dissertation work presents studies on the development of a technology for processing refractory gold-silver-bearing ores by the pyrometallurgical method, bypassing the enrichment stage (with the rejection of cyanidation technology) to obtain a metallized phase containing gold, silver, and copper.

Based on the theoretical and applied research, the author of the dissertation created a new technology for processing refractory gold-silver-bearing ores, which does not involve the use of cyanides with the extraction of precious metals, according to the scheme: ore, concentrate → contractile pyroselection → roasting of gold-bearing matte → carbon-thermal reduction → product

enriched with precious metals.

A highly efficient technology for processing refractory base gold ores with high rates of extraction of precious metals has been developed. From the technological scheme, the processes of fine grinding, beneficiation and, accordingly, the loss of gold with tailings, ineffective for refractory gold-arsenic-carbonaceous gold ores, were completely excluded. From the charge in the process of its melting in the form of dump slags sent to the production of building materials, all minerals of the waste rock, which make up 70-80 % of the weight of the charge, are completely removed, and arsenic, carbon and other volatiles are almost completely transferred to the gas phase in the process of pyroselection of the charge components. In the region of high temperatures and during liquid-phase interactions under the conditions of the reduction-sulfiding process, a negative effect on the opening of base gold ores of all refractory forms is excluded. 95-98 % of gold, silver and copper pass into the collector melt, the yield of which from the weight of the charge will be 5-15 % because of almost tenfold reduction in the volume of the initial charge. The absence of special gold recovery processing in the technological cycle and the possibility of processing large volumes of refractory ores and produced mattes.

**Connection of the dissertation subject with the directions of science development that are formed by the Higher Scientific and Technical Commission under the Government of the Republic of Kazakhstan in accordance with paragraph 3 of article 18 of the Law "On Science" and (or) state programs.** Key results and subject areas of the thesis R. Seisembayev associated with the state-funded program MES according to the priority "Rational use of natural resources, recycling of raw materials and products" in the years 2015-2017 on the theme: "Research and development of technological parameters of new processes for the extraction of gold and non-ferrous metals from collector sulfide and metal melts of contractile pyrometallurgical selection of refractory gold ores".

This work is a continuation of the studies carried out under the project "Development of an integrated technology for pyrometallurgical selection of refractory gold-bearing ores and concentrates with the transfer of gold to matte by the method of contractile electric smelting and extraction of gold from mattes by the method of electromembrane oxyhydrochlorination (Zholbaristy field, Shovan Teriskei LLP, Mayatas Mayatas LLP ", Sayak-4, etc.)" of the program "Scientific and technological support for the intensification of gold production in the Republic of Kazakhstan" for 2011-2014.

**Analysis of the level of implementation of the results of the dissertation in practice.** 13 printed works were published on the topic of the thesis, including 2 articles in journals peer-reviewed by the Scopus database, 4 articles from the list of scientific journals recommended by the Committee for Control in the Sphere of Education and Science of the Ministry of Education and Science of the Republic of Kazakhstan, 5 abstracts, 2 patents were received. The main provisions of the dissertation work were reported at 4 international conferences, including: International scientific and practical conference "Modern problems and innovative technologies for solving the issues of processing technogenic deposits of the Almalyk mining and metallurgical plant" (Uzbekistan, 2019); 2nd International Conference on Materials Science and Engineering ICMSE-2019 (Cairo, Egypt, 2019).

**4.4 The analysis of the subject of work of A. Tymbayeva** «Development of the technology on processing arsenic-bearing materials of copper and lead operations with removal of arsenic in the form of low-hazard waste», submitted for the degree of doctor of Ph.D in the specialty 6D070900 - Metallurgy.

The dissertation work of the doctoral student of D. Serikbayev EKTU A. Tymbayeva is devoted to the problem of processing arsenic-bearing materials at enterprises producing non-ferrous metals.

A new technology has been developed for processing copper skims of lead production of UKMC Kazzinc Ltd. where about 84% of arsenic from the total load to the Lead Plant is distributed. The technology allows the selective removal of arsenic in the form of a low-hazard waste.

The research carried out during the dissertation work made it possible to study in detail and obtain new information about the material and phase composition of copper skims of lead production; theoretically substantiate and experimentally confirm the possibility of processing copper skims by alkaline sulfide leaching and deposition of arsenic into a dump sulfide cake. The principal difference between the proposed technological scheme and the existing modern methods of processing copper skims is the possibility of selective arsenic removal relative to lead, copper, zinc, gold and silver, and the possibility for regeneration of alkaline sulfide reagent.

The proposed method for regeneration of alkaline sulfide reagent from a sodium sulfate solution obtained during the deposition of arsenic will eliminate the accumulation of sodium sulfate solution in a closed water circulation system of metallurgical enterprises, and will reduce the consumption of an expensive reagent - caustic soda.

The research work was carried out in "IRGETAS" Engineering Laboratory of the non-profit joint stock company D. Serikbayev East Kazakhstan Technical University and the Research Center of UKMC Kazzinc Ltd.

**The connection of the topic of the dissertation with the directions of development of science, which are formed by the Higher Scientific and Technical Commission under the Government of the Republic of Kazakhstan in accordance with paragraph 3 of Article 18 of the Law "On Science" and (or) state programs.** The main results and topics of the thesis work directions of A. Tymbayeva are related to the priority direction of science development on "Rational use of natural resources, including water resources, geology, processing, new materials and technologies, safe products and constructions". The developed process flowsheet on hyrometallurgical treatment of copper skims will improve the environmental safety of production, and will create conditions for the involvement of high impurity ores and concentrates into production.

**Analysis of the level of implementation of the thesis results in practice.** According to the results of the dissertation work of A. Tymbayeva, 3 scientific papers were published in the publications recommended by CCES MESRK, 1 article in journals included in the Scopus database, 2 quartiles (Q2, Scimago). A patent of the Republic of Kazakhstan was obtained for the developed method of hydrometallurgical processing of arsenic-bearing industrial products of non-ferrous metallurgy. The main provisions of the work are presented at 3 international scientific and practical conferences: the international scientific and practical conference "Materials Science and Metallurgical Technologies". Chelyabinsk, 2018; International scientific and practical conference "Innovations in the field of natural sciences as the basis of export-oriented industrialization of Kazakhstan". Almaty, 2019; V International scientific and technical conference of students, undergraduates and young scientists "Creativity of young innovative development of Kazakhstan".

**4.5 The analysis of the subject of work of Ye. Zholdasbay** «Development of an integrated innovative technology for joint processing of lead intermediates, recyclable materials and high-sulfur copper-zinc concentrate», submitted for the degree of doctor of Ph.D in the specialty 6D070900 - Metallurgy.

The dissertation work of a doctoral student of KazNRTU named after K.I. Satpayev Zholdasbay Ye. is devoted to the problems of processing intermediates and recycled materials of lead production in Kazakhstan. In this paper, the problem is solved by the possibility of joint processing of intermediates and recycled materials of lead production with hard-to-process copper-zinc concentrate and obtaining high-quality melting products.

The new technology makes it possible to achieve high rates of extraction of non-ferrous metals into target products. The best result is achieved with a concentrate consumption of 30 %. The selective extraction of metals into the target products was: copper in matte compared to the existing technology from 88.9 % to 96 %, lead in rough lead – 94 %, against 60.8 %, zinc in slag - 94.7 %, against 80.7 %, and arsenic, antimony in dust - 92.3 %, against 69.5% and 91%, against 59.8 %, respectively.

Based on the enlarged laboratory tests, the main optimal parameters of the technology were established and technological recommendations for practice were given. High rates were obtained

for the extraction of lead into rough lead - 92.0%; copper into commercial matte - 96.0 %; arsenic, antimony into dust – 91 %, 89 %.

Scientific research on the topic of the dissertation was conducted at the Kazakh National Research University named after K.I. Satpayev, at the Weizmann Scientific Institute (Israel).

Based on the results obtained and conducted scientific research, a comprehensive innovative technology for the joint processing of lead intermediates, recycled materials and high-sulfur copper-zinc concentrate is proposed.

**The connection of the topic of the dissertation with the directions of development of science, which are formed by the Higher Scientific and Technical Commission under the Government of the Republic of Kazakhstan in accordance with paragraph 3 of Article 18 of the Law "On Science" and (or) state programs.** The main results and topics of the directions of the dissertation work Zholdasbay Ye. are related to the project carried out within the framework of state grants of the Science Foundation of the Ministry of Education and Science of the Republic of Kazakhstan: No. AP05130595 "Development of a new high-tech bubbling technology for direct extraction of lead, copper, zinc and rare earth metals into commercial products from substandard intermediates and recycled materials of lead production" for 2018-2020. and according to the project: "Development of high-tech waste-free technology for the disposal of current and accumulated slag waste of non-ferrous metallurgy with the production of commercial products", carried out under the program No. 2018/BR05235618 "Modernization of technologies and production in the mining and mining processing industries of the Republic of Kazakhstan" for 2018-2020.

**Analysis of the level of implementation of the thesis results in practice.** According to the results of the dissertation work, Ye. Zholdasbay published 21 scientific papers, including: 3 articles in scientific journals included in the Web of Science database; 2 articles in scientific journals included in the Scopus database; 2 articles in scientific journals included in the RSCI database; 5 articles in scientific journals recommended by CCES MES RK; 5 publications in the materials of international and republican conferences. The main provisions of the dissertation work were reported and discussed at foreign international conferences: at the international scientific and practical conference "Science and Innovation - modern concepts". 2019, Moscow.; at the international scientific and practical conference "IX International science conference The latest research in modern science: experience, traditions and innovations". 2019, Morrisville, North Carolina, USA; at the International scientific and practical conference "The 5th International scientific and practical conference Dynamics of the development of world science". 2020, Vancouver, Canada; at the international scientific and practical conference "11th International Conference on Molten Slags, Fluxes and Salts". 2021, Seoul, Korea. Based on the results of the work, 2 patents of the Republic of Kazakhstan were obtained.

**4.6 The analysis of the subject of work of L. Mustafa** «Development of methods for modifying epoxy resin and carbon fabric to increase the strength properties of carbon fiber reinforced plastic», submitted forthe degree of doctor of PhD in the specialty 6D071000 -Materials Science and technology of newmaterials.

The dissertation work of a doctoral student of KazNRTU named after K.I. Satpayev Mustafa L.M. is devoted to the problems of obtaining high-impact carbon fiber reinforced plastic with modification of carbon fabric and epoxy resin.

The advantage of using carbon fiber reinforced plastic is that they reduce the weight of the structure by 15-50 %, increase resistance to corrosion and various deformations, and allow you to create high-quality complex products. However, despite such good performance, carbon fiber reinforced plastic has not yet been widely used in production, the main reason for which is weakness to impact. To expand the scope of application of carbon fiber reinforced plastic in the aerospace industry, the production of impact-resistant carbon fiber reinforced plastic is relevant.

This work is based on improving the mechanical properties of carbon fiber reinforced plastic by increasing adhesion to epoxy resin by oxidizing carbon fabric, adding modifiers to the epoxy resin. The double effect of this method by increasing the activity of carbon tissue and modification

of the epoxy resin for the first time in world practice makes it possible to obtain impact-resistant carbon fiber reinforced plastic samples with an increase in the strength level.

The peculiarity of carbon fiber reinforced plastic developed using this technology corresponds to the strength characteristics of carbon fiber reinforced plastic, which is not allowed to be implemented in the dual-use list.

The technology proposed in this dissertation makes it possible to obtain carbon fiber reinforced plastic with compressive strength up to 425-600 MPa and impact strength up to 250 $kJ/m^2$. Carbon fiber reinforced plastic developed using this technology make it possible to increase the stability of the aircraft structure to shock loads.

Scientific research on the topic of the dissertation was conducted at the Department of "Materials Science, Nanotechnology and Engineering Physics" of KazNRTU named after K. I. Satpayev and in the Department of Space Materials Science and Instrumentation of JSC "National Center for Space Research and Technology".

**The connection of the topic of the dissertation with the directions of development of science, which are formed by the Higher Scientific and Technical Commission under the Government of the Republic of Kazakhstan in accordance with paragraph 3 of Article 18 of the Law "On Science" and (or) state programs.** The main results and topics of the directions of the dissertation work Mustafa L.M. are related to the activities of the state program "Development of space activities in the Republic of Kazakhstan for 2015-2017" and the republican budget program 008 "Applied scientific research in the field of space activities", "Development of technology for the production of impact-resistant carbon fiber plastics for defense and aerospace products" for 2018-2020.

**Analysis of the level of implementation of the thesis results in practice.**

According to the results of the dissertation work of Mustafa L. M., 7 scientific papers were published, including: 1 article in journals included in the Scopus database; 3 articles in publications recommended by the CCES MES RK for publishing the main results of research in technical sciences; 2 publications in the materials of international conferences. The main provisions of the dissertation were presented and discussed at international conferences: "Science and Innovation: news, problems and achievements" (April 29-30, 2020, Almaty); At the international conference "Scientific potential of modern youth - 2021" (May 17-18, 2021, Karaganda). A patent of the Republic of Kazakhstan for a utility model was obtained.

5. alysis of the work of official reviewers (with examples of the most low-quality reviews)

| № | Full name of the doctoral student | Reviewers | |
|---|---|---|---|
| | | **Full name of the first reviewer** (position, academic degree, title, number of publications in the specialty for the last 3 years) | **Full name of the second reviewer** (position, academic degree, title, number of publications in the specialty for the last 3 years) |
| 1 | Kamshat Bedelbekova | Ismailov M.B. – Doctor of Technical Sciences, Professor of the JSC "National Center for Space Research and Technologies". (5 publications on specialty 6D070900 - Metallurgy) | Yar-Mukhamedova G.Sh. - Doctor of Physics and Math Sciences, Professor of the Al-Farabi Kazakh National University. (5 publications on specialty 6D070900 - Metallurgy) |

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|---|---|---|---|
| 2 | Farkhat Zhautikov | Khomyakov A. P. - Doctor of Technical Sciences, Chief Specialist of the Production and Technical Department of RSE NC CPMRM RK. (5 publications on specialty 6D070900 - Metallurgy) | Koishina G. M. – Doctor PhD, Kazakh National Research Technical University named after K.I. Satpayev. (5publications on specialty6D070900 - Metallurgy) |
| 3 | Ruslan Seisembayev | Aitkulov D. K. – Doctor of Technical Sciences, Professor, Director of the Department of Scientific Research, RSE NC CPMRM RK. (5 publications on specialty 6D070900 - Metallurgy) | Shevko V. M. - Doctor of Technical Sciences, Professor, Head of the Department of Metallurgy, M. Auezov South Kazakhstan State University. (5 publications on specialty 6D070900 - Metallurgy) |
| 4 | Aigerim Tymbayeva | Chepushtanova T.A. – Doctor of Philosophy (PhD), Candidate of Technical Sciences, Associated Professor, Head of the Department "Metallurgical processes, heat engineering and technology of special materials" in the O. Baykonurov Mining and Metallurgical Institute under Kazakh National Research Technical University named after K.I. Satpayev (5 publications on specialty 6D070900 - Metallurgy) | Nitsenko A.V. - Candidate of Technical Sciences, Head of the Laboratory of vacuum processes in the «Institute of Metallurgy and Ore Benefication» JSC under Kazakh National Research Technical University named after K.I. Satpayev (5 publications on specialty 6D070900 - Metallurgy) |
| 5 | Yerzhan Zholdasbay | Baikonurov E.G. – Doctor PhD, Head of the Center for Science and Innovation of the Zhezkazgan University named after O.A. Baikonurov (5 publications on specialty 6D070900 - Metallurgy) | Berdikulova F.A. - Candidate of Technical Sciences, Head of the research and development of the Republican State Enterprise "Center for Complex Processing of Mineral Raw Materials of the Republic of Kazakhstan" (5 publications on specialty 6D070900 - Metallurgy) |
| 6 | Laura Mustafa | Batryshev D.G. – Doctor of Philosophy (PhD), Managing Director of the Department of Science and Innovation at "Kazakh-British Technical University" JSC. (5 publications on specialty 6D071000 – Materials science and technology of new materials) | Partizan Gulmaira – Doctor of Philosophy (PhD), Associate Professor of the Department of Solid State Physics and Nonlinear Physics, Faculty of Physics and Technology at the "Al-Farabi Kazakh National University". (5 publications on specialty 6D071000 – Materials science and technology of new materials) |

6. Proposals for further improvement of the system of training scientific personnel. Increase the requirements for the work of scientific consultants (especially from

Kazakhstan) doctoral students in terms of the proposed topics of dissertation research and theirleadership in the training of scientific personnel.

7. Data on the considered dissertations for the degree of doctor of philosophy PhD, doctorof profile

| **Dissertation Council** | **Code and title of specialty** | **Code and title of specialty** |
|---|---|---|
| | 6D070900 - "Metallurgy" | 6D071000 - "Materials science and technology of new materials» |
| Dissertations accepted for defense | 4 | 2 |
| Including doctoral students from other universities | 2 | – |
| Dissertations withdrawn from consideration | – | – |
| Including doctoral students from other universities | – | – |
| Dissertations that received negative reviews from reviewers | – | – |
| Including doctoral students from other universities | – | – |
| Dissertations with a negative decision on the results of the defense | – | – |
| Including doctoral students from other universities | – | – |
| Dissertations aimed at completion | – | – |
| Including doctoral students from other universities | – | – |
| Dissertations aimed at repeated defense | – | – |
| Including doctoral students from other universities | – | – |

**Chairman of the dissertation Council** **B. Kenzhaliyev**

**Scientific Secretary of the dissertation Council** **N. Burabayeva**