

**REPORT**  
**about the work of the Dissertation Council**

Dissertation Council on the direction 8D053 - Physical and Chemical Sciences  
(6D060400/8D05302 - Physics) at the Abai Kazakh national pedagogical  
university

**1. Data on the number of meetings held**

In the Dissertation Council at the Abai Kazakh national pedagogical university in the direction 8D053 - Physical and Chemical Sciences (6D060400/8D05302 - Physics) at the Kazakh National Pedagogical University named after Abai in the reporting year held 2 meetings (from 14.11.2023y. to 31.12.2023y.).

**2. Surname, first name, patronymic (if any) of the dissertation council members who attended less than half of the meetings.**

There are no members of the Council who attended less than half of the meetings.

**3. List of PhD candidate indicating the organization of training.**

*Zhussanbayeva Aiyim Kanatovna, Abai Kazakh National Pedagogical University.*

**4. Brief analysis of the dissertations reviewed by the council during the reporting year, highlighting the following sections:**

According to the dissertation of *Zhussanbayeva Aiyim*: Emergence and evolution of structured flows at boundary of the «diffusion – concentration convection» regime change in isothermal multicomponent mixing in gas mixtures.

*The topic of the dissertation:* experimental and numerical investigation of mechanical equilibrium of isothermal ternary gas mixtures, determination of dynamic characteristics of arising concentration gravity currents under different conditions (pressure, mixture composition, ratio between diffusion coefficients), obtaining computational data on the effect of differences in diffusion coefficients of components on the determination of the boundaries of the transition "diffusion - convection".

***Educational program:*** 8D05302 – Physics.

***Scientific consultants:*** Doctor of Physical and Mathematical Sciences, Professor, Corresponding Member of NAS RK Kosov Vladimir. Doctor of Technical Sciences, Professor Holm Altenbach, Otto von Guericke University.

*The defense took place on December 28, 2023 y.*

*Novelty and reliable results have been obtained in the work:*

- the transition «diffusion – convection» in the system  $H_2 + CO_2 - N_2$  at different compositions and pressures has been experimentally investigated;

- the convective stability of the mixture for the systems  $H_2 + CO_2 - N_2, N_2 + RI2 - n - C_4H_{10}$  in a vertical diffusion channel was numerically investigated;

- the influence of the difference in the diffusion coefficients of the components on the mixing intensity in gas mixtures near the region of transition to the convective mass transfer mode was studied;

- the distribution of component concentrations and pressure at the occurrence of supercritical convective flows in ternary gas mixtures with different initial compositions were calculated.

*2) connection of dissertation topics with the directions of science development, 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 Concept of Education Development of the Republic of Kazakhstan for 2022 – 2026 (November 24, 2022 № 941), the State obligatory standards of higher and postgraduate education (July 20, 2022 № 2), the Message of the Head of State Kasym – Jomart Tokayev to the people of Kazakhstan «The unity of the people and system reforms - a solid basis for the prosperity of the country» (July 1, 2021), the Concept of development of the information and communication technologies industry and digital sphere (December 30, 2021 № 961), the Concept of development of higher education and science in the Republic of Kazakhstan for 2026-2029, approved by the Resolution of the Government of the Republic of Kazakhstan dated March 28, 2023 № 248;

*3) analysis of the level of implementation of the thesis results in practical activity*

Practical application of the results on multicomponent transfer is seen in the application of the obtained data for partial flows of components in the use of separation technologies, in technical solutions to reduce the ecological load on the environment, which corresponds to the national priorities of socio-economic development of Kazakhstan.

## **5. Analyzing the work of official reviewers.**

The reviewers were approved scientists who contributed in the field of physics.

The reviewers' responses noted scientifically based theoretical and practical results of the study, sufficiently argued conclusions and gave comments and suggestions on the work. Basically, comments concern individual shortcomings that do not affect overall scientific and theoretical content and practical results of the study.

Information on the reviewers by dissertation work of *Zhussanbayeva A.K.*:

*Dmitry Yurievich Sokolov* - PhD, Associate Professor, Almaty Technological University (Almaty, Kazakhstan);

*Turekhanova Kunduz Mominovna* – Candidate of Sciences in Physics and Mathematics, Associate Professor, Al-Farabi Kazakh National University (Almaty, Kazakhstan).

**6. Proposals for further improvement of the scientific personnel training system.**

- graduating departments that send dissertations for defense should pay special attention to the quality of research work and documents required for defense.

**7. Number of dissertations for the Doctor of Philosophy degrees (PhD), doctor by profile in the context of specialties (areas of training):**

	8D05302 – Физика
Dissertations accepted for defense	1
Dissertations accepted for defense (including PhD candidates from other universities);	-
Dissertations withdrawn from consideration (including PhD candidates from other universities)	-
Dissertations that received negative reviews from reviewers (including PhD candidates from other universities)	-
Dissertations with a negative decision based on the results of the defense (including PhD candidates from other universities).	-
Dissertations aimed at revision (including doctoral students from other universities)	-
Dissertations aimed at re-defense (including doctoral students from other universities)	-

Chairman dissertation Council

Academic secretary of the dissertation council

December 28, 2023 y.



Kosov V.N.

Akzholova A.A.