ПУБЛІКАЦІЇ НАУКОВО-ПЕДАГОГІЧНИХ ПРАЦІВНИКІВ БДПУ В НАУКОМЕТРИЧНИХ БАЗАХ SCOPUS TA WEB OF SCIENCE 2024

Publications of BSPU Academic Staff in Scopus and Web of Science 2024

Науково-допоміжний бібліографічний покажчик

Бібліотека БДПУ
Запоріжжя
2025

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П70 **Публікації науково-педагогічних працівників БДПУ в наукометричних базах Scopus та Web of Science 2024** : науководопоміжний-бібліографічний покажчик / упоряд. та комп. набір Г. В. Потапенко ; бібліограф. редактор А. В. Куторга ; Бердянський державний педагогічний університет, Бібліотека БДПУ. – Запоріжжя : БДПУ, 2025. – 89 с.

Щорічний науково-бібліографічний покажчик публікацій науковців університету у міжнародних базах Scopus та Web of Science, виходить один раз на рік до Днів науки України. Видання систематизує публікаційну діяльність наукових і науково-педагогічних працівників БДПУ, надаючи аналітичний огляд їхніх робіт за попередній рік. Покажчик призначений для наукової спільноти, адміністрації університету та бібліотекарів як інструмент моніторингу наукової продуктивності.

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P70 Potapenko, H. (Compiler & Typesetter), & Kutorha, A. (Bibliographic Editor). (2025). Publications of BSPU Academic Staff in Scopus and Web of Science 2024 : A Scientific Auxiliary Bibliographic Index. *Berdyansk State Pedagogical University, BSPU Library,* pp. 89.

The Annual Scientific and Bibliographic Index of University Researchers' Publications in the International Databases Scopus and Web of Science is published once a year before the Science Days in Ukraine. The publication systematizes the scientific output of the researchers and academic staff of Berdyansk State Pedagogical University, providing an analytical overview of their works from the previous year. The index is intended for the scientific community, university administration, and librarians as a tool for monitoring scientific productivity.

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ВІД УПОРЯДНИКА

Мета даного науково-допоміжного бібліографічного покажчика – ознайомити наукову спільноту з публікаційною діяльністю наукових і науково-педагогічних працівників університету в міжнародних наукометричних реферативних базах даних Scopus та Web of Science. Покажчик містить інформацію про публікації, проіндексовані в цих базах даних за 2024 рік, загальною кількістю 139 наукові статті. Бібліографічні записи систематизовано у двох розділах. Групування описів в межах розділів здійснено за хронологічним та алфавітним принципом. До першого розділу увійшли видання, проіндексовані у наукометричній базі Scopus. У другому розділі описано праці науково-педагогічних працівників університету, проіндексовані в наукометричній базі Web of Science Core Collection.

Також до покажчика включено результати аналізу публікацій у міжнародних базах за 2024 рік:

- ТОП-10 найбільш цитованих статей;
- ТОП-10 авторів за кількістю публікацій;
- ТОП-10 журналів, популярних серед викладачів.

Бібліографічний опис здійснено згідно з міжнародним бібліографічним стандартом APA style. Опис публікацій подано мовою оригіналу документа із дотриманням правил орфографії, пунктуації та фонетичних особливостей. Додано анотації до статей, а також гіперпосилання або DOI, які дозволяють одразу перейти до тексту публікації. Електронну версію науково-допоміжного бібліографічного покажчика оприлюднено на:

- Сайті бібліотеки БДПУ
- Сайті Інституційного репозитарію БДПУ
- Сайті міжнародного репозитарію Zenodo. Community Berdyansk State Pedagogical University

Науково-допоміжний бібліографічний покажчик видано до Днів науки в Україні. Він розрахований на науковців, науково-педагогічних працівників, здобувачів вищої освіти.

ЗМІСТ

CONTENTS

РОЗДІЛ І Публікації науково-педагогічних працівників університету, проіндексовані в наукометричній базі Scopus

CHAPTER I Publications of the university's scientific and pedagogical staff indexed in the Scopus database

2024

1. **Abdikadirova, A., Sembiyeva, L., Temirkhanov, Z., Popov, A. I., Suchikova, Y. (2024). Evaluating the nexus of funding and scientific output in Kazakhstan. *Knowledge and Performance Management*, 8 (1), pp. 17–31.**

https://doi.org/10.21511/kpm.08(1).2024.02

This study examines the dynamics and effectiveness of investments in Kazakhstan's research and development (R&D). The primary aim is to assess the efficiency of scientific research activities in Kazakhstan by analyzing the relationship between R&D investments and scientific outputs across different periods. As a methodological approach, Data Envelopment Analysis (DEA) calculates efficiency indicators by transforming multiple inputs into outputs. Descriptive analysis comprehensively explains trends and patterns in R&D funding, scientific publications, and patent registrations. The results reveal a substantial increase in R&D expenditure. Despite this, the share of domestic R&D expenditures from the gross domestic product (GDP) declined from 0.25% to 0.12%. The analysis also uncovered a significant surge in scientific publications, with Scopus publications increasing from 1,799 to 28,280 and Web of Science publications rising from 1,468 to 20,532 across the study period. However, a contrasting trend was observed in patent registrations, which decreased from 6,968 to 2,612, indicating potential inefficiencies in translating research into innovations. The study concludes that while Kazakhstan has demonstrated notable progress in enhancing research output, the decline in patent registrations relative to the increase in R&D investments underscores the need for strategic initiatives. These should strengthen industry-academia collaboration, enhance innovation infrastructure, and balance incentives for publications and patents, ensuring that R&D investments translate into tangible innovations and contribute effectively to the nation's socio-economic development.

2. **Achkan, V. V., Vlasenko, K. V., Lovianova, I. V., Kaluhin, R. Yu, Armash, T. S. (2024). The case classification and their development for would-be mathematics teachers' training. *Journal of Physics: Conference Series*, 2871 (1), art. no. 012001.**

https://doi.org/10.1088/1742-6596/2871/1/012001

The article looks into the issue of the case classification for the training of Mathematics teachers. The analysis, which was carried out, and the survey of 47 University teachers of methodical disciplines allowed to highlight the classification features of cases in the process of teaching methodical disciplines: the amount of time to complete, the way of presentation, the level of complexity and the breadth of the covered problem. Classifying cases by the amount of time for their implementation contributed to the separation of mini-cases, medium-term cases, and long-term cases. Classification by the method of presentation of cases in the process of studying methodical disciplines ensured their use in printed (handwritten) form, multimedia presentation of cases, and video cases. According to the level of complexity, the cases were divided into reproductive-training, partial-research, and creative-innovative cases. Thematic and integrated cases ensured the breadth of coverage of the problem during the teaching of methodical disciplines. The article presents general requirements for the selection and development of cases in the process of studying methodical disciplines. These requirements are based on the principles of accessibility, scientificity, contextuality, systematicity, methodological expediency, and practical orientation. The classification and specific requirements became the basis for the development of cases that can be used in the process of teaching methodological disciplines of would-be Mathematics teachers.

3. **Baran, M., Stasiv, V., Vasylechko, L., Zazubovich, S., Zhydachevskyy, Y. (2024). Thermally stimulated luminescence of UV-irradiated $YAlO_3$:Bi perovskite. *Journal of Luminescence*, 276, art. no. 120875.**

https://doi.org/10.1016/j.jlumin.2024.120875

The appearance of the ultraviolet Bi^{3+}-related emission band in the thermally stimulated luminescence (TSL) spectrum is observed around 465 K after selective irradiation of the $YAlO_3$:Bi perovskite in the Bi^{3+}-related absorption bands. The excitation spectrum of the TSL glow curve peak at 465 K, activation energies of its creation by photons of different energies, and the dependence of the TSL peak intensity on the irradiation duration are measured. The origin of the optically created electron centers and the mechanisms of photostimulated creation of the electron and hole centers under irradiation in the Bi^{3+}-related absorption bands of $YAlO_3$:Bi are discussed. The TSL glow curve peak at 465 K is suggested to appear as a result of electrons release from the electron centers intrinsic to the $YAlO_3$ lattice and their recombination with the hole Bi^{4+} centers. The same processes

are shown to take place in the X-ray-irradiated $YAlO_3$:Bi perovskite. The obtained results are important for possible applications of the investigated material in thermoluminescent dosimetry.

4. **Bohdanov, I., Suchikova, Y. (2024). EXTENDED COMMENTARY-Navigating the labyrinth of youth return to deoccupied territories in Ukraine: Stakeholders, strategies, and ethical imperatives [评论文 - 穿越 "乌克兰青年重返解除占领领土" 的迷宫: 利益攸关方、战略与伦理要求] [COMENTARIO AMPLIADO - navegando por el laberinto del regreso de los jóvenes a los territorios desocupados en ucrania: Partes interesadas, estrategias e imperativos éticos]. *World Affairs*, 187 (4), pp. 559–573.**

https://doi.org/10.1002/waf2.12034

The war in Ukraine has been ongoing for over two years. As territories that were captured at the beginning of the conflict are being deoccupied, the pressing issue of repopulating these areas emerges, especially concerning the youth. In this commentary, we critically examine the tripartite cooperation among universities, governments, and local self-government bodies as a critical mechanism for encouraging the return of young people to Ukraine's deoccupied territories. Considering the inevitable exodus of youth due to occupation, we underscore the importance of early strategy conceptualization for their return. The discussion analyzes the roles and responsibilities of all key stakeholders, the necessity to balance national directives with local autonomy, and the ethical imperatives that should guide such endeavors. Although centered on the Ukrainian context, the insights from this research may prove valuable for other regions encountering similar challenges amidst globalization.

5. **Bondarenko, V. V., Markus, I. S., Savchenko, V. M., Herashchenko, S. I., Khatuntseva, S. M., Sheremet, I. V., Lyakhova, N. A. (2024). The effectiveness of physical therapy in the rehabilitation of patients after arthroscopy of the knee joint. *Wiadomosci lekarskie (Warsaw, Poland, 1960)*, 77 (6), pp. 1167–1173.**

https://doi.org/10.36740/WLek202406109

OBJECTIVE: Aim: To determine the effectiveness of physical therapy on the functional state of law enforcement officers' knee joints after surgical intervention. PATIENTS AND METHODS: Materials and Methods: The research involved law enforcement officers from different units of the National Police of Ukraine (n = 56) who had suffered knee joint injuries in the line of duty, and underwent surgical intervention and rehabilitation procedures. RESULTS: Results: It was found that 78.2 % of respondents had suffered knee joint ligament injuries as a result of falls during rapid movement, while 43.9 % were in full gear (armored protection, helmet, etc.). It was determined that after surgical

intervention, the functional state of the knee joint of law enforcement officers who followed the recommendations of physical therapy specialists and systematically performed special sets of physical exercises was significantly different ($p < 0.001$). Worse results were noted in people who partially followed the recommendations of rehabilitation therapists and performed part of the prescribed procedures and physical exercises. CONCLUSION: Conclusions: The effectiveness of the complex use of physical rehabilitation means for restoring the functioning of the knee joint after surgical intervention, which included arthroscopy, partial menisectomy of the damaged areas, debridement, vaporization of damaged cartilage, etc. was revealed. The positive effect of physical exercises on the functional state of the knee joint was proven. The sets of exercises that are advisable to use to restore the functioning of the knee joint were determined.

6. **Cherniak, A., Dudorov, O., Kamensky, D., Fedun, I., Buryak, Y. (2024). Ponzi Schemes in the FinTech World: Emerging Threat for the Economic Globalization. *Lecture Notes in Networks and Systems* (LNNS, volume 927), pp. 435–445. International Conference on Business and Technology, ICBT2023, Code 308979.**

https://doi.org/10.1007/978-3-031-54009-7_40

The paper provides overview of the financial technologies (FinTech) sector and addresses some legal vulnerabilities of this emerging segment of the global economy. Complicated nature of the FinTech sector is explained – from mobile payment applications to complex blockchain networks containing encrypted transactions. Aside from numerous advantages of the FinTech services, issues related to fraudulent practices in this sector of economy are discussed at length. In particular, it is argued, with reference to the two major Ponzi schemes of the past, that financial pyramids are types of illegal enterprises, which can infiltrate legitimate financial technology industries. Through the lenses of the relevant Ukrainian law and practice, the complicated nature of illegal financial pyramids, in particular the absence of meaningful definition of this type of fraud, proposals are elaborated on how to improve national financial market regulation. Based on research findings, the key idea of the research is formulated: in some cases there is a potential link between modern financial technologies and fraudulent schemes related to financial pyramids. Such disturbing realities should trigger more aggressive legal response by national lawmakers and regulators.

7. **Dmitrenko, N., Panchenko, V., Hladka, O., Shkola, I., Devitska, A. (2024). Cultivating Communication Skills in Times of Crisis: The perceived impact of SEL techniques in formative assessment on the communication competence of pre-service teachers in Ukraine. *International Journal of Emotional Education*, 16 (2), pp. 96–100.**

https://doi.org/10.56300/MAIN4950

This study examined the integration of social-emotional learning (SEL) in formative assessment of pre-service English as foreign language (EFL) teachers during times of crisis and its perceived impact on their communicative competence. The study encompasses a six-month trial period of SEL-enriched formative assessments across five Ukrainian universities. Findings from interviews with 12 participants indicate that incorporating SEL in EFL teacher education programs enhanced learning outcomes, when compared to traditional assessment methods. Furthermore, data suggest that promoting SEL in formative assessment provides invaluable feedback for tutors, prompting them to modify their teaching strategies appropriately while applying and expanding pre-service EFL teachers' professional-focused skills.

8. **Dmitrenko, N., Shkola, I., Saliuk, B., Panchenko, V., Neshko, S. (2024). Canva Platform: Visual Content for Developing Writing Skills of Prospective Engineers in ESP Classes. *Vide. Tehnologija. Resursi - Environment, Technology, Resources*, 2, pp. 358–363. International Scientific and Practical Conference on Environment. Technology. Resources, ETR 2024. Rezekne, 27 June 2024 through 28 June 2024, Code 201245.**

https://doi.org/10.17770/etr2024vol2.8075

This article explores the integration of visual content technologies, with a specific focus on the Canva.com platform, to enhance the teaching of English for specific purposes (ESP) to prospective engineers. The primary goal of the authors was to investigate the effectiveness and benefits of using Canva.com for developing writing skills among prospective engineers through a mix of theoretical research and practical implementation in an educational setting. For this purpose, they implemented targeted activities via Canva.com, provided classroom observations, conducted a literature review, and administered a questionnaire survey with 50 engineering students, which helped to analyze students' work and demonstrate the impact Canva had on the development of students' writing abilities. Canva's user-friendly interface and visually appealing templates support the mastery of writing, covering various formats like resumes, cover letters, essays, and engineering blueprints. The article not only highlights the potential of Canva.com but goes further to present concrete examples of activities tailored for prospective engineers. Models of both individual visual storytelling and collaborative endeavours, exemplified by the "Evolution of Railway Technology" project, showcase the platform's versatility in facilitating engaging and educational experiences. In addition to these activities, the authors provide insightful assessment criteria and teaching tips, offering valuable guidance on effectively incorporating Canva.com into the classroom. By seamlessly integrating visuals into writing activities, the authors emphasize the transformative impact on prospective engineers, encouraging them to express ideas more effectively and imaginatively. The Canva.com platform emerges as a dynamic and

indispensable tool in ESP classes, cultivating an environment that not only stimulates creativity but also provides structured templates that empower students to navigate the intricacies of writing with confidence. Consequently, the article advocates wholeheartedly for the effective integration of Canva.com in English language instruction for prospective engineers, presenting a compelling avenue to elevate both their writing skills and overall language proficiency.

9. **Dmitrenko, N., Shkola, I., Saliuk, B., Shkola, O., Zakharova, N. (2024). Messengers in providing debates within a remote online learning of university students. *International Journal of Evaluation and Research in Education*, 13 (5), pp. 3456–3465.**

https://doi.org/10.11591/ijere.v13i5.28060

The study aims to investigate the effectiveness of using messengers for debates within remote online and blended learning environments for university students. The research design incorporates a mixed-methods approach, combining quantitative data collection and analysis with qualitative insights. By examining the benefits, challenges, and educational achievements associated with utilizing messengers for debates, this study seeks to provide valuable insights for educators and institutions striving to enhance student engagement and learning outcomes in digital learning contexts. It is concluded that using online debates via messengers in class helps students to increase knowledge, memorize, understand and use what has been learned (students should be able to show an understanding of the points being discussed), conduct some analysis of existing messages, see things differently and express their opinion, build social competency and embrace lifelong learning.

10. **Hlazova, S., Akulshyna, N., Shkvorchenko, N., Hromovenko, V., Orenchak, O. (2024). Linguistic aspects of language culture: study of norms, standards and variations in speech communication. *Multidisciplinary Science Journal*, 6, art. no. e2024ss0214.**

https://doi.org/10.31893/multiscience.2024ss0214

The article examines the linguistic aspects of a language culture. It describes the study of norms, standards and variations in speech communication. The relevance of this study originates from the fact that today, speech communication plays a significant role as intercultural communication intensifies. Hence, people living in the globalized world should be able to use their language to express themselves as a person. At the same time, learning norms and standards is a complex and continuous process. Moreover, the presence of variations in speech communication requires not only theoretical but also practical knowledge of the language culture. This study aims to determine some linguistic

aspects of the language culture regarding learning norms, standards and variations in speech communication. The subject of the study is speech communication as an element of the language culture. The following research methods were used in this paper: description, analysis and synthesis, comparison, generalization, and linguistic analysis. The article is devoted to researching linguistic aspects of the language culture in terms of studying norms, standards and variations in speech communication. The authors defined the essence of the "language culture" concept and its main aspects. In particular, the basic linguistic norms of linguistic culture are described. These norms include the rules of quantity, quality, modality, precision, orientation, and word standardization. The article explored the peculiarities of applying linguistic norms. The specificity of using exoticisms, barbarisms, and borrowings in speech was also determined. The authors revealed linguistic standards of the language culture.

11. Hnatyuk, V., Pshenychna, N., Kara, S., Kolodii, V., Yaroshchuk, L. (2024). Education's role in fostering environmental awareness and advancing sustainable development within a holistic framework. *Multidisciplinary Reviews*, 7 (Special Issue), art. no. e2024spe012.

https://doi.org/10.31893/multirev.2024spe012

The paper explores the pivotal role of education in nurturing environmentally conscious citizenship and advancing sustainable development. It delves into how education raises public awareness regarding critical environmental issues like pollution, biodiversity loss, and climate change. The analysis also probes the influence of education in shaping environmental values, skills, and decision-making abilities crucial for responsible ecological stewardship. Additionally, the paper examines innovative approaches and methodologies applicable in educational programs to enhance environmental literacy and promote active citizen engagement in addressing environmental challenges. The research seeks to investigate the nexus between perception, attitude, and environmental behavior among higher education students majoring in diverse fields such as electrical engineering, mechanics, and economics. Involving 453 students from Ukrainian higher educational institutions, the study employed the Likert scale to gauge students' environmental education, perception, attitude, and behavior. Findings revealed that students actively participating in academic education exhibit engagement in environmental initiatives such as volunteering, event participation, and recycling, along with a keen interest in green technologies and alternative energy sources. Moreover, statistical analysis indicated no significant difference in the awareness of the importance of environmental education across various faculties.

12. Hreb, V., Kissabekova, A., Krasnikov, A., Laguta, V. V., Vasylechko, L., Zazubovich, S., Zhydachevskyy, Y. (2024). Excited state dynamics of Bi^{3+} centers in cubic Gd_2O_3. *Journal of Luminescence*, 269, art. no. 120460.

https://doi.org/10.1016/j.jlumin.2024.120460

Photoluminescence characteristics of Gd_2O_3:Bi are studied in the 4.2–800 K temperature range by the time-resolved spectroscopy methods. Purely cubic structure of Gd_2O_3:Bi is confirmed by XRD. The luminescence of $Bi^{3+}(S_6)$ and $Bi^{3+}(C_2)$ centers is found to arise from the electron transitions from the emitting level of the triplet excited state of Bi^{3+}, corresponding to the $^3P_1 \rightarrow {}^1S_0$ transitions of the free Bi^{3+} ion. Relaxation processes in the triplet excited state of Bi^{3+} ions do not result in the population of the lowest-energy metastable level. The absence of the radiative transitions, corresponding to the $^3P_0 \rightarrow {}^1S_0$ transitions of the free Bi^{3+} ion, explains the short (0.3–2.0 μs) decay time of the triplet emission of Bi^{3+} even at 4.2 K. The conclusion is made that the fast luminescence decay cannot be caused by the mixing of the metastable and emitting levels of the triplet excited state of Bi^{3+} by the magnetic field created at the Bi^{3+} site by the magnetically ordered Gd^{3+} sublattice. The electron transfer and recombination processes, resulting in the appearance of the photo- and thermally stimulated electron recombination luminescence of $Bi^{3+}(S_6)$ and $Bi^{3+}(C_2)$ centers under excitation in the E_{exc} > 4.3 eV energy region, are also discussed. The energy level positions of the $Bi^{3+}(S_6)$ and $Bi^{3+}(C_2)$ centers in the band gap of Gd_2O_3 are estimated.

13. Hrytsenko, V., Popovych, H., Shcherbakova, N., Hrechanyk, N., Zhukovskyi, S. (2024). Methods of Studying Web Technologies in a Blended Learning Format: Analysis of Models in Education. *Journal of Curriculum and Teaching*, 13 (3), pp. 65–78.

https://doi.org/10.5430/jct.v13n3p65

The purpose of the article is to study the methodology of studying web technologies in a blended learning format, to analyse existing models used in education. To achieve this goal, the article uses the methods of analysis and synthesis, as well as content analysis to study the existing scientific literature, and modelling to study the relevant models. The results of the study show that blended learning is a form of learning organisation that combines elements of traditional classroom learning and online learning. In this model, students have the opportunity to learn both in the classroom and in the online environment. The main idea is to combine the advantages of both forms of learning to create a more individualised and effective learning process. In this context, advanced innovative technologies play an important role in shaping the educational experience. The choice of information technologies should be adapted to the individual capabilities of students to ensure the effective involvement of all participants in the educational process. It is determined that the main web-based technologies used in a mixed form are learning management systems, cloud services, special chats, learning platforms, electronic portfolios, multimedia resources. The use of these technologies has its advantages and disadvantages, including accessibility, flexibility, customisation and visualisation. The general conclusion is that all blended learning models aim to combine traditional and online learning to create a more individualised, flexible and diverse learning experience

for students. Each model has its own characteristics, such as rotation between different modes of learning, flexible study schedules, the choice of specific courses or modules, or a combination of online learning and periodic classroom meetings. Each of these models offers learning approaches that suit different student needs and learning contexts, and the choice of a particular model may depend on learning objectives, available resources and pedagogical strategy. Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

14. **Hurenko, O., Suchikova, Y., Kravchenko, N., Nesterenko, M., Petryk, K. (2024). Employment of young people with disabilities: The potential of social partnership of universities, municipalities and the labor market of Ukraine. *Work*, 79 (3), pp. 1407–1423.**

https://doi.org/10.3233/WOR-230351

BACKGROUND: This study analyzed the existing global experience of university and labor market partnerships concerning the employment of youth with disabilities. It was found that current cooperation models are implemented locally, in a fragmented manner, and are limited to interactions between universities and large enterprises. OBJECTIVE: The research aimed to explore the current state of meeting the needs of students with disabilities in terms of providing educational services and employment opportunities and to analyze the interaction between universities, municipalities, and the labor market to improve employment opportunities for young people with disabilities. METHODS: The study considered a survey of three target groups from different regions of Ukraine (105 students with disabilities, 321 university faculty members, and 102 enterprise managers) conducted to study the current state of needs satisfaction in providing educational services and employing people with disabilities. RESULTS: The findings indicated a lack of coordination among stakeholders, an absence of systematization, and organization in addressing the issue of improving the employment of youth with disabilities. The research enabled the identification of existing and desired connections between the subjects of social partnership. A social partnership model between universities, municipalities, and the labor market was developed to improve the employment of youth with disabilities. CONCLUSION: The study results are promising, as implementing the social partnership model will broadly impact society.

15. **Hurenko, O., Tsybuliak, N., Mytsyk, H., Popova, A., Lyndina, Y., Lopatina, H., Suchikova, Y. (2024). Organizational adaptation for inclusive education in universities amidst war. *Journal of Governance and Regulation*, 13 (2 Special Issue), pp. 339–353.**

https://doi.org/10.22495/jgrv13i2siart10

In the evolving landscape of Ukrainian higher education, implementing inclusive education is both a challenge and an opportunity, intensified by the backdrop of war and post-war recovery. This study, centered on the experiences of the Berdyansk State Pedagogical University, a displaced and borderless institution, seeks to understand the unique hurdles and prospects in this journey. Engaging with 36 management representatives across four hierarchical levels, the research sheds light on effective strategies to ensure equal access for individuals with special educational needs. Key findings highlight the pivotal role of digitalization (Shuayb, 2020), the importance of adhering to European standards of inclusive education (Veidemane et al., 2021), and the transformative potential of a "university without walls" concept. These insights offer a deep understanding of the present scenario and chart a path forward, emphasizing collaborative, adaptive, and globally informed approaches. The outcomes are crucial for policymakers, educators, and the global academic community, providing a nuanced understanding of inclusive education in conflict-affected settings and underscoring the potential challenges.

16. **Ishchenko, Y., Hubarieva, D., Soroka, I., Usyk, D., Chemonina, L. (2024). Emotional Education as a Means of Developing Social Competence in Primary School Students in Wartime. *International Electronic Journal of Elementary Education*, 17 (1), pp. 1–13.**

https://doi.org/10.26822/iejee.2024.359

Emotional education is key for primary school children, as it promotes their emotional evelopment and successful socialization. Specialized mobile software, which are integrated into psychological and pedagogical support programmes for primary school students, can help in the development of children's emotional intelligence (EI). The aim of the research was to analyse the effectiveness of using two mobile applications (Emotional, and Bouncy the People Trainer). They were designed to stimulate the EI growth among children aged 6-9. The research methods included psychological methods from the EQ.app kids computer software, emotional education programmes developed on the basis of socio-emotional learning (SEL) methods, mathematical statistics methods (correlation analysis, Pearson correlation coefficient, Student's t-test). Analysis of the dynamics of EI indicators revealed significant differences between the experimental group (EG) and control group (CG) on pre-tests and post-tests. In the EG, a statistically significant improvement (p-value = 0.000) was observed in the indicators of emotional praxis by 8.57 points, in perceptual and language components by 10.63 points. This gives grounds to conclude that working in two mobile applications helped to develop children's EI. At the same time, the CG remained at their pre-test scores, showing no improvement. Research prospects include a deeper study of the impact of different methods of emotional education on the children's mental state and social skills, as well as an analysis of the long-term consequences of such programmes. It is important to study the integration of digital technologies in the process of emotional education, evaluate the

effectiveness of various mobile applications, online platforms and other digital tools for the development of EI and social competence.

17. **Ivanenko, N., Varyvoda, K., Halukha, L., Petrovska, K., Turgenieva, A. (2024). Armed Conflicts and Higher Education: Challenges and Opportunities for Academic Development in Post-Conflict Regions. *Academia (Greece)*, No 35-36, pp. 156–178.**

https://doi.org/10.26220/aca.5007

Armed conflicts have long been a pervasive challenge, leaving profound scars on societies worldwide. Among the myriad of consequences, armed conflicts have a significant impact on higher education systems, particularly in post-conflict regions. This study aims to examine the challenges and opportunities faced by academic institutions in post-conflict regions concerning the development of higher education. A comprehensive review of existing literature on armed conflicts and higher education was conducted, focusing on case studies from various post-conflict regions worldwide. Qualitative analysis was employed to identify common challenges and opportunities faced by academic institutions in these contexts, drawing on specific examples and empirical evidence. The study revealed that armed conflicts pose significant challenges to higher education systems in post-conflict regions, including the destruction of infrastructure, displacement of students and faculty, disruption of academic programs, and limitations on academic freedom. The findings underscore the importance of addressing the impact of armed conflicts on higher education as part of broader post-conflict reconstruction efforts. Initiatives aimed at rebuilding educational infrastructure, supporting displaced students and scholars, promoting access and inclusion, and fostering peace and reconciliation are essential for the development of academic institutions in post-conflict regions.

18. **Kaplia, O., Ribtsun, Y., Barbashova, I., Chobaniuk, M., Ptashchenko, O. (2024). Advancing Ukrainian education in times of military conflict. *Multidisciplinary Science Journal*, 6 (10), art. no. e2024211.**

https://doi.org/10.31893/multiscience.2024211

The deepening of the conflict in Ukraine and the imposition of martial law have had a devastating impact on the country's social environment as well as its economic infrastructure. The education sector is one of the most war-affected areas in Ukraine, which currently faces new challenges that should be studied in order to explore the existing experience of anti-crisis management of educational institutions and search for ways to optimize the situation. The purpose of the academic paper is to distinguish the features of education in Ukraine in the context of military operations in Ukraine, and to

characterize the main aspects that should be taken into account when organizing educational activities during the period of military invasion. In the course of the present research, induction, deduction, analysis, synthesis of information, system-structural, comparative, logical and linguistic methods, abstraction, and idealization were used to study and process data. At the same time, the analytical and bibliographic method was applied to study the scientific literature on developing the educational system during military incursion. By the way, the research authors also conducted a questionnaire in online mode to practically clarify the most significant issues related to the research topic. Based on the research results, the main and most important theoretical characteristics of the educational process during the war were established. Along with this, the viewpoints of scientists and educators on key aspects of the outlined issue were investigated.

19. **Kolomoets, A. G., Shkola, O. V., Lisina, L. O. (2024). Phase Transitions and Structural Peculiarities of Divalent Nitrates. *Journal of Nano- and Electronic Physics*, 16 (1), pp. 1009-1-1009-3.**

https://doi.org/10.21272/jnep.16(1).01009

The paper is devoted to the problem of choose of the space group of symmetry for the high temperature phase of divalent nitrates. The photos of reverse lattices of Barium, Strontium and Lead nitrates at room temperature were obtained, as well as at high temperatures, which correlate with the temperatures of realization of high temperature phase in divalent nitrates. The analysis of reflexes indicates, that phase Pa3 realizes at room temperature; at the same time phases Pm3 or Pm3m are to be realized as the high temperature phase. The symmetry considerations, that are described in the paper, testify to Pm3 space group for high temperature phase in divalent nitrates. This phase can be considered as maternity phase for Pa3 and P213 phases, that realizes in divalent nitrates, as it contains all symmetry elements for these phases. So, the chain of phase transitions Pm3 $$ Pa3 $$ P213 can be described by the set of symmetry elements of Pm3 phase. These investigations confirm our supposition, that this chain of phase transitions realizes due to especial mobility of nitrate groups in crystal lattice. It was shown, that high temperature Pm3 → Pa3 phase transition can be realized because of "freezing" of free move of NO3-groups around Nitrogen atoms, which has spherical symmetry and turning it into their oscillations around Nitrogen atom in one plane.

20. **Korotkyi, O. (2024). Compositional and stylistic features of the Northern Black Sea region's detention facilities of the first third of the 19th century. *Architectural Studies*, 10 (1), pp. 115–124.**

https://doi.org/10.56318/as/1.2024.115

The investigation of the history of prison infrastructure development is being updated by the ongoing (2024) penitentiary reform in Ukraine. The planning and development of a new network of penitentiary institutions that will meet modern standards and goals of imprisonment requires attention to similar processes of rethinking prison architecture that took place in the first third of the 19th century. In this regard, the purpose of the study was to explore the transformation of the structural and spatial organisation of detention facilities during the active prison construction of the 19th century based on published and archival materials. This led to the use of historical, historical and comparative, compositional, grapho-analytical analysis, which were applied in the context of structural-functional and sociological approaches to the study of architecture. The application of this methodology helped to establish the origins and historical prerequisites for the expansion of new detention facilities during the study period. Based on the analysis of the structural and spatial construction of detention facilities, conclusions are drawn about the main goals that architects and authorities pursued when reforming prisons. By comparing the layout of different prisons, the regional specificity of different prison castles in the Kherson province was investigated. The study of the composition and structural-functional organisation of prison castles allowed tracing how the ideas about disciplinary space were embodied in the empire. Based on the analysis, the conclusions about the palliative nature of prison reform in the first third of the 19th century are clarified. The analysis of the implementation of the system of power relations in the architecture of detention facilities revealed that certain pre-reform elements have been preserved in prison castles. The study of the organisation of prison space allowed creating a periodisation of the development of architecture. It was concluded that typical places of detention of the pre-reform period were designed to solve pressing problems of functioning of detention facilities, and not to consistently implement certain penitentiary ideas in architecture. The prison reform of 1819 brought a neo-Gothic style and more complex composition to prison architecture. The results of the study can be used by researchers of other architectural experiments of the 19th century on the organisation of disciplinary spaces and serve as source material for educational and local history organisations.

21. Kovachov, S. S., Bohdanov, I. T., Drozhcha, D. S., Tikhovod, K. M., Bondarenko, V. V., Kosogov, I. G., Suchikova, Ya. O. (2024). Study on phase characteristics of heterostructure por-Ga_2O_3/GaAs [Дизайн та дослідження фазових характеристик гетероструктури por-Ga_2O_3/por-GaAs/mono-GaAs]. *Himia, Fizika ta Tehnologia Poverhni*, 15 (2), pp. 212–220.

https://doi.org/10.15407/hftp15.02.212

The synthesis and characterization of heterostructure por-Ga_2O_3/GaAs represent a crucial advancement in nanomaterials, particularly in optoelectronic applications. Employing a two-stage electrochemical etching methodology, this research has elucidated the precise conditions required to fabricate such a heterostructure. The initial

stage involves etching monocrystalline gallium arsenide (GaAs) using an aqueous nitric acid solution as the electrolyte. This process is governed by the redox reactions at the crystal-electrolyte interface, where GaAs are partially oxidized and selectively etched. The second stage introduces ethanol into the electrolytic solution. This chemical addition serves a dual purpose: Firstly, it modulates the electrochemical environment, allowing for controlling pore morphology in GaAs. Secondly, it facilitates the etching of the resultant oxide layer, which predominantly consists of gallium oxide (Ga_2O_3). The formation of this oxide layer can be attributed to the oxidation of GaAs, driven by the electrochemical potentials and resulting in the deposition of reaction by-products on the substrate surface. The fabricated nanocomposite was comprehensively characterized using Scanning Electron Microscopy (SEM), Energy Dispersive X-ray Analysis (EDX), and Raman Spectroscopy. SEM imaging revealed a range of agglomerated nanostructures dispersed across the surface, with dimensions ranging from 8–25 μm, 1–1.5 μm, and 70–100 nm. These observations suggest a hierarchical pore structure indicative of a complex etching mechanism modulated by the electrolyte composition. Raman spectroscopic analysis corroborated the presence of various phases in the heterostructure. Signals corresponding to bulk GaAs, serving as the substrate, were distinguishable. In addition, peaks indicative of porous GaAs and porous Ga_2O_3 were observed. A cubic phase in the Ga_2O_3 layer was particularly noteworthy, suggesting a higher degree of crystallinity. Notably, the absence of Raman-active modes associated with internal stresses implies that the fabricated heterostructure is of high quality.

22. Kryzhko, O. (2024). Etymology, History and Development of the Semantics of Food Names in Ukrainian Chronicles of the End of the 17th and the Beginning of the 18th Century [Maisto pavadinimų semantikos etimologija, istorija ir raida Ukrainos XVII amžiaus pabaigos ir XVIII amžiaus pradžios kronikose] [Етимологія, історія, розвиток семантики назв їжі українських літописів кінця XVII – початку XVIII століття]. *Slavistica Vilnensis*, 69 (1), pp. 41–55.

https://doi.org/10.15388/SlavViln.2024.69(1).3

The article examines the etymology, history and semantic development of food names found in late 17th- and early 18th-century Ukrainian chronicles, including those by Samovydetsia, S. Velichko, and H. Hrabianka. Taking a synchronic-diachronic approach, the author analyzes these food nominations within the lexical-semantic domains of generic food names and dish names, establishing semantic relationships such as polysemy, synonymy and variation. This analysis traces the evolution of the Ukrainian language's lexical composition and reveals its nationally distinct characteristics. By following these food nominations from their earliest written attestations through the period depicted in the chronicles, the study clearly illustrates the semantic development of the given food terminology. The author notes that words of Proto-Slavic origin comprise a signifcant portion of the food terminology used in late 17th- and early 18th-century Ukrainian chronicles. Borrowings from various languages are also used, including Polish,

Old Slavic, Turkic, Russian, and German (occasionally by way of Polish), as well as Italian via German. The presence of these loanwords is explained by key historical events in Ukraine across diferent periods that shaped the development of the language. Taken together, the linguistic evidence across these chronicles illustrates the codifcation of a fedgling Ukrainian literary tradition frmly rooted in popular verbal traditions.

23. Kurbatov, D., Suchikova, Ya. (2024). Distributed peer review: how Ukraine has reaped the benefits and minimized the risks. *Nature*, 635 (8037), pp. 39.

https://doi.org/10.1038/d41586-024-03611-y

No abstract available

24. Lavrik, V., Mezhuyev, V. (2024). Computation of Stress–Strain States in Elastomers Utilizing the Moment Diagram Approach in Finite Element Analysis. *Lecture Notes in Networks and Systems (LNNS)*, 967, pp. 315–327.

https://doi.org/10.1007/978-981-97-2053-8_24

Currently, materials based on elastomers and composites are extensively used in mechanical engineering and construction fields. Owing to the intricate nature of problems involving elastomer mechanics, selecting the most suitable computational approach, tailored specifically through methods of computational mathematics, is essential. However, at the current level of research, determining the optimal computation scheme is not always feasible, leading researchers to develop and compare various calculation algorithms. This article aims to present a mathematical model that addresses these challenges. The project employed an adaptation of the finite element method (FEM), termed the finite element moment scheme (FEMS), tailored for materials with low compressibility. The developed models and algorithms were integrated into a software module, and their efficiency was validated through a case study focusing on the VR-201 vibration isolator.

25. Lemish, N., Kaliberda, O., Kryzhko, O., Ovchynnikova, I. (2024). Etymology and development of semantics of 'Angel' and 'Demon' in English, Dutch, and Ukrainian: a comparative study [Leksemų „angelas“ir „demonas“ etimologija ir semantikos raida anglų, olandų ir ukrainiečių kalbose: lyginamasis tyrimas]. *Studies About Languages*, (45), pp. 27–42.

https://doi.org/10.5755/j01.sal.1.45.36380

The paper deals with a dichotomy of an angel and a demon as opposed creatures that embody the good and the evil in various cultures. An interdisciplinary overview of angels and demons outlines their roles and significance in philosophy, literature, religion, and arts. Common and particular ways of 'angel' and 'demon' reflection in English, Dutch, and Ukrainian are identified with three types of linguistic analysis: etymological, componential, and that of dictionary definitions. Thus, the paper gives the results of an etymological analysis for the two key lexemes based on English ('angel', 'demon'), Dutch ('engel', 'demon'), and Ukrainian ('ангел', 'демон') etymological dictionary entries followed by comparison and contrast and identification of both isomorphic and allomorphic features. It also provides the semantic changes in the meanings of 'angel' and 'demon' in three languages under study. The dictionary interpretations for the studied lexemes are added to present the ideas/images of angels and demons reflected in the consciousness of the English, Dutch, and Ukrainians. In fact, the obtained data enable readers to witness similarities and differences in perception, conceptualisation and categorisation of the good (embodied by angels) and the evil (embodied by demons) by speakers of different languages. This can both contribute to improved dictionary definitions and facilitate intercultural communication making it more efficient in today's globalized world.

26. Lopatina, H., Tsybuliak, N., Popova, A., Hurenko, O., Suchikova, Y. (2024). Inclusive education in higher education institution: Are Ukrainian faculty members' ready for it? *Research in Education*, 118 (1), pp. 49–72.

https://doi.org/10.1177/00345237231207721

Quality higher education involves making it accessible to students with special needs and disabilities. Therefore, the implementation of inclusive education is a certain indicator of quality among higher education institutions (HEIs). At the same time, faculty members play a fundamental role in promoting inclusive learning environments working with students with disabilities. The aim of research is to determine the readiness of faculty members to implement an inclusive education in Ukrainian HEIs, because their willingness to work defines the practical implementation of legislative and regulatory initiatives regarding the organization of inclusive education in the actual educational practice. For this, we conducted a survey among 186 faculty members with different age, teaching experience, and professional category. The results confirm that the faculty of HEI are primarily focused on working with students with normative development and almost do not take into account the characteristics of educational difficulties of students with disabilities. In addition, their level of knowledge about basic legal and regulatory documents, elements of an inclusive learning environment, and typical problems of implementing an inclusive approach in the educational process of HEI are not uniform. But faculty members showed their readiness to master the practices of implementing an

inclusive learning environment in higher education institutions. The results obtained can be useful for the development of institutional policies for the implementation of inclusive education in HEIs.

27. Luchechko, A., Vasyltsiv, V., Kushlyk, M., Hreb, V., Slobodzyan, D., Vasylechko, L., Zhydachevskyy, Y. (2024). Crystal Structure, Luminescence and Electrical Conductivity of Pure and Mg^{2+}-Doped β-Ga_2O_3-In_2O_3 Solid Solutions Synthesized in Oxygen or Argon Atmospheres. *Materials*, 17 (6), art. no. 1391.

https://doi.org/10.3390/ma17061391

Undoped and Mg^{2+}-doped β-Ga_2O_3-20% In_2O_3 solid solution microcrystalline samples were synthesized using the high-temperature solid-state chemical reaction method to investigate the influence of native defects on structural, luminescent, and electrical properties. The synthesis process involved varying the oxygen partial pressure by synthesizing samples in either an oxygen or argon atmosphere. X-ray diffraction (XRD) analysis confirmed the monoclinic structure of the samples with the lattice parameters and unit cell volume fitting well to the general trends of the $(Ga_{1-x}In_x)_2O_3$ solid solution series. Broad emission spectra ranging from 1.5 to 3.5 eV were registered for all samples. Luminescence spectra showed violet, blue, and green emission elementary bands. The luminescence intensity was found to vary depending on the synthesis atmosphere. An argon synthesis atmosphere leads to increasing violet luminescence and decreasing green luminescence. Intense bands at about 4.5 and 5.0 eV and a low-intensity band at 3.3 eV are presented in the excitation spectra. The electrical conductivity of the samples was also determined depending on the synthesis atmosphere. The high-resistance samples obtained in an oxygen atmosphere exhibited activation energy of around 0.98 eV. Samples synthesized in an argon atmosphere demonstrated several orders of magnitude higher conductivity with an activation energy of 0.15 eV. The results suggest that the synthesis atmosphere is crucial in determining the luminescent and electrical properties of undoped β-Ga_2O_3-In_2O_3 solid solution samples, offering the potential for various optoelectronic applications.

28. Luchechko, A., Vasyltsiv, V., Stasiv, V., Kushlyk, M., Kostyk, L., Włodarczyk, D., Zhydachevskyy, Y. (2024). Luminescence spectroscopy of Cr^{3+} ions in bulk single crystalline β-Ga_2O_3-In_2O_3 solid solutions. *Optical Materials*, 151, art. no. 115323.

https://doi.org/10.1016/j.optmat.2024.115323

Cr-doped monoclinic β-Ga_2O_3–7%In_2O_3 single crystals were grown by the floating zone technique with radiation heating. The dark green color of the as-grown crystals

transforms to light green upon crystals annealing in an oxygen atmosphere. Excitation spectra reveal characteristic Cr^{3+} bands in the visible spectral region and complex features in the UV region. Comparisons between as-grown and annealed crystals show variations in chromium excitation bands. UV or visible light irradiation induces intense Cr^{3+} luminescence in the red spectrum. The R_2 line diminishes at low temperatures, and the R_1 line dominates, exhibiting a blue shift compared to gallium oxide. Raman spectroscopy identifies phonon frequencies, revealing distinct modes associated with crystal lattice vibrations. The fine structure in the luminescence spectrum is attributed to vibronic transitions involving R lines and specific phonon modes. The R_1 line in β-Ga_2O_3–7%In_2O_3 single crystals has a larger FWHM than in β-Ga_2O_3. Decomposition of R_1-line reveals inhomogeneous broadening, with Gaussian fits indicating several types of Cr^{3+} centers, attributed to the octahedrally-coordinated Ga- and In positions, as well as is sensitive to oxygen non-stoichiometry. Photoluminescence decay kinetics measured at 695 nm (R_1(Ga)-line) have a single-exponential decay at lower temperatures with a lifetime of 2.8 ms at 4.5 K. Temperature dependence of lifetime for the studied crystals is consistent with the previously studied β-Ga_2O_3:Cr and confirms an application potential of the material for low-temperature non-contact luminescence thermometry and light sources in deep red or near-IR spectral region.

29. Movchan, R., Dudorov, O., Kamensky, D., Vozniuk, A., Makarenko, T. (2024). Criminal liability for illegal acts with amber: law-making and law-enforcement issues [Кримінальна відповідальність за незаконні дії з бурштином: правотворчі та правозастосовні проблеми]. *Naukovyi Visnyk Natsionalnoho Hirnychoho Universytetu*, (3), pp. 197–203.

https://doi.org/10.33271/nvngu/2024-3/197

Purpose. Analyses of problematic issues of qualification and implementation of criminal liability provisions for the crime provided for in Article 2401 of the Criminal Code of Ukraine, and elaboration on balanced recommendations for improving the current Criminal Code of Ukraine and the practice of applying its individual provisions. Methodology. A system of methods of scientific knowledge that ensured the achievement of the declared research goal (philosophical (dialectical), statistical, specifically sociological, modeling methods). Findings. Lawmaking and law enforcement problems have been identified, which significantly reduce the preventive and protective potential of Article 2401 of the Criminal Code of Ukraine, in particular: recognizing illegal actions with amber as criminal ones independent of its value; lack of differentiation of criminal liability for committing the analyzed crime depending on the forms of complicity, as well as poor quality differentiation depending on the value of amber; lack of references to relevant provisions of regulatory legislation in procedural documents; imperfection of the sanctions provided by the considered criminal law prohibition; lack of proper individualization of criminal liability of convicted persons. Originality. The authors were the first in criminal law science to carry out a comprehensive study of the practice of applying Article 2401 of the Criminal Code of Ukraine, which made it possible to identify

issues of qualification and implementation of criminal liability for illegal actions with amber and, based on this, to put forward balanced recommendations for improving the current Criminal Code of Ukraine and the practice of applying its individual provisions on the regulation of liability for illegal actions with amber. Practical value. Based on the results of elaboration on the research piece, specific proposals have been developed which can be considered during further lawmaking regarding updating relevant provisions of the applicable criminal law and in the course of law enforcement actions. It has been argued that in order to improve the ban under study, it is necessary to strengthen criminal liability regime for the commission of the acts provided for in Part 1 of it in the case of their commission by a group of persons, organized group and on a large scale. It has been justified that the analyzed composition of the crime should be constructed as formal and material. It has been proven that law enforcement bodies should: a) indicate in the relevant procedural documents, firstly, not only the mass of amber, but also its value, secondly, refer to the acts of regulatory legislation, which establish the procedure for mining and circulation of amber; b) pay more attention to the individualization of criminal liability of guilty persons.

30. Movchan, R., Kamensky, D. (2024). Criminal liability for soil pollution in Western Europe and Ukraine: A comparative study. *Soil Security*, 14, art. no. 100129.

https://doi.org/10.1016/j.soisec.2024.100129

Based on acomparative approach, this article examines issues of criminal liability for soil pollution in several Western European countries and Ukraine. National criminal statutes, their elements, forms of culpability in particular, are examined in detail. Based on the research results, certain conclusions are drawn with an eye on improving criminal laws of both European countries and Ukraine. In particular, the approach is supported, where: (a) the amount of damage, caused by the land pollution, is formalized; (b) sanctions for intentional and careless actions are properly differentiated.

31. Mykolaiets, A., Reznichenko, V., Yakovyshyna, T., Gogunska, O., Shpatakova, O. (2024). Influence of environmental innovation on ecological productivity. *African Journal of Applied Research*, 10 (1), pp. 454–465.

https://doi.org/10.26437/ajar.v10i1.715

Purpose: This research aims to analyse the potential of advanced environmental technologies and innovations to improve ecological productivity. Design/Methodology/Approach: The study is theoretical. The methods of generalisation, comparison, systematisation, abstraction, analysis, synthesis, and concretisation were

used at the theoretical level. Research Limitation/Implications: The mechanisms for ensuring sustainable development through implementing environmental innovation activities were analysed. The essence of environmental innovations was identified, and trends in their implementation were revealed. Findings: The activities of Ukrainian business entities are currently characterised by low innovation activity. Environmental innovations contribute to increasing environmental productivity through an effective coordinated vector of activities aimed at developing green energy. Social Implication: The potential of economic stimulation and business motivation to transition to renewable energy sources to reduce emissions and increase climate resilience was identified. Practical Implication: The research results' practical importance lies in their applicability to optimise Ukraine's socio-economic development by implementing sustainable climate policies and preventive environmental conservation measures. Originality/ Value: The research process has highlighted the significance of reducing the use of exhaustible resources and minimising emissions into the atmosphere to alleviate anthropogenic pressure on the environment.

32. Mytsyk, H., Popova, A., Bohdanova, M. (2024). The Use of Gamification in the System of Social and Psychological Adaptation of Forcibly Displaced Teenagers from Ukraine: Reflections of the German Experience. *Journal of Education for Students Placed at Risk*, pp. 129–155.

https://doi.org/10.1080/10824669.2024.2309359

The article presents its own view on a partial solution to the problem of social and psychological adaptation of teenagers who, as a result of the armed aggression of the Russian Federation against Ukraine, have become forced migrants. Based on the conducted social-pedagogical experiment, it was found that social and psychological deafness is typical for forcibly displaced teenagers from Ukraine even after the implementation of a complex set of adaptation measures at the German school. This confirms the necessity of making certain changes in the existing adaptation programs for this category of individuals. It is justified to use gamification in school conditions as a way of influencing the process of social and psychological adaptation of forcibly displaced teenagers from Ukraine. The text highlights the structure of gamification in the educational process and points out its advantages. It determines the main tasks of social and psychological adaptation of teenagers through gamification, including subcultural identification, self-actualization, and emotional congruence. It presents an algorithm for the introduction and use of gamification in this process. The author's program, "Together" for the social and psychological adaptation of forcibly displaced teenagers from Ukraine, provides a detailed description of the active use of gamification elements.

33. **Nedilko, S., Chornii, V., Sheludko, V., Scherbatskyi, V., Zhydachevskyy, Y., Sementsov, Y., Hamamda, S. (2024). Effect of the Multi-Walled Carbon Nanotubes on Dilatometric and Optical Properties of the Micro/Nano-Sized Cellulose.** ***Proceedings 42nd IEEE International Conference on Electronics and Nanotechnology, ELNANO*****, pp. 316–319.**

https://doi.org/10.1109/ELNANO63394.2024.10756923

The concentration set of the composites, where the micro/nano crystalline cellulose (M/NC) was used as a matrix, while multi-walled carbon nanotubes (MWCNT) were used as fillers, were prepared and studied. The dilatometric properties (relative linear thermal expansion, coefficient of the thermal expansion (CTE)), diffuse reflection spectra, photoluminescence spectra and luminescence intensity have been measured and analyzed. The band gap Eg was evaluated, so it was found that Eg value decreases (3.6 →3.4 eV) when the MWCNT content increases. The temperature behaviors of the relative expansion and CTE revealed two temperature ranges with different values of CTE. Noted ranges correspond to parts of the cellulose matrix with various amorphous phase structures. Nanocomposite materials under study are characterized by photoluminescence (PL), whose spectra range from soft ultraviolet to red light. The PL spectra of 'pure' M/NC are formed by a complex band lying in the range 350 - 650 nm with peak position near 425 nm. When MWCNTs are incorporated into the cellulose matrix the PL intensity decreses and the spectral profile is deformed. Thus, the UV band (peak position near 330 nm) becomes the most intensive in the spectra. An appearance of the and increasing its relative intensity is considered as features of the micro/nanosized carbon fragments/clusters/dots luminescence in the cellulose matrix. Concentration dependences of the intensity and of luminescence spectra confirmed the conclusion about the selective interaction of the carbon filler with different phase components of the cellulose matrix.

34. **Nesterenko, M., Mytsyk, H., Petryk, K., Kovachov, S., Suchikova, Y. (2024). From Resistance to Acceptance: The Role of Higher Education in the Integration of STEM Education for Sustainable Development.** ***Journal for STEM Education Research*****.**

https://doi.org/10.1007/s41979-024-00141-0

This article dips into the integration challenges and potential of STEM education within higher education institutions aimed at promoting sustainable development. In the context of higher education, it means implementing innovative approaches to teaching that equip students with the skills and knowledge necessary to address global challenges. However, like all educational innovations, the process of implementing STEM is not without its challenges. Therefore, a central theme is the resistance from both management and academic staff towards adopting this relatively new interdisciplinary approach. The study identifies critical barriers to STEM integration, including fear of the unknown, inadequate resources, and entrenched educational practices. It also discusses strategies for

overcoming these barriers, such as effective communication, leadership support, gradual integration, comprehensive training, and adequate resource provision. The article emphasizes resistance as constructive feedback, advocating a paradigm shift in how resistance is perceived and managed within educational frameworks. It highlights that understanding and integrating resistance can significantly improve the effectiveness of STEM education in HEIs. This work is significant as it guides educational policy and curriculum development that addresses contemporary challenges and workforce needs. It offers a framework for understanding and leveraging resistance to create a more innovative educational environment in higher education.

35. Nesterenko, T., Kozii, O., Varych, N., Shulzhenko, A., Tsypina, D. (2024). Language technologies impact on modern communication: analysis of new formats, challenges, and education. *Multidisciplinary Science Journal*, 6, art. no. e2024ss0215.

https://doi.org/10.31893/multiscience.2024ss0215

Updating modern communication requires the improvement of innovative language technologies to facilitate communication in remote conditions. The process of modern communication requires integration into the world and European space currently. Modern society faces more and more new communication challenges that need to be solved. Therefore, our research aimed to identify innovative language technologies that are often used by modern society and to determine their advantages and disadvantages. Moreover, the article deals with studying the peculiarities of modern communication. To achieve the purposes of the research, such methods were used: theoretical: analysis of scientific literature; empirical: questionnaires, interviews; graphics. The results of the study made it possible to define the most popular language technologies in Ukraine, and their pros and cons. Searching the problem provided the opportunities to determine the main formats and challenges that influence modern communication and the ways to improve innovative language technologies facilities for comfortable communication.

36. Ojala-Fulwood, M., Miyamoto, B., Ruiz, M., Martins, H., Bakas, F. E., Čapská, V., Pirita, F., Prosinger, L., Lyman, I., Konstantinova, V. (2024). Memorializing Women on the Move: A register of migrant women landmarks in Europe. *Open Research Europe*, 4, art. no. 109.

https://doi.org/10.12688/openreseurope.17052.1

This dataset was developed by COST Action 19112 Women on the Move (WEMov), which engages in unveiling women migrants' presence and participation in the construction of Europe. The dataset was built as a register of toponyms and monuments in the political and public landscape in Europe – such as street names, school names and parks, as well

as statues and memorials – that celebrate women migrants. With the dataset we want to discover how women migrants are remembered and what kind of landmarks present these individuals who have had an episode of migration for a variety of reasons. Moreover, our aim is to make these landmarks and the stories of women migrants visible by presenting the results of the dataset in an interactive map on our website. At the moment, the dataset includes 1000 landmarks. The collection of data was based on voluntary work of scholars and students from over 40 different European countries. We have aimed for broad geographical coverage; however, some areas are better represented than others due the nature of data collection. The collection of data is an ongoing process and therefore the dataset in Nakala repository, to which this data note refers, presents the situation in July 2023. Updated versions of the dataset will be made available in Nakala and we will download new landmarks to our interactive map on a regular basis. The selected landmarks and migrant trajectories feature cross-community or cross-cultural migration. They show both typical and exceptional forms of mobility and present women of different age, profession, social status and migration status. This intersectionality of the project and the dataset highlights not only the richness of these landmarks and their value for scholarship but also the wide spectrum of migrant women and their contribution to society.

37. Ordatii, N., Nykonenko, O., Barbashova, I., Klymenko, I., Hrytsaniuk, V. (2024). The influence of social media on psychological well-being: Examination and outlook. *Multidisciplinary Science Journal*, 6, art. no. e2024ss0721.

https://doi.org/10.31893/multiscience.2024ss0721

The article is dedicated to assessing the impact of social networks on the mental health of the population. Social networks have gained global popularity and are integral to modern life. Currently, social networks are platforms for personal development, communication skills, and socialization, searching for like-minded individuals and new friends, maintaining personal blogs, distance learning, and work. This study aims to analyze the impact of social networks on the mental health of the population and assess the possible perspectives of this influence. Theoretical methods were used to achieve the set goal: studying, analyzing, and systematizing scientific literature data. Currently, approximately 60% of the world's population uses social networks, with approximately 40% of users using them not only for entertainment and relaxation but also for work and education, which determines their socioeconomic significance. According to statistics, the most popular social networks worldwide are Facebook, YouTube, WhatsApp, Instagram, WeChat, and TikTok. In addition, most social media users are registered in one or several of them. On the one hand, social networks can help people communicate regardless of distance, acquire new knowledge, meet like-minded individuals, exchange ideas, and increase social support. On the other hand, their excessive use is associated with the development of addiction, low self-esteem, levels of anxiety and depression, and deterioration of social and physical health. These problems are particularly acute with

increasing time spent in the virtual world. Therefore, in recent years, there has been increased interest in studying the impact of social networks on the health of the population as a whole and persons in particular and in developing and implementing effective methods to prevent the negative aspects of their us. This is a promising direction for further research.

38. Pankratova, V., Chernenko, K., Bocharov, D., Chesnokov, A., Sychikova, Y., Popov, A. I., Pankratov, V. (2024). Unveiling of UV intrinsic luminescence in $(Lu,Y)_2SiO_5:Ce^{3+}$ single crystals. *Optical Materials*, 152, art. no. 115554.

https://doi.org/10.1016/j.optmat.2024.115554

Intrinsic luminescence in Ce-doped $(Lu,Y)_2SiO_5$ (or LYSO:Ce) single crystals have been studied by means of excitation luminescence spectroscopy in the vacuum ultraviolet energy range under synchrotron radiation. A previously unreported luminescence band with emission at 250 nm has been discovered as well as its thermal behavior was described in the temperature range 10–120 K. The excitation spectra as well as time-resolved properties of this band suggest that this emission corresponds either to the singlet component of self-trapped exciton or to a self-trapped exciton in the lutetium sublattice of LYSO single crystals.

39. Pavlenko, L. V., Pavlenko, M. P. (2024). Using native virtualization technologies for teaching IP telephony to future IT specialists. *CEUR Workshop Proceedings*, 3844, pp. 23–34.

https://ceur-ws.org/Vol-3844/

This paper explores the use of virtualization technologies for teaching IP telephony to future IT specialists. It defines the requirements for students' professional training in this field and identifies the components of a network training laboratory for IP telephony. It also analyzes the modern approaches to virtualization technologies and their advantages for learning IP telephony. The paper proposes native virtualization as a suitable solution for creating a virtual training laboratory using VirtualBox software. It reports the results of a pedagogical experiment that confirmed the effectiveness of the developed virtual laboratory and repository of virtual hosts for teaching IP telephony. The paper highlights the benefits of virtual machines for student mobility and remote learning, especially during the pandemic and war.

40. **Pavlenko, L. V., Pavlenko, M. P., Khomenko, V. H. (2024). Teaching statistics to future programmers using real data sets and R programming language. *CEUR Workshop Proceedings*, 3820, pp. 102–117.**

https://ceur-ws.org/Vol-3820/

This paper addresses the problem of teaching statistics to future programmers. It argues that the theoretical content of teaching statistics needs to be updated and oriented towards the practical field, even at the higher education level. It suggests that the teaching of statistics to students should move from theoretical methods to practical solutions of applied problems and emphasize the analysis and interpretation of results rather than the statistical calculations. The paper proposes a system of tasks based on real data sets obtained from statistical research as a way of improving the learning of statistics for future programmers. It shows that such tasks can increase the students' motivation compared to synthetic examples, which are commonly used in statistics courses. The paper also reviews the software tools for statistical data analysis and identifies their features and advantages for the learning process. It recommends using R, a specialized programming language, as the main tool for teaching statistics.

41. **Petryk, K., Nesterenko, M., Mytsyk, H., Kovachov, S., Kryvylova, O., Suchikova, Y. (2024). A cross-specialization study of pre-service teachers' perception of STEM education. *International Journal of Science Education*, pp. 1-27.**

https://doi.org/10.1080/09500693.2024.2432489

This article investigates STEM education perceptions among pre-service teachers from various specialties at a pedagogical university in Ukraine, highlighting its role in addressing socio-economic and environmental challenges of the country. The study aims to understand how pre-service teachers from various specialties view the integration of STEM into their professional activity. Key findings indicate that while there is a general positive attitude towards STEM education, significant variations exist across different specialties. Pre-service teachers of the 'Science' and 'Early Childhood and Primary Education' categories demonstrate higher engagement with STEM-oriented tasks compared to those in the 'Arts and Humanities' and 'Social Sciences' categories. The research reveals a gap in pre-service teachers' understanding of STEM's interdisciplinary nature, often associating it primarily with technological innovations. The study identifies several barriers to the effective implementation of STEM education, including limited resources, insufficient knowledge of teachers, and a lack of appropriate teaching materials. To address these challenges, the article suggests enhancing STEM courses, providing professional development for teachers, and fostering collaboration with industry. Overall, the research underscores the importance of aligning STEM education with the needs and perceptions of pre-service teachers, emphasising its role in developing critical skills for future educators and contributing to Ukraine's recovery.

42.Popova, A., Tsybuliak, N., Lopatina, H., Suchikova, Y., Kovachov, S., Bogdanov, I. (2024). I (don't) want to go home. Will young people return to the de-occupied territories of Ukraine? *Heliyon*, 10 (15), art. no. e35230.

https://doi.org/10.1016/j.heliyon.2024.e35230

This study focuses on understanding the intentions and perspectives of the youth in Ukraine regarding their return to their native cities post-de-occupation. In the context of sustainable regional development, the research aims to grasp the complexities of the youth's mindset, which is crucial for effective policy-making and strategic planning in the post-occupation period. The study utilized a mixed-methods approach, combining quantitative surveys and qualitative focus group discussions. The quantitative phase involved a survey, targeting youth aged 14–35 and its district, to gather data on their willingness to return to de-occupied territories, trust in local institutions, and views on reconstruction efforts. This was followed by qualitative research through structured focus groups, segmented into participants with varying attitudes towards returning. The study highlights the importance of stability, economic growth, and the rebuilding of trust from the youth's viewpoint. It emphasizes the critical role of young people as key stakeholders in the reconstruction and planning processes.

43.Popova, E., Bezrukovs, D., Bezrukovs, V., Suchikova, Y., Popov, A. I. (2024). Radio-astronomical monitoring of active regions in the microwave range in the service of forecasting solar flares. *Modern Physics Letters A*, 39 (15), art. no. 51465038.

https://doi.org/10.1142/S021773232450069X

One of the key factors of space weather is solar flare activity, the monitoring and prediction of which is an important task of specialized dedicated groups of space experts and solar astronomers. Solar flare forecasts are based on identifying and detecting the so-called precursors, specific processes in solar activity events that occur before flares. Collecting data for space weather analysis and prediction comes down to several types of measurements performed by more than a dozen spacecraft. Ground-based observations and monitoring nowadays are becoming more or less complimentary. One of the reasons for this is the limitation of observation time with ground-based telescopes due to adverse Earth weather conditions. However, solar radio astronomy is immune to almost any weather activity, and the main question here is what new quality it can bring. Observational data accumulated in the 20th century show that solar radio bursts can be associated with flare activity. In addition, the existing network of solar radio telescopes is already well established. As an example, in this paper, we describe the possibilities of a fully steerable 32-meter radio telescope of Ventspils International Radio Astronomy

Centre (VIRAC), Latvia, which can be useful for searching for new precursors of solar flares.

44. Rudyshyn, S., Truskavetska, I., Romanyuk, S., Vakal, A., Hnatyuk, V. (2024). The role of motivation factors in education for the development of student's environmental leadership in HEIs. *Journal of Education and Learning*, 18 (1), pp. 1–8.

https://doi.org/10.11591/edulearn.v18i1.21016

This study aimed to explore the motivational factors influencing the development of environmental leadership qualities among students in higher educational institutions (HEIs). The study used surveys based on the methods of Zhang and Nunez Alonso, the Karpenko criteria, and the methods of Chen and Semedo. The study revealed that the proposed program, designed to enhance motivation and foster environmental leadership qualities, positively impacted students' motivation. Approximately one-third of students exhibited only an elementary level of environmental culture, indicating a lack of focus on environmental protection. However, applying the proposed approach increased motivation, environmental culture, and environmental leadership among students. Furthermore, a correlation was identified between motivation factors, environmental culture, and environmental leadership qualities. Future research should explore strategies for promoting ecological behavior among students, schoolchildren, and adults.

45. Shpektorenko, I., Zahurska-Antoniuk, V., Pasichnyi, R., Ortina, G., Orhiiets, O., Pavlovskyi, O. (2024). Causes and consequences of intellectual migration of human capital in the context of national security: Public administrative aspect. *Edelweiss Applied Science and Technology*, 8 (6), pp. 1322–1333.

https://doi.org/10.55214/25768484.v8i6.2249

The article considers theoretical and practical approaches to processes of the international intellectual migration and investigates modern processes of this phenomenon, their feature, the precondition and the reason at the present. The special attention is given to the role of intellectual migration of human capital on the landscape of national security of countries. It is shown that although the problem of intellectual migration of human capital, "brain drain", previously attracted economists and sociologists, today it is in the center of attention of political scientists and researchers of international relations. The relationship between intellectual migration of human capital and soft power is considered.Potential vectors of public administration combatting negative consequences of intellectual migration of human capital within the plane of national security.

46. **Somakumar, A. K., Zhydachevskyy, Y., Wlodarczyk, D., Haider, S. S., Barzowska, J., Bindu, K. R., Edathumkandy, Y. K., Zayarniuk, T., Szewczyk, A., Narayanan, S., Lysak, A., Przybylinska, H., Anila, E. I., Suchocki, A. (2024). Temperature and pressure dependent luminescence mechanism of a zinc blende structured ZnS:Mn nanophosphor under UV excitation. *Journal of Materials Chemistry C*, 12 (19), pp. 7041–7052.**

https://doi.org/10.1039/d4tc00960f

A comprehensive photoluminescence and mechanoluminescence analysis of a ZnS:Mn^{2+} nano-phosphor with a zinc blende structure is presented. The sample containing quantum dot-sized nanocrystallites was synthesized by the chemical precipitation method and shows excellent orange luminescence at ambient conditions related to the $^4T_1 \rightarrow {}^6A_1$ transition. The sample shows stable and identical luminescence behavior under both UV and X-ray excitation at ambient conditions and also exhibits excellent self-powered mechanoluminescence properties. The pressure and temperature-induced luminescence mechanism of the phosphor is also established. The shift of the $^4T_1 \rightarrow {}^6A_1$ luminescence band of Mn^{2+} with both pressure and temperature and the luminescence mechanism is explained via the d^5 Tanabe Sugano diagram. The broad luminescence band of the $^4T_1 \rightarrow {}^6A_1$ transition shifts from the visible to near-infrared range at a rate of −35.8 meV GPa^{-1} with the increase of the pressure and it is subsequently quenched completely at a pressure of 16.41 GPa due to a reversible phase transition from zinc blende ($F\bar{4}3m$) to rocksalt ($Fm\bar{3}m$) phase. The high-pressure and temperature-dependent decay kinetics measurements of the sample luminescence are also reported.

47. **Stasiv, V., Zhydachevskyy, Y., Stadnik, V., Hreb, V., Mykhaylyk, V., Vasylechko, L., Luchechko, A., Wojciechowski, T., Sybilski, P., Suchocki, A. (2024). Chemical tuning of photo- and persistent luminescence of Cr^{3+}-activated β-Ga_2O_3 by alloying with Al_2O_3 and In_2O_3. *Journal of Alloys and Compounds*, 982, art. no. 173827.**

https://doi.org/10.1016/j.jallcom.2024.173827

An effect of alloying of the monoclinic β-Ga_2O_3 with Al_2O_3 and In_2O_3 on the photoluminescent, thermoluminescent and persistent luminescent properties of Cr^{3+} ions has been comprehensively investigated. For this purpose, various series of Cr^{3+} and Ca^{2+} co-doped microcrystalline phosphors were synthesized by the solution combustion method, including pseudobinary compounds like (Ga-Al)$_2O_3$ with up to 20 % Al and (Ga-In)$_2O_3$ with up to 50 % In as well as pseudoternary compounds (Ga-Al-In)$_2O_3$ with balanced proportion of Al, Ga and In. The phase composition and crystal structure of the obtained materials were examined by X-ray powder diffraction technique.

Detailed luminescence studies were conducted for the $(Ga\text{-}Al)_2O_3$ and $(Ga\text{-}In)_2O_3$ compounds which exhibited a single-phase monoclinic structure. Low-temperature and time-resolved photoluminescence investigations of the Cr-doped pseudobinary compounds unveiled several types of Cr^{3+} centres, attributed to the Al-, Ga- and In-centred octahedra in the studied alloys. The obtained results underscore the benefit of bandgap engineering through alteration in the host lattice chemical composition for efficient tuning of the thermoluminescent and persistent luminescent properties of the near-infrared-emitting $\beta\text{-}Ga_2O_3$:Cr based phosphors. Furthermore, it was demonstrated that modification of the chemical composition of the host lattice also adjusts the thermometric performance of the studied phosphors. Indeed, the specific sensitivity of the $\beta\text{-}Ga_2O_3:Cr^{3+}$ decay time luminescence thermometer showed nearly twofold enhancement when the host lattice was alloyed with 30 % of In_2O_3.

48. Stepura, E., Zavhorodnia, O., Sushchynska, T. (2024). Features of the Attributional Style of Individuals with Alexithymia and Psychopathy [Особливості атрибутивного стилю осіб з алекситимією та психопатією]. *Insight*, 12, pp. 495–514.

https://doi.org/10.32999/2663-970X/2024-12-20

The aim of the study is to determine the features of the attributional style of individuals with alexithymia and psychopathy. Methods. Theoretical methods: analysis and generalization of theoretical propositions related to the research problem, based on a review of scientific sources and research data; empirical methods: Seligman Attributional Style Questionnaire (Seligman, 2006), 26-item Toronto Alexithymia Scale (Taylor et al. 1985), Levenson Self-Report Psychopathy Scale (Levenson, 1995); methods of mathematical statistics. Results. The interrelations between alexithymia, psychopathic traits, and attributional style were studied. A negative correlation between alexithymia and the general level of optimism was established ($R = -.32$; $p < .010$). It was found that the primary factor of psychopathy has a weak but significant direct correlation with alexithymia ($R = .20$; $p < .050$). Secondary psychopathy has a high direct correlation with alexithymia ($R = .46$; $p < .010$). It was determined that the primary factor of psychopathy has a direct correlation with the general level of optimism ($R = .29$; $p < .010$). A negative correlation between secondary psychopathy and the general level of optimism was noted ($R = -.28$; $p < .010$). Numerous significant inverse correlations between specific cognitive attitudes that constitute an optimistic attributional style, alexithymia, and the secondary factor of psychopathy were identified. Discussion and conclusions. The specific features of the attributional style of individuals with alexithymia and psychopathy were determined, and the connections of psychological constructs with the components of the attributional style were clarified. The presence of a relationship between alexithymia and primary and secondary psychopathy was demonstrated. It was found that individuals with alexithymia and secondary psychopathy are characterized by a pessimistic attributional style, whereas those with primary psychopathy are characterized by an optimistic attributional style. The attributional style of people with secondary psychopathy is mainly

depressogenic, in contrast to people with primary psychopathy, in whom such a feature is not observed. The study results may be useful in choosing psychocorrectional strategies for individuals with alexithymia and psychopathy.

49. Subbot, A. I., Lysenko, T. V., Anokhin, V., Mazur, I., Muntian, L. (2024). The peculiarities of labor legal relations with a family doctor in the context of healthcare reform in Ukraine. *Edelweiss Applied Science and Technology*, 8 (5), pp. 1708–1714.

https://doi.org/10.55214/25768484.v8i5.1891

According to national and international legislation, every person on the territory of Ukraine has the right to qualified medical assistance. As a result of healthcare reform in Ukraine, family doctors have started working, with whom patients conclude declarations in accordance with Ukrainian legislation. Consideration of labor legal relations with a family doctor is extremely important and relevant, as there are many problems and gaps in practice and legislative activities that require research and resolution. The full-scale invasion of Russia on the territory of our state had a negative impact on labor legal relations with family doctors. Due to hostilities, many patients have left for safer places in Ukraine or abroad. Many family doctors, who left their home and place of residence, are generally forced to seek for another place of work. These are significant drawbacks of labor law in the field of medicine, which we are currently facing in Ukraine and which require regulation and finding ways to resolve them. Therefore, consideration of theoretical and legislative material is relevant and extremely important. The purpose is to study the peculiarities of labor legal relations with a family doctor in the context of healthcare reform in Ukraine. The object is the legal basis and legislative framework, which regulate labor legal relations with a family doctor. Conducting research and summarizing qualifications, it can be said that general scientific methods, general methods, interdisciplinary methods, and specialized methods are applied. The analysis of the theoretical and legal source base, from the labor legislation, reveals ways to solve the problematic issues that family doctors face today. Incorporating positive international experience and making proposals for its further consideration and implementation in practice will make it possible to solve the current problems, taking into account all the risks. It is proposed to increase the salary of family doctors, regardless of the number of patients who have signed declarations with them. It is proposed to highlight the fundamental principles of labor activity with family doctors, which are based on the principles of legality, openness, voluntariness, normativity, transparency, control, and informativeness. The proposal is to enhance public awareness of the services of family doctors and the conclusion of declarations without being tied to the location.

50. **Suchikova, Y. (2024). University without walls—science without borders. *Management in Education*.**

https://doi.org/10.1177/08920206241293972

Abstract not available

51. **Suchikova, Y., Bohdanov, I., Kovachov, S., Popov, A. I. (2024). Thin CIGS Films Obtained by Spray Pyrolysis. *Springer Proceedings in Physics*, 253 SPP, pp. 237–252.**

https://doi.org/10.1007/978-3-031-67519-5_17

This article presents the results of synthesizing polycrystalline CuIn(Ga)Se2 (CIGS) films using a combined spray pyrolysis method followed by additional selenization. The main focus is on analyzing the obtained films' structural, morphological, and compositional characteristics by applying XRD, SEM, EDX, and Raman spectroscopy. XRD analysis confirmed the formation of a polycrystalline tetragonal chalcopyrite structure, while SEM and EDX analyses revealed a disordered morphology and high compositional uniformity. Raman spectroscopy emphasized the phase purity of the material. The results highlight the significant potential of the synthesized CIGS films in high-efficiency thin-film solar cells and open new possibilities for further improvement and development. The article aims to deepen the understanding of essential aspects of the synthesis and characteristics of photoelectric materials.

52. **Suchikova, Y., Kolomiiets, U., Popova, A., Lopatina, H., Tsybuliak, N. (2024). Calm me down, or I'll leave: anxiety and institutional support among Ukrainian academic staff during wartime. *BMC Public Health*, 24 (1), art. no. 3483.**

https://doi.org/10.1186/s12889-024-21040-4

Background: Mental health conditions among academic staff are a growing global concern, driven by factors such as heavy workloads, job insecurity, and a lack of institutional support. Anxiety, one of the most common mental health problems, is particularly widespread in academia, affecting cognitive function and productivity. In Ukraine, the ongoing war has intensified these challenges, creating unprecedented working conditions for academic staff. This study investigates the prevalence of anxiety among Ukrainian academics during wartime. It explores the impact on their desire to change careers and the perceived effectiveness of institutional mental health support. Methods: This cross-sectional study surveyed 429 academic staff from Ukrainian higher education institutions between December 2023 and February 2024. Anxiety levels were

measured using the Generalized Anxiety Disorder (GAD-7) scale, while additional questions assessed the desire to change professions and the perceived effectiveness of institutional mental health support. The data were analyzed using chi-squared tests, correlation analysis, and Ordinary Least Squares (OLS) regression. Results: The findings revealed that 44.3% of respondents experienced moderate (24%) or severe (20.3%) anxiety, reflecting the profound psychological toll of the war. There was a significant relationship between higher anxiety levels and an increased likelihood of considering a career change. While 90.2% of respondents viewed institutional mental health support as important, many felt that the existing programs were ineffective. Greater accessibility to psychological support services was associated with lower anxiety levels. Conclusions: The high prevalence of anxiety among Ukrainian academic staff during the war highlights the urgent need for targeted mental health interventions. Institutional mental health support – such as accessible psychological services – is important in the ongoing war conditions. These findings underscore the broader implications of anxiety for the sustainability of Ukraine's educational and scientific sector during wartime and emphasize the need for comprehensive mental health programs tailored to the unique challenges faced by academics in wartime.

53. Suchikova, Y. O., Kovachov, S. S. (2024). Nanoart in STEAM education: Combining the microscopic and the creative. *Journal of Physics: Conference Series*, 2871 (1), art. no. 012024.

https://doi.org/10.1088/1742-6596/2871/1/012024

This article explores the integration of Nanoart within the STEAM (Science, Technology, Engineering, Art, and Mathematics) education framework, highlighting its pivotal role in enhancing interdisciplinary learning. Through a detailed examination of a project-based learning (PBL) initiative, the study showcases students specializing in "Applied Physics and Nanomaterials"engaging in creating nanostructures via electrochemical etching and their subsequent transformation into Nanoart. This educational endeavor exemplifies the seamless integration of STEAM components - combining scientific principles, technological application, engineering design, artistic creativity, and mathematical precision - and significantly deepens students' understanding of these elements. The article details each project phase, from conceptualization through execution, illustrating how students navigate the complexities of nanoscience and apply their interdisciplinary knowledge to produce tangible artistic and scientific outcomes. By transforming abstract scientific concepts into visually and intellectually stimulating Nanoart, the project encourages creative thinking and innovation among students. It further demonstrates how integrating art into STEM subjects can make scientific education more accessible and engaging, attracting a more comprehensive array of students and enriching their academic and practical experiences. Additionally, the study discusses the broader implications of Nanoart in STEAM education, emphasizing its effectiveness in bridging the gap between scientific exploration and artistic expression. It argues that this

approach not only demystifies complex concepts but also fosters a holistic educational environment that pr epares students to think critically and creatively across disciplines.

54. Suchikova, Y., Kovachov, S., Bohdanov, I., Drozhcha, D., Kosogov, I., Karipbayev, Z. T., Popov, A. I. (2024). Synthesis and Characterization of β-Ga_2O_3/por-GaAs/mono-GaAs Heterostructures for Enhanced Portable Solar Cells [Синтез та характеристика β- Ga_2O_3/por-GaAs/mono-GaAs гетероструктур для покращених портативних сонячних елементів]. *Physics and Chemistry of Solid State*, 25 (3), pp. 546–552.

https://doi.org/10.15330/pcss.25.3.546-552

This study comprehensively details the successful synthesis of a β-Ga_2O_3/por-GaAs/mono-GaAs heterostructure designed for portable solar cells. Employing a combination of electrochemical etching and high-temperature oxygen annealing, we engineered a heterostructure that exhibits both crystalline and amorphous phases. XRD, SEM, and Raman spectroscopy analyses confirmed the formation of crystalline β-Ga_2O_3 and GaAs, with the porosity in the GaAs layer enhancing light absorption and charge collection. The potential of the heterostructure to improve photovoltaic performance is attributed to the inherent stability of Ga_2O_3 and the increased surface area provided by the porous GaAs.

55. Suchikova, Y., Kovachov, S., Bohdanov, I., Karipbayev, Z. T., Zhydachevskyy, Y., Lysak, A., Pankratov, V., Popov, A. I. (2024). Advanced Synthesis and Characterization of CdO/CdS/ZnO Heterostructures for Solar Energy Applications. *Materials*, 17 (7), art. no. 1566.

https://doi.org/10.3390/ma17071566

This study introduces an innovative method for synthesizing Cadmium Oxide /Cadmium Sulfide/Zinc Oxide heterostructures (CdO/CdS/ZnO), emphasizing their potential application in solar energy. Utilizing a combination of electrochemical deposition and oxygen annealing, the research provides a thorough analysis of the heterostructures through scanning electron microscopy (SEM), energy-dispersive X-ray (EDX) spectroscopy, X-ray diffraction (XRD), Raman spectroscopy, and photoluminescence (PL) spectroscopy. The findings reveal a complex surface morphology and a composite structure with significant contributions from hexagonal CdS and cubic CdO phases. The study highlights the uniformity in the distribution of luminescent centers and the crystalline quality of the heterostructures, which is evident from the PL analysis. The redshift observed in the emission peak and the additional peaks in the excitation spectrum indicate intricate optical properties influenced by various factors, including quantum confinement and

lattice strain. The research demonstrates these heterostructures' potential in enhancing solar cells' efficiency and applicability in optoelectronic devices. This comprehensive characterization and analysis pave the way for future optimization and application in efficient and sustainable solar energy solutions.

56. Suchikova, Y., Kovachov, S., Bohdanov, I., Konuhova, M., Popov, A. I. (2024). Synthesis of periodic porous structures on the surface of indium phosphide. *Latvian Journal of Physics and Technical Sciences*, 61 (5), pp. 3–15.

https://doi.org/10.2478/lpts-2024-0032

The paper demonstrates the possibility of forming specific nanostructures of the "parquet" type of nanowires on the InP surface. The resulting nanostructure is characterised by an ordered transverse and longitudinal relative shift of separate nanowires. A dislocation model is proposed that explains the mechanism of such structure formation. The numerical estimates of the geometric parameters of the nanostructure obtained during theoretical modelling are quite adequate for the experimental results.

57. Suchikova, Y., Kovachov, S., Bohdanov, I., Konuhova, M., Zhydachevskyy, Y., Kumarbekov, K., Pankratov, V., Popov, A. (2024). Wet Chemical Synthesis of $Al_xGa_{1-x}As$ Nanostructures: Investigation of Properties and Growth Mechanisms. *Crystals*. 14 (7), art. no. 633.

https://doi.org/10.3390/cryst14070633

This study focuses on the wet chemical synthesis of AlxGa1−xAs nanostructures, highlighting how different deposition conditions affect the film morphology and material properties. Electrochemical etching was used to texture GaAs substrates, enhancing mechanical adhesion and chemical bonding. Various deposition regimes, including voltage switching, gradual voltage increase, and pulsed voltage, were applied to explore their impact on the film growth mechanisms. SEM analysis revealed distinct morphologies, EDX confirmed variations in aluminum content, Raman spectroscopy detected structural disorders, and XRD analysis demonstrated peak position shifts. The findings emphasize the versatility and cost-effectiveness of wet electrochemical methods for fabricating high-quality AlxGa1−xAs films with tailored properties, showing potential for optoelectronic devices, high-efficiency solar cells, and other advanced semiconductor applications.

58. **Suchikova, Y., Kovachov, S., Bohdanov, I., Kosogov, I., Drozhcha, D., Karipbayev, Z., Popov, A. (2025). Investigation of the Dynamics of Electrochemical Dissolution of n-InP(111) in Various Electrolyte Compositions and Determination of Optimal Etching Conditions. *Nanosistemi, Nanomateriali, Nanotehnologii,* 22 (4), pp. 1025–1037.**

https://www.imp.kiev.ua/nanosys/ua/articles/2024/4/nano_vol22_iss4_p1025p1037_2024_abstract.html

We present a study on the dynamics of the electrochemical dissolution of n-InP(111), explicitly analysing the behaviour of the 'electrolyte– semiconductor' system in different electrolyte compositions, based on the analysis of critical points of the electrochemical reaction. Critical points are defined as characteristics of the technological process, where active phase dissolution of the sample surface is observed. We determine the minimum and maximum current-density values required to initiate the pore formation process on the surface of n-InP(111) in different electrolyte compositions. Additionally, for all cases, the duration of the active phase of surface dissolution and the Flade's potential values are determined. This allows us to establish optimal parameters for treatment time, current density, and anodizing voltage for etching n-InP(111) in aqueous and alcoholic solutions of hydrochloric, hydrofluoric, and nitric acids. This, in turn, enables understanding and investigation of the kinetics of electrochemical surface dissolution as an essential result for unifying the requirements of the technological process of nanostructuring the surface of indium phosphide. The tools presented for analysing the dynamics of the electrochemical dissolution of n-InP can be applied to assess the behaviour of various semiconductors during electrochemical etching.

59. **Suchikova, Y., Kovachov, S., Bohdanov, I., Kosogov, I., Drozhcha, D., Popov, A. I. (2024). Design and structural characteristics of Ga_2O_3/por-GaAs/mono-GaAs Heterostructures for Advanced MEMS Applications. *International Conference on Perspective Technologies and Methods in MEMS Design*, pp. 48–51.**

https://doi.org/10.1109/MEMSTECH63437.2024.10620009

This study presents the synthesis and comprehensive characterization of a Ga_2O_3 / por-GaAs/mono-GaAs heterostructure. Utilizing a combination of electrochemical etching and oxygen annealing, we have successfully fabricated a heterostructure that incorporates both crystalline and porous layers. XRD and Raman spectroscopy confirmed the presence of crystalline β− Ga_2O_3 and GaAs phases, while SEM analysis revealed a highly porous morphology indicative of a complex phase composition. The structural integrity and quality of the heterostructure offer promising implications for MEMS technologies, leveraging the unique properties of the composite materials for enhanced device performance.

60. **Suchikova, Y., Kovachov, S., Bohdanov, I., Kosogov, I., Drozhcha, D., Popov, A. I. (2024). Electrochemical Synthesis and Characterization of AlGaAs/GaAs Nanostructured Heterostructures for Advanced Electronic and Optoelectronic Applications.** ***IEEE 7th International Conference on Smart Technologies in Power Engineering and Electronics, STEE 2024.***

https://doi.org/10.1109/STEE63556.2024.10747853

This article reports synthesizing and characterizing an AlGaAs/GaAs heterostructure, focusing on its potential applications in advanced electronics and optoelectronics. A nanostructured heterostructure was developed through a straightforward electrochemical deposition process, demonstrating significant flexibility in electronic and optical properties. The findings underscore the heterostructure's suitability for LED technology, high-power electronics, and potential in emerging technologies, emphasizing the advantages of the synthesis method in terms of simplicity and scalability.

61. **Suchikova, Y., Kovachov, S., Bohdanov, I., Kosogov, I., Drozhcha, D., Popov, A. I. (2024). Ga_2O_3/por-GaAs/mono-GaAs Heterostructures for Advanced Electronic Applications.** ***IEEE 7th International Conference on Smart Technologies in Power Engineering and Electronics, STEE 2024.***

https://doi.org/10.1109/STEE63556.2024.10747888

This study presents the synthesis and detailed characterization of Ga_2O_3/por-GaAs/mono-GaAs heterostructures, exploiting the unique properties of gallium oxide and gallium arsenide for potential applications in advanced electronics. Employing an efficient electrochemical etching method, we have successfully fabricated a heterostructure that exhibits distinct layers with high crystallinity and well-controlled porosity. Raman scattering spectroscopy and X-ray diffraction (XRD) confirm the quality and integrity of the heterostructure, demonstrating sharp characteristic peaks indicative of minimal crystallographic defects. The straightforward and cost-effective synthesis method shows promise for scalable production. The prospect of integrating these heterostructures into powerful, high-frequency optoelectronic devices is highlighted, underscoring the potential for significant advances in semiconductor technologies. Future research directions are proposed to optimize the properties of the heterostructure further and explore integration with other advanced materials for multifunctional device applications.

62. **Suchikova, Y., Kovachov, S., Bohdanov, I., Kosogov, I., Drozhcha, D., Popov, A. I. (2024). Synthesis and Characterization of Hierarchical ZnO/ZnS Nanostructures on Porous Silicon for Advanced MEMS Applications.** ***International Conference on Perspective Technologies and Methods in MEMS Design*****, pp. 124–127.**

https://doi.org/10.1109/MEMSTECH63437.2024.10620059

This study uses a straightforward and cost-effective method to present the synthesis, morphological, and structural characterization of hierarchical ZnO/ZnS nanostructures formed on porous silicon substrates. We achieved flower-like crystallites by employing a two-stage synthesis process, showcasing a unique morphology with an increased surface area. Detailed analysis through Raman spectroscopy and X-ray diffraction (XRD) elucidated the heterostructure's high crystallinity and structural integrity despite inherent lattice mismatches. The study reveals that the flower-like hierarchical morphology, combined with the material's compositional properties, significantly enhances its physicochemical properties. These findings suggest potential ZnO/ZnS heterostructure applications in various microelectromechanical system (MEMS) technologies, including sensors, photodetectors, and photocatalysts.

63. **Suchikova, Y., Kovachov, S., Karipbaev, Z., Zhydachevskyy, Y., Bohdanov, I., Popov, A. I. (2024). Investigation of Photoluminescence and Raman Emission of Porous Gallium Phosphide.** ***Proceedings 42nd IEEE International Conference on Electronics and Nanotechnology, ELNANO*****, pp. 227–230.**

https://doi.org/10.1109/ELNANO63394.2024.10756876

This article presents a study of porous gallium phosphode (GaP) utilizing photoluminescence (PL) and Raman spectroscopy, followed by its synthesis by electrochemical etching. The investigation identifies a blue shift in the PL peak, indicative of quantum confinement phenomena, and spectral confirmation of structural integrity through Raman analysis. Deconvolution of the PL emission into Gaussian components further demarcates a complex defect structure. These results contribute significantly to the discussion on the impact of nanostructuring on semiconductor properties, providing a pathway to the refined application of GaP in optoelectronic device engineering.

64. **Suchikova, Y., Kovachov, S., Karipbaev, Z., Zhydachevskyy, Y., Bohdanov, I., Popov, A. I. (2024). Passivating Oxide Layers on the Surface of InP.** ***Proceedings 42nd IEEE International Conference on Electronics and Nanotechnology, ELNANO*****, pp. 223–226.**

https://doi.org/10.1109/ELNANO63394.2024.10756920

This study investigates the formation and characteristics of intrinsic oxide layers on the surface of n-type indium phosphide (InP), formed via electrochemical processing in a sulfuric acid environment. We have explored the oxide film's structure, chemical composition, and electronic properties using various analytical methods. The results indicate the formation of composite oxides with crackled morphologies and their impact on surface passivation. Our findings affirm the potential of InP native oxides for protective coatings yet highlight the need for further optimization to improve the uniformity and reduce the defectiveness of passivation layers.

65. **Suchikova, Y., Kovachov, S., Kosogov, I., Bohdanov, I., Popov, A. I. (2024). Improvement of ß-SiC/por-Si/mono-Si Heterostructures for Supercapacitor Applications by Mitigating Lattice Mismatch and Improving Electrochemical Performance.** ***Proceedings of the 2024 IEEE 14th International Conference "Nanomaterials: Applications and Properties", NAP 2024*****.**

https://doi.org/10.1109/NAP62956.2024.10739751

This research introduces a novel β-SiC/porSi /mono-Si heterostructure fabrication method aimed at addressing the challenges of lattice mismatch and enhancing electrochemical performance for supercapacitor applications. Integrating a porous silicon buffer layer mitigates strain, enhances adhesion, and reduces defect densities in SiC films. Comprehensive structural and crystalline assessments are conducted using SEM, EDX, XRD, and Raman spectroscopy, revealing an orderly and pure morphology with high crystallinity. Our results indicate significant potential for supercapacitors, evidenced by an increased surface area for charge storage and a stable electrode-electrolyte interface, crucial for rapid energy delivery and high-power applications. The straightforward carbonization process also underscores this technology's scalability and industrial viability.

66. **Suchikova, Y., Lysak, A., Kovachov, S., Konuhova, M., Zhydachevskyy, Y., Popov, A. I. (2024). Investigation of the Impact of Crystalline Arsenolite Oxide Formations on Porous Gallium Arsenide.** ***Physica Status Solidi (A) Applications and Materials Science*****, 221 (18), art. no. 2400365.**

https://doi.org/10.1002/pssa.202400365

Herein, the impact of arsenolite oxide (As_2O_3) crystallites on the structural and optical properties of porous gallium arsenide (GaAs) is examined, focusing on understanding the

potential passivation effect and its influence on material stability and safety. Utilizing a comprehensive set of analytical methods, including cathodoluminescence (CL) spectroscopy, Raman scattering spectroscopy, and X-ray diffraction, the interaction between the GaAs substrate and arsenolite crystallites is characterized. The results indicate that the crystallites do not significantly alter the electronic and optical properties of the underlying GaAs, suggesting a possible passivating effect that could enhance device performance. However, concerns regarding arsenolite's environmental stability and toxicity prompt a cautious approach to its application. Herein, the need for further research into conditions conducive to natural oxide formation, exploration of alternative passivation strategies, and development of safe and stable oxide layers is underscored. Reproducible results are necessary to confirm the differences in CL signals between samples, as the current findings are based on single measurements.

67. Suchikova, Y., Nazarovets, S., Popov, A. I. (2024). Ga_2O_3 solar-blind photodetectors: From civilian applications to missile detection and research agenda. *Optical Materials*, 157, art. no. 116397.

https://doi.org/10.1016/j.optmat.2024.116397

This study offers a comprehensive review of gallium oxide (Ga_2O_3)-based photodetectors, emphasizing their applications in solar-blind UV detection and missile tracking systems. Using bibliometric, patent, and content analysis, research trends and technological developments were examined through an extensive review of scientific publications and patents. The analysis highlights the evolution of Ga_2O_3 photodetectors, particularly in fabrication techniques, device performance, and military applications. The study identifies critical research gaps, such as the need for optimized fabrication methods and the development of self-powered photodetectors. It proposes a research agenda to improve the efficiency and reliability of Ga_2O_3-based photodetectors for advanced applications, including missile detection and beyond.

68. Suchikova, Y., Tsybuliak, N. (2024). ChatGPT isn't an author, but a contribution taxonomy is needed. *Accountability in Research*, pp. 1–6.

https://doi.org/10.1080/08989621.2024.2405039

Purpose: The increasing use of AI tools, particularly large language models like ChatGPT, in academic research has raised significant questions about authorship and transparency. This commentary emphasizes the need for a standardized AI contributions taxonomy to clarify AI's role in producing and publishing research outputs, ensuring ethical standards and maintaining academic integrity. Approach: We propose adapting

the NIST AI Use Taxonomy and incorporating categories that reflect AI's use in tasks such as hypothesis generation, data analysis, manuscript preparation, and ethical oversight. Findings: Establishing an AI contributions taxonomy for the production and publication of research output would address inconsistencies in AI disclosure, enhance transparency, and uphold accountability in research. It would help differentiate between AI-assisted and human-led tasks, providing more explicit attribution of contributions. Findings: Establishing an AI contributions taxonomy for the production and publication of research output would address inconsistencies in AI disclosure, enhance transparency, and uphold accountability in research. It would help differentiate between AI-assisted and human-led tasks, providing more explicit attribution of contributions. Practical implications: The proposed taxonomy would offer researchers and journals a standardized method for disclosing AI's role in academic work, promoting responsible and transparent reporting aligned with ethical guidelines from COPE and ICMJE. Value: A well-defined AI contributions taxonomy for the production and publication of research output would foster transparency and trust in using AI in research, ensuring that AI's role is appropriately acknowledged while preserving academic integrity.

69. Sullivan, J. E., Kamensky, D. (2024). Putin's power play: Russia's attacks on Ukraine's electric power infrastructure violate international law. *Electricity Journal*, 37 (2), art. no. 107371.

https://doi.org/10.1016/j.tej.2024.107371

International humanitarian law is a branch of public international law that seeks to moderate the conduct of wars to protect those who are not taking part in the hostilities. Under international humanitarian law, belligerents may not intentionally target civilians or installations that are indispensable to the survival of the civilian population. While collateral harm to civilians and civilian infrastructure may occur, international humanitarian law prohibits attacks that may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof which would be excessive in relation to the concrete and direct military advantage anticipated. In practice, these principles have not always been honored or enforced. State and non-state actors have deliberately targeted civilians and/or disregarded civilian impacts, often for the purpose of pressuring political leaders to capitulate. The increasing occurrence and severity of harm to civilians and civilian infrastructure in modern conflicts calls into question the continuing relevance of what were once viewed as fundamental protections. In this paper, we present a case study involving Russia's 2022–23 attacks on Ukraine's electric power infrastructure, which left millions of civilians without heat, water, or other basic services for extended periods in harsh winter conditions. Considering the scope, scale, and long-term impacts of these attacks, we conclude that Russia violated international law. We also suggest that a new international protocol may be necessary in order to more effectively deter and punish attacks on civilian infrastructure in future armed conflicts and military occupations.

70.Tsybuliak, N., Kolomiiets, U., Lopatina, H., Popova, A., Suchikova, Y. (2024). Anxiety among Ukrainian academic staff during wartime. *Scientific Reports*, 14 (1) art. no. 27152.

https://doi.org/10.1038/s41598-024-78052-8

The ongoing war in Ukraine has significantly impacted the mental health of academic staff, with anxiety emerging as a predominant issue. This study aimed to assess the prevalence and severity of generalized anxiety disorder (GAD) among Ukrainian academic staff and determine the influence of sociodemographic factors, such as gender, age, migration status, scientific degree, and job title, on anxiety levels. The research was conducted using a cross-sectional online survey between December 2023 and February 2024. The sample included 429 participants from various Ukrainian universities, representing both male and female academic staff, holding job positions such as assistants, senior lecturers, associate professors, and full professors. The findings revealed that 44.3% of participants experienced moderately severe to severe anxiety, with migration due to the full-scale war being a significant predictor of higher anxiety levels. Notably, male academic staff exhibited higher anxiety levels than their female counterparts, contrary to typical peacetime trends, suggesting that wartime responsibilities and societal expectations may play a crucial role. The data underscore the need for targeted mental health support, particularly for displaced academic staff, and highlight the importance of developing gender-specific interventions. These insights are vital for informing policies and support programs to enhance academic staff's mental health and productivity in conflict zones, ensuring the continuity and quality of scientific research during and after the war.

71.Tsybuliak, N., Lopatina, H., Shevchenko, L., Popova, A., Kovachov, S., Suchikova, Y., Popov, A. I. (2024). Researchers of Ukrainian universities in wartime conditions: Needs, challenges and opportunities. *Regional Science Policy and Practice*, 16 (9), art. no. 100012.

https://doi.org/10.1016/j.rspp.2024.100012

Against the backdrop of the ongoing war conflict between Russia and Ukraine, the article explores the needs, challenges, and opportunities that researchers affiliated with Ukrainian relocated university experienced. In the study, we investigated the impact of the war and the safety situation on the scientific activity of Ukrainian university researchers based on their geographical circumstances: those who living in occupied territories, those who had relocated to Ukrainian-controlled areas, or those who had temporarily moved abroad. We also analyzed the relationship between the unique challenges and needs faced by these researchers in light of their security predicaments and explored the extent to which they capitalized on available opportunities. The study

identifies a notable decrease in scientific activity among those who temporarily moved abroad. The widespread uncertainty and instability within Ukraine due to the conflict compel researchers to seek novel avenues for resuming scientific undertakings. Overall, the study underscores the evident impact of the war on researchers' scientific activities, necessitating immediate attention and effective actions. The decline in scientific activity and projected loss of academic potential pose political consequences demanding focused strategies for supporting university researchers during wartime.

72.Tsybuliak, N., Lopatina, H., Shevchenko, L., Popova, A., Suchikova, Y. (2024). Burnout and Migration of Ukrainian University Academic Staff During the War. *SAGE Open*, 14 (3).

https://doi.org/10.1177/21582440241279137

This study examines the impact of migration processes on burnout among Ukrainian university academic staff during the full-scale war. A survey involving 836 participants from 164 higher education institutions revealed that 37% of respondents became forced migrants, either internally (24%) or externally (13%). Significant connections were found between forced migration and burnout among academic staff, with noticeable distinctions between external migrants, internal migrants, and non-migrants. Academic staff who were forced to migrate displayed higher levels of emotional exhaustion compared to non-migrant counterparts. External migrants experienced energy depletion, while internal migrants reported reduced professional accomplishment. Inadequate pay, social security instability, increased professional activity, insufficient state support, anxiety, constant stress, and concern for their country, city, and university were common factors contributing to burnout among all groups. External migrants faced challenges with social protection, team relations, and workload. Internal migrants encountered difficulties in rebuilding professional activities and experienced a heightened sense of danger, particularly for those living in temporarily occupied territories. The findings highlight the necessity for targeted support strategies to address the unique needs of academic staff during conflict and migration, promoting their mental health and resilience at the policymaker and university administrator levels during times of crisis by implementing support strategies and programs to help them cope with the challenges of migration and promote overall job satisfaction for quality education of the next generation of citizens.

73.Tsybuliak, N., Mytsyk, H., Suchikova, Y., Lopatina, H., Popova, A., Hurenko, O., Hrynkevych, O. (2024). Inclusion in Ukrainian universities from an inside perspective. *Scientific Reports*, 14 (1), art. no. 18041.

https://doi.org/10.1038/s41598-024-69084-1

This study investigates the state of inclusivity in Ukrainian universities, focusing on the perceptions of university staff amid the country's ongoing sociopolitical transformations. Here we report on the perceptions of 820 staff members from various professional roles,

including academic, management, and support positions, this research explored inclusivity through diverse lenses, encompassing work experience, interactions with students with disabilities, and self-identification with vulnerable groups. Most respondents assessed a moderate to high level of inclusivity, indicating a positive overall outlook on inclusive practices within these institutions. Notably, perceptions of inclusivity vary slightly across different professional roles, with academic staff expressing a marginally lower level of perceived inclusivity than their counterparts. However, these variations are not statistically significant, suggesting a uniform perception across staff categories. Furthermore, the study revealed that personal experience in working with students with disabilities does not substantially alter staff perceptions of inclusivity. Similarly, self-identification with vulnerable groups only marginally influences these perceptions. This suggests that while individual experiences and identities are factors in inclusivity perceptions, their impact is not profoundly different. This research contributes to understanding inclusivity in higher education, particularly within environments undergoing significant social and political changes.

74. Tsybuliak, N., Polulyakhov, A., Suchikova, Y. (2024). Mobilization and stigmatization: PhD admissions in wartime. *Higher Education Research and Development*.

https://doi.org/10.1080/07294360.2024.2424161

The ongoing war in Ukraine has profoundly impacted Ukraine's higher education system, particularly in the realm of PhD admissions. This essay explores the surge in PhD enrollments, driven partly by mobilization policies, and examines the complex challenges it presents, including the stigmatization of male students who are often labelled as 'draft dodgers'. The essay analyzes policy changes, societal perceptions, and their implications for the future of Ukrainian higher education. It argues that while the recent reforms aim to maintain academic integrity, they may inadvertently create barriers that limit diversity and academic potential. The stigmatization of male PhD students threatens both their mental health and the vitality of academic discourse, creating a hidden crisis with long-term consequences for research and intellectual potential. By navigating this complex terrain with a balanced approach to policy-making, Ukraine can preserve the integrity of its education system while supporting its scholars for future recovery.

75. Tsybuliak, N., Popova, A., Lopatina, H., Suchikova, Y. (2024). In a Stranger's House: Social Isolation of Internally Displaced People in Ukraine during Wartime. *Human Affairs*.

https://doi.org/10.1515/humaff-2024-0027

This article explores the impact of internal displacement during wartime in Ukraine on individuals' social isolation. This study focused on understanding and comparing feelings

of isolation in two different contexts: the native community in territories temporarily occupied by Russian troops since the full-scale war and the host community. The research reveals a consistent pattern of isolation characterized by feelings of loneliness, anxiety, and emotional exhaustion among internally displaced people (IDPs), irrespective of their location. Cultural disconnection emerges as a significant factor in both settings, with war-induced changes in social norms and practices leading to a sense of alienation in native communities, and the challenge of adapting to new cultural environments in host communities. Furthermore, it highlights IDPs' increased vulnerability to bias, stigma, and anxiety in social interactions. Overall, this qualitative study advances the understanding of the effects of displacement on social isolation and provides insights that can inform effective recovery strategies and foster a resilient, cohesive national identity in post-war contexts in Ukraine.

76. Ulunova, H., Spivak, L., Starynska, O., Nickolaenko, S. (2024). Forms of address used by Ukrainian bilingual civil servants in professional communication. *Die Welt der Slaven: Internationale Halbjahresschrift fur Slavistik*, 69 (1), pp. 1–17.

https://doi.org/10.13173/WS.69.1.001

Over the past one hundred years, Ukraine has undergone at least two paradigm shifts in addressing. Nowadays, among the forms of address recommended for civil servants to use in professional communication there are both traditional address forms of Ukraine and Eastern Europe and those associated with the Soviet era. This complexity complicates the communication process because it creates a certain risk that the recipient rejects the form of address chosen by the communicator. This situation is particularly acute in traditionally bilingual border regions of Ukraine. The empirical study allows us to answer the question: What forms of address are used by bilingual civil servants in various types of professional communication? By establishing the relationships between certain forms of address used by bilingual civil servants and the parameters of their national identity, the authors were able to analyze more deeply the personal meaning of different forms of appeals in the professional communication for bilingual civil servants.

77. Voloshchuk, K., Nekrasov, H., Samsutina, N., Samoilenko, V., Anastasova, O. (2024). Methods of maintaining motivation for volleyball in the student environment during the war. *Academia (Greece)*, (35-36), pp. 1–15.

https://doi.org/10.26220/aca.5009

The importance of volleyball in the field of education and health improvement in the context of modern challenges (including military ones) has acquired a new meaning. The purpose of the article is to analyse the methods of supporting motivation to play volleyball among higher education students against the background of the deployment of Russian aggression as a critical factor. To achieve this goal, a number of scientific methods were used: content analysis of scientific literature, comparative analysis, modelling method. A total of 31 items of literature were selected for analysis. The results show that students are motivated to play volleyball by certain motives. It has been proved that in the global dimension and in times of martial law, patriotism and the desire to represent one's country with dignity are relevant, etc. no less relevant are personal motivators related to the realisation of one's own competitive desires. The conclusions emphasise that in the conditions of military tan, motivation can fall, so an important task for the coaching and teaching team is to constantly search for new methods to support students. An important direction for future research is an empirical study of the outlined methods.

78. Yuhan, N., Herasymenko, Y., Deichakivska, O., Solodka, A., Kozlov, Y. (2024). Translation as a linguistic act in the context of artificial intelligence: the impact of technological changes on traditional approaches [La traducción como acto lingüístico en el contexto de la inteligencia artificial: el impacto de los cambios tecnológicos en los enfoques tradicionales]. *Data and Metadata*, 3, art. no. 429.

https://doi.org/10.56294/dm2024429

The purpose of this article is to study translation as a human speech act in the context of artificial intelligence. Using the method of analysing the related literature, the article focuses on the impact of technological changes on traditional approaches and explores the links between these concepts and their emergence in linguistics and automatic language processing methods. The results show that the main methods include stochastic, rule-based, and methods based on finite automata or expressions. Studies have shown that stochastic methods are used for text labelling and resolving ambiguities in the definition of word categories, while contextual rules are used as auxiliary methods. It is also necessary to consider the various factors affecting automatic language processing and combine statistical and linguistic methods to achieve better translation results. Conclusions-In order to improve the performance and efficiency of translation systems, it is important to use a comprehensive approach that combines various techniques and machine learning methods. The research confirms the importance of automated language processing in the fields of AI and linguistics, where statistical methods play a significant role in achieving better results.

79. **Zemko, A., Govorun, O., Shchurenko, S., Paseka, M., Hnatyuk, V. (2024). The Ecosystem Approach to Guaranteeing the Constitutional Human Right to a Safe Environment. *Pakistan Journal of Criminology*, 16 (1), pp. 29–45.**

https://doi.org/10.62271/pjc.16.1.29.45

The article aims to analyse the ecosystem approach, which should ensure the constitutional human right to a safe environment. The research methodology was based on the use of econometric, comparison, and graphical methods. Analysing the legal instruments, the study identified ways of harmonising the ecosystem approach with the existing legal framework and policy to improve environmental protection. The need for joint efforts between the state, industry, and local communities to find common positions and the importance of strong institutional capacity, public administration, and law enforcement mechanisms was demonstrated based on data from 37 European countries and Ukraine. It is emphasised that it is possible to achieve a balanced prospect between economic development and environmental protection. The academic novelty of this research is an interdisciplinary approach, a new application of the ecosystem approach to human rights, a detailed analysis of challenges and solutions, and global and local prospects. Prospects for further research are the expansion of the analysis database to the level of world regions to obtain generalised results regarding the provision of the constitutional human right to a safe environment.

РОЗДІЛ ІІ Публікації науково-педагогічних працівників університету, проіндексовані в наукометричній базі Web of Science Core Collection

CHAPTER II Publications of the University's Scientific and Pedagogical Staff Indexed in the Web of Science Core Collection

2024

1. **Absalyamova, L., Kriukova, M., Chorna, O., Bader, S., Anastasova, N., Maksymchuk, B. (2024). Neuropsychological Prevention of Students' Procrastination.** ***Brain-Broad Research in Artificial Intelligence and Neuroscience*****, 15 (1), pp. 1–13.**

https://doi.org/10.18662/brain/15.1/530

The article addresses to the problem of theoretical study of the problem of academic procrastination and its neuropsychological prevention for students. It describes neuropsychological means of prevention of academic procrastination with the recommendation to take into account the results of psychodiagnostics and analysis of some conditions and causes of the studied phenomenon. The psychological portrait of a student-procrastinator is analised the components of which are individual psychological, psychophysiological and personal characteristics. The role of the relationship between self-regulation and student learning motivation in foreign literature is also summarized. Peculiarities of educational burnout of procrastination students on the basis of foreign and domestic works are noted. It was revealed the essence of development and introduction of neuropsychological means of academic procrastination – conditioning of dynamic process of emotional and cognitive transformations in self-regulation of the student's personality and improvement of his/her educational success. The author's system of neuropsychological exercises for neuropsychological prevention of academic procrastination is presented in the article considering the neuropsychological mechanisms of its development at the cognitive-emotional-bodily systemic level. It is noted that procrastination may be associated with a negative emotional and mental response to the introduction of quarantine and the transition to distance learning, and even with the new opportunities. It is emphasized that neuropsychological prevention of academic procrastination should be combined with programs for the formation of future professionals thinking and development of a high level of independence, discipline and responsibility in educational activities as a successful strategy to prevent burnout and actualize motivation to learn at the integration level.

2. **Baran, M., Stasiv, V., Vasylechko, L., Zazubovich. S., Zhydachevskyy, Ya. (2024). Thermally stimulated luminescence of UV-irradiated $YAlO_3$:Bi perovskite. *Journal of Luminescence*, 276.**

https://doi.org/10.1016/j.jlumin.2024.120875

The appearance of the ultraviolet Bi3+-related emission band in the thermally stimulated luminescence (TSL) spectrum is observed around 465 K after selective irradiation of the $YAlO_3$:Bi perovskite in the Bi3+-related absorption bands. The excitation spectrum of the TSL glow curve peak at 465 K, activation energies of its creation by photons of different energies, and the dependence of the TSL peak intensity on the irradiation duration are measured. The origin of the optically created electron centers and the mechanisms of photostimulated creation of the electron and hole centers under irradiation in the Bi3+-related absorption bands of $YAlO_3$:Bi are discussed. The TSL glow curve peak at 465 K is suggested to appear as a result of electrons release from the electron centers intrinsic to the $YAlO_3$ lattice and their recombination with the hole Bi4+ centers. The same processes are shown to take place in the X-ray-irradiated $YAlO_3$:Bi perovskite. The obtained results are important for possible applications of the investigated material in thermoluminescent dosimetry.

3. **Danylevych, M., Masenko, L., Chopyk, R., Kushniriuk, S., Konovalska, L., Samoilenko, V., Sobolenko, A. (2024). Interrelation of students' motor activity and physical state as a basis for determining individual health-improving motor regimen. *Acta Balneologica*, 66 (5).**

https://doi.org/10.36740/ABAL202405103

Aim: To investigate the interrelation between motor activity and the physical state of students. Materials and methods: The research, which was conducted in 2023-2024, involved 168 students (86 girls and 82 boys) aged 17-18. The following indicators were studied: motor activity indicator according to the Framingham method, body mass index, Rufier index, body balance index using the Romberg test, speed index, indicator of speed and strength abilities, agility indicator, strength indicator, strength endurance indicator, flexibility indicator, endurance indicator. Results: The dependence of morphological and functional indicators and indicators of physical development of the student's body on the level of weekly motor activity, including the amount of time spent directly on physical exercises, has been established. It has been found that the Rufier index has the strongest correlation relationship with motor activity, and therefore can be considered an informative indicator of the physical state of young people. Conclusions: The interrelation of a high level of students' motor activity with the level of physical state as well as morphological and functional indicators of their body development has been established. The identified correlation relationships can form the basis for planning the nature and direction of the content of motor loads in the process of students' physical exercises by gender.

4. **Dmitrenko, N., Panchenko, V., Hladka, O., Shkola, I., Devitska, A. (2024). Cultivating Communication Skills in Times of Crisis: The perceived impact of SEL techniques in formative assessment on the communication competence of pre-service teachers in Ukraine. *International Journal of Emotional Education*, 16 (2), pp. 96–100.**

https://doi.org/10.56300/MAIN4950

This study examined the integration of social-emotional learning (SEL) in formative assessment of pre-service English as foreign language (EFL) teachers during times of crisis and its perceived impact on their communicative competence. The study encompasses a six-month trial period of SEL-enriched formative assessments across five Ukrainian universities. Findings from interviews with 12 participants indicate that incorporating SEL in EFL teacher education programs enhanced learning outcomes, when compared to traditional assessment methods. Furthermore, data suggest that promoting SEL in formative assessment provides invaluable feedback for tutors, prompting them to modify their teaching strategies appropriately while applying and expanding pre-service EFL teachers' professional-focused skills.

5. **Dziubak, N., Pavlyk, N., Lipych, V., Shuliak, S., Ohar, A. (2024). Morphology and morphemology: word structure and morphological aspects of language*. Ad Alta-Journal of Interdisciplinary Research*, 14 (1).**

https://doi.org/10.33543/1401397983

The article focuses on analyzing the foundational theoretical tenets of morphemology and morphology within contemporary Ukrainian linguistics, emphasizing their intrinsic interrelation. A comprehensive examination of the morpheme as the fundamental linguistic entity for morphemological studies is undertaken. The primary attributes of a morpheme as a linguistic unit are elucidated, facilitating a more proficient comprehension of the principles underlying the morphemic analysis of words. Furthermore, the research delves into the grammatical meanings embodied by morphemes within specific parts of speech, drawing on Ukrainian language lexemes for illustration. The discourse provides a rationale for considering morphemology as an autonomous branch of linguistics, intricately linked with morphology and derivatology. The article delineates distinctions in the application of terms such as "morphemics" versus "morphemology" and "morpheme" versus "morph." A crucial assertion is advanced, substantiating that a morpheme, functioning as the smallest semantically significant constituent of a word, can simultaneously convey lexical, grammatical, and word-formational meanings. The correlation between morphemology and morphology is substantiated by the integral semantics inherent in words, a phenomenon derived from the amalgamation of lexical and grammatical meanings. The confluence of these meanings establishes a word's classification within a specific grammatical category (part of speech) and its affiliation with a particular word-formational type. Similar to a word form, a morpheme exhibits reproducibility in language, possesses a semiological function, and serves to convey both subject (via the root) and non-subject (via affixes) meanings. As with other linguistic entities, morphemes and word forms can be regarded as historical categories, prompting the differentiation of word formation into historical and synchronic aspects. Throughout the historical evolution of a language, alterations in word structure manifest through phonetic changes, the loss of productive affixes, and modifications in

the phonemic boundaries of morphemes. Consequently, the framework for synchronic morphemic analysis must not be indiscriminately applied to other synchronic facets of the language.

6. **Fedoryk, Yu., Rudenko, O., Sablina, N., Moskalyk, H., Shymanovych, A., Danylchenko, O. (2024). The Moral Shock of the War in Ukraine and the Mobilization of World Resources in the Light of the Philosophy of Mind. *Brain-Broad Research in Artificial Intelligence and Neuroscience*, 15 (2), pp.144–158.**

https://doi.org/10.18662/brain/15.2/569

The relevance of the article lies in the need to study the moral side of war and the mobilization of world resources in the context of educational philosophy. In the context of metaphysics, war has an anti-materialistic, spiritual meaning and is "a certain test for the nation", which can be a manifestation of artificial intelligence. It is during war that society fights for the highest principles of civilization, not for the state or its ambitious aspirations. Both war and heroic experience can awaken deep forces connected to the foundations of race. On the contrary, materialists, especially Marxists, saw the cause of wars solely in social-class inequality and the antagonistic confrontation "between labor and capital." At the same time, war in society is not just a phenomenon of armed struggle guided by politics, a way of achieving one's goals with the use of armed violence. It is followed by a change in the course of numerous social processes and the involvement of economic, ideological and other forces of society in the struggle. War tests the economic and organizational strength of every nation. Therefore, it is important to understand the war as provoking a moral shock in Ukraine and mobilizing world resources in the light of the philosophy of reason. Its impact on social development is associated with a significant disruption and change in the usual functions and nature of the existence of elements of this or that social organization.

7. **Holovnia, Yu., Lisnychenko, A., Dovhaliuk, T., Falshtynska, Yu., Samoilenko, I. (2024). The role of digital competencies in creating an inclusive educational environment. *Synesis*, 16 (1).**

https://www.researchgate.net/publication/387743389_the_role_of_digital_competencies_in_creating_an_inclusive_educational_environment_o_papel_das_competencias_digitais_na_criacao_de_um_ambiente_educativo_inclusivo

The purpose of the article is to try to specify digital competencies that ensure integrative and inclusive learning. By its functional characteristics, the digital environment mainly updates the format of adaptation of students. The task of the current research is to reorient the purpose of the digital arsenal, which contributes to adaptation of educational institutions. Digitalisation assumes the formation of inclusive educational environment through the use of innovative learning platforms and improved participants' communication. The methodology of the article is typical for a review type of article and involves the analysis (systematic and comparative) of scientific works on the peculiarities of using digital resources in inclusive education. The sources of scientific research were the scientometric databases Web of Science, ResearhGate, Google Scholar, from which

the relevant studies of the last five years were extracted. The results of the article indicate that digital competencies for inclusive learning are currently in search of an optimal status in the modern educational paradigm. The unaltered use of digital resources or their complete disregard in educational activities does not comply with the principles of inclusive education. Therefore, the scientific discourse identifies the use of synergistic approaches that will offer the interaction of traditional and innovative inclusive learning formats, in which digital competencies will become an effective mechanism for removing any obstacles to functioning of the inclusive educational environment. Digitalisation makes it possible to develop relevant competencies for all participants in the educational process, which ensures continuity, mobility, and accessibility of education.

8. **Hreb, V., Kissabekova, A., Krasnikov, A., Laguta, V., Vasylechko, L., Zazubovich, S., Zhydachevskyy, Ya. (2024). Excited state dynamics of Bi^{3+} centers in cubic Gd_2O_3. *Journal of Luminescence*, 269.**

https://doi.org/10.1016/j.jlumin.2024.120460

Photoluminescence characteristics of Gd_2O_3:Bi are studied in the 4.2-800 K temperature range by the time-resolved spectroscopy methods. Purely cubic structure of Gd_2O_3:Bi is confirmed by XRD. The luminescence of Bi^{3+} (S-6) and Bi^{3+} (C-2) centers is found to arise from the electron transitions from the emitting level of the triplet excited state of Bi^{3+}, corresponding to the P-3(1) -> S-1(0) transitions of the free Bi^{3+} ion. Relaxation processes in the triplet excited state of Bi^{3+} ions do not result in the population of the lowest-energy metastable level. The absence of the radiative transitions, corresponding to the P-3(0) -> S-1(0) transitions of the free Bi^{3+} ion, explains the short (0.3-2.0 mu s) decay time of the triplet emission of Bi^{3+} even at 4.2 K. The conclusion is made that the fast luminescence decay cannot be caused by the mixing of the metastable and emitting levels of the triplet excited state of Bi^{3+} by the magnetic field created at the Bi^{3+} site by the magnetically ordered Gd^{3+} sublattice. The electron transfer and recombination processes, resulting in the appearance of the photo- and thermally stimulated electron recombination luminescence of Bi^{3+} (S-6) and Bi^{3+} (C-2) centers under excitation in the E-exc > 4.3 eV energy region, are also discussed. The energy level positions of the Bi^{3+} (S-6) and Bi^{3+} (C-2) centers in the band gap of Gd_2O_3 are estimated.

9. **Hurenko, O., Suchikova, Y., Kravchenko, N., Nesterenko, M., Petryk, K. (2024). Employment of young people with disabilities: The potential of social partnership of universities, municipalities and the labor market of Ukraine. *Work-A Journal of Prevention Assessment & Rehabilitation*, 79 (3), pp. 1407–1423.**

https://doi.org/10.3233/WOR-230351

BACKGROUND: This study analyzed the existing global experience of university and labor market partnerships concerning the employment of youth with disabilities. It was found that current cooperation models are implemented locally, in a fragmented manner, and are limited to interactions between universities and large enterprises. OBJECTIVE: The research aimed to explore the current state of meeting the needs of students with disabilities in terms of providing educational services and employment opportunities and

to analyze the interaction between universities, municipalities, and the labor market to improve employment opportunities for young people with disabilities. METHODS: The study considered a survey of three target groups from different regions of Ukraine (105 students with disabilities, 321 university faculty members, and 102 enterprise managers) conducted to study the current state of needs satisfaction in providing educational services and employing people with disabilities. RESULTS: The findings indicated a lack of coordination among stakeholders, an absence of systematization, and organization in addressing the issue of improving the employment of youth with disabilities. The research enabled the identification of existing and desired connections between the subjects of social partnership. A social partnership model between universities, municipalities, and the labor market was developed to improve the employment of youth with disabilities. CONCLUSION: The study results are promising, as implementing the social partnership model will broadly impact society.

10. **Kharchenko, A., Nalyvaiko, O., Kreydun, N., Sheiko, A., Ptushka, A., Khatuntseva, S., Zotova, L. (2024). Digital Technologies as a Factor of Transformation of Learning in the University Education. *Revista Romaneasca Pentru Educatie Multidimensionala*. 16 (4), pp. 97–126.**

https://doi.org/10.18662/rrem/16.4/909

This article investigates the transformative impact of digital technologies on university education, particularly in light of the accelerated adoption driven by the COVID-19 pandemic. The study aims to explore how these technologies have reshaped teaching and learning processes, focusing on their effectiveness, the challenges they present, and their future potential. The research is grounded in a thorough literature review, coupled with empirical data gathered from interviews with university teachers and students, and enhanced by insights from AI systems. The findings reveal a generally positive reception of digital tools, with significant benefits in enhancing student engagement, providing flexible access to educational resources, and supporting diverse learning modalities. However, the study also identifies key challenges, including the digital divide, the need for continuous faculty training, and the rapid pace of technological change. Additionally, the potential of emerging technologies such as artificial intelligence (AI), virtual reality (VR), and augmented reality (AR) to further personalize and enrich the educational experience is highlighted. The article concludes that while digital technologies offer substantial opportunities for innovation in higher education, their successful integration requires strategic planning, robust policy frameworks, and sustained investment in infrastructure and professional development.

11. **Kryvylova, O., Kurylo, O., Oleksenko, K., Khavina, I., Burtseva, O., Oleksenko, R., Pyurko, V., Khrystova, T., Pyurko, O., Arabadzhy-Tipenko, L. (2024). Professional Training of Engineering-Teachers in the Food Industry: Evaluation of an Experimental Model. *Tem Journal-Technology Education Management Informatics*. 13 (4), pp. 2794–2801.**

https://doi.org/10.18421/TEM134-16

The article analyzes the peculiarities of the pedagogical experiment aimed at solving the contradiction between the needs of Ukrainian society for highly qualified teachers and the actual state of pedagogical education. The main research methods include mathematical statistics, in particular the calculation of the student's t-test and the nonparametric Pearson test. The hypothesis is that strengthening the personnel potential of vocational education is ensured by the readiness of future specialists to quickly adapt to changing working conditions in production and education. This is ensured by creating appropriate psychological and pedagogical conditions. The results of the study confirmed the effectiveness of the experimental model.

12. Kumarbekov, K., Zhilgildinov, Z., Karipbayev, Z., Zhunusbekov, A., Nurmoldin, E., Brik, M., Suchikova, Y., Kemere, M., Popov, A., Kassymzhanov, M. (2024). A novel method of preparation of $Y_3Al_5O_{12}:Cr^{3+}$ ceramics and its structural and optical characterization. *Optical Materials,* 159, 116535

https://doi.org/10.1016/j.optmat.2024.116535

$Y_3Al_5O_{12}:Cr^{3+}$ ceramics were prepared by a new method of electron beam synthesis. Special features of this method are the fast speed of synthesis, high phase purity and stoichiometry. The samples were characterized by SEM and XRD methods. After the samples structure was confirmed, the optical measurements of the excitation/emission spectra and luminescence kinetics were performed in a wide temperature range. Characteristic excitation and emission spectral features of the 6-fold coordinated Cr^{3+} ions were detected and investigated; their presence is solid proof of successful doping of the prepared ceramics samples with the trivalent chromium ions. The developed technique of ceramics synthesis can be applied to other samples with different chemical compositions.

13. Kurbatov, D., Suchikova, Ya. (2024). Distributed peer review: how Ukraine has reaped the benefits and minimized the risks. *Nature*, 635 (8037), pp. 39.

https://doi.org/10.1038/d41586-024-03611-y

No abstract available

14. Kurbatov, D., Suchikova, Y. (2024). Ukraine's experience with distributed peer review. *Nature*, 635 (8037), pp. 39–39.

https://www.webofscience.com/wos/woscc/full-record/WOS:001438787400002

No abstract available

15. **Lavrik, V., Mezhuyev, V. (2024). Computation of Stress-Strain States in Elastomers Utilizing the Moment Diagram Approach in Finite Element Analysis. *Communication and Intelligent Systems*, 1, pp. 315–327.**

https://doi.org/10.1007/978-981-97-2053-8_24

Currently, materials based on elastomers and composites are extensively used in mechanical engineering and construction fields. Owing to the intricate nature of problems involving elastomer mechanics, selecting the most suitable computational approach, tailored specifically through methods of computational mathematics, is essential.

16. **Luchechko, A., Vasyltsiv, V., Kushlyk, M., Hreb, V., Slobodzyan, D., Vasylechko, L., Zhydachevskyy, Ya. (2024). Crystal Structure, Luminescence and Electrical Conductivity of Pure and Mg^{2+}-Doped β-Ga_2O_3-In_2O_3 Solid Solutions Synthesized in Oxygen or Argon Atmospheres. *Materials*, 17(6).**

https://doi.org/10.3390/ma17061391

Undoped and Mg^{2+}-doped β-Ga_2O_3-20% In_2O_3 solid solution microcrystalline samples were synthesized using the high-temperature solid-state chemical reaction method to investigate the influence of native defects on structural, luminescent, and electrical properties. The synthesis process involved varying the oxygen partial pressure by synthesizing samples in either an oxygen or argon atmosphere. X-ray diffraction (XRD) analysis confirmed the monoclinic structure of the samples with the lattice parameters and unit cell volume fitting well to the general trends of the $(Ga_{1-x}In_x)_2O_3$ solid solution series. Broad emission spectra ranging from 1.5 to 3.5 eV were registered for all samples. Luminescence spectra showed violet, blue, and green emission elementary bands. The luminescence intensity was found to vary depending on the synthesis atmosphere. An argon synthesis atmosphere leads to increasing violet luminescence and decreasing green luminescence. Intense bands at about 4.5 and 5.0 eV and a low-intensity band at 3.3 eV are presented in the excitation spectra. The electrical conductivity of the samples was also determined depending on the synthesis atmosphere. The high-resistance samples obtained in an oxygen atmosphere exhibited activation energy of around 0.98 eV. Samples synthesized in an argon atmosphere demonstrated several orders of magnitude higher conductivity with an activation energy of 0.15 eV. The results suggest that the synthesis atmosphere is crucial in determining the luminescent and electrical properties of undoped β-Ga_2O_3-In_2O_3 solid solution samples, offering the potential for various optoelectronic applications.

17. **Luchechko, A., Vasyltsiv, V., Stasiv, V., Kushlyk, M., Kostyk, L., Wlodarczyk, D., Zhydachevskyy, Ya. (2024). Luminescence spectroscopy of Cr^{3+} ions in bulk single crystalline β-Ga_2O_3-In_2O_3 solid solutions. *Optical Materials*, 151.**

https://doi.org/10.1016/j.optmat.2024.115323

Cr-doped monoclinic β-Ga_2O_3–7%In_2O_3 single crystals were grown by the floating zone technique with radiation heating. The dark green color of the as-grown crystals transforms to light green upon crystals annealing in an oxygen atmosphere. Excitation spectra reveal characteristic Cr^{3+} bands in the visible spectral region and complex features in the UV region. Comparisons between as-grown and annealed crystals show variations in chromium excitation bands. UV or visible light irradiation induces intense Cr^{3+} luminescence in the red spectrum. The R_2 line diminishes at low temperatures, and the R_1 line dominates, exhibiting a blue shift compared to gallium oxide. Raman spectroscopy identifies phonon frequencies, revealing distinct modes associated with crystal lattice vibrations. The fine structure in the luminescence spectrum is attributed to vibronic transitions involving R lines and specific phonon modes. The R_1 line in β-Ga_2O_3–7%In_2O_3 single crystals has a larger FWHM than in β-Ga_2O_3. Decomposition of R_1-line reveals inhomogeneous broadening, with Gaussian fits indicating several types of Cr^{3+} centers, attributed to the octahedrally-coordinated Ga- and In positions, as well as is sensitive to oxygen non-stoichiometry. Photoluminescence decay kinetics measured at 695 nm (R_1(Ga)-line) have a single-exponential decay at lower temperatures with a lifetime of 2.8 ms at 4.5 K. Temperature dependence of lifetime for the studied crystals is consistent with the previously studied β-Ga_2O_3:Cr and confirms an application potential of the material for low-temperature non-contact luminescence thermometry and light sources in deep red or near-IR spectral region.

18. Marynchenko, I., Gaivoronska, T., Barbashova, I., Shchurova, V., Skachedub, N. (2024). Methodological principles for ensuring the assessment of educational achievements in higher education under the conditions of distance education. *Ad Alta-Journal of Interdisciplinary Research*, 14 (2), pp. 120–125.

https://dspace.bdpu.org.ua/items/4385ec9d-446c-4c41-95d4-dcff83cb35ca

The article examines the opportunities for organizing the educational process, specifically focusing on the control and assessment of educational achievements of higher education students in distance learning conditions. The relationship between assessment in traditional and distance learning conditions is discussed. The quality and effectiveness of modern distance education are analyzed. Scientific approaches and perspectives regarding the main criteria for evaluating the quality and effectiveness of training in remote settings are revealed. The role of digital technologies in organizing effective training is highlighted. As part of the research, a survey was conducted at the initial stage of the experiment. The survey aimed to determine the frequency, methods, and forms of current and final assessment of student learning outcomes in distance education; identify preferred means and tools for evaluating distance learning results used by teachers; elucidate the peculiarities and main difficulties in organizing the evaluation of future specialists' training results under martial law; and identify changes in assessment procedures and approaches to selecting evaluation methods. An analysis of the main difficulties complicating the implementation of assessment procedures in wartime conditions was carried out. The directions and prospects for improving the mechanisms for evaluating the results of distance learning for future specialists are outlined. The development of digital literacy among teachers and future specialists is justified, as well as the need to create didactic support for online learning integrated into a single educational and methodological complex.

19. **Movchan, R., Kamensky, D., Dudorov, O., Mamedova, S., Holovchuk, V. (2024). Intentional destruction or damage of objects of plant life as a crime under the law of Ukraine and other European countries: cross-jurisdictional analysis. *Amazonia Investiga*, 13 (75), pp. 296–307.**

https://doi.org/10.34069/AI/2024.75.03.25

The key goal of this research paper is to analyze the specific features of legislative construction of Article 245 of the Criminal Code of Ukraine, in particular, the method of statutory reflection of the elements of the subject matter and subjective side of this criminal wrongful act used therein, and also to study the relevant European experience. This will enable to develop proposals aimed at improving the provisions of current national criminal legislation, which are intended to guarantee the protection of flora by means of Ukrainian criminal law. In the course of relevant comparative legal research and formulation of conclusions, the author used a number of different scientific methods of cognition, in particular: modeling, comparative, dialectical, systemic as well as statistical methods. A conclusion has been reached that the newer version of the criminal law norm under study should, firstly, retain criminal liability for trespass to any type of vegetation, and not only violations relating to forests, and secondly, within its framework, liability for a) encroachment not only on green spaces around settlements, along railways, but also on any other green spaces, including those not located in appropriate places; b) destruction/damage of vegetation on lands of any category from among those provided for by the Land Code of Ukraine. In addition, the authors argue that it is necessary to establish penalties for intentional and negligent destruction of flora that differ in severity, which is explained by the significantly different degree of public harmfulness.

20. **Myroshnychenko, V., Kamensky, D., Lysenko, T., Makarenko, T., Petiahina, I. (2024). "Defense of Ukraine" degree program for future school teachers: a new element of Ukrainian higher education. *Eduweb-Revista de Tecnologia de Informacion y Communicacion en Educacion*, 18, pp. 190–203.**

https://doi.org/10.46502/issn.1856-7576/2024.18.01.14

The article examines various aspects of professional training of future teachers of the "Defense of Ukraine" course for effective legal education among students. The key aspects in this process are the formation of practical skills, legal culture, socio-psychological and methodological readiness of teachers. Emphasis is placed on the use of modern technologies and interactive methods in pedagogical universities to develop legal thinking and patriotic values. Several theoretical methods have been used in the course of research. In particular, the article extensively refers to empirical research methods, such as observation, comparison, and monitoring. Modern challenges in the field of national security of Ukraine require active participation of teachers in the formation of legal awareness of students. It is emphasised that successful teacher training requires not only knowledge of law, but also taking into account of individual characteristics and application of innovative pedagogical approaches. In general, the article points out the importance of providing teachers with the necessary competencies to educate Ukrainian citizens who consciously observe their duties and execrisetheir rights (freedoms).

21. Mytsyk, H., Babichenko, A. (2024). The use of gamification in the prevention of dyslexia of children in preschool age. *Information Technologies and Learning Tools*, 99 (1), pp. 16–27.

https://doi.org/10.33407/itlt.v99i1.5284

In this article, the use of gamification in the organization of preventive work with children prone to dyslexia is analyzed. The factor that causes dyslexia has been identified, emphasizing the need to promptly identify children at risk and intervene, in order to avoid negative psychosocial consequences during their education. The main achievements of scientists in this field have been summarized. The advantages of using individual elements of gamification for propaedeutic purposes in working with children prone to dyslexia are highlighted, and their description is provided. An algorithm for creating a game mechanism, criteria for selecting digital learning platforms, and developing games based on them are proposed.

Considering the variety of available mobile applications and platforms that contribute to the implementation of propaedeutic and developmental goals in working with children with speech disorders, it is stated that they have some disadvantages. Therefore, the main approaches to developing custom digital games on gamified platforms, with the ability to modify their content and tasks, have been considered in such a way that they contribute to the implementation of the goals of corrective and developmental work with children prone to dyslexia. Several variants of such games are proposed as examples. The identified factors that can hinder the achievement of a positive effect of using digital games by a speech therapist in the classroom are discussed, and ways to solve them are explored. The perspective of using digital games in providing remote corrective and developmental assistance to children in conditions of distance learning is indicated.

The article also emphasizes the need for speech therapists to possess a sufficient level of digital competence as a guarantee of methodologically correct creation and implementation of digital games into their work with children.

22. Mytsyk, H., Popova, A., Bohdanova, M. (2024). The use of gamification in the system of social and psychological adaptation of forcibly displaced teenagers from Ukraine: reflections of the German experience. *Journal of Education for Students Placed at Risk*, pp. 129-155.

https://doi.org/10.1080/10824669.2024.2309359

The article presents its own view on a partial solution to the problem of social and psychological adaptation of teenagers who, as a result of the armed aggression of the Russian Federation against Ukraine, have become forced migrants. Based on the conducted social-pedagogical experiment, it was found that social and psychological deafness is typical for forcibly displaced teenagers from Ukraine even after the implementation of a complex set of adaptation measures at the German school. This confirms the necessity of making certain changes in the existing adaptation programs for this category of individuals. It is justified to use gamification in school conditions as a way of influencing the process of social and psychological adaptation of forcibly displaced teenagers from Ukraine. The text highlights the structure of gamification in the educational process and points out its advantages. It determines the main tasks of social and psychological adaptation of teenagers through gamification, including subcultural

identification, self-actualization, and emotional congruence. It presents an algorithm for the introduction and use of gamification in this process. The author's program, "Together" for the social and psychological adaptation of forcibly displaced teenagers from Ukraine, provides a detailed description of the active use of gamification elements

23. **Pankratova, V., Chernenko, K., Bocharov, D., Chesnokov, A., Sychikova, Ya., Popov, A., Pankratov, V. (2024). Unveiling of UV intrinsic luminescence in $(Lu,Y)_2SiO_5:Ce^{3+}$ single crystals. *Optical Materials*, 152, pp. 1–5.**

https://doi.org/10.1016/j.optmat.2024.115554

Intrinsic luminescence in Ce-doped $(Lu,Y)_2SiO_5$ (or LYSO:Ce) single crystals have been studied by means of excitation luminescence spectroscopy in the vacuum ultraviolet energy range under synchrotron radiation. A previously unreported luminescence band with emission at 250 nm has been discovered as well as its thermal behavior was described in the temperature range 10–120 K. The excitation spectra as well as time-resolved properties of this band suggest that this emission corresponds either to the singlet component of self-trapped exciton or to a self-trapped exciton in the lutetium sublattice of LYSO single crystals.

24. **Petryk, K., Nesterenko, M., Mytsyk, H., Kovachov, S., Kryvylova, O., Suchikova, Ya. (2024). A cross-specialization study of pre-service teachers' perception of STEM education. *International Journal of Science Education*.**

https://doi.org/10.1080/09500693.2024.2432489

This article investigates STEM education perceptions among pre-service teachers from various specialties at a pedagogical university in Ukraine, highlighting its role in addressing socio-economic and environmental challenges of the country. The study aims to understand how pre-service teachers from various specialties view the integration of STEM into their professional activity. Key findings indicate that while there is a general positive attitude towards STEM education, significant variations exist across different specialties. Pre-service teachers of the 'Science' and 'Early Childhood and Primary Education' categories demonstrate higher engagement with STEM-oriented tasks compared to those in the 'Arts and Humanities' and 'Social Sciences' categories. The research reveals a gap in pre-service teachers' understanding of STEM's interdisciplinary nature, often associating it primarily with technological innovations. The study identifies several barriers to the effective implementation of STEM education, including limited resources, insufficient knowledge of teachers, and a lack of appropriate teaching materials. To address these challenges, the article suggests enhancing STEM courses, providing professional development for teachers, and fostering collaboration with industry. Overall, the research underscores the importance of aligning STEM education with the needs and perceptions of pre-service teachers, emphasising its role in developing critical skills for future educators and contributing to Ukraine's recovery.

25. **Ponomarenko, T., Spivak, L., Khomchuk, O., Tsypnniatova, I. (2024). Professional burnout among english language female teachers in Ukrainian general secondary schools: do war time matter?** ***Conhecimento & Diversidade*****. 16 (43), pp. 176–191.**

https://doi.org/10.18316/rcd.v16i43.11781

This research represents a continuation of previous research focusing on the professional burnout experienced by general secondary English teachers in emergency situations. Through the implementation of the Maslach Burnout Inventory, empirical data were collected from a sample of 70 female English language teachers working in general secondary schools in Ukraine. The results revealed notable patterns in the components of professional burnout, including emotional exhaustion, depersonalization of personality, and reduction of professional achievements. Specifically, teachers' significant proportion reported experiencing high to medium levels of emotional exhaustion, medium to low levels of depersonalization, and medium to low levels of reduction in professional achievements amidst the backdrop of war. Conversely, teachers' minority reported low-level emotional exhaustion but high-level reduction in professional achievements and depersonalization. Statistical analysis indicated significant differences in emotional exhaustion (medium level), depersonalization of personality (high and low levels), and reduction of professional achievements (high level) between prewar and wartime contexts. However, no significant correlation was found between professional experience and professional burnout among female English language teachers. The implications of these empirical findings are discussed in relation to existing literature on the professional burnout experienced by English language teachers in general secondary schools, with emphasis placed on both theoretical considerations and practical implications.

26. **Popova, A., Tsybuliak, N., Lopatina, H., Suchikova, Ya., Kovachov, S., Bogdanov, I. (2024). I (don't) want to go home. Will young people return to the de-occupied territories of Ukraine?** ***Heliyon*****, 10 (15).**

https://doi.org/10.1016/j.heliyon.2024.e35230

This study focuses on understanding the intentions and perspectives of the youth in Ukraine regarding their return to their native cities post-de-occupation. In the context of sustainable regional development, the research aims to grasp the complexities of the youth's mindset, which is crucial for effective policy-making and strategic planning in the post-occupation period. The study utilized a mixed-methods approach, combining quantitative surveys and qualitative focus group discussions. The quantitative phase involved a survey, targeting youth aged 14–35 and its district, to gather data on their willingness to return to de-occupied territories, trust in local institutions, and views on reconstruction efforts. This was followed by qualitative research through structured focus groups, segmented into participants with varying attitudes towards returning. The study highlights the importance of stability, economic growth, and the rebuilding of trust from the youth's viewpoint. It emphasizes the critical role of young people as key stakeholders in the reconstruction and planning processes.

27. **Popova, E., Bezrukovs, D., Bezrukovs, V., Suchikova, Ya., Popov, A. (2024). Radio-astronomical monitoring of active regions in the microwave range in the service of forecasting solar flares. *Modern Physics Letters A*, 39 (15).**

https://doi.org/10.1142/S021773232450069X

One of the key factors of space weather is solar flare activity, the monitoring and prediction of which is an important task of specialized dedicated groups of space experts and solar astronomers. Solar flare forecasts are based on identifying and detecting the so-called precursors, specific processes in solar activity events that occur before flares. Collecting data for space weather analysis and prediction comes down to several types of measurements performed by more than a dozen spacecraft. Ground-based observations and monitoring nowadays are becoming more or less complimentary. One of the reasons for this is the limitation of observation time with ground-based telescopes due to adverse Earth weather conditions. However, solar radio astronomy is immune to almost any weather activity, and the main question here is what new quality it can bring. Observational data accumulated in the 20th century show that solar radio bursts can be associated with flare activity. In addition, the existing network of solar radio telescopes is already well established. As an example, in this paper, we describe the possibilities of a fully steerable 32-meter radio telescope of Ventspils International Radio Astronomy Centre (VIRAC), Latvia, which can be useful for searching for new precursors of solar flares.

28. **Semeniako, Yu., Mardarova, I., Lystopad, O., Rybak, O., Samoilenko, V., Hrechanovska, O. (2024). Strengthening Students' Proficiency in Digital Technologies and the SMART Society. *Revista Romaneasca Pentru Educatie Multidimensionala*, 16 (1), pp. 608–622.**

https://doi.org/10.18662/rrem/16.1/840

The relevance of the article is that nowadays digital technologies are an effective means of differentiation and personalization of educational activities, they change the face of today's education, turning it into the top rank of human capital investment in the digital age. The shift to digital education requires the collaborative effort of instructors, administrators, and learners to create and meet educational goals, using data analysis to provide individualised learning plans for students. The article is devoted to the issue of formation of digital skills in the learning process of students. The concept of digital literacy and digital skills, as well as the classification of digital skills is considered. The author proposes indicators and criteria for assessing digital skills, as well as theoretical and practical training of students, presented in the form of several modules. The choice of research methods is conditioned by the peculiarities of studying informatization and digitalization, as well as the peculiarities of using up-to-date information technologies in the educational process. The following methods were chosen: analysis of psychological, pedagogical and methodological literature, descriptive method, method of generalization, system-structural analysis, method of interpretation and semantic reconstruction of pedagogical sources.

29. **Shelever, O., Bazulevska, O., Lopatina, H., Cherniakova, Zh., Lisovyi, V., Polishchuk, V. (2024). Computer Technologies as a Method of Forming Students' Information Skills in the Process of Learning.** ***Brain-Broad Research in Artificial Intelligence and Neuroscience*****, 15 (1), pp. 398–413.**

https://doi.org/10.18662/brain/15.1/559

The article investigates the problem of formation of future teachers' readiness to innovative activity, the role of computer technologies as a method of formation of students' information skills in the learning process. Based on the stated and analyzed interpretations of the authors about the concept of "innovations in education", the research position to consider innovation as an important element of education support in a state of dynamic development, adequate to the demands of today's society as a phenomenon of collective or formed individual professional creative activity of a teacher was formulated. On the example of the course, in which a systematic theoretical, methodological and practice-oriented training of students is carried out, the experience of formation of readiness of future teachers to innovative activity is described, the leading forms of pedagogical activity are presented. According to the results of the study it is concluded that the formation of the future teacher's readiness for innovative activity contributes to the identification of the conceptual position of the specialty, the identification of development resources and innovation (including potential) and their critical evaluation, creating conditions for finding innovative solutions in education. This competence is an important part of the professionalism of the today's teacher. Also in the article the role of computer technologies as a method of formation of students' information skills in the learning process is studied; e-learning tools as a basic step of realization of digital pedagogical technologies, the structure of the author's system of preparation of university teacher to the application of e-learning tools in professional activity is given.

30. **Shumilova, I., Prykhodkina, N., Volotovska, T., Sholokh, O., Cherezova, I., Shust, V. (2024). The system of formation of educational environment for the professional training of future education managers (in Ukrainian context).** ***Ad Alta-Journal of Interdisciplinary Research*****, 14 (2), pp. 26–30.**

https://www.magnanimitas.cz/14-02-xliii

Recent studies have considered the practical aspect of professional and pedagogical competence formation of students of pedagogical specialties as future managers of the educational environment. Aim of the research is to develop theoretical foundation, methodology and experimentation framework contributinng to the formation of psychological and pedagogical conditions for shaping professional competence of managers in educational system.

31. **Somakumar, A., Zhydachevskyy, Ya., Wlodarczyk, D., Haider, S., Barzowska, J., Bindu, K., Edathumkandy, Ya., Zayarniuk, T., Szewczyk, A., Narayanan, S., Lysak, A., Przybylinska, H., Anila Edathottiyil Issac, Suchocki, A. (2024). Temperature and pressure dependent**

luminescence mechanism of a zinc blende structured ZnS:Mn nanophosphor under UV excitation. *Journal of Materials Chemistry C*, 12 (19), pp. 7041–7052.

https://doi.org/10.1039/d4tc00960f

A comprehensive photoluminescence and mechanoluminescence analysis of a ZnS:Mn^{2+} nano-phosphor with a zinc blende structure is presented. The sample containing quantum dot-sized nanocrystallites was synthesized by the chemical precipitation method and shows excellent orange luminescence at ambient conditions related to the $^4T_1 \rightarrow {}^6A_1$ transition. The sample shows stable and identical luminescence behavior under both UV and X-ray excitation at ambient conditions and also exhibits excellent self-powered mechanoluminescence properties. The pressure and temperature-induced luminescence mechanism of the phosphor is also established. The shift of the $^4T_1 \rightarrow {}^6A_1$ luminescence band of Mn^{2+} with both pressure and temperature and the luminescence mechanism is explained via the d^5 Tanabe Sugano diagram. The broad luminescence band of the $^4T_1 \rightarrow {}^6A_1$ transition shifts from the visible to near-infrared range at a rate of -35.8 meV GPa^{-1} with the increase of the pressure and it is subsequently quenched completely at a pressure of 16.41 GPa due to a reversible phase transition from zinc blende ($F\bar{4}3m$) to rocksalt ($Fm\bar{3}m$) phase. The high-pressure and temperature-dependent decay kinetics measurements of the sample luminescence are also reported.

32. Starynska, O. (2024). Gender Characteristics of Reflection in Higher Education Students in Relation to Social Intelligence. *Revista Romaneasca Pentru Educatie Multidimensionala*, 16 (3), pp. 119–129.

https://doi.org/10.18662/rrem/16.3/886

Purpose of article: to highlight the results of an empirical research on the gender characteristics of the differential type of reflection in higher education students in relation to social intelligence. Systemic reflection, which allows simultaneous coverage of both the subject and object poles, is found at a high level in all male and almost all female participants; at an average level, it is found in a small number of female participants. Introspection, which promotes focusing on the experiences of both own and other people, is identified at a high level in three-fifths of the male participants and slightly less than one-second of the female participants; at an average level, it is found in two-fifths of the male participants and slightly more than one-second of the female participants. Quasi-reflection, which involves detachment from the real situation due to a focus on an ideal object, is found at a high level in three-fifths of the male participants and slightly more than one-second of the female participants; at an average level, it is found in two-fifths of the male participants and slightly less than one-second of the female participants. No low levels of systemic reflection, introspection, or quasi-reflection were observed. Statistically significant differences were found only in the levels of introspection between male and female participants. Statistically significant correlations between the overall social intelligence indicator and systemic reflection, introspection, and quasi-reflection have demonstrated that reflection is a psychological mechanism of the development of social intelligence in higher education students with special educational needs.

33. **Stasiv, V., Zhydachevskyy, Ya., Stadnik, V., Hreb, V., Mykhaylyk, V., Vasylechko, L., Luchechko, A., Wojciechowski, T., Sybilski, P., Suchocki, A. (2024). Chemical tuning of photo- and persistent luminescence of Cr^{3+}-activated β-Ga_2O_3 by alloying with Al_2O_3 and In_2O_3. *Journal of Alloys and Compounds,* 982.**

https://doi.org/10.1016/j.jallcom.2024.173827

An effect of alloying of the monoclinic β-Ga_2O_3 with Al_2O_3 and In_2O_3 on the photoluminescent, thermoluminescent and persistent luminescent properties of Cr^{3+} ions has been comprehensively investigated. For this purpose, various series of Cr^{3+} and Ca^{2+} co-doped microcrystalline phosphors were synthesized by the solution combustion method, including pseudobinary compounds like (Ga-Al)$_2O_3$ with up to 20 % Al and (Ga-In)$_2O_3$ with up to 50 % In as well as pseudoternary compounds (Ga-Al-In)$_2O_3$ with balanced proportion of Al, Ga and In. The phase composition and crystal structure of the obtained materials were examined by X-ray powder diffraction technique. Detailed luminescence studies were conducted for the (Ga-Al)$_2O_3$ and (Ga-In)$_2O_3$ compounds which exhibited a single-phase monoclinic structure. Low-temperature and time-resolved photoluminescence investigations of the Cr-doped pseudobinary compounds unveiled several types of Cr^{3+} centres, attributed to the Al-, Ga- and In-centred octahedra in the studied alloys. The obtained results underscore the benefit of bandgap engineering through alteration in the host lattice chemical composition for efficient tuning of the thermoluminescent and persistent luminescent properties of the near-infrared-emitting β-Ga_2O_3:Cr based phosphors. Furthermore, it was demonstrated that modification of the chemical composition of the host lattice also adjusts the thermometric performance of the studied phosphors. Indeed, the specific sensitivity of the β-Ga_2O_3:Cr^{3+} decay time luminescence thermometer showed nearly twofold enhancement when the host lattice was alloyed with 30 % of In_2O_3.

34. **Suchikova, Y., Bohdanov, I., Kovachov, S., Popov, A. I. (2024). Chapter 17 Thin CIGS Films Obtained by Spray Pyrolysis. *Nanomaterials and nanocomposites, nanostructures, and their applications*, *NANO-2023*, 253, pp. 237–252.**

https://doi.org/10.1007/978-3-031-67519-5_17

This article presents the results of synthesizing polycrystalline CuIn(Ga)Se2 (CIGS) films using a combined spray pyrolysis method followed by additional selenization. The main focus is on analyzing the obtained films' structural, morphological, and compositional characteristics by applying XRD, SEM, EDX, and Raman spectroscopy. XRD analysis confirmed the formation of a polycrystalline tetragonal chalcopyrite structure, while SEM and EDX analyses revealed a disordered morphology and high compositional uniformity. Raman spectroscopy emphasized the phase purity of the material. The results highlight the significant potential of the synthesized CIGS films in high-efficiency thin-film solar cells and open new possibilities for further improvement and development. The article aims to deepen the understanding of essential aspects of the synthesis and characteristics of photoelectric materials.

35. **Suchikova, Y., Kolomiiets, U., Popova, A., Lopatina, H., Tsybuliak, N. (2024). Calm me down, or I'll leave: anxiety and institutional support among Ukrainian academic staff during wartime. *BMC Public Health*, 24 (1), art. no. 3483.**

https://doi.org/10.1186/s12889-024-21040-4

Background: Mental health conditions among academic staff are a growing global concern, driven by factors such as heavy workloads, job insecurity, and a lack of institutional support. Anxiety, one of the most common mental health problems, is particularly widespread in academia, affecting cognitive function and productivity. In Ukraine, the ongoing war has intensified these challenges, creating unprecedented working conditions for academic staff. This study investigates the prevalence of anxiety among Ukrainian academics during wartime. It explores the impact on their desire to change careers and the perceived effectiveness of institutional mental health support. Methods: This cross-sectional study surveyed 429 academic staff from Ukrainian higher education institutions between December 2023 and February 2024. Anxiety levels were measured using the Generalized Anxiety Disorder (GAD-7) scale, while additional questions assessed the desire to change professions and the perceived effectiveness of institutional mental health support. The data were analyzed using chi-squared tests, correlation analysis, and Ordinary Least Squares (OLS) regression. Results: The findings revealed that 44.3% of respondents experienced moderate (24%) or severe (20.3%) anxiety, reflecting the profound psychological toll of the war. There was a significant relationship between higher anxiety levels and an increased likelihood of considering a career change. While 90.2% of respondents viewed institutional mental health support as important, many felt that the existing programs were ineffective. Greater accessibility to psychological support services was associated with lower anxiety levels. Conclusions: The high prevalence of anxiety among Ukrainian academic staff during the war highlights the urgent need for targeted mental health interventions. Institutional mental health support – such as accessible psychological services – is important in the ongoing war conditions. These findings underscore the broader implications of anxiety for the sustainability of Ukraine's educational and scientific sector during wartime and emphasize the need for comprehensive mental health programs tailored to the unique challenges faced by academics in wartime.

36. **Suchikova, Ya., Kovachov, S., Bohdanov, I., Drozhcha, D., Kosogov, I., Karipbayev, Zh., Popov, A. (2024). Synthesis and Characterization of β- Ga_2O_3/por-GaAs/mono-GaAs Heterostructures for Enhanced Portable Solar Cells. *Physics and Chemistry of Solid State*, 25 (3), pp. 546–552.**

https://doi.org/10.15330/pcss.25.3.546-552

This study comprehensively details the successful synthesis of a β-Ga2O3/por-GaAs/mono-GaAs heterostructure designed for portable solar cells. Employing a combination of electrochemical etching and high-temperature oxygen annealing, we engineered a heterostructure that exhibits both crystalline and amorphous phases. XRD, SEM, and Raman spectroscopy analyses confirmed the formation of crystalline β-Ga2O3 and GaAs, with the porosity in the GaAs layer enhancing light absorption and charge

collection. The potential of the heterostructure to improve photovoltaic performance is attributed to the inherent stability of Ga2O3 and the increased surface area provided by the porous GaAs.

37. Suchikova, Ya., Kovachov, S., Bohdanov, I., Karipbayev, Zhakyp T., Zhydachevskyy, Ya., Lysak, A., Pankratov, V., Popov, A. (2024). Advanced Synthesis and Characterization of CdO/CdS/ZnO Heterostructures for Solar Energy Applications. *Materials*, 17 (7).

https://doi.org/10.3390/ma17071566

This study introduces an innovative method for synthesizing Cadmium Oxide /Cadmium Sulfide/Zinc Oxide heterostructures (CdO/CdS/ZnO), emphasizing their potential application in solar energy. Utilizing a combination of electrochemical deposition and oxygen annealing, the research provides a thorough analysis of the heterostructures through scanning electron microscopy (SEM), energy-dispersive X-ray (EDX) spectroscopy, X-ray diffraction (XRD), Raman spectroscopy, and photoluminescence (PL) spectroscopy. The findings reveal a complex surface morphology and a composite structure with significant contributions from hexagonal CdS and cubic CdO phases. The study highlights the uniformity in the distribution of luminescent centers and the crystalline quality of the heterostructures, which is evident from the PL analysis. The redshift observed in the emission peak and the additional peaks in the excitation spectrum indicate intricate optical properties influenced by various factors, including quantum confinement and lattice strain. The research demonstrates these heterostructures' potential in enhancing solar cells' efficiency and applicability in optoelectronic devices. This comprehensive characterization and analysis pave the way for future optimization and application in efficient and sustainable solar energy solutions.

38. Suchikova, Y., Kovachov, S., Bohdanov, I., Konuhova, M., Popov, A. (2024). Synthesis of Periodic Porous Structures on the Surface of Indium Phosphide. *Latvian Journal of Physics and Technical Sciences*, 61 (5), pp. 3–15.

https://doi.org/10.2478/lpts-2024-0032

This study comprehensively details the successful synthesis of a β-Ga2O3/por-GaAs/mono-GaAs heterostructure designed for portable solar cells. Employing a combination of electrochemical etching and high-temperature oxygen annealing, we engineered a heterostructure that exhibits both crystalline and amorphous phases. XRD, SEM, and Raman spectroscopy analyses confirmed the formation of crystalline β-Ga2O3 and GaAs, with the porosity in the GaAs layer enhancing light absorption and charge collection. The potential of the heterostructure to improve photovoltaic performance is attributed to the inherent stability of Ga2O3 and the increased surface area provided by the porous GaAs.

39. **Suchikova, Ya., Kovachov, S., Bohdanov, I., Konuhova, M., Zhydachevskyy, Ya., Kumarbekov, K., Pankratov, V., Popov, A. (2024). Wet Chemical Synthesis of $Al_xGa_{1-x}As$ Nanostructures: Investigation of Properties and Growth Mechanisms.** ***Crystals,*** **14 (7).**

https://doi.org/10.3390/cryst14070633

This study focuses on the wet chemical synthesis of AlxGa1−xAs nanostructures, highlighting how different deposition conditions affect the film morphology and material properties. Electrochemical etching was used to texture GaAs substrates, enhancing mechanical adhesion and chemical bonding. Various deposition regimes, including voltage switching, gradual voltage increase, and pulsed voltage, were applied to explore their impact on the film growth mechanisms. SEM analysis revealed distinct morphologies, EDX confirmed variations in aluminum content, Raman spectroscopy detected structural disorders, and XRD analysis demonstrated peak position shifts. The findings emphasize the versatility and cost-effectiveness of wet electrochemical methods for fabricating high-quality AlxGa1−xAs films with tailored properties, showing potential for optoelectronic devices, high-efficiency solar cells, and other advanced semiconductor applications.

40. **Suchikova, Y., Kovachov, S., Bohdanov, I., Kosogov, I., Drozhcha, D., Popov, A. I. (2024). Design and structural characteristics of Ga_2O_3/por-GaAs/mono-GaAs Heterostructures for Advanced MEMS Applications.** ***International Conference on Perspective Technologies and Methods in MEMS Design*****, pp. 48–51.**

https://doi.org/10.1109/MEMSTECH63437.2024.10620009

This study presents the synthesis and comprehensive characterization of a Ga_2O_3 / por-GaAs/mono-GaAs heterostructure. Utilizing a combination of electrochemical etching and oxygen annealing, we have successfully fabricated a heterostructure that incorporates both crystalline and porous layers. XRD and Raman spectroscopy confirmed the presence of crystalline β− Ga_2O_3 and GaAs phases, while SEM analysis revealed a highly porous morphology indicative of a complex phase composition. The structural integrity and quality of the heterostructure offer promising implications for MEMS technologies, leveraging the unique properties of the composite materials for enhanced device performance.

41. **Suchikova, Ya., Kovachov, S., Bohdanov, I., Kosogov, I., Drozhcha, D., Popov, A. (2024). Synthesis and Characterization of Hierarchical ZnO/ZnS Nanostructures on Porous Silicon for Advanced MEMS Applications.** ***IEEE 19th International Conference on the Perspective Technologies and Methods in Mems Design, Memstech 2024. Series International Conference on Perspective Technologies and Methods in MEMS*****, pp. 124–127.**

https://doi.org/10.1109/MEMSTECH63437.2024.10620059

This study uses a straightforward and cost-effective method to present the synthesis, morphological, and structural characterization of hierarchical ZnO/ZnS nanostructures formed on porous silicon substrates. We achieved flower-like crystallites by employing a two-stage synthesis process, showcasing a unique morphology with an increased surface area. Detailed analysis through Raman spectroscopy and X-ray diffraction (XRD) elucidated the heterostructure's high crystallinity and structural integrity despite inherent lattice mismatches. The study reveals that the flower-like hierarchical morphology, combined with the material's compositional properties, significantly enhances its physicochemical properties. These findings suggest potential ZnO/ZnS heterostructure applications in various microelectromechanical system (MEMS) technologies, including sensors, photodetectors, and photocatalysts.

42. Suchikova, Y., Kovachov, S., Karipbaev, Z., Zhydachevskyy, Y., Bohdanov, I., Popov, A. I. (2024). Investigation of Photoluminescence and Raman Emission of Porous Gallium Phosphide. *Proceedings 42nd IEEE International Conference on Electronics and Nanotechnology, ELNANO*, pp. 227–230.

https://doi.org/10.1109/ELNANO63394.2024.10756876

This article presents a study of porous gallium phosphode (GaP) utilizing photoluminescence (PL) and Raman spectroscopy, followed by its synthesis by electrochemical etching. The investigation identifies a blue shift in the PL peak, indicative of quantum confinement phenomena, and spectral confirmation of structural integrity through Raman analysis. Deconvolution of the PL emission into Gaussian components further demarcates a complex defect structure. These results contribute significantly to the discussion on the impact of nanostructuring on semiconductor properties, providing a pathway to the refined application of GaP in optoelectronic device engineering.

43. Suchikova, Y., Kovachov, S., Karipbaev, Z., Zhydachevskyy, Y., Bohdanov, I., Popov, A. I. (2024). Passivating Oxide Layers on the Surface of InP. *Proceedings 42nd IEEE International Conference on Electronics and Nanotechnology, ELNANO*, pp. 223–226.

https://doi.org/10.1109/ELNANO63394.2024.10756920

This study investigates the formation and characteristics of intrinsic oxide layers on the surface of n-type indium phosphide (InP), formed via electrochemical processing in a sulfuric acid environment. We have explored the oxide film's structure, chemical composition, and electronic properties using various analytical methods. The results indicate the formation of composite oxides with crackled morphologies and their impact on surface passivation. Our findings affirm the potential of InP native oxides for protective coatings yet highlight the need for further optimization to improve the uniformity and reduce the defectiveness of passivation layers.

44.Suchikova, Y., Kovachov, S., Kosogov, I., Bohdanov, I., Popov, A. (2024). Improvement of β-SiC/por-Si/mono-Si Heterostructures for Supercapacitor Applications by Mitigating Lattice Mismatch and Improving Electrochemical Performance. *IEEE 14th International Conference Nanomaterials: Applications & Properties*, *NAP 2024.*

https://doi.org/10.1109/NAP62956.2024.10739751

This research introduces a novel beta-SiC/porSi/mono-Si heterostructure fabrication method aimed at addressing the challenges of lattice mismatch and enhancing electrochemical performance for supercapacitor applications. Integrating a porous silicon buffer layer mitigates strain, enhances adhesion, and reduces defect densities in SiC films. Comprehensive structural and crystalline assessments are conducted using SEM, EDX, XRD, and Raman spectroscopy, revealing an orderly and pure morphology with high crystallinity. Our results indicate significant potential for supercapacitors, evidenced by an increased surface area for charge storage and a stable electrode-electrolyte interface, crucial for rapid energy delivery and high-power applications. The straightforward carbonization process also underscores this technology's scalability and industrial viability.

45.Suchikova, Ya., Lysak, A., Kovachov, S., Konuhova, M., Zhydachevskyy, Ya., Popov, A. (2024). Investigation of the Impact of Crystalline Arsenolite Oxide Formations on Porous Gallium Arsenide. *Physica Status Solidi A-Applications and Materials Science*, 221 (18).

https://doi.org/10.1002/pssa.202400365

Herein, the impact of arsenolite oxide (As_2O_3) crystallites on the structural and optical properties of porous gallium arsenide (GaAs) is examined, focusing on understanding the potential passivation effect and its influence on material stability and safety. Utilizing a comprehensive set of analytical methods, including cathodoluminescence (CL) spectroscopy, Raman scattering spectroscopy, and X-ray diffraction, the interaction between the GaAs substrate and arsenolite crystallites is characterized. The results indicate that the crystallites do not significantly alter the electronic and optical properties of the underlying GaAs, suggesting a possible passivating effect that could enhance device performance. However, concerns regarding arsenolite's environmental stability and toxicity prompt a cautious approach to its application. Herein, the need for further research into conditions conducive to natural oxide formation, exploration of alternative passivation strategies, and development of safe and stable oxide layers is underscored. Reproducible results are necessary to confirm the differences in CL signals between samples, as the current findings are based on single measurements.

46.Suchikova, Ya., Nazarovets, S. (2024). Redefining sabbaticals: A strategic investment in early career researchers' futures. *Policy Futures in Education*.

https://doi.org/10.1177/14782103241281893

This paper explores the evolving role of sabbaticals in higher education, particularly emphasizing their potential impact on early career researchers (ECRs). Traditionally, sabbaticals have been viewed as a privilege for senior academics, designed to provide periods of rejuvenation and scholarly productivity. However, we argue that ECRs, who face unique pressures such as the need for rapid publication, networking, and managing administrative duties, could greatly benefit from sabbatical opportunities. The article highlights barriers ECRs encounter, such as funding limitations and institutional resistance, and calls for a rethinking of policies to include diverse and flexible sabbatical formats. These changes, supported by government, institutional, and departmental initiatives, could help mitigate burnout, foster innovation, and contribute to the long-term sustainability of academic careers.

47. Suchikova, Y., Nazarovets, S., Popov, A. (2024). Ga_2O_3 solar-blind photodetectors: From civilian applications to missile detection and research agenda. *Optical Materials*. 157 (3).

https://doi.org/10.1016/j.optmat.2024.116397

This study offers a comprehensive review of gallium oxide (Ga_2O_3)-based photodetectors, emphasizing their applications in solar-blind UV detection and missile tracking systems. Using bibliometric, patent, and content analysis, research trends and technological developments were examined through an extensive review of scientific publications and patents. The analysis highlights the evolution of Ga_2O_3 photodetectors, particularly in fabrication techniques, device performance, and military applications. The study identifies critical research gaps, such as the need for optimized fabrication methods and the development of self-powered photodetectors. It proposes a research agenda to improve the efficiency and reliability of Ga_2O_3-based photodetectors for advanced applications, including missile detection and beyond.

48. Suchikova, Y., Tsybuliak, N. (2024). ChatGPT isn't an author, but a contribution taxonomy is needed. *Accountability in Research-Ethics Integrity and Policy*.

https://doi.org/10.1080/08989621.2024.2405039

Purpose: The increasing use of AI tools, particularly large language models like ChatGPT, in academic research has raised significant questions about authorship and transparency. This commentary emphasizes the need for a standardized AI contributions taxonomy to clarify AI's role in producing and publishing research outputs, ensuring ethical standards and maintaining academic integrity. Approach: We propose adapting the NIST AI Use Taxonomy and incorporating categories that reflect AI's use in tasks such as hypothesis generation, data analysis, manuscript preparation, and ethical oversight. Findings: Establishing an AI contributions taxonomy for the production and publication of research output would address inconsistencies in AI disclosure, enhance transparency, and uphold accountability in research. It would help differentiate between AI-assisted and human-led tasks, providing more explicit attribution of contributions. Findings: Establishing an AI contributions taxonomy for the production and publication of research output would address inconsistencies in AI disclosure, enhance transparency, and uphold accountability in research. It would help differentiate between AI-assisted and human-led tasks, providing more explicit attribution of contributions. Practical

implications: The proposed taxonomy would offer researchers and journals a standardized method for disclosing AI's role in academic work, promoting responsible and transparent reporting aligned with ethical guidelines from COPE and ICMJE. Value: A well-defined AI contributions taxonomy for the production and publication of research output would foster transparency and trust in using AI in research, ensuring that AI's role is appropriately acknowledged while preserving academic integrity.

49. Sullivan, J. E., Kamensky, D. (2024). Putin's power play: Russia's attacks on Ukraine's electric power infrastructure violate international law. *Electricity Journal*, 37 (2), art. no. 107371.

https://doi.org/10.1016/j.tej.2024.107371

International humanitarian law is a branch of public international law that seeks to moderate the conduct of wars to protect those who are not taking part in the hostilities. Under international humanitarian law, belligerents may not intentionally target civilians or installations that are indispensable to the survival of the civilian population. While collateral harm to civilians and civilian infrastructure may occur, international humanitarian law prohibits attacks that may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof which would be excessive in relation to the concrete and direct military advantage anticipated. In practice, these principles have not always been honored or enforced. State and non-state actors have deliberately targeted civilians and/or disregarded civilian impacts, often for the purpose of pressuring political leaders to capitulate. The increasing occurrence and severity of harm to civilians and civilian infrastructure in modern conflicts calls into question the continuing relevance of what were once viewed as fundamental protections. In this paper, we present a case study involving Russia's 2022–23 attacks on Ukraine's electric power infrastructure, which left millions of civilians without heat, water, or other basic services for extended periods in harsh winter conditions. Considering the scope, scale, and long-term impacts of these attacks, we conclude that Russia violated international law. We also suggest that a new international protocol may be necessary in order to more effectively deter and punish attacks on civilian infrastructure in future armed conflicts and military occupations.

50. Susla, N., Lesyk, A., Popova, O., Mykhalchenko, N., Koroliuk, S., Tsyna, A. (2024). Methodological approaches to stimulating innovative activity. *Conhecimento & Diversidade*, 16 (42), pp. 483–499.

https://doi.org/10.18316/rcd.v16i42.11718

The article clarifies the principles of innovation management, taking into account participatory management as a new approach to project management. Based on an assessment of the current state and trends in the country's socio-economic development in the conditions of an innovative economy, a conceptual model for the formation and assessment of socio-economic development priorities has been developed. The conceptual provisions of the new paradigm of socio-economic development are revealed and justified. A set of theoretical provisions and practical tools for assessing the impact of innovative projects has been developed. The criticality of stakeholders in the

management of innovation activities has been determined and assessed. A methodology and methods have been developed for integrating the management of innovation activities into the management system. A method is proposed for taking into account the influence of mutual risks and assessing changes in the cost part of the project taking into account risks based on determining the factors of interaction of innovative projects.

51. Tsybuliak, N., Kolomiiets, U., Lopatina, H., Popova, A., Suchikova, Y. (2024). Anxiety among Ukrainian academic staff during wartime. *Scientific Reports*, 14 (1) art. no. 27152.

https://doi.org/10.1038/s41598-024-78052-8

The ongoing war in Ukraine has significantly impacted the mental health of academic staff, with anxiety emerging as a predominant issue. This study aimed to assess the prevalence and severity of generalized anxiety disorder (GAD) among Ukrainian academic staff and determine the influence of sociodemographic factors, such as gender, age, migration status, scientific degree, and job title, on anxiety levels. The research was conducted using a cross-sectional online survey between December 2023 and February 2024. The sample included 429 participants from various Ukrainian universities, representing both male and female academic staff, holding job positions such as assistants, senior lecturers, associate professors, and full professors. The findings revealed that 44.3% of participants experienced moderately severe to severe anxiety, with migration due to the full-scale war being a significant predictor of higher anxiety levels. Notably, male academic staff exhibited higher anxiety levels than their female counterparts, contrary to typical peacetime trends, suggesting that wartime responsibilities and societal expectations may play a crucial role. The data underscore the need for targeted mental health support, particularly for displaced academic staff, and highlight the importance of developing gender-specific interventions. These insights are vital for informing policies and support programs to enhance academic staff's mental health and productivity in conflict zones, ensuring the continuity and quality of scientific research during and after the war.

52. Tsybuliak, N., Lopatina, H., Shevchenko, L., Popova, A., Kovachov, S., Suchikova, Ya., Popov, A. (2024). Researchers of Ukrainian universities in wartime conditions: Needs, challenges and opportunities. *Regional Science Policy and Practice*, 16 (9).

https://doi.org/10.1016/j.rspp.2024.100012

Against the backdrop of the ongoing war conflict between Russia and Ukraine, the article explores the needs, challenges, and opportunities that researchers affiliated with Ukrainian relocated university experienced. In the study, we investigated the impact of the war and the safety situation on the scientific activity of Ukrainian university researchers based on their geographical circumstances: those who living in occupied territories, those who had relocated to Ukrainian-controlled areas, or those who had temporarily moved abroad. We also analyzed the relationship between the unique challenges and needs faced by these researchers in light of their security predicaments and explored the extent to which they capitalized on available opportunities. The study identifies a notable decrease in scientific activity among those who temporarily moved abroad. The widespread uncertainty and instability within Ukraine due to the conflict

compel researchers to seek novel avenues for resuming scientific undertakings. Overall, the study underscores the evident impact of the war on researchers' scientific activities, necessitating immediate attention and effective actions. The decline in scientific activity and projected loss of academic potential pose political consequences demanding focused strategies for supporting university researchers during wartime.

53. Tsybuliak, N., Lopatina, H., Shevchenko, L., Popova, A., Suchikova, Ya. (2024). Burnout and Migration of Ukrainian University Academic Staff During the War. *Sage Open*, 14 (3).

https://doi.org/10.1177/21582440241279137

This study examines the impact of migration processes on burnout among Ukrainian university academic staff during the full-scale war. A survey involving 836 participants from 164 higher education institutions revealed that 37% of respondents became forced migrants, either internally (24%) or externally (13%). Significant connections were found between forced migration and burnout among academic staff, with noticeable distinctions between external migrants, internal migrants, and non-migrants. Academic staff who were forced to migrate displayed higher levels of emotional exhaustion compared to non-migrant counterparts. External migrants experienced energy depletion, while internal migrants reported reduced professional accomplishment. Inadequate pay, social security instability, increased professional activity, insufficient state support, anxiety, constant stress, and concern for their country, city, and university were common factors contributing to burnout among all groups. External migrants faced challenges with social protection, team relations, and workload. Internal migrants encountered difficulties in rebuilding professional activities and experienced a heightened sense of danger, particularly for those living in temporarily occupied territories. The findings highlight the necessity for targeted support strategies to address the unique needs of academic staff during conflict and migration, promoting their mental health and resilience at the policymaker and university administrator levels during times of crisis by implementing support strategies and programs to help them cope with the challenges of migration and promote overall job satisfaction for quality education of the next generation of citizens.

54. Tsybuliak, N., Mytsyk, H., Suchikova, Ya., Lopatina, H., Popova, A., Hurenko, O., Hrynkevych, O. (2024). Inclusion in Ukrainian universities from an inside perspective. *Scientific Reports*, 14 (1).

https://doi.org/10.1038/s41598-024-69084-1

This study investigates the state of inclusivity in Ukrainian universities, focusing on the perceptions of university staff amid the country's ongoing sociopolitical transformations. Here we report on the perceptions of 820 staff members from various professional roles, including academic, management, and support positions, this research explored inclusivity through diverse lenses, encompassing work experience, interactions with students with disabilities, and self-identification with vulnerable groups. Most respondents assessed a moderate to high level of inclusivity, indicating a positive overall outlook on inclusive practices within these institutions. Notably, perceptions of inclusivity vary slightly across different professional roles, with academic staff expressing a

marginally lower level of perceived inclusivity than their counterparts. However, these variations are not statistically significant, suggesting a uniform perception across staff categories. Furthermore, the study revealed that personal experience in working with students with disabilities does not substantially alter staff perceptions of inclusivity. Similarly, self-identification with vulnerable groups only marginally influences these perceptions. This suggests that while individual experiences and identities are factors in inclusivity perceptions, their impact is not profoundly different. This research contributes to understanding inclusivity in higher education, particularly within environments undergoing significant social and political changes.

55. Tsybuliak, N., Polulyakhov, A., Suchikova, Ya. (2024). Mobilization and stigmatization: PhD admissions in wartime. *Higher Education Research & Development*, 1–9.

https://doi.org/10.1080/07294360.2024.2424161

The ongoing war in Ukraine has profoundly impacted Ukraine's higher education system, particularly in the realm of PhD admissions. This essay explores the surge in PhD enrollments, driven partly by mobilization policies, and examines the complex challenges it presents, including the stigmatization of male students who are often labelled as 'draft dodgers'. The essay analyzes policy changes, societal perceptions, and their implications for the future of Ukrainian higher education. It argues that while the recent reforms aim to maintain academic integrity, they may inadvertently create barriers that limit diversity and academic potential. The stigmatization of male PhD students threatens both their mental health and the vitality of academic discourse, creating a hidden crisis with long-term consequences for research and intellectual potential. By navigating this complex terrain with a balanced approach to policy-making, Ukraine can preserve the integrity of its education system while supporting its scholars for future recovery.

56. Tsybuliak, N., Popova, A., Lopatina, H., Suchikova, Ya. (2024). In a Stranger's House: Social Isolation of Internally Displaced People in Ukraine During Wartime. *Human Affairs-Postdisciplinary Humanities & Social Sciences Quarterly*.

https://doi.org/10.1515/humaff-2024-0027

This article explores the impact of internal displacement during wartime in Ukraine on individuals' social isolation. This study focused on understanding and comparing feelings of isolation in two different contexts: the native community in territories temporarily occupied by Russian troops since the full-scale war and the host community. The research reveals a consistent pattern of isolation characterized by feelings of loneliness, anxiety, and emotional exhaustion among internally displaced people (IDPs), irrespective of their location. Cultural disconnection emerges as a significant factor in both settings, with war-induced changes in social norms and practices leading to a sense of alienation in native communities, and the challenge of adapting to new cultural environments in host communities. Furthermore, it highlights IDPs' increased vulnerability to bias, stigma, and anxiety in social interactions. Overall, this qualitative study advances the understanding of the effects of displacement on social isolation and provides insights that can inform effective recovery strategies and foster a resilient, cohesive national identity in post-war contexts in Ukraine.

57. **Tsybuliak, N., Suchikova, Ya. (2024). Don't let watermarks stigmatize AI-generated research content. *Nature*, 635 (8040), pp. 815.**

https://doi.org/10.1038/d41586-024-03869-2

No abstract available

58. **Ulunova, H., Spivak, L., Starynska, O., Nickolaenko, S. (2024). Forms of address used by Ukrainian bilingual civil servants in professional communication. *Welt Der Slaven-Halbjahresschrift Fur Slavistik*, 69 (1), pp. 1–17.**

https://doi.org/10.13173/WS.69.1.001

Over the past one hundred years, Ukraine has undergone at least two paradigm shifts in addressing. Nowadays, among the forms of address recommended for civil servants to use in professional communication there are both traditional address forms of Ukraine and Eastern Europe and those associated with the Soviet era. This complexity complicates the communication process because it creates a certain risk that the recipient rejects the form of address chosen by the communicator. This situation is particularly acute in traditionally bilingual border regions of Ukraine. The empirical study allows us to answer the question: What forms of address are used by bilingual civil servants in various types of professional communication? By establishing the relationships between certain forms of address used by bilingual civil servants and the parameters of their national identity, the authors were able to analyze more deeply the personal meaning of different forms of appeals in the professional communication for bilingual civil servants.

59. **Vasylyshyna, N., Barbashova, I., Semashko, T., Bespalova, O., Myrna, A. (2024). Educational-methodological complexes application within specific discipline in the process of teaching social work and physical rehabilitation at the university: on the example of multifunctional dual English course complex High Note (in Ukrainian context). *Ad Alta-Journal of Interdisciplinary Research*, 14 (1), pp. 187–192.**

https://ep3.nuwm.edu.ua/29658/

The relevance of the article is determined by the fact that the modern landscape of higher education, the competitiveness of specialists in the labor market, the problem of professional training of social work specialists is of particular relevance. It is shown that the creation of an active learning environment using active forms, methods and teaching aids is of particular relevance in modern university education of future social workers. Taking into consideration the modern tendencies happening in the frame of higher education of Ukraine it was mentioned that educational methodological complexes of all university courses are the intrinsic part of the successful future specialists' preparation. Theoretical review of the educational methodological provisions stated in the official documents that should be fulfilled by teaching staff and learners during university studying is given. Secondly, the recommendations for displaying and analyzing from the teachers' perspective modern courses and Pearson English Platform are given, that can

be used during teaching English language, and a comprehensive summary of the advantages and disadvantages of paper teaching materials and on-line resources is presented. The article emphasizes that the means of systematic approach implementation purposed to reveal main sides, components and functions of the educational methodological complexes allow implementing a personality-oriented paradigm, in accordance with the requirements of modern society for the quality of training of a future specialist in the social sphere as human capital, a labor market resource and an agent of social change. The conclusions emphasize that university educational process must be supported with educational methodological complexes of all disciplines, built according to synergetic approach.

60. Vientseva, N., Orhiiets, O., Omelchenko, A., Romanchuk, S. (2024). Students' perception of the effectiveness of the professional activity of teachers of higher education institutions: the influence of social conditions. *Pedagogika-Pedagogy*, 96 (2), pp. 195–205.

https://doi.org/10.53656/ped2024-2.04

The article provides a theoretical analysis of scientific approaches to determining the components of teaching effectiveness from the students' point of view. Three groups of indicators of the teacher's effectiveness are distinguished: pedagogical mastery, professional and personal qualities; their components are revealed. Students' feedback on the teaching of subjects at Berdyansk State Pedagogical University in two periods – pre-war (during the coronavirus pandemic) (735 reviews) and the military invasion of Russia in Ukraine (627 reviews) were analyzed. It was revealed that the war affected the change of priorities in the assessment of the effectiveness of the professional activity of teachers of higher education institutions, namely: during the martial law, the highest indicators were given to personal qualities, in contrast to the professional qualities of teachers, which were prioritized in the pre-war period.

ТОП-10 найбільш цитованих статей. Scopus 2024

№	Назва документа	Кількість цитувань
1.	Inclusive education in higher education institution: Are Ukrainian faculty members' ready for it?	10
2.	Chemical tuning of photo- and persistent luminescence of Cr^{3+}-activated β-Ga_2O_3 by alloying with Al_2O_3 and In_2O_3	9
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ТОП-10 авторів за кількістю публікацій. Scopus 2024

№	Автор	Scopus ID	Загал. кіл-ть статей за 2024 р.
1.	Suchikova, Yana	Scopus ID: 36523907500	36
2.	Kovachov, Sergii	Scopus ID: 57208748653	19
3.	Bogdanov, Ihor	Scopus ID: 57197810681	15
4.	Zhydachevskyy, Yaroslav	Scopus ID: 6603506739	12
5.	Tsybuliak, Natalia	Scopus ID: 57200150887	12
6.	Popova, Anastasia	Scopus ID: 58246885800	9
7.	Lopatina, Hanna	Scopus ID: 57200145628	9
8.	Kosogov, Ivan	Scopus ID: 58203760300	7
9.	Drozhcha, Dariya	Scopus ID: 58203543600	6
10.	Mytsyk, Hanna	Scopus ID: 58865871700	5

ТОП-10 журналів, популярних серед викладачів. Scopus 2024

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1.	Multidisciplinary Science Journal	4
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3.	Academia (Greece)	2
4.	CEUR Workshop Proceedings	2
5.	Edelweiss Applied Science and Technology	2
6.	Journal of Luminescence	2
7.	Lecture Notes in Networks and Systems	2
8.	Materials	2
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ТОП-10 найбільш цитованих статей. Web of Science 2024

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1.	Chemical tuning of photo- and persistent luminescence of Cr^{3+}-activated β-Ga_2O_3 by alloying with Al_2O_3 and In_2O_3	8
2.	Advanced Synthesis and Characterization of CdO/CdS/ZnO Heterostructures for Solar Energy Applications	7
3.	Luminescence spectroscopy of Cr^{3+} ions in bulk single crystalline β-Ga_2O_3-In_2O_3 solid solutions	4
4.	The Use of Gamification in the System of Social and Psychological Adaptation of Forcibly Displaced Teenagers from Ukraine: Reflections of the German Experience	4
5.	ChatGPT isn't an author, but a contribution taxonomy is needed	3
6.	Excited state dynamics of Bi^{3+} centers in cubic Gd_2O_3	3
7.	In a Stranger's House: Social Isolation of Internally Displaced People in Ukraine During Wartime	3
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9.	Researchers of Ukrainian universities in wartime conditions: Needs, challenges and opportunities	2
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ТОП-10 авторів за кількістю публікацій. Web of Science 2024

№	Автор	Web of Science Researcher ID	Загал. кіл-ть статей за 2024 р.
1.	Suchikova, Yana	Researcher ID: O-7911-2019	30
2.	Kovachov, Sergii	Researcher ID: GNW-7523-2022 Researcher ID: JCL-4639-2023	14
3.	Bohdanov, Ihor	Researcher ID:AAC-4000-2022	10
4.	Tsybuliak, Natalia	Researcher ID: O-8734-2017	10
5.	Zhydachevskyy, Ya	Researcher ID: P-4869-2017	10
6.	Lopatina, Hanna	Researcher ID: AAB-7858-2020	8
7.	Popova, Anastasia	Researcher ID: E-3107-2019	8
8.	Mytsyk, Hanna	Researcher ID: E-1509-2019	4
9.	Kosogov, Ivan	Researcher ID: LKS-8043-2024	4
10.	Kamensky, Dmitriy	Researcher ID: AAQ-4357-2021	3

ТОП-10 журналів, популярних серед викладачів. Web of Science 2024

№	Назва журналу	Кількість статей
1.	Optical Materials	4
2.	Ad Alta-Journal of Interdisciplinary Research	4
3.	Revista Romaneasca Pentru Educatie Multidimensionala	3
4.	Nature	3
5.	Brain-Broad Research in Artificial Intelligence and Neuroscience	3
6.	Journal of Luminescence	2
7.	Materials	2
8.	Crystals	2
9.	Conhecimento & Diversidade	2
10.	Scientific Reports	2

Додаткові матеріали

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9. Zenodo. Community Berdyansk State Pedagogical University https://zenodo.org/communities/bdpu-science/records?q=&l=list&p=1&s=10&sort=newest

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