Name	Oksana Podshyvalova
Position, Department/Faculty	Professor, Department of Physics (505)
Academic Degree, Academic Title	PhD (cand. of phys. & math. science), Associate professor
Email:	oksana.podshyvalova@khai.edu
Scopus Author ID:	55842863300
Web of Science ResearcherID:	ODJ-2979-2025
ORCID iD:	0000-0001-9680-9610
Google Scholar:	https://scholar.google.com/citations?user=ZmIGgOwAAAAJ&hl=en&gmla=AH8HC4xW4rr1TyXQauX02-CM8FcfvZkaXOfDXd5yLi8edIwTqQBsAFEKPs1znyiddQp87M3qUTC3Fg-I8ewQS3uAiL3K4P2VBP_N5Y1x4FiOkw
ResearchGate:	https://www.researchgate.net/profile/Oksana-Podshyvalova

EDUCATION:

Basic education (university, major, year of graduation):
Kharkiv State University (now V.N. Karazin Kharkiv National University), physicist, 1986

Postgraduate/Doctoral studies:
Completed the postgraduate studies at Kharkiv State University in 1993

Additional training, certification programs:
Regularly attends professional development courses. The most recent course took place from October 24, 2022, to December 18, 2024, as confirmed by a certificate

WORK EXPERIENCE:

Professional Career (Workplace, Years, Position):
Kharkiv State University: 1986-1987 – trainee teacher, 1987-1993 – postgraduate student, 1993-1998 – researcher.
National Aerospace University “Kharkiv Aviation Institute”: 1998-2000 – assistant professor, 2000-2003 – head teacher, 2003-2018 – associate professor, 2018-present – professor.

Teaching Experience:
1986-987 – conducting laboratory classes at the Physics faculty of Kharkiv State University
1998-present – conducting all types of physics classes (lectures, problem solving, laboratory work) at the National Aerospace University “Kharkiv Aviation Institute”.

Experience in International or National Projects:
2018-present – conducting joint research with Shizuoka University, Research Institute of Electronics, Hamamatsu, Japan

RESEARCH ACTIVITIES:

Main Research Areas:
Crystal and thin film growth, diffusion in solids, nonlinear waves in crystals, radiation-induced mass transfer, thermionic emission in composite cathode materials, materials science

Number of Publications (Scopus, WoS, others):
2020-2025 – 12

Monographs, Textbooks:
Chapter in a collective monograph: Investigation of the convection effect on the inclusion motion in thermally stressed crystals / O.P. Kulyk, V.I. Tkachenko, O.L. Andrieieva, O.V Podshyvalova, V.A. Gnatyuk, T. Aoki // Research and Education: Traditions and Innovations: Proceedings of the 19th International Conference on Global Research and Education (Inter-Academia 2021), Vol. 422 (2022), Chapter 14, 141-158.

Participation in Scientific Conferences:
1. O. Podshyvalova, O.P. Kulyk, O.O. Kulyk, V. Tkachenko, V. Gnatyuk, T. Aoki. Mechanism of the impurity influence on the kinetics of layer-by-layer mass transfer. 2024 Biomedical Engineering Joint Research Center Results Report Meeting, Tokyo University of Science, Book of Abstracts, 2025, 111, Abstract P1-80. (3 March 2025, Yokohama, Japan).
2. O.P. Kulyk, O.O. Kulyk, V. Tkachenko, O. Podshyvalova, V. Gnatyuk, T. Aoki. Morphology of a single growth spiral under local step dynamics. 2024 Biomedical Engineering Joint Research Center Results Report Meeting, Tokyo University of Science, Book of Abstracts, 2025, 116, Abstract P1-85. (3 March 2025, Yokohama, Japan).
3. O.O. Kulyk, V. Tkachenko, O.P. Kulyk, O. Podshyvalova, V. Gnatyuk, T. Aoki. Factors determining the morphological evolution of rounded spirals on screw dislocations. The 9th International Symposium on Biomedical Engineering (ISBE2024), Book of Abstracts, 2024, p. 297 (P 3-42) (3-4 December 2024, Hamamatsu, Japan).
4. O.P. Kulyk, V.I. Tkachenko, O.O. Kulyk, O.V. Podshyvalova, V.A. Gnatyuk, T. Aoki. Linear tension of steps and thermodynamic stability of vicinal surfaces. The 20th Int. Conf. on Global Research and Education, Inter-Academia 2023, Collection of Extended Abstracts (Scientific electronic publication), 2023, 2-SP3-11, 2 page (27-29 September, 2023, Hamamatsu, Japan).
5. Kulyk O.P., Podshyvalova O.V., Kulyk O.O., Tkachenko V.I. Analytical solutions of the kinetic equation for rounded spirals in effectively isotropic systems. The International Conference on Crystal Growth and Epitaxy-ICCGE-20, Program and Abstract Book, 2023, Abstract 1 page, (30 July – 4 August 2023, Naples, Italy).
6. O. Podshyvalova, O. Kulyk, V. Tkachenko, V. Gnatyuk, T. Aoki. Simulation of the fluid physics environment of microgravity by the method of inclusions in a crystal. Reiwa 4th Year Biomedical and Dental Engineering Joint Research Center 2022 Annual Achievement Report Meeting, Book of Abstracts, 2023, Abstract No 92 (P 1-12), 31 (3 March 2023, Yokohama, Japan).
7. O. Kulyk, V. Tkachenko, O. Podshyvalova, V. Gnatyuk, T. Aoki. Bunching of steps during the evolution of the vicinal surface. Reiwa 4th Year Biomedical and Dental Engineering Joint Research Center 2022 Annual Achievement Report Meeting, Book of Abstracts, 2023, Abstract No 91 (P 1-13), 32 (3 March 2023, Yokohama, Japan).
8. A. Taran, D. Voronovich, O. Podshyvalova, A. Okhrimovskyy. Relationships between phase transitions in REM borides and their thermionic and emissivity properties. Book of Abstracts 21st Int. Symp. On Boron, Borides and Related Materials ISBB 2022, Paris, France, 5 – 9 Sept. 2022, p. 46.
9. Kulyk O., Tkachenko V., Podshyvalova O. Shock waves of the density of elementary steps on vicinal surfaces of crystals. 19th International conference on Advanced Nanomaterials (ANM 2022) *Abstract Book*, 2022, Abstract #50. (27-29 July 2022, Aveiro, Portugal).

10. O. Podshyvalova, O. Kulyk, V. Tkachenko, V. Gnatyuk, T. Aoki. Diffusion-limited motion of inclusions in a crystal. The 7th International Symposium on Biomedical Engineering (ISBE 2022), Program and Abstract Book, 2022, Abstract P053, 1 page (25 November, posters session 22 Nov.-02 Dec., 2022, Hamamatsu, Japan).
11. O. Kulyk, V. Tkachenko, O. Podshyvalova, V. Gnatyuk, T. Aoki. Bunching of steps on NaCl growth surfaces in the vicinity of (001). The 7th International Symposium on Biomedical Engineering (ISBE 2022), Program and Abstract Book, 2022, Abstract P054, 1 page (25 November, posters session 22 Nov.-02 Dec., 2022, Hamamatsu, Japan).
12. O.P. Kulyk, V.I. Tkachenko, O.L. Andrieieva, O.V. Podshyvalova, V.A. Gnatyuk, T. Aoki. Investigation of the convection effect on the inclusion motion in thermally stressed crystals. The 19th International Conference on Global Research and Education in Engineering for Sustainable Future, Inter-Academia 2021 (iA-2021), Collection of Abstracts, 2021, 79-81. (20-22 October 2021, Gomel, Belarus).
13. O. Podshyvalova, V. Tkachenko, O. Kulyk, V. Gnatyuk, T. Aoki. Radiation-induced motion of liquid inclusions in crystals. Reiwa 1st Biomedicine Dental Engineering Collaborative Research Base Results Report Meeting, Book of Abstracts, 2020, Presentation No 1-10, 36 (13 March 2020, Yokohama, Japan).

TEACHING ACTIVITIES:

Courses Taught:
Physics (1 and 2 semester courses), Physics for students of the preparatory department

Author Courses, Academic Programs:
Online physics courses on the Mentor platform for Ukrainian students, foreign students studying in English, and students in the preparatory department.

Methodological Materials, Textbooks:
1. Physics for Preparatory Department. Part III: guidance manual / O.V. Podshyvalova, A.M. Okhrimovskyy, O.I. Petrova / Kharkiv: National Aerospace University «Kharkiv Aviation Institute», 2022. – 93 c.
2. Physics for Preparatory Department. Part II: guidance manual / O.V. Podshyvalova, A.M. Okhrimovskyy, O.I. Petrova / Kharkiv: National Aerospace University «Kharkiv Aviation Institute», 2021. – 92 c.
3. Фізика : навч. посіб. для підготовки до модуля (тренінг-тест) / О.М. Чугай, І.В. Луньов, С.В. Олійник, О.В. Подшивалова / Харків: Нац. аерокосм. ун-т ім. М. Є. Жуковського «Харків. авіац. ін-т», 2021.– 110 с.
4. Physics for Preparatory Department. Part I: guidance manual / O.V. Podshyvalova, A.M. Okhrimovskyy, O.I. Petrova, A.O. Taran / Kharkiv: National Aerospace University «Kharkiv Aviation Institute», 2019. – 90 c.
5. Загальна фізика. Навчальний посібник до практичних занять / О.М Чугай, М.В. Вармінський, Л.В. Зайцева, І.В. Луньов, О.В. Подшивалова, О.В. Рубльова / Х.: Нац. аерокосм. ун-т «Харк. авіац. ін-т», 2019. – 122 с.

GRANTS AND PROJECTS:

Participation in International and National Projects:
2018-present – Participation in joint research projects with Shizuoka University, Research Institute of Electronics, Hamamatsu, Japan

PROFESSIONAL ACHIEVEMENTS AND AWARDS:

Honorary Titles:
Professor of Kharkiv Aviation Institute

INTERNATIONAL ACTIVITIES:

Cooperation with Foreign Universities:
Collaboration on joint research projects with Shizuoka University, Hamamatsu, Japan

SELECTED PUBLICATIONS:

Key Articles (Scopus, WoS, others):

1. Analytical solutions of the kinetic equation for rounded spirals in effectively isotropic systems / O.P. Kulyk, V.I. Tkachenko, O.O. Kulyk, O.V. Podshyvalova // Colloids and Surfaces A: Physicochemical and Engineering Aspects, Volume 703, 135319 (16 pages), 2024. https://doi.org/10.1016/j.colsurfa.2024.135319

2. Linear tension of steps and thermodynamic stability of vicinal surfaces / O.P. Kulyk, V.I. Tkachenko, O.O. Kulyk, O.V. Podshyvalova, D.O. Protektor, V.A. Gnatyuk, T. Aoki // Problems of Atomic Science and Technology, January 2024, №1 (149), p. 64 – 70. DOI: 10.46813/2024-149-064

3. Model of radiation-induced motion of liquid inclusions in crystal / O.P. Kulyk, O.V. Podshyvalova, M.Yu. Shevchenko, V.I. Tkachenko, I.V. Hariachevska, T. Aoki // East Eur. J. Phys, 2023, 3, 570-577.DOI:10.26565/2312-4334-2023-3-67

4. Thermal vacuum evaporation peculiarities of perovskite-type barium-strontium hafnate / A. Taran, O. Kyslytsyn, O. Podshyvalova, S. Taran, A. Okhrimovskyy // Journal of Physics: Conference Series, Volume 2628 (CEST 2023) DOI:10.1088/1742-6596/2628/1/012031

5. Mass transfer in composites based on Ba_xSr_{1-x} HfO_3 with tungsten at large temperature gradients / A. Taran, O. Kyslytsyn, M. Nechiporuk, O. Podshyvalova, A. Okhrimovskyy, S. Taran // *AIP Conf. Proc.* 2801, 030032 (2023) https://doi.org/10.1063/5.0146723

6. Formation of step density shock waves on vicinal Nacl(100) growth surfaces / Kulyk O.P., Podshyvalova O.V., Andrieieva O.L., Tkachenko V.I., Gnatyuk V.A., Aoki T. // Problems of Atomic Science and Technology, 2022, 137(1), pp. 154– 160. https://doi.org/10.1007/978-981-19-0379-3_14

7. Poisoning at air leaking and recovery of thermionic activity in $BaZrO_3$ – W system / A. Taran, O. Kyslytsyn, O. Podshyvalova, A. Okhrimovskyy, S. Taran // Conf.Proc. 2022 IEEE 3rd KhPI Week on Advanced Technology (KhPI Week), pp. 488 – 491. DOI: 10.1109/KhPIWeek57572.2022.9916496

8. Investigation of the convection effect on the inclusion motion in thermally stressed crystals / O.P. Kulyk, V.I. Tkachenko, O.L. Andrieieva, O.V. Podshyvalova, V.A Gnatyuk, T. Aoki // Research and Education: Traditions and Innovations: Proceedings of the 19th International Conference on Global Research and Education (Inter-Academia 2021), Vol. 422 (2022), Chapter 14, 141-158. https://doi.org/10.1007/978-981-19-0379-3_14

9. Heat-shielding coating for spacecraft based on the directionally crystallized LaB_6−NbB_2 eutectic alloy / Anatoliy Taran, Daniil Voronovych, Mykola Nechiporuk, Volodymyr Filipov, Oksana Podshyvalova // AIP Conf. Proc. 2429, 020038 (2021) https://doi.org/10.1063/5.0069629

10. Application of particular solutions of the Burgers equation to describe the evolution of shock waves of density of elementary steps / Oksana Andrieieva, Victor Tkachenko, Oleksandr Kulyk, Oksana Podshyvalova, Volodymyr Gnatyuk, Toru Aoki // East European Journal of Physics, No. 4 (2021), p. 59 – 67. DOI: 10.26565/2312-4334
11. Nonlinear interaction of macrosteps on vicinal surfaces at crystal growth from vapor / O.P. Kulyk, V.I.Tkachenko, O.V.Podshyvalova, V.A.Gnatyuk, T.Aoki // Journal of Crystal Growth, Vol 530, 125296 (2020), (19 pages).
https://doi.org/10.1016/j.jcrysgro.2019.125296
12. Temperature dependencies of spectral emissivity of some rare-earth dodecaborides single crystals / Anatoliy Taran, Daniil Voronovych, Mykola Nechiporuk, Natalya Shitsevalova, Volodymyr Filipov, Andriy Okhrimovskyy, Oksana Podshyvalova // AIP Conference Proceedings, Vol. 2275 (1), 020030 (2020). https://doi.org/10.1063/5.0025718

Books, Chapters in Collective Monographs:
Chapter in a collective monograph: Investigation of the convection effect on the inclusion motion in thermally stressed crystals / O.P. Kulyk, V.I. Tkachenko, O.L. Andrieieva, O.V. Podshyvalova, V.A Gnatyuk, T. Aoki // Research and Education: Traditions and Innovations: Proceedings of the 19th International Conference on Global Research and Education (Inter-Academia 2021), Vol. 422 (2022), Chapter 14, 141-158.

Links to Citation Database Profiles:
https://scholar.google.com/citations?hl=en&user=ZmIGgOwAAAAJ&view_op=list_works&sortby=pubdate

ADDITIONAL INFORMATION:

Language Proficiency:
English (B2)

IT Skills:
Experience in working with Microsoft Office tools (Word, Excel and PowerPoint), Software of SMART Board, Matlab, LaTeX