Публикаций ППС и научных сотрудников в международной базе WEB OF SCIENCE

№ п/п	Автор	Название статьи	Аннотация	Ссылка	Индекс цитирования
2017 год					
1.	Zhaglovskaya AA, Chlachula J., Thevs N., Myrzagaliyeva AB., Aidossova SS.	Natural regeneration potential of the black saxaul shrub-forests in semi-deserts of Central Asia - the Ili River delta area, SE Kazakhstan	Two saxaul species black saxaul (Haloxylon aphyllum Minkw.) and white saxaul (Haloxylon persicum Bunge) constitute the principal arboreal cover of the cold continental deserts of Central Asia. While the latter is a rain-fed shrub distributed on sand dunes, the former is a ground-water phreatophyte mainly found on alluvial terraces. Saxaul has played an important role as a fodder plant also used as firewood by local herders. Due to over-grazing and over-exploitation for fuel during the past fifty years, the once dominant saxaul vegetation has considerably degraded. Important growth characteristics at the present plantations (such as height, and basal trunk and crown diameters) show a direct quantitative relationship between the plants' age up to the 25-year lifetime and the total tree biomass reduced by natural degradation. Annual productivity largely depends on the overall vegetation density that reflects specific environmental conditions at particular locations. The recommended harvest rate, balancing the calculated natural regeneration capacity, should not exceed 0.82 t/ha at the density of up to 900 shrubs/ha, 1.78 t/ha at the density of 900-1500 shrubs/ha and 2.63 t/ha at the density of 1500-2000 shrubs/ha. The results from the field monitoring sites provide new insights on the natural reproductive potential of black saxaul shrub-forests in undisturbed versus anthropogenically affected and exploited semi desert and parkland settings of Central Asia.	https://www.webofscience.com/wos/woscc/full-record/WOS:000412150800004	5
2.	Fedorchuk, Y. M., Zamyatin, N. V., Smirnov, G. V., Rusina, O. N., Sadenova, M. A.	Prediction of the properties anhydrite construction mixtures based on neural network approach	The article considered the question of applying the backstop modeling mechanism from the components of anhydride mixtures in the process of managing the technological processes of receiving construction products which based on fluoranhydrite.	https://www.webofscience.com/wos/woscc/full-record/WOS:000411830100039	3
2018 год					
3.	Oskembay, AA, Kelgembaeva, BB, Yerdembekov, BA	The social and historical situation in the nineteenth-century Kazakhstan and the anti-colonial trend in Kazakh literature	The paper features a brief review of the history of Russia's colonization of Kazakhstan in the nineteenth century. During this period, Russia was engaged in colonial activities in Asia. After conquering the Kazakh lands, Russia launched a policy of russification and started to force a new sociopolitical model upon the Kazakhs. The research investigates the status of the Kazakh population in Russia and that of the people who were forced to move to China. The research also reviews the attempts of Kazakhs to regain their independence through rebellions, which were suppressed violently by imperial armed forces. The authors analyzed the works of East Kazakhstani poets in the context of the sociocultural processes of that age. The poetic works best reflect the mood of the nation and its attitude to the new policy. The poems of Arimzhan Zhanuzakuli, Argynbek Apashbayuli, and Nogaybay Suleymenuli discover and contemplate the themes that reflect the political and social controversies of the age of economic, political, and cultural expansion into the country (the	https://www.webofscience.com/wos/woscc/full-record/WOS:000472788200011	0

			theme of disappointment with the past and fear of the future) and unite the poets into the "times of tribulation" literary trend. The works of the "times of tribulation" poets gave impetus to the national rebirth of Kazakhs and the return of independence and the possibility to choose their own policy. Due to the subjects addressed in their works, many poets were subject to purges. Nowadays, the Kazakhs have their own independent state of Kazakhstan, which became possible thanks to the national idea that was formed in the works of nineteenth-century poets.		
4.	Rakhadilov, B, Skakov, M, Miniyzov, A, Kenesbekov, A	Hydrogen and deuterium storage in tungsten when irradiation with plasma beam	The paper devotes to study of hydrogen and deuterium storage and research of capturing hydrogen and deuterium in tungsten samples irradiated with plasma beam. The paper shows that some changes occur in the surface like relief propagation caused by heterogeneous surface etching after irradiation with hydrogen plasma. Ratio of change in relief and structure of irradiated samples' surface layer herewith depends on the irradiation temperature. Hydrogen and deuterium storage in tungsten have been studied while their irradiation with hydrogen and deuterium plasma. Thermo-desorption analysis of tungsten samples irradiated with hydrogen and deuterium plasma at 1000 degrees C degrees showed that tungsten surface became saturated with deuterium and did not become saturated with hydrogen. The data obtained by emission spectrometry and thermo-desorption spectrometry verified, that the basic share of captured deuterium is accumulated at the depth of up to 7 mu m.	https://www.webofscience.com/wos/woscc/full-record/WOS:000461832200194	7
5.	Sagdoldina, Z, Stepanova O. Tuyakbayev B. Buitkenov D	The effect of heat treatment on the structural-phase states of ti-al coatings synthesized by the method of mechanical alloying	This article presents the results of studying the structural-phase state changes of Ti-Al coatings on the surface of titanium synthesized by mechanical alloying. The study of the substrate-coating boundary showed the practical absence of traces of diffusion of the coatings in the titanium substrate after the mechanical alloying process. The mechanism of formation of Ti-Al coatings is due to cold welding and due to deformation compaction of powder particles on the surface of titanium under the impact of ball hits. Stirring of coating components with the formation of diffusion zones at the interfaces is observed after annealing at 600 degrees C. Al3Ti is the first phase that forms in the coatings as a result of the interaction of Ti and Al. The compounds Al2Ti and TiAl are formed as a result of subsequent reactions between Ti and Al3Ti. After the process of mechanical alloying, heat treatment should be used as a complex treatment to accelerate the diffusion processes in the coating-substrate system.	https://www.webofscience.com/wos/woscc/full-record/WOS:000461832200196	0
6.	Zhantassova, Z, Tlebaldinova, A, Nugumanova, A, Zhurtpayeva, A, Kaydarova, M	Software development for the correction of various aspects of children's oral and written speech (based on Latin alphabet)	This paper presents the main stages of software development in different aspects of children's oral and written speech. The program enables to work with a wide range of speech units from sound to text, to solve various surdologopedic tasks: from adjusting speech breathing, voice and pronunciation to the development of the lexical and grammatical aspect of speech. The software scope of the tasks to be solved includes game moments in the process of correcting speech deficiencies, multiple playback of the necessary type of exercises and speech activities, work at different levels of complexity depending on student's abilities along with the speech therapy that develops perception, attention and memory. When creating the program, the psychological features and visual perception of children with speech deficiencies as well as the locomotive system and	https://www.webofscience.com/wos/woscc/full-record/WOS:000462760400022	0

			intellectual disorders were taken into account. The program contains an entertaining plot based on the national features. The software development is based on Adobe Flash technology, which is a powerful tool with great potential in terms of creating large and functional applications.		
7.	Shmelev, SE; Sagiyeva, RK; Kadyrkhanova, ZM; Chzhan, YY; Shmeleva, IA.	Comparative Sustainability Analysis of Two Asian Cities: A Multidimensional Assessment of Taipei and Almaty	The article compares economic and environmental performance of Taipei and Almaty from the point of view of "green" economy, which is able to act as a key tool to ensure sustainable development of the region. As the comparison of the parameters of ecological and economic development of the Taipei and Almaty cities shows, they are similar in population size, but demonstrate completely different trends of sustainable development. Economic performance of the Taipei city is achieved with a decrease in the consumption of natural resources and the production of pollution, while the situation in Almaty is the opposite. Almaty maintains a high level of air pollution due to the use of coal in electricity production, as well as increased traffic and density of construction, including the southern part of the city, which is a zone for the transit of mountain air flows. The article discusses the activities jointly conducted by the Government of Taiwan and non-governmental organizations on environmental issues, as well as environmental NGOs, which resulted in significant improvements in the environmental field. Measures to stimulate the development and implementation of environmental innovations applied in the field of sustainable development in the city of Taipei can be adapted for the city of Almaty, where the environmental situation deteriorates year by year.	https://www.webofscience.com/wos/woscc/full-record/WOS:000446929000014	9
8.	Suleimen, EM (Suleimen, E. M.) [1] ; Kazantsev, AV (Kazantsev, A. V.) [2] ; Van Hecke, K (Van Hecke, K.) [3] ; Iskakova, ZB (Iskakova, Zh. B.) [1] ; Akatan, K (Akatan, K.)	Crystal and Molecular Structure, and Cytotoxic Activity of diethyl ether of 2-[(phenyl-(phenyl-o-carboranyl)-methyl]malonic acid	The crystal and molecular structure of diethyl ether of 2-[(phenyl-(phenyl-o-carboranyl)-methyl]malonic acid is determined by single crystal X-ray diffraction and NMR spectroscopy for the first time. The cytotoxic activity of the molecule is analyzed.	https://www.webofscience.com/wos/woscc/full-record/WOS:000427725900037	0
9.	Shomanov, AS Mansurova, ME Nugumanova, AB	Design of K-means clustering algorithm in PGAS based Mapreduce framework	Clustering large volumes of data is a complicated and time-consuming task. The main goal of clustering task is to explore a given dataset and find appropriate set of cluster centers that have maximum within-cluster and minimum inter-cluster similarity. In our work we present parallel K-means clustering algorithm based on Partitioned Global Address Space implementation of Mapreduce model. The main idea of our approach is to exploit data locality of partitioned global address space model to assign threads to different cluster centers.	https://www.webofscience.com/wos/woscc/full-record/WOS:000482671700028	0
10.	Al-Maitah, M Timchenko, LI Kokriatskaia, NI Nakonechna, SV	Parallel-hierarchical network as the model of neurocomputing	In this paper considers methodological approach was developed for analysis of parallel processes. This approach considers influence of structural hierarchy in dynamics, in other words it tracks processes of spatial areas transformation of correlated and generation of	https://www.webofscience.com/wos/woscc/full-	2

	Stepaniuk, DS Gradz, ZM Syzdykpayeva, A		uncorrelated in time elements of generated network, at the time of transition of the network from one stable stage to another.	record/WOS:000450820000096	
11.	Azarov, OD Pavlov, SV Chernyak, OI Ivasyuk, ID Wójcik, W Syzdykpayeva, A	Principles of fast count in modified Fibonacci numerical system	The theoretical aspects of count in the modified Fibonacci numerical system are proposed in the article. It allows constructing of high-speed Fibonacci counters where the hardware costs are comparatively small and increase proportionally at code length growth. Fibonacci transformations of codes are described that play the role of carryings and borrowings at increment and reverse count. The admissible forms of codes for specifying the initial states of counters are explored.	https://www.webofscience.com/wos/woscc/full-record/WOS:000450820000081	1
12.	Woszczyk, M (Woszczyk, Michal) [1] ; Spychalski, W (Spychalski, Waldemar) [2] ; Boluspaeva, L (Boluspaeva, Laura) [3]	Trace metal (Cd, Cu, Pb, Zn) fractionation in urban-industrial soils of Ust-Kamenogorsk (Oskemen), Kazakhstan-implications for the assessment of environmental quality	Ust-Kamenogorsk is one of the largest cities and industrial centers in Kazakhstan. Non-ferrous metallurgy (Zn-Pb smelter) has acted as a predominating industrial branch in the city since late 1940s. The industrial plants are situated directly adjacent to the residential area of the city which creates grievous ecotoxicological hazard. In the present paper, we aimed at assessing the trace metal pollution of top soils in Ust-Kamenogorsk and its potential threats to the local population. The top soils were sampled at 10 sites throughout the city center. We determined the physical and chemical properties of soils as well as the contents of Cd, Cu, Pb, and Zn. In addition, the soil samples were subjected to a five-step sequential extraction to ascertain the fractionation of trace metals. On this basis, we calculated the geoaccumulation index (I-geo) and pollution load index (PLI) and assessed bioavailability of the elements. From our data, it emerged that the soils displayed a strong polymetallic pollution. PLI was as high as 33.4. Throughout the city, the trace metal contents exceeded the geochemical background and allowable values for residential, recreational, and institutional areas. The I-geo obtained were 3.7-6.5 for Cd, 1.5-4.7 for Cu, 2.8-5.7 for Pb, and 2.6-4.6 for Zn. The soils in Ust-Kamenogorsk displayed extremely high contamination with Cd, moderate to strong contamination with Pb and Zn, and low to moderate contamination with Cu. Cd and Pb were found to be the most bioavailable elements. The mobility of trace metals in the soils changed in the order Cd > Pb > Zn > Cu.	https://www.webofscience.com/wos/woscc/full-record/WOS:000434090600034	28
2019 год					
13.	Rakhadilov, B (Rakhadilov, Bauyrzhan) [1] ; Satbayeva, Z (Satbayeva, Zarina) [1] ; Baizhan, D (Baizhan, Daryn)	Effect of electrolytic-plasma surface strengthening on the structure and properties of steel 40khn	The paper presents the results of electrolytic-plasma surface hardening (EPSH) of steel 40KhN. The optimal electrolyte composition for EPSH of 40KhN steel containing 10 % sodium carbonate and 15 % carbamide, which does not cause the surface layer to erosion, oxidation and decarburization, is determined. As a result of EPSH, a modified layer was obtained with increased hardness and wear resistance. We studied the changes in the microhardness of the surface layer of steel 40KhN after the EPSH, as well as the dependence of the microhardness on the duration of the effect of the electrolyte plasma. The paper presents tests for wear resistance of samples before and after electrolytic-plasma surface hardening. Tests have shown that the treated samples show a significant decrease in wear rate compared with the original sample. To clarify the structural factors affecting the wear resistance of steel, the structural-phase states of the hardened surface layers of steel 40KhN were investigated. X-ray structural analysis showed that in the initial state the a-phase and cementite (Fe3C) are present in the structure of 40KhN steel. After the EPSH, diffraction patterns showed a broadening of the interference lines from the crystallographic	https://www.webofscience.com/wos/woscc/full-record/WOS:000539487400155	4

			plane (110). The broadening of the interference line (110) is associated with an increase in the density of dislocations and the formation of martensite and is determined mainly by the tetragonal nature of martensite.		
14.	Alekseyenko, AN (Alekseyenko, A. N.) [1] , [2] ; Aubakirova, ZS (Aubakirova, Z. S.) [3] ; Zhanbossinova, AS (Zhanbossinova, A. S.)	Ethno-Demographic Evolution and Formation of the Sovereign Demographic System in Kazakhstan	The article analyzes the formation of demographic system on an autochthonous basis in the Republic of Kazakhstan. It shows that the algorithm of the functioning of sovereign demographic system stems from the peculiarities of the Kazakh lifestyle in the Soviet era when before the collapse of the Soviet Union more than 60% of ethnic representatives had lived in rural areas, preserving their traditional variants of demographic behavior. The core of the urban population was made up of European peoples who moved to Kazakhstan mainly as a result of external migrations. In the 1990s, a considerable part of the European component emigrated. In the second decade of the 21st century, the role of external migration (both emigration and immigration) has been reduced to a minimum; the population dynamics are determined by the reproduction of the Kazakh ethnos - the majority of the population in the republic (both rural and urban). Nevertheless, the heritage of the Soviet era still influences the functioning of the sovereign demographic system. First of all, it is displayed in the evolution of the Kazakh age structure affected by the demographic explosion in the middle of the 20th century. A feature of the current demographic situation in the republic is the rapid urbanization of autochthons, mostly young people. There is a stage of "quantitative" development of urban space, when a significant part of the urban population is represented by former rural residents who transfer corresponding reproductive attitudes to their new residence. Thus, for the first time in the modern history of Kazakhstan there is a demographic system functioning on an autochthonous basis.	https://www.webofscience.com/wos/woscc/full-record/WOS:000507873200013	1
15.	Aubakirova, RA (Aubakirova, R. A.) [1] ; Shomanova, ZK (Shomanova, Zh K.) [2] ; Safarov, RZ (Safarov, R. Z.) [3] ; Atasoy, E (Atasoy, E.)	Analysis of copper-containing products for the content of noble metals	In the article we are presenting the results of electron microscopy study of the samples of blister copper taken from copper production. It was shown significant amount of noble metals - silver and gold. As a result, silver was found in the range of 0.29-0.59%, gold - up to 0.66%. The methodof assay-gravimetric detection of gold and silver in samples of blister copper is described.	https://www.webofscience.com/wos/woscc/full-record/WOS:000478012400010	0
16.	Aubakirova, RA (Aubakirova, R. A.) [1] ; Shomanova, ZK (Shomanova, Zh K.) [2] ; Safarov, RZ (Safarov, R. Z.) [3] ; Atasoy, E (Atasoy, E.)	Atomic emission method with inductively coupled plasma for determining of noble metals (au, ag) in samples of industrial blister copper	In the article weare presenting the results of investigation of AES ISP method for Au and Ag determination in samples of industrial blister copper. The developed method allows determining Au in the range 2856 g/ton, Ag - 2000-3000 g/ton. Control of precision was conducted using control analytical method (assay-gravimetric) as well as using measurement of state standard sample of copper content with attested values of impurities. The developed method is not inferior in metrological characteristics to control analytical method. Optimal spectral lines for Au - 242,795 nm and for Ag - 328,068 nm were selected because they have the most sensitivity and do not have spectral noises. Statistical processing of calibration characteristics for AES ISP determination of Ag and Au was conducted in accordance to RIS 54-2002. As a result, values of average standard relative	https://www.webofscience.com/wos/woscc/full-record/WOS:000478012400009	0

			deviations, the ratio of the average squared deviations and quantile of distribution were obtained. Parameters of precision, correctness, repeatability, reproducibility of the method were calculated according to RIS 61-2013.		
17.	Sagdoldina, Z (Sagdoldina, Zhuldyz) [1] ; Rakhadilov, B (Rakhadilov, Bauyrzhan) [2] ; Kenesbekov, A (Kenesbekov, Aidar) [3] ; Stepanova, O (Stepanova, Olga) [4] ; Buitkenov, D (Buitkenov, Dastan)	Phase-structural Condition of the Ti-Al System Treated by Irradiation with Si Ions and Heat Treatment	This work showed the study of the features of phase-structural transformations in the titanium-aluminum system during irradiation with silicon ions and heat treatment. It was determined that under the heating of treatment, aluminide phases are formed on the surface of titanium with a thin aluminum coating in accordance with the equilibrium state diagram. It was found that after annealing, a change in the grain size is observed.	https://www.webofscience.com/wos/woscc/full-record/WOS:000627570800011	1
18.	Sagdoldina, Z (Sagdoldina, Zhuldyz) [1] ; Rakhadilov, B (Rakhadilov, Bauyrzhan) [3] ; Skakov, M (Skakov, Mazhyn) [2] ; Stepanova, O (Stepanova, Olga)	Structural evolution of ceramic coatings by mechanical alloying	This article researches the formation of ceramic coatings of zirconium dioxide (ZrO2) on a X 12 Cr Ni 18 10 Ti steel surface after mechanical alloying. The study of the coating surfaces shows a coalescence of defected coating particles with subgrains created. This process is more representative due to the difference in toughness between zirconium oxide and steel. It is suggested that an adhesive bond between the coating and support structure is provided by the strain welding of the powder on the support structure coating. When using X-phase analysis, neither the diffusive mixing of coating/support structure components nor the formation of new compounds and phase changes are revealed. Surface contamination of the coating with carbon was found. It decreased in the direction of the border between the coating and the support structure. This may be due to the mechanical sorption of carbon dioxide from the environment.	https://www.webofscience.com/wos/woscc/full-record/WOS:000463358300002	8
19.	Avrunin, O [1] ; Mustetsova, O [1] ; Tymchik, S [2] ; Khudaieva, S [1] ; Homolinskyi, VO; Omiotek, Z; Syzdykpayeva, A	Possibility of determining the cause of the snore by instrumental methods	Violation of the function of breathing manifested in the form of snoring can lead to a decrease in pulmonary ventilation and a decrease in the level of oxygen in the blood. As a result, it is possible to develop a number of diseases, and even with a fatal outcome. The reasons for the appearance of snoring can be many, which complicates both the diagnosis and treatment of snoring. The creation of objective tools and methods for diagnosing snoring is possible in the case of creating an adequate physical model for air passage in the upper respiratory tract and describing the physical effects that arise in the process of breathing. The physical model of air ducts, created on the basis of the anatomical model, takes into account the influence of all structural elements influencing the passage of air. The appearance of sound during snoring is the result of the ingress of turbulent airflow into the oropharynx and subsequent vibration of the palatine tongue and the vibration of the surface of the soft palate. One possible perspective method for identifying the main cause of snoring can be a spectral analysis of the sounds of snoring.	https://www.webofscience.com/wos/woscc/full-record/WOS:000511104400086	1
20.	Abutalip, M (Abutalip, Munziya)	Reversible Addition-	In this work, we report the first molecular weight-controlled amphiphilic polybetaine synthesis using various hydrocarbons via reversible addition fragmentation chain-transfer	https://www.webofscience.com/wos/w	3

	[1] , [2] ; Mahmood, A (Mahmood, Anam) [1] ; Rakhmetullayeva, R (Rakhmetullayeva, Raikhan) [2] ; Shakhvorostov, A Dauletov, Y Kudaibergenov, S, Nuraje, N	Fragmentation Chain-Transfer Polymerization of Amphiphilic Polycarboxybetaines and Their Molecular Interactions	(RAFT) polymerization. The experimental separation of the alkyl aminocrotonate tautomers, which has been the subject of debate, was completed for the first time. The enamine form of these tautomers was further used as a monomer for the RAFT polymerization of amphiphilic polycarboxybetaines. Self-assembly of the amphiphilic polycarboxybetaines showed micelle structures from spherical, rod-like to fractal in the aqueous media due to the competition between both electrostatic and hydrophobic forces. Hydrophobically dominant interactions among amphiphilic polycarboxybetaines and long-chain hydrocarbon alkane molecules were investigated to understand long-chain hydrocarbon alkane crystallization using alkane crystal deposition and viscosity experiments. Strong hydrophobic forces between poly(hexadecyl-grafted aminocrotonate methacrylic acid) and long-chain hydrocarbon alkane molecules changed the surface properties of the long-chain hydrocarbon alkane nucleus and inhibited the growth of paraffin crystals.	oscc/full-record/WOS:000473248000023	
21.	Kvaterniuk, S (Kvaterniuk, Serhii) [1] ; Kvaterniuk, O (Kvaterniuk, Olena) [2] ; Petruk, V (Petruk, Vasil) [1] ; Rakytyanska, H (Rakytyanska, Hanna) [1] ; Mokanyuk, O (Mokanyuk, Olexander) [3] ; Omiotek, Z; Syzdykpayeva, A	Determination of the time of occurrence of superficial damage to human biological tissues on the basis of colorimetry and fuzzy estimates of color types	Improved methods for surface imaging of the damaged human tissues based on colorimetry and fuzzy evaluation of color types are presented. Based on the color segmentation of images of superficial damage of human soft tissues, the original image is divided into zones of different colors in accordance with the reference colors used. Further, on the basis of calculated relative zones of different colors for a large set of experimental data on surface damage of biological tissues with a known time of occurrence of prescription, a fuzzy knowledge base is formed, what allows to classify damages and establish their time of occurrence. A bruise color is formalized by a fuzzy set defined on a discrete universal set of colors, where the degree of belonging of a fuzzy set corresponds to the degree of manifestation of each color in the coloring. The degree of coloration in a fuzzy set is determined on the basis of expert-experimental data on the percentage of the area of each color in the coloration. The relationship "time of occurrence of a bruise - coloring" is given in the form of fuzzy rules IF-THEN, which associate fuzzy estimates of time with fuzzy sets of color types. The time range is divided by the expert into intervals of the minimum duration, during which a change in the bruise color is recorded. The decision on the time of occurrence of a bruise is made on the basis of the degree of closeness of the observed and tabular fuzzy color sets.	https://www.webofscience.com/wos/woscc/full-record/WOS:000511104400082	0
22.	Selivanova, KG [1] ; Avrunin, OG [1] ; Kobylianskyi, OV [2] ; Palamarchuk, MI[2] ; Lyashenko, AV [3] ; Omiotek, Z [4]Syzdykpayeva, A	Biometric hand tremor identification on graphics tablet	This work describes the use of linguistic modeling for biometric identify the patient during testing on graphics tablet. The general structure of the system identification algorithm and the realization method based on interval approach are reviewed. In the article, basic principles are considered aimed at construction, application and use of the automated systems of authentication on the basis of "informational handwriting" of work stylus on graphics tablet. Some approaches to tremor identification through two constituents of " informational handwriting" are explored: testing on keyboard, touchscreen and dynamics of work with the stylus on graphics tablet was considered.	https://www.webofscience.com/wos/woscc/full-record/WOS:000511104400088	0
23.	Bezsmertnyi, YO [1] ; Shevchuk, VI (Shevchuk, Viktor I.)	Information model of individual rehabilitation	On the basis of mathematical modeling, prognostic measures are identified in the individual rehabilitation program (IRP), which influence on the effectiveness of the rehabilitation process and reduce the limitations in disabled individuals with cardiovascular diseases.	https://www.webofscience.com/wos/woscc/full-	0

	[1] ; Kurylenko, IV [1] ; Bezsmertna, HV [1] ; Zlepko, SM [2] ; Kozlovska, TI [2] ; Teplova, OY [3] ; Omiotek, Z [4] ; Syzdykpayeva, A	program efficacy in disabled persons with cardiovascular diseases	According to a multivariate stepwise discriminant analysis, the main rehabilitation measures that increase the effectiveness of rehabilitation in persons with disabilities due to cardiovascular diseases are: "restorative therapy", "medical observation", "counseling on physical rehabilitation", "therapeutic physical education", "examination potential professional abilities", " professional orientation", " rational employment" and "adequacy of the profession and specialty recommended in IRP". Taking into account these measures and their implementation will significantly increase the effectiveness of rehabilitation of a person with disabilities with cardiovascular pathology.	record/WOS:000511104400084	
24.	Zharikova, MV [1] ; Sherstjuk, VG [1] ; Wójcik, W [2] ; Syzdykpayeva, A[3] ; Muslimov, K	A model of destructive processes based on interval fuzzy rough soft sets	This work presents a spatial model of destructive processes for the real-time GIS-based decision support systems. A dynamic fuzzy rough soft topology represents a structure of a geoecotechnogenic system that contains a multitude of interacting processes, which evolve in space and time. In disaster conditions, some of the interacting processes can be destructive. Their dynamics are modeled using the spread model. The area of interest is represented as an approximation by a grid of cubic cells. This allows taking into account the peculiarities of the initial information obtained from drones using remote sensing techniques and having a significant uncertainty. The proposed model reduces the computational complexity and provides the acceptable performance of real-time DSS.	https://www.webofscience.com/wos/woscc/full-record/WOS:000462991300023	0
25.	Gursky, Volodymyr M.[1] ; Kuzio, IV [1] ; Lanets, OS [2] ; Kisala, P [3] ; Tolegenova, A [4] ; Syzdykpayeva, A	Implementation of dual-frequency resonant vibratory machines with pulsed electromagnetic drive	The rational method of implementation of dual-frequency resonant systems with multiple eigenfrequencies of oscillations is considered. The efficiency of implementation of such operation modes is substantiated by the use of a pulsed electromagnetic drive with oscillations frequency of 50 Hz. The analysis of the vibrating system dynamics is carried out on the basis of numerical modelling of the system of nonlinear ordinary differential equations. The influence of inertia of auxiliary oscillating mass on the indexes of acceleration of the working device, namely on its maximum value and on the fundamental harmonics ratio, is investigated. The structure of a partial module, which is a means of modernization of single-frequency resonant systems, is proposed.	https://www.webofscience.com/wos/woscc/full-record/WOS:000462991300008	5
26.	Maksakova, Olga [1] ; Pogrebnjak, A [1] , [2] ; Beresnev, V [3] ; Stolbovoy, V [4] ; Simoes, S [5] ; Yelbolatuly, D	Study of advanced nanoscale zrn/crn multilayer coatings	The scientific interest in the investigation of nitride composites as protecting materials in tool and machining industries intensively increases. The good oxidation resistance of CrN single-layer films and high melting point, good chemical and thermal resistance of ZrN compound are motive factors for designing of multilayer composites composed of these metal nitrides. The suggested advantages of ZrN/CrN multilayer coatings as structural materials are the high-temperature resistance, high density and extreme hardness compared to the metal-nitride systems. Experimental ZrN/CrN multilayer coatings were deposited on AISI 321 steel substrates by using a cathodic arc evaporation device equipped with two high-purity metal Cr and Zr targets. Structural, chemical and morphological characteristics together with mechanical properties of multilayer composites were analyzed by X-ray diffraction, scanning electron microscopy, energy-dispersive X-ray spectroscopy and Vickers hardness tester. SEM analysis revealed an increase of roughness and concentration of the droplets on the surface of the coatings when negative bias potential decreased to -70 V. The results of data obtained from the X-ray analysis showed (200) and (111) plane for ZrN and Cr2N phases as the most intense. The peak positions of ZrN were shifted towards	https://www.webofscience.com/wos/woscc/full-record/WOS:000493524200004	0

			lower diffraction angles comparing with bulk values and indicated a decrease of the interplanar distance and formation of compressive stresses. The calculated lattice strain values in the ZrN were higher than those of the CrN, indicated a greater presence of dislocations and defects in the lattice of ZrN. The averaged crystallite sizes in ZrN and CrN layers were 11-14 and 7-12 nm, respectively. The maximum value of the Vickers microhardness was found to be 6600HV0.01 that is 2.1 and 1.8 times greater than the corresponding values of binary CrN and ZrN coatings.		
2020 год					
27.	Abilev, M. B.) [1]Zhilkashinova A. M.) [1] ; Kabdrakhmanova, SK ([1] ; Troyeglazova, AV	Modeling the optimal rubber composition using industrial waste	Due to the complex composition of the rubber compound, the optimization of the formulation for its preparation is a complex process. The experiments required to determine the optimal composition are a multi-step process that requires time and money. The purpose of this article is to use the method of mathematical modeling to determine the optimal composition of a rubber compound with the addition of industrial waste. Sulfur of the Tengiz deposit and metallurgical production slags were used as industrial waste. The Protodyakonov equation was used to derive the generalized equation and check its adequacy. The escaped equations were used to prepare the rubber compound. The process of vulcanization of the mixture with and without the addition of waste was carried out. The kinetics of vulcanization of the optimized mixture has been studied. The optimized composite provides higher minimum and maximum torque levels, shorter initiation times and optimal cure times compared to a blend without additive. Tensile tests have shown that the composition of the rubber compound, selected by the method of mathematical modeling, is not inferior to the standard formulation. The computational model for determining the optimal composition of the rubber compound can be used for research and applied purposes in various industries related to rubber.	https://www.webofscience.com/wos/woscc/full-record/WOS:000849640100002	0
28.	Rakhadilov, B. K.) [1] , [2] ; Nugumanova, AB [1] ; Kowalewski, P [3] ; Kylyshkanov, MK [1] ; Bayatanova, LB [2] ; Kakimzhanov, DN	Obtaining functional gradient coatings based on Al2O3 by detonation spraying	The article deals with the phase composition and hardness of Al2O3 coatings obtained by detonation spraying. It was found that a decrease in the delay time between shots is leading to an increase in the hardness and elastic module of Al2O3 coatings. It was found based on X-ray diffraction analysis that the main reason for the increase in hardness with a decreasing in the delay time between shots is associated with increases in the volume fraction of a- Al2O3 phase. A high content of the more ductile gamma-Al2O3 phase at the substrate-coating interface leads to an increase in adhesion characteristics, and a high content of the alpha-Al2O3 phase on the coating surface provides high hardness and wear resistance. The studies of X-ray diffraction presented that the highest phase content is achieved when the coatings are formed with a delay time between shots of 0.25 s. It was found that increase in the volume fraction of the alpha-Al2O3 phase is caused by the secondary recrystallization gamma -> alpha, which occurs due to the heating of particles during coating formation, i.e. due to increase in temperature above 1100 degrees C in single spots of the coating when they are put each other.	https://www.webofscience.com/wos/woscc/full-record/WOS:000604321800003	0
29.	Rakhadilov, Bauyrzhan) [1] ; Satbayeva, Z [1] ;	Influence of plasma electrolytic hardening on the	This work presents the results of plasma electrolytic hardening of steel 20Cr2Ni4A. The optimal electrolyte composition for electrolytic-plasma hardening of steels containing 20 % sodium carbonate and 20 % urea has been determined. As a result, a modified layer was	https://www.webofscience.com/wos/woscc/full-	0

	Sagdoldina, Z [1] ; Kozhanova, R	structure and properties of 20cr2ni4a steel	obtained on the surface of steel with increased hardness and wear resistance. In this case, the basis of the material does not change, it consists of a ferritic-pearlitic structure, i.e. the part retains its viscous core, and the surface layer contains carbide particles. The presence of carbide particles in the surface layers has a positive effect on the performance properties of the parts, since small carbides keep the products from abrasion.	record/WOS:000794331100077	
30.	Kitapbaeva, A. A.) [1] ; Kabataeva, ZK [1] ; Alipina, KB [1] ; Komekova, GK[1] ; Tuktassinova, AA	The research of winter hardiness and seasonal development of some woody plants in East Kazakhstan	The article presents the results of research on the assessment of winter hardiness and seasonal development of some woody plants of East Kazakhstan flora in order to study the adaptation parameters of introducers to new soil and climatic conditions. Phenological observations made it possible to evaluate the prospects of the species and its further use in the culture of the region. The research team identified perspective tree-shrub introducers of East Kazakhstan natural flora and foreign origin for inclusion in the range of green construction.	https://www.webofscience.com/wos/woscc/full-record/WOS:000651781000292	1
31.	Rakhadilov, B. K.) [1] , [2] ; Baizhan, DR [1] ; Sagdoldina, ZB [1] ; Buitkenov, DB (Buitkenov, D. B.) [1] , [2] ; Maulet, M	Phase Composition and Structure of Composite Ti / HA Coatings Synthesized by Detonation Spraying	The coating based on a composite mixture of 50Ti-50HA (mass, %) was obtained by detonation spraying. The rational model of detonation spraying and the composition of the 50Ti-50HA mechanocomposite (mass, %) were determined experimentally way. The surface Morphology, phase and element composition of coatings were studied by scanning electron microscopy, energy-dispersion analysis, x-ray diffractometer, and Raman spectroscopy. The results of the elemental analysis showed the formation of a composite coating with HA content with a Ca/P=1.53 ratio, close to the indicator of bone tissue. Based on the results of Raman spectroscopy and x-ray phase analysis, it can be said that HA and titanium correct the harmonious composite component.	https://www.webofscience.com/wos/woscc/full-record/WOS:000679339700003	12
32.	Rakhadilov, B. K.) [1] , [2] ; Buitkenov, DB [1] , [2] ; Sagdoldina, ZB [1] ; Zhurerova, LG [3] ; Wieleba, W	Preparation of powder coatings on the surface of steel balls by mechanochemical synthesis	This work presents the results of the study of tribological and corrosion properties of powder coatings based on VN, TiN, SiC and Cr2N obtained by mechanochemical synthesis on the surface of steel balls ShKh15. The idea of this method is using the impact energy of moving balls to apply coatings on metal surfaces. Based on the conducted research, it was proved using the method of mechanochemical synthesis possible to obtain a coating of VN, TiN, SiC, and Cr2N on the surface of steel balls. The optimal parameters for coating were chosen: amplitude of the oscillation 3.5 mm; frequency of the oscillation 50 Hz; volume of filling of the chamber 50 %, the diameter of the ball 6 mm; ratio mass of the powder to the mass of the balls m(p):m(b)=1:30, processing time by mechanochemical synthesis is 1 hour. It is established that the change in the characteristics of coatings directly depends on the stiffness and physical and mechanical properties of the source material (substrate) and surface roughness. The results of the tribological study showed that a wear-resistant coating was formed on the surface of the steel balls.	https://www.webofscience.com/wos/woscc/full-record/WOS:000604321800001	6
33.	Zhilkashinova, A [1] ; Abilev, M [1] ; Zhilkashinova, A	Microplasma-Sprayed V2O5/C Double-Layer Coating for the Parts of Mini-Hydropower Systems	The development of novel designs for hydropower plants is of high interest nowadays. Studies have shown the negative effect of fluid flow on the turbines of mini-hydropower plants when using them in the conditions of the mountain river. To reduce the damage caused by cavitation, a microplasma coating technique has been chosen. Due to its wetting ability, low density, high thermal conductivity, high heat resistance and low chemical activity, graphite has been studied as a coating material. Vanadium pentoxide has been added as an interlayer to increase the wear resistance, corrosion resistance, and adhesion of	https://www.webofscience.com/wos/woscc/full-record/WOS:000564645400001	3

			the system. The microstructure of the system was studied using scanning electron microscopy and transmission electron microscopy. Functional properties of the system were tested by microhardness tests, wear resistance tests (friction), corrosion tests, and pull-off tests. The surface of the coating was homogeneous without warping, swelling and cracking. The microstructure consisted of regular structures in the form of branches of dendrites. V2O5/C coating resulted in the increase in microhardness up to 2534 MPa. The wear resistance (volume loss) of the sample with double-layer coating was 0.14 mm(3)and the maximum adhesion strength was 17.5 MPa. Thus, the double-layer microplasma V2O5/C coating was applied and studied for strengthening the blades of mini-HPP. The microplasma method can find application in modifying the surface of power equipment subjected to the cavitation effect of the river water.		
34.	(Meruyert, Maulet) [1] ; Rakhadilov, B [1] ; Stepanova, O [2] ; Sagdoldina, Z [1] ; Kassymov, A[2] ; Kakimzhanov, D	Structure, Hardness and Wear Resistance of the Ni-Cr-Al Detonation Coating	This paper discusses the results of studies of the properties of Ni-Cr-Al wear-resistant detonation coatings obtained at different values of the volume of filling the detonation barrel with an explosive acetylene-oxygen mixture. When the barrel is filled with an explosive gas mixture of 40%, the coating is not dense enough, with noticeable boundaries between individual particles, which may be the result of insufficient heating and acceleration of the particles of the sprayed powder. Higher values of microhardness were obtained at 50% filling of the barrel. The results of tribological tests of coatings have shown that the coating applied when the volume of filling the detonation barrel with an explosive mixture is up to 60 %, has a lower wear rate than other coatings. Visible that the mass loss at 50% of the detonation barrel filling volume is less than other coatings	https://www.webofscience.com/wos/woscc/full-record/WOS:000682785900090	0
35.	Kozhanova, R. S.) [1] , [4] ; Rakhadilov, BK [2] ; Wieleba, W	Interaction model of low-temperature plasma with a steel surface during electrolyte plasma nitriding in an electrolyte on the bases of carbamide	The features of the formation of low-temperature plasma and its interaction with a metal surface were studied in this work. A qualitative model of the interaction of low-temperature plasma with the steel surface during nitriding has been developed by summarizing the available research results and taking into account the specific features of the electrolyte plasma process. In accordance with this model, in the first moments of the interaction of low-temperature plasma with the steel surface in the near-surface layer, which accelerated formation of the Fe-alpha(N) solid solution occurs due to the action of directed bombardment of charged particles, which enhances the adsorption and diffusion of nitrogen into the interior of the material, then dispersed particles of nitride of alloying elements are formed as further saturation in places with an increased level of free energy (at lattice defects, at grain boundaries, etc.). Subsequently, transformations occur in the surface zone of the layer when the limiting solubility of nitrogen in iron is exceeded, which leading to the formation of nitrides of the gamma'-phase (Fe4N) and epsilon-phase (Fe2-3N) in it. Thus, electrolyte plasma nitriding opens up many new possibilities, in particular: varying the nitriding temperature over a wide range (400-700 degrees C), targeted production of a nitrided layer consisting only of a diffusion layer without a layer of compounds, while obtaining a diffusion layer with particles gamma'-phase (Fe4N) of plate form and with finely dispersed nitrides MN (CrN). The use of an electric discharge in an electrolyte (low-temperature plasma) makes it possible to increase the heating rate and diffusion saturation of the material surface. This work is of practical importance, since the studied method of	https://www.webofscience.com/wos/woscc/full-record/WOS:000604321800005	0

			electrolytic-plasma nitriding makes it possible to obtain a modified surface layer on steels with high physical and mechanical properties.		
36.	Rakhadilov, Bauyrzhan K.) [1] ; Buranich, VV ([2] ; Satbayeva, ZA [1] ; Sagdoldina, ZB [1] ; Kozhanova, RS (Kozhanova, Rauan S.) [1] ; Pogrebnjak, AD	The cathodic electrolytic plasma hardening of the 20Cr2Ni4A chromium-nickel steel	In order to obtain the modified surface structure of the 20Cr2Ni4A steel plasma electrolytic hardening (PEH) method was used. The surface hardening process was conducted in the aqueous electrolyte solution of 20% sodium carbonate and 20% urea. The sample consists of a ferritic-pearlitic structure, i.e. the part retains its viscous core, and the surface layer contains carbide particles. Hardening process induces martensite transformation and creation of carbide particles in the surface layer. The presence of carbide particles in the surface layers has a positive effect on the tribo-mechanical performance. Hardened structure 600 mu m long was obtained with hardness increase up to 520 HV and 2.5 times higher wear resistance. Tribological test results showed the difference of the coefficient of friction as a function of surface roughness determined by plasma-electrolytic hardening process. (C) 2020 The Author(s). Published by Elsevier B.V.	https://www.webofscience.com/wos/woscc/full-record/WOS:000556883700001	11
37.	Rakhadilov, Bauyrzhan) [1] ; Kurbanbekov, S [2] ; Skakov, M [3] ; Wieleba, W ([4] ; Zhurerova, L (	Effect plasma beam irradiation on the microstructure and phase composition of high-speed steel R6M5	The present study is devoted to research into the morphology and structural-phase state of an R6M5 high speed steel surface layer after it was affected by a plasma beam. It was discovered, that R6M5 steel is a multi-phase material with an alpha-phase, gamma-phase (retained austenite) and carbide phase just as in the initial state. The main phase component of the R6M5 steel matrix before and after plasma beam processing was an a-phase (gamma -> alpha'-martensite): lamellar and lath martensite; but lamellar martensite is dominated by a volume ratio similar to 90% gross share alpha'-martensite. The gamma-phase as the second morphological component of the steel matrix (retained austenite) yields within the martensite plates the form of twintype colonies with a volume ratio of similar to 6 %. It was established that there were M6C -type carbide particles of complex composition (Fe,W,Mo)(6)C in the material just as in the initial state. It should be said that in its initial state, the dislocation structure, formed under the effect of the plasma beam, is characterized by fairly high value of excess density of dislocations with an average value of rho(+/-) = 2.0 x 10(10) cm(-2) (in the initial state rho(+/-) = 1.7 x 10(10) cm(-2)) along with scalar density. The depth of torsion curve of the face-centered space lattice in the a'-martensite is chi = 500 cm(-1) (in the initial state it is equal to chi similar to 436 cm(-1)), the amplitude of the inner long-distance voltage is sigma(partial derivative) = 280 MPa (in the initial state it is equal to sigma(partial derivative) = 260 MPa). Thus, the amplitude of shift voltage is equal to sigma(L) = 420 MPa (in the initial state it is sigma(L)= 350 MPa); nevertheless, sigma(L) > sigma(partial derivative) remains the mean torsion-curve of the fcs-lattice of alpha'-martensite maintaining its lamellar nature after the effect of the electron beam much as in the initial state.	https://www.webofscience.com/wos/woscc/full-record/WOS:000588332000011	1
38.	Zhurerova, L. G.) [1] ; Rakhadilov, BK [2] ; Popova, NA (Popova, N. A.) [3] ; Kylyshkanov, MK [4]	Effect of the PEN/C surface layer modification on the microstructure, mechanical and tribological	As result of plasma-electrolytic nitrocarburizing 30CrMnSiA carbon steel (ferrite-perlite grade), there was a change in the elemental and phase composition, as well as the surface layer microstructure (40 divided by 45 microns thick from the surface). A formation of Me-23 (CN)(6) carbonitrides, FeN nitrides, Fe3C - (Fe,Cr)(3)C carbides and an increase in dislocation density within alpha-phase (tempered martensite crystallites), high-temperature lamellar martensite were observed. As a result of PEN / C exposure for 7 min. at 750	https://www.webofscience.com/wos/woscc/full-record/WOS:000509333300030	12

	; Buranich, VV [5] ; Pogrebnjak, AD	properties of the 30CrMnSiA mild-carbon steel	degrees C there is a reduction of friction coefficient and wear rate, what is connected with finely dispersed secondary phases FeN, (Fe, Cr)(3)C, Me-23 (C, N)(6) formation. Thus there is an 2,5 divided by 3,3 times increase in hardness of 30CrMnSiA carbon steel samples. (C) 2019 The Authors. Published by Elsevier B.V.		
39.	Rakhadilov, B. K.) [1] ; Kozhanova, RS [2] ; Popova, NA [3] ; Nugumanova, AB [1] ; Kassymov, AB	Structural-phase transformations in 0.34C-1CRr-1Ni-1Mo-Fe steel during plasma electrolytic hardening	Structural-phase transformations in 0.34C-1Cr-1Ni-1Mo-Fe steel during plasma electrolytic hardening were investigated. Electrolytic-plasma hardening of steel samples was carried out by surface quenching with rapid concentrated heating of the surface by plasma action and subsequent rapid cooling by heat removal from the depth of the sample by electrolyte jet. Plasma electrolytic hardening was carried out in the cathode mode in an electrolyte made from an aqueous solution containing 20 % sodium carbonate and 10 % carbamide. To study the structural-phase states of the modified layer, we used the method of transmission diffraction electron microscopy on thin foils. The study of steel samples was carried out before and after the plasma electrolytic hardening. Initially, the steel was a mixture of pearlite and ferrite grains. Surface hardening of 0.34C-1Cr-1Ni-1Mo-Fe ferrite-pearlite steel led to a change in the structural-phase state and the formation of a packet-lamellar martensite structure. It was found that PEH leads to distortion of the crystal lattice and the formation of long-range internal stresses, as well as to the release of small particles of cementite and carbide of M23C6 type, uniformly distributed throughout the volume of the material. Surface hardening led to the increase in all quantitative parameters of the fine structure (rho, rho +/-, chi, sigma L, sigma d,).	https://www.webofscience.com/wos/woscc/full-record/WOS:000644542700024	2
40.	(Kadyrkhanova, Zhanar M.) [1] ; Shmelev, SE (Shmelev, Stanislav E.) [2] , [3] , [4] ; Sagiyeva, RK [1] ; Chzhan, YY [5] ; Shmeleva, IA	Multidimensional assessment of sustainability of Taipei and Almaty		https://www.webofscience.com/wos/woscc/full-record/WOS:000670040500007	0
2021 год					
41.	Gavrilova, Yulia) [1] ; Bogdanova, Y [2] ; Orsayeva, R [3] ; Khimmataliev, D [4] ; Rezanovich, I	Peculiarities of Training Engineering Students with Disabilities	In this day and age, there are increasing discussions and calls for shifting towards inclusive education. In view of this, the present study intended to identify the most severe challenges disabled engineering students face according to their own view and find possible ways to solve them. For this particular aim, a survey of 555 students from five universities of Russia, Kazakhstan, and Uzbekistan was performed. These were the Bauman Moscow State Technical University, Northern Trans-Ural State Agricultural University, Sarsen Amanzholov East Kazakhstan State University, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, and South Ural State University. The survey was carried out in two stages. The first focused on identifying the main problems of disabled students (physical environment, staff skills and knowledge, theory-practice relationship, assessment peculiarities, and bias). The second intended to define the most critical of them (unadapted physical environment and reduced abilities to apply theoretical knowledge in	https://www.webofscience.com/wos/woscc/full-record/WOS:000672614600010	2

			practice). To resolve these issues, the authors propose the following recommendations to be adopted. These include adapted laboratories and equipment; programs that allow performing practical tasks; engineering tutors able to assist in performing practical tasks; an adapted assessment system with reference to health condition; psychological support to integrate disabled students into an inclusive team and eliminate prejudices. The obtained research findings can be used by other universities to promote a comprehensive integration of students with special needs into the educational process.		
42.	Chlachula, Jiri) [1] , [2] ; Zhensikbayeva, NZ [3] ; Yegorina, AV [3] ; Kabdrakhmanova, NK [4] ; Czerniawska, J [5] ; Kumarbekuly, S	Territorial Assessment of the East Kazakhstan Geo/Ecotourism: Sustainable Travel Prospects in the Southern Altai Area	In spite of picturesque landscapes, natural beauties and authentic traditional lifestyles to be seen in East Kazakhstan, tourism is far from being developed. The Kazakh Altai (called the Kazakh Switzerland) is one the most colourful parts of the country and, indeed, all Central Asia. The attractiveness of this geographically isolated region (formerly a part of the Imperial Russia), consisting of rocky semi-deserts, vast parkland-steppes, and rugged mountain terrains, is reflected in its distinctive geological and geomorphological character, its pristine nature, and its extraordinary geodiversity and biodiversity. This study presents a roster of geotourism and ecotourism loci for the broader Altai area within a framework of sustainable development. The modelled assessment of the tourism and recreation potential is based upon multi-proxy analyses of GIS, DEM, and cartographic data. It integrates the most appealing natural (biotic and abiotic) site-specific natural features across all physiographic zones within a broad region. The most significant and representative geosites fall within three geographic sectors suitable for geo- and ecotourism. Prospects for travel to these places are enhanced by the presence of numerous prehistoric archaeological sites and historical monuments, which document the rich, multi-ethnic background of Kazakhstan and the ancient Silk Road that traverses it. These geological, environmental and cultural resources, and the regional geoheritage and environmental conservation concepts have been figured into strategies for economic growth of rural Kazakhstan. Visitors travelling to this most appealing region are constrained by climate of pronounced continentality, seasonality, geographic accessibility, the international border-zone regulations and a lack of services of an international standard.	https://www.webofscience.com/wos/woscc/full-record/WOS:000643088600001	5
43.	Budnikova, NN	Bases of Disintegration Processes Allocation in Syntax	The article presents one of the possible options for a comprehensive analysis of disintegrating syntactic processes from the standpoint of a structural and semantic approach. This work continues the research of syntactic processes of disintegration laid down in the works of A. A. Chuvakin and O. V. Maryina. The aim of the study was to develop the basis for distinguishing disintegrating syntactic processes. To achieve this aim, observation, comparison, interpretation in the study of syntactic processes, and the method of contextual analysis in describing the interaction of components of syntactic processes were used. The research material was the texts of representatives of modern Russian-language Kazakh prose: G. Belger, B. Kairbekov, B. Kanapyanov, V. Minaev, A. Omar, O. Suleymenov, U. Tazhikenova, created in the late 20th and early 21st centuries, from which the units of analysis were selected by the method of continuous sampling. Disintegration as a syntactic process is the process of separating components of syntactic processes or syntactic processes themselves. The article examines the following	https://www.webofscience.com/wos/woscc/full-record/WOS:000653743000001	0

			disintegration processes: paragraph division, insertion, parceling, and syntactic implication. The author has developed the following grounds for classifying the syntactic process as a disintegrative one: 1. Violation of structural and semantic unity, which is comprehensively implemented in each disintegration process: there is a modification of structural characteristics against the background of semantic duplicity and violation of cause-and-effect relationships, which is associated with the features of a particular disintegration process. 2. Absence of formal indicators of syntactic relations between components of the process/syntactic processes indicates rupture of the semantic and structural links between the components of the process leading to independence and autonomous existence of the components of the syntactic process. 3. Use of font (non-linguistic) markers: font highlighting, italics, author's selection, underscores, numbering, ellipsis, exclamation and question marks, dashes, brackets. The analysis of the use of font markers has shown that the separation of components of the syntactic process is enhanced (at the visual, structural and semantic levels) if the semantic selection marker and/or the text structure marker are used together with the non-linguistic marker of a particular process. In the course of the study, the author has identified the grounds that, separately from each other or in interaction with each other, allow attributing the syntactic process to a disintegrative one: violation of structural and semantic unity, lack of formal indicators, and presence of font (non-linguistic) markers. In the author's opinion, the developed grounds are applicable to the description of disintegration processes in literary texts and texts of a different orientation.		
44.	Pavlov, A., V) [1] , [2] ; Aiymkhanov, EE [2] ; Sagdoldina, ZB [1] ; Kassymov, AB [3] ; Baizhan, DR [1] ; Zhaparova, MS	Research of methods for introducing TiO2 nanoparticles into a micron matrix of BeO and TiO2 powders and their effect on the rheological properties of a casting slip	This article presents the research results of methods for introducing nanodispersed TiO2 powders into a micron matrix of beryllium and titanium oxides. It is shown that the presence of nanoparticles over 5.0 wt.% negatively affects the rheological properties of the casting slip and vice versa, the addition of nanoparticles in the range of 0.1-2.0 wt.% contributes to reducing the viscosity and increasing the casting ability of the slipping mass. Macrostructural analysis of the sintered billet indicates the complete absence of structural elements in the form of conglomerates of nanoparticles, or nano- and micro-TiO2 particles. The developed method of introducing nanoparticles makes it possible to obtain products with their uniform distribution over the entire volume of the workpiece by slip casting under pressure. Further, the authors of the scientific work planned to research the effect of nanoparticles on the thermophysical and impedance characteristics of the obtained ceramics. Research into the effect of nanopowders on the electrophysical properties of beryllium ceramics is not known in the scientific world. The most important properties that the BeO+TiO2 ceramics should possess is the ability to absorb ultrahigh frequency radiation, while it should heat up a little, i.e., conduct heat well. It is necessary to introduce the TiO2 phase into the composition of the BeO ceramics as much as possible to obtain a high coefficient.	https://www.webofscience.com/wos/woscc/full-record/WOS:000738134800008	0
45.	Kylyshkanov, M. K.) [1] , [2] ; Shestakov, KA [1] ; Sagdoldina,	Processing of industrial waste by	In this paper, the results of the processing of magnesium fluoride by plasma-chemical method to obtain periclase and a solution of hydrogen fluoride (hydrofluoric acid) were presented. For the industrial implementation of plasma technologies, it is necessary to study	https://www.webofscience.com/wos/woscc/full-	2

	ZB [2] ; Rakhadilov, BK [2] ; Kengesbekov, AB	plasma-chemical method	the main parameters of plasma processes for obtaining reducing gases and processing metal oxides with them, to solve the issues of their hardware design, to increase the service life of plasma torches for their use in continuous metallurgical processes. The purpose of this work was to determine the conditions for the plasma-chemical process of processing magnesium fluoride. Thermal analysis of magnesium fluoride on a TGA/DSC2 thermogravimetric analyzer was performed. Thermogravimetric analysis showed that in the temperature range under consideration the process is endothermic, and at a temperature of similar to 1280 degrees C a phase transition of the 1st kind is observed due to the melting of magnesium fluoride. The fractional composition of MgF2 and MgO powders was studied using the Analysette-22 Nanotech laser diffraction analyzer. The results of the evaluation of the fractional composition of powders have a significant difference. At the same time, the convergence of the data obtained using laser diffraction and electron microscopy methods was found.	record/WOS:000738134800005	
46.	Nugumanova, Aliya ; Baiburin, Y	Evaluation metrics for automatically constructed concept maps	Concept maps are knowledge visualization tools that allow representing the text or domain at a conceptual level. They reflect the systemic relations between the key concepts of the text and thereby contribute to a deeper understanding of its ideas, save time spent on reading and analysis. However, the very process of creating concept maps is laborious and time-consuming. At the same time, with the rapid growth of digital reading services, the automatic construction of concept maps attracts an increasing intensive research. Against that background, comparison and evaluation of methods for automatic construction of concept maps are of great importance. In this paper, we discuss popular evaluation metrics for automatically created concept maps and propose our new metric based on network centrality analysis. We test all the considered metrics by comparing an automatic concept map with a reference concept map developed manually by experts. Experiments show that our proposed metric complements existing metrics by providing information about significance degrees of concepts and relations.	https://www.webofscience.com/wos/woscc/full-record/WOS:000750950700046	0
47.	Rakhadilov, B. K.) [1] , [2] ; Buitkenov, DB [1] ; Adilkhanova, M [3] ; Sagdoldina, ZB [1] ; Kurbanbekov, SR	Influence of pulse plasma treatment on the phase composition and microhardness of detonation coatings based on Ti-Si-C	The paper considers the study results of the phase composition and microhardness of detonation coatings based on Ti-Si-C after exposure to pulsed plasma treatment. The CCDS2000 detonation complex was used to obtain the coatings. Coatings surface modification was carried out using pulsed plasma exposure (PPE). The detonation coatings were treated with varying the distance H (30 mm mode 1, 40 mm mode 2, 50 mm mode 3) from the plasmatron to the hardened surface. It is shown that the treated coatings are generally characterized by high microhardness compared to the original coating. It was determined that after treatment by pulsed plasma effects an increase in the intensity of all reflexes phase Ti3SiC2 was observed, and the appearance of reflexes (101, 102, 112, 204, 0016) phase Ti3SiC2 was found, which indicates the increase of the content of Ti3SiC2 phase. The change in the fraction of phases indicates a solid-phase transformation during pulsed-plasma activation. High hardness is observed on the coating surface treated according to mode 3 (50 mm) and as it approaches the surface of the substrate modes 2 (40 mm) and 1 (30 mm) the hardness decreases. It is established that the increase in the microhardness of detonation coatings after pulse-plasma treatment is associated with an	https://www.webofscience.com/wos/woscc/full-record/WOS:000668155800004	1

			increase in the content of Ti3SiC2 phases in the coatings, as well as an increase in the defects density in the modified layer.		
48.	Rakhadilov, Bauyrzhan) [1] , [2] ; Maulet, M [1] ; Abilev, M [1] ; Sagdoldina, Z [1] ; Kozhanova, R	Structure and Tribological Properties of Ni-Cr-Al-Based Gradient Coating Prepared by Detonation Spraying	In this paper, Ni-Cr-Al coatings were deposited using the detonation spraying method. The aim was to investigate how technological parameters influence coating structure formation, phase composition and tribological performances. We observed that the degree to which the barrel is filled with an O-2/C2H2 gas mixture strongly influences the chemical composition of manufactured coatings. High degrees of barrel filling led to a decrease in aluminum content in the coating. Filling degrees of 40% and 50% produced sprayed coatings in which only Ni-Cr phases could be found. When the filling degree was reduced up to 25%, Ni-Al phases began to form in the sprayed coatings. Gradient Ni-Cr-Al coatings were produced by gradually reducing the filling degree from 50% to 25%. These coatings are characterized by Ni-Cr near the substrate level with Ni-Cr and Ni-Al phases at higher levels. The results obtained confirm that gradient Ni-Cr-Al coatings exhibit high hardness as well as good wear resistance.	https://www.webofscience.com/wos/woscc/full-record/WOS:000622382800001	11
49.	Rakhadilov, Bauyrzhan) [1] ; Kengesbekov, A [1] ; Zhurerova, L [1] ; Kozhanova, R [1] , [2] ; Sagdoldina, Z	Impact of Electronic Radiation on the Morphology of the Fine Structure of the Surface Layer of R6M5 Steel	In recent decades, great efforts have been made to significantly improve the performance characteristics of high-speed steel using various surface hardening techniques. Electron beam modification is engaging because it has an exceptionally high thermal efficiency and can significantly improve steels' physical and mechanical properties. This work is devoted to researching the fine structure and changing the structural phase state of the surface layer of R6M5 high-speed steel after exposure to an electron beam. Electron beam treatment of steel R6M5 was carried out on a vacuum installation. The structure and phase composition of P6M5 steel samples were studied by transmission electron microscopy. Determined that after electron irradiation, the steel structure as in the initial state consists of martensite, carbides and residual austenite. After electron irradiation, an increase in the volume fraction of lamellar martensite is observed: the fraction of lamellar martensite in the initial state is 80%, and after irradiation, it is similar to 90% of the total fraction of alpha '-martensite. The action of the electron beam led to an increase in internal stresses in alpha '-martensite. Revealed, the value of the scalar dislocation density in R6M5 steel after exposure to an electron beam is higher than in the initial state. A cardinal difference in the state of the material after exposure to an electron beam is the presence of bending extinction contours in all M6C carbide particles.	https://www.webofscience.com/wos/woscc/full-record/WOS:000622754400001	2
50.	Akatan, K.) [1] , [2] ; Kuanyshbekov, TK (Kuanyshbekov, T. K.) [1] , [2] ; Kabdrakhmanova, SK (Kabdrakhmanova, S. K.) [1] , [3] ; Imasheva, AA [1] , [2] ; Battalova, AK [1] , [2] ;	Synthesis of nanocomposite material through modification of graphene oxide by nanocellulose	Intensive research of nanocomposites contributes to the development of new materials in the fields of medicine, nanoelectronics, energy, biotechnology, information technology. Therefore, the synthesis of new materials by modifying of graphene oxide (GO) with nanocellulose and the study of its properties are of great interest. In this study synthesized nanocomposite material by modifying of graphene oxide (GO) from activated carbon (BAU- A) in a 1:1 volume ratio with nanocellulose (NC) from hemp stems belonging to the annual plant, and their chemical structure was studied by FTIR and UV-spectroscopy. The results of the study showed the absorption of the etheric bond C = O in the UV spectrum at full length 243 nm. The IR spectrum showed all the new etheric bonds O = C - OH at a wavelength of 1625 cm-1. The average particle sizes of GO was 352 nm and NC	https://www.webofscience.com/wos/woscc/full-record/WOS:000849642900002	2

	Abylkalykova, RB [1] ; Nasyrova, AK [1] ; Ibraeva, ZE		was 470 nm in length and 80 nm in width. The SEM analysis indicating the NC as a contact layer between ultralow thicknesses of the GO layers. The XRD analysis indicated GO-NC composite film is a substance comprising GO and NC. According to the results, modification of graphene oxide showed that its scope can be expanded as much as possible.		
51.	Pavlov, A. V.) [1] , [2] ; Kveglis, LI (Kveglis, L. I.) [1] , [2] ; Saprykin, DN (Saprykin, D. N.) [2] ; Nasibullin, RT (Nasibullin, R. T.) [3] ; Kalitova, AA [2] ; Velikanov, DA [1] , [4] ; Nemtsev, IV, [4] ; Kantai, N	Emergence of Ferromagnetism in Nanoparticles of BeTiO3 Ceramic with the Perovskite Structure	Emergence of ferromagnetism and an increase in the electrical conductance of BeTiO3 beryllium ceramic with the perovskite structure were discovered experimentally. To explain the reason for appearance of the metallic properties, models are proposed, and calculations of the electronic structure of nanoclusters with different short-range order are performed.	https://www.webofscience.com/wos/woscc/full-record/WOS:000703968300017	0
52.	Rakhadilov, B. K.) [1] ; Kozhanova, RS [2] , [3] ; Tyurin, YN .) [4] ; Zhurerova, LG [1] ; Sagdoldina, ZB	The technology of thermal cyclic electrolytic plasma hardening of steels	This work describes the technology of thermal cyclic electrolytic plasma hardening, as well as describes the design features of the electrolytic plasma heater. There are presented the results of the research of medium-carbon steel hardness treated by thermal cyclic electrolytic plasma hardening under different conditions. An industrial installation for thermal cyclic electrolytic plasma hardening of materials was developed to carry out thermal cyclic electrolytic plasma hardening of steels in an automated mode. Tempered layers were obtained on the surface of the samples with average thickness values from 0.5 to 10 mm and hardness up to 750 HV. Experimentally that the alternation of switching on the electric potential at a voltage of U1 = 320 V and U2 = 200 V provides heating of the product surface to a depth of 10 mm. In this case, the maximum hardness of the surface layer (750 HV) practically does not depend on the thickness of the hardened layer. The hardness of the hardened layer of the product gradually decreases from the maximum (750 HV) to the hardness of the base (280-300 HV). The developed installation allows to vary the electrophysical parameters within a wide range: to set the voltage, the duration of processing, the time of switching on and off the voltage.	https://www.webofscience.com/wos/woscc/full-record/WOS:000635161300004	0
53.	Sagdoldina, Zhuldyz) [1] ; Rakhadilov, B (Rakhadilov, Bauyrzhan) [1] , [2] ; Kurbanbekov, S (Kurbanbekov, Sherzod) [3] ; Kozhanova, R (Kozhanova, Rauan) [2] ; Kengesbekov, A	Effect of Irradiation with Si+ Ions on Phase Transformations in Ti-Al System during Thermal Annealing	The article deals with the effect of irradiation with Si+ ions on phase transformations in the Ti-Al system during thermal annealing. An aluminum film with a thickness of 500 nm was deposited on VT1-00 titanium samples by magnetron sputtering, followed by ion implantation. Samples before and after irradiation with Si ions were annealed in a vacuum of 10(-4) Pa in the temperature range 600-1000 degrees C. It was established that ion implantation reduces the dissolution of Al in alpha-Ti with the formation of titanium silicides (TiSi2, Ti5Si3) and stabilizes aluminide phases Ti3Al rich in aluminum. As a result, a composite structure based on titanium silicide/aluminide was obtained on the surface of the sample synthesized by complex treatment: deposition, irradiation with Si+, and thermal annealing at the near-surface layers. The formation of the phase-structural state of the implanted layers is associated with the displacement of atoms of the crystal lattice, a	https://www.webofscience.com/wos/woscc/full-record/WOS:000622362900001	6

			result that is reflected in an increase in the size of the crystal lattice and a decrease in microdistortion of the lattice. The opposite effect is observed with increasing temperature. This fact is explained by the relaxation of unstable large grains with an excess of internal energies. At the annealing temperature of 900-1000 degrees C, a significant increase in microhardness was observed due to silicide phases.		
54.	Rakhadilov, Bauyrzhan) [1] , [2] ; Buitkenov, D (Buitkenov, Dastan) [2] ; Sagdoldina, Z (Sagdoldina, Zhuldyz) [2] ; Idrisheva, Z (Idrisheva, Zhanat) [3] ; Zhamanbayeva, M (Zhamanbayeva, Manira) [3] ; Kakimzhanov, D	Preparation and Characterization of NiCr/NiCr-Al2O3/Al2O3 Multilayer Gradient Coatings by Gas Detonation Spraying	This paper investigates the influence of the technological parameters of detonation spraying on the phase composition of NiCr- and Al2O3-based coatings. It was determined that the phase composition of Al2O3 coatings during detonation spraying strongly depends on the barrel filling volume with the gas mixture. The acetylene-oxygen mixture, which is the most frequently used fuel in the detonation spraying of powder materials, was used as a fuel gas. To obtain a ceramic layer based on Al2O3, spraying was performed at an acetylene-oxygen O-2/C2H2 mixture ratio of 1.856; the volume of filling of the detonation gun barrel with an explosive gas mixture was 63%. To obtain a NiCr-based metallic layer, spraying was performed at the O-2/C2H2 ratio of 1.063; the volume of filling of the detonation gun barrel with an explosive gas mixture was 54%. Based on a study of the effect of the detonation spraying mode on the phase composition of NiCr and Al2O3 coatings, NiCr/NiCr-Al2O3/Al2O3-based multilayer coatings were obtained. Mixtures of NiCr/Al2O3 powders with different component ratios were used to obtain multilayer gradient coatings. The structural-phase composition, mechanical and tribological properties of multilayer gradient metal-ceramic coatings in which the content of the ceramic phase changes smoothly along the depth were experimentally investigated. Three-, five- and six-layer gradient coatings were obtained by alternating metallic (NiCr) and ceramic (Al2O3) layers. The phase composition of all coatings was found to correspond to the removal of information from a depth of 20-30 mu m. It was determined that the five-layer gradient coating, consisting of the lower metal layer (NiCr), the upper ceramic layer (Al2O3) and the transition layer of the mechanical mixture of metal and ceramics, is characterized by significantly higher hardness (15.9 GPa), wear resistance and adhesion strength.	https://www.webofscience.com/wos/woscc/full-record/WOS:000736255400001	2
55.	Rakhadilov, Bauyrzhan) [1] ; Satbayeva, Z (Satbayeva, Zarina) [1] ; Ramankulov, S (Ramankulov, Sherzod) [2] ; Shektibayev, N (Shektibayev, Nurdaulet) [2] ; Zhurerova, L (Zhurerova, Laila) [1] ; Popova, N (Popova,	Change of 0.34Cr-1Ni-Mo-Fe Steel Dislocation Structure in Plasma Electrolyte Hardening	This work deals with the study of changes in the dislocation structure and quantitative characteristics, as well as morphological components, of 0.34Cr-1Ni-Mo-Fe steel before and after plasma electrolytic hardening. According to the electron microscopic studies of the fine structure of 0.34Cr-1Ni-Mo-Fe steel before and after plasma electrolytic hardening, 0.34Cr-1Ni-Mo-Fe steel is a multiphase material containing an alpha-phase, a gamma-phase (retained austenite), and a cementite and carbide phase. It was revealed that, morphologically, the alpha-phase in the initial state, generally, is present in the form of: lamellar pearlite with a volume fraction of 35%, a ferritocarbide mixture with a volume fraction of 45%, and fragmented ferrite with a volume fraction of 20% of the material. After surface hardening, the morphological components of the structure changed: packet-lamellar martensite with volume fractions of 60% and 40%, 5% and 7% of gamma-phase as residual austenite in the crystals of packet-lamellar martensite, 0.6% and 1.5% of cementite in crystals of packet-lamellar martensite, and 0.15% and 0.35% of complex	https://www.webofscience.com/wos/woscc/full-record/WOS:000644518500001	3

	Natalya) [3] ; Uazyrkhanova, G (Uazyrkhanova, Gulzhaz) [4] ; Sagdoldina, Z		carbide M23C6 in crystals of packet-lamellar martensite, respectively, were observed. The quantitative characteristics of the dislocation structure were estimated by the following calculated indices of packet and lamellar martensite: scalar (rho) and excess (rho +/-) density of dislocations, the value of the curvature-torsion of the crystal lattice (chi), the amplitude of long-range internal stresses (sigma d), and the amplitude of shear stresses (sigma(L)), according to which the plastic nature of the bending-torsion of the crystal lattice was confirmed (sigma(L) > sigma d).		
56.	Rakhadilov, Bauyrzhan) [1] , [2] ; Buitkenov, D (Buitkenov, Dastan) [1] ; Idrisheva, Z (Idrisheva, Zhanat) [3] ; Zhamanbayeva, M (Zhamanbayeva, Manira) [3] ; Pazylbek, S (Pazylbek, Sapargali) [4] ; Baizhan, D	Effect of Pulsed-Plasma Treatment on the Structural-Phase Composition and Tribological Properties of Detonation Coatings Based on Ti-Si-C	The structural-phase state and tribological characteristics of detonation coatings based on Ti-Si-C before and after pulsed-plasma exposure have been experimentally investigated. The authors of the research used a detonation set-up of CCDS2000 to obtain coatings. The modification of coating surfaces was carried out by a pulsed-plasma flow using the "Impulse-6" installation. The results of the research have shown that the modification of coatings surface by a pulsed-plasma effect causes an increase in the microhardness of the surface layer and in its wear resistance. It was determined that after such type of treatment, there is an increase in the content of the Ti3SiC2 phase. According to the results of XRD analysis, the improvement in the mechano-tribological properties of detonation spraying coatings of the Ti-Si-C system as a result of pulsed-plasma treatment is associated with an increase in the content of Ti3SiC2 phases in the coatings, as well as the formation of carbide and oxide phases on the surface layer.	https://www.webofscience.com/wos/woscc/full-record/WOS:000677347800001	12
57.	Rakhadilov, B. K.) [1] , [2] ; Kozhanova, RS [2] , [3] ; Kowalewski, P [4] ; Baizhan, D [1] , [5] ; Sagdoldina, ZB [1] ; Zhurerova, LG [1] ; Yerbolatova, GU	Impact of Volume and Surface Heat Treatment on the Structure and Properties of Steel 30HGSA	The work presents the results of a comparative study of volumetric and surface heat treatment impact on the structural-phase states, hardness, and wear resistance of steel 30HGSA. Surface hardening was carried out by the electrolyte-plasma method. Bulk quenching of the samples was carried out by heating to a temperature of 900 degrees C, followed by cooling in water and oil, and some of the samples after quenching were annealed at a temperature of 510 degrees C. The structural-phase states of 30HGSA steel samples were studied by metallographic and X-ray structural analysis. There were carried out the microhardness measurements, tribological tests according to the ball-disk scheme, as well as was determined the resistance of the samples to abrasive wear. It was determined that after electrolytic-plasma hardening, fine-acicular martensite with a small content of cementite is formed on the basis of metallographic and X-ray structural analyzes, and coarse-acicular martensite is formed after volume quenching in water and oil. It was determined that the microhardness increased to 400-460 HV after volume quenching, and subsequent annealing leads to a decrease in hardness to 330-360 HV. It was revealed that the electrolyte-plasma surface hardening leads to an increase in microhardness up to 2 times due to the formation of fine-acicular martensite.	https://www.webofscience.com/wos/woscc/full-record/WOS:000754321900002	1
58.	Rakhadilov, Bauyrzhan) [1] , [2] ; Buitkenov, D [1] ; Sagdoldina, Z [1] ; Seitov, B [3] ;	Structural Features and Tribological Properties of Detonation Gun Sprayed Ti-Si-C Coating	The paper considers the research results of structural-phase state and tribological characteristics of detonation coatings based on Ti-Si-C, obtained at different filling volumes of the explosive gas mixture barrel of a detonation gun. The results analysis indicates that the phase composition and properties of detonation coatings strongly depend on the technological parameters of spraying. With an increase of the explosive mixture in the filling volume of the detonation barrel up to 70% of the coatings consist mainly of the	https://www.webofscience.com/wos/woscc/full-record/WOS:000622391800001	16

	Kurbanbekov, S [3] ; Adilkanova, M		TiC phase, because high temperature leads to a strong decomposition of Ti3SiC2 powders. Thus, the XRD results confirm that at 70% of the explosive gas mixture's filling volume, partial decomposition and disintegration of the powders occurs after detonation spraying. We established that detonation coatings based on titanium carbosilicide obtained at the explosive gas mixture's filling volume at 60% are characterized by high wear resistance and adhesive strength. Thermal annealing was performed after spraying in the temperature range of 700-900 degrees C for 1 h to reduce microstructural defects and improve the Ti-Si-C coating characteristics. As a result of the heat treatment in the Ti-Si-C system at 800 degrees C, we observed that an increase in the volume fraction of the Ti3SiC2 and TiO2 phases led to a 2-fold increase in microhardness. This means that the after-heat-treatment can provide a sufficient reaction time for the incomplete reaction of the Ti-Si-C (TSC) coating during the detonation gun spraying. Thus, annealing can provide an equal distribution of elements in the coatings.		
59.	Pavlov, Alexandr) [1] ; Sagdoldina, Z [1] ; Kassymov, A [2] ; Seitkanova, A [3] ; Rakhadilov, B [1] , [3] ; Kengesbekov, A	Physico-mechanical properties, structure, and phase composition of (BeO + TiO2)-ceramics containing TiO2 nanoparticles (0.1-2.0 wt.%)	This research studies the effects of addition of micro- and nanoparticles of TiO2 and variations in the firing temperature on the physico-mechanical properties of oxide-beryllium ceramics, shows the evolution of the microstructure of such ceramics during sintering, and presents the data of X-ray phase analysis. It was shown that the addition of TiO2 nanoparticles leads to a higher density of the ceramic material after sintering due to the interpenetration of TiO2 and BeO phases, which is caused by an increase in the diffusion mobility of atoms that can in turn be attributed to an increase in the imperfection of the structure and the fraction of grain boundaries. It was found that the presence of nanoparticles contributes to an increase in the apparent density of the material, as well as a decrease in its total and closed porosity; and an increase in the sintering temperature contributes to the transformation of the crystalline structure of TiO2 into a more conductive Ti(3)O(5)with an orthorhombic structure. The presence of nanoparticles also promotes self-healing of micropores, which can be explained by the blocking of a certain fraction of the interfaces between BeO particles by nanoparticles and the creation of a diffusion barrier.	https://www.webofscience.com/wos/woscc/full-record/WOS:000796058000001	0
60.	Rakhadilov, Bauyrzhan) [1] , [2] ; Seitkhanova, A [3] ; Satbayeva, Z [1] , [4] ; Yerbolatova, G [5] ; Icheva, Y [6] ; Sagdoldina, Z	Investigation of the Structural, Mechanical and Tribological Properties of Plasma Electrolytic Hardened Chromium-Nickel Steel	This paper investigates how electrolytic plasma hardening (PEH) bears upon the changes in the phase structural and tribological properties of steel 0.34C-1Cr-1Ni-1Mo-Fe, which is widely used in manufacturing highly stressed gears. The samples of steel 0.34C-1Cr-1Ni-1Mo-Fe went through the PEH in an electrolyte containing an aqua solution of 20% calcined soda (Na2CO3) and 10% carbamide ((NH2)(2)CO). The initial steel 0.34C-1Cr-1Ni-1Mo-Fe is stated to have the following structural components: a lamellar pearlite with volume share of 35%, a ferrite-carbide mixture of ~45% and a fragmented ferrite of ~20%; after the PEH it contains lath-lamellar martensite, fine particles of cementite and M23C6 carbide. The durability of steel 0.34C-1Cr-1Ni-1Mo-Fe was found to rise by 3.4 times after the PEH and its microhardness increased in 2.6 times. The curve-tension of the crystal lattice was established to be like plastic (chi = chi(pl)) and does not cause the formation of microcracks in the material.	https://www.webofscience.com/wos/woscc/full-record/WOS:000725524500001	3
61.	Zhilkashinova, Almira [1] ; Abilev,	Ion-Plasma Spraying and	The blades of modern gas turbine engines are complex structures made of heat-resistant nickel alloys with a complex system of internal cavities. The article describes a method of	https://www.webofscience.com/wos/w	3

	M [1] ; Pavlov, A [1] ; Prokhorenkova, N [2] ; Skakov, M [1] , [3] ; Gradoboev, A [4] ; Zhilkashinova, A	Electron-Beam Treatment of Composite Cr-Al-Co-ZrO2-Y2O3 Coating on the Surface of Ni-Cr Alloy	strengthening samples of a heat-resistant Ni-Cr alloy by applying a composite coating (Cr-Al-Co + ZrO2-Y2O3). The alloy prototypes were fabricated by vacuum melting. An ion-plasma technology of a two-layer coating with an inner metal and an outer ceramic layer on the prepared surface of the heat-resistant alloy matrix was developed. The morphology and structure of the alloy prototypes and the investigated composite coating were studied by scanning electron spectroscopy. The total thickness of the two-layer wear-resistant coating was 17-18 mu m. The thickness of the inner layer (Cr/Al/Co) is 10-11 mu m and the thickness of the outer ceramic coating (ZrO2-Y2O3) is 6-7 mu m. To improve the operational characteristics of the material, an electron-beam surface treatment was proposed. The research results showed a sevenfold increase in surface resistance compared with the initial state.	oscc/full-record/WOS:000633592800001	
62.	Rakhadilov, Bauyrzhan) [1] ; Tyurin, Y [2] ; Kakimzhanov, D [3] ; Baizhan, D [1] , [4] ; Kolisnichenko, O [2] ; Zhurerova, L	Deposition of duplex cr3c2-nicr coatings on steel using a combined technique of gas detonation spraying and pulse-plasma treatment	Sintered chromium carbide-nickel-chromium alloys are widely used to protect machine parts operated in extreme conditions. In this research, a duplex technology was studied, which includes the deposition of Cr3C2-NiCr coatings using a multichambered detonation device and subsequent pulse-plasma treatment (PPT). It was determined that PPE promotes a decrease in the surface roughness and friction coefficient of the coating (approximately two times), an increase in the microhardness of the Cr3C2-NiCr coating material from 12 GPa (initial) to similar to 16.2 GPa, and an increase in wear resistance by two times compared to an untreated coating. It was also revealed that after the pulse-plasma treatment, the resistance of Cr3C2-NiCr coatings to abrasive wear and erosion increases. The proposed duplex technology ensures the formation of high-quality coatings from a cermet material of the Cr3C2-NiCr system with a complex heterogeneous structural-phase state, where a layered structure of regions of carbide particles and matrix metal was found in the immediate vicinity of the carbide-matrix interface with precipitates in the matrix of dispersed secondary carbides.	https://www.webofscience.com/wos/woscc/full-record/WOS:000799168100001	3
63.	Zhanbosinova, A. S.) [1] ; Zhandybayeva, SS [2] ; Kazbekova, AT	Ego-documents of the History of Political Terror in Kazakhstan	Interdisciplinary approaches have expanded the research space of the history of political repression of 1920-1950s. The surge of interest in documents of personal origin in the historiography of the post-Soviet space led to an appeal to ego-documents - personal letters from victims of political repression. The study is based on archival and investigative materials of the Special State Archive of the Ministry of Internal Affairs of the Republic of Kazakhstan. Introduction of narrative sources into the scholarship enables to hear the history of political repression "from inside", "from below", to feel the psychology of terror. Letters to the authorities touched upon a complex of problems related to the violation of socialist legality in the field, especially in the period of political repression. The main message of the letters sent to the first leaders of the Soviet state was the monstrosity of the accusation of Article 58 of the Criminal Code of the RSFSR, the ridiculous mistake made by Soviet justice. The purpose of the article is to reveal the cognitive potential of ego documents in articulating the history of political repression. Based on the theoretical concepts of a linguistic, narrative turn, the historical past of political repressions, represented by ego documents of victims of political terror is constructed. A discursive assessment of the letter suggests its interpretation as a reconstruction of the sociocultural	https://www.webofscience.com/wos/woscc/full-record/WOS:000712434400007	0

			memory of the tragic past that left a cultural trauma in the family frame of memory. Each letter has its own power of power, the inner `I' voices the daily practices of political terror.		
64.	Bayatanova, Lyaila) [1] ; Rakhadilov, B [1] ; Kurbanbekov, S [2] ; Skakov, M [3] ; Popova, N	Fine structure of low-carbon steel after electrolytic plasma treatment	This work shows the results of research of the fine and dislocation structure of the transition layer of 18CrNi3Mo low-carbon steel after the influence of electrolytic plasma. Conducted research has shown that the modified steel layer, as a result of carbonitriding, was multiphase. Quantitative estimates were made for carbonitride M-23(C,N)(6) in various morphological components of alpha-martensite and on average by material in the transition layer of nitro-cemented steel. It was established that alpha-phase is tempered martensite after nitrocementation. Released martensite is represented by batch, or lath and lamellar low-temperature and high-temperature martensite. Inside the tempered martensitic crystals, lamellar cementite precipitates are simultaneously present, and residual austenite is found along the boundaries of the martensitic rails and plates of low-temperature martensite. It was determined that inside the crystals of all morphological components of alpha-martensite there are particles of carbonitride M-23(C,N)(6).	https://www.webofscience.com/wos/woscc/full-record/WOS:000696400800009	2
65.	Rakhadilov, Bauyrzhan) [1] , [2] ; Kakimzhanov, D [2] , [3] ; Baizhan, D [1] , [4] ; Muslimanova, G [3] , [5] ; Pazylbek, S; Zhurerova, L	Comparative Study of Structures and Properties of Detonation Coatings with α-Al2O3 and γ-Al2O3 Main Phases	This study is aimed at obtaining a coating of aluminum oxide containing alpha-Al2O3 as the main phase by detonation spraying, as well as a comparative study of the structural, tribological and mechanical properties of coatings with the main phases of alpha-Al2O3 and gamma-Al2O3. It was experimentally revealed for the first time that the use of propane as a combustible gas and the optimization of the technological regime of detonation spraying leads to the formation of an aluminum oxide coating containing alpha-Al2O3 as the main phase. Tribological tests have shown that the coating with the main phase of alpha-Al2O3 has a low value of wear volume and coefficient of friction in comparison with the coating with the main phase of gamma-Al2O3. It was also determined that the microhardness of the coating with the main phase of alpha-Al2O3 is 25% higher than that of the coatings with the main phase of gamma-Al2O3. Erosion resistance tests have shown (evaluated by weight loss) that the coating with alpha-Al2O3 phase is erosion-resistant compared to the coating with gamma-Al2O3 (seen by erosion craters). However, the coating with the main phase of gamma-Al2O3 has a high value of adhesion strength, which is 2 times higher than that of the coating with the main phase of alpha-Al2O3. As the destruction of coatings by the primary phase, alpha-Al2O3 began at low loads than the coating with the main phase gamma-Al2O3. The results obtained provide the prerequisites for the creation of wear-resistant, hard and durable layered coatings, in which the lower layer has the main phase of gamma-Al2O3, and the upper layer has the main phase of alpha-Al2O3.	https://www.webofscience.com/wos/woscc/full-record/WOS:000736750400001	3
66.	Buranich, Vladimir) [1] ; Tsyganok, PS [1] ; Pogrebnjak, AD [1] , [2] ; Kassenova, LG [3] ; Kupchishin, AI [4] ; Webster, RF [5] ; Tilley, RD [5] ;	Structure formation and functional properties of tialsiyn/mon nanolayer-thick coating	Hard and wear-resistant protective coatings based on metal nitrides have been used for decades as support for the stable functioning of mechanical instrumentation: cutting tools, gears, and drills. Combining multielement nanocomposite (TiAlSiTh) and nanodimensional multilayer (MoN) concepts of coatings deposition, in turn, ensure the way to tune promising properties and performance. In this paper, the coating was synthesized by the reactive cathodic are deposition at intensive nitrogen pressure and was studied in the internal structure and composition manner. X-ray diffraction and scanning/transmission	https://www.webofscience.com/wos/woscc/full-record/WOS:000693366400004	0

	Bondar, OV [1] ; Rokosz, K [6] ; Raaen, S		electron microscopy analyses have revealed the mechanism of coherent growth of fcc TiAlN on fcc gamma-Mo2N along (200) plane. Surface and lateral section contained microdroplet fractions of Mo and Ti-Si-N, respectively, whose formation was attributed to the deposition features and elemental segregation within a coating. The study has unveiled the processes corresponding to nanostructure formation in the nanocomposite and template layers. It was shown that Al bonds prevail in the upper TiAlSiYN layer recognized as an influential factor of the enhanced hardness (33.2 GPa) due to the formation of TiAlN solid solution. The vacancy exchange mechanism in MoN layers was proposed as a source for structural stability. Yet, the tribological tests pointed out the deficiency of lubricating particles in the TiAlSiYN matrix. Additional studies regarding the optimization of composition are required.		
67.	Abykanova, Bakytgul) [1] ; Kussainov, GM [2] ; Vasilyeva, EN (Vasilyeva, Ekaterina Nikolaevna) [3] ; Shalgynbaeva, KK [4] ; Igibayeva, AK [5] ; Tautenbayeva, A [6] ; Tanirbergenova, AS [7] ; Tabyldieva, O	Pedagogical Technology: A specific historical approach	In the present context of numerous reforms, modernization and upgrading, much attention is given to the content of education, while the technological bases of education, which has not been subjected to redesigning for decades, is virtually neglected. It resulted in the decline in the quality of education, which is illustrated by the data of international studies PISA, TIMSS, PIRLS, TALIS, etc. In regard to the above, this article examines the questions of organization of educational process, the core component of which are general forms of education that depending on the specific historical conditions dominate in its organizational structure. Underestimation of these laws of development of educational process led to the constant and systemic improvement of traditional pedagogical technology, i. e. group learning that was established in schools and higher educational institutions as early as in the 16th-17th centuries. The lack of a unified understanding of the entity and categorization of pedagogical technologies in pedagogical theory and practice has resulted in the need to define the concept of "pedagogical technology", as well as categorize pedagogical technologies based on the specific historical approach. This article also provides an analysis of the concepts and categorization of pedagogical technologies that are aligned in accordance with the so-called psychological-pedagogical approach. Based on the specific historical approach (V. K. Dyachenko), analysis of long-standing pedagogical practice and scientific studies, this article proposes a justification of the need to reform and master a new and the latest pedagogical technology of collective learning and ways of its realization. The novelty of this study consists in the fact that it offers a new approach to the definition of the concept "pedagogical technology", categorization and characterization of realization of collective learning "vertically" and "horizontally", presents practical results of the implementation of each of them.	https://www.webofscience.com/wos/woscc/full-record/WOS:000635168100023	2
68.	Sharifi-Rad, Javad) [1] ; Quispe, C [2] ; Mukazhanova, Z [3] ; Knut, E (Knut, Ewa) [4] ; Turgumbayeva, A [5] , [6] ; Kipchakbayeva, A [7]	Resveratrol-Based Nanoformulations as an Emerging Therapeutic Strategy for Cancer	Resveratrol is a polyphenolic stilbene derivative widely present in grapes and red wine. Broadly known for its antioxidant effects, numerous studies have also indicated that it exerts anti-inflammatory and antiaging abilities and a great potential in cancer therapy. Regrettably, the oral administration of resveratrol has pharmacokinetic and physicochemical limitations such as hampering its effects so that effective administration methods are demanding to ensure its efficiency. Thus, the present review explores the published data on the application of resveratrol nanoformulations in cancer therapy, with	https://www.webofscience.com/wos/woscc/full-record/WOS:000696675800001	22

	; Seitimova, G [7] ; Mahomoodally, MF [8] ; Lobine, D [8] ; Koay, A [9] ; Wang, JF [9] ; Sheridan, H [9] ; Leyva-Gómez, G [10] ; Del Prado-Audelo, ML (Del Prado-Audelo, Maria L.) [10] ; Cortes, H [11] ; Rescigno, A [12] ; Zucca, P [12] ; Sytar, O (Sytar, Oksana) [13] , [14] ; Imran, M [15] ; Rodrigues, CF [16] ; Cruz-Martins, N [17] , [18] , [19] ; Ekiert, H [4] ; Kumar, M [20] ; Razis, AFA [21] , [22] ; Sunusi, U [22] , [23] ; Kamal, RM [22] , [24] ; Szopa, A		the use of different types of nanodelivery systems. Mechanisms of action with a potential use in cancer therapy, negative effects, and the influence of resveratrol nanoformulations in different types of cancer are also highlighted. Finally, the toxicological features of nanoresveratrol are also discussed.		
2022 год					
69.	Saltanat, Adikanova) [1] ; Kaldykul, S (Kaldykul, Sarbassova) [1] ; Zaure, K (Zaure, Kabdrakhmanova) [1] ; Saniya, K (Saniya, Kubentayeva) [1] ; Gulbanu, U (Gulbanu, Uristenbekova) [2] ; Karas, K (Karas, Kaziyev) [3] ; Bagdat, B (Bagdat, Baimukhanbetov	Opinions of University Students on Technology Literacy	The aim of this study is to evaluate the views of engineering faculty students on technology literacy. This research was conducted using a qualitative research design. In accordance with the structure of the research, the phenomenology design was chosen from the qualitative research designs. The study group of the research consisted of 142 students studying at engineering faculties at various universities in Kazakhstan and who voluntarily agreed to participate in the research. In the study, the opinions of engineering faculty students on technology literacy were collected with a semi-structured interview form developed by the researchers. As a result of the research, students defined technology literacy as knowing the meaning and function of technology and using it effectively. In addition, they associated technology use in the profession with technology competencies and professional competencies. The majority of students put forward the knowledge of technology in technological competencies and being able to follow technological innovations in professional competencies as a prerequisite for the use of technology in the profession. The students participating in the research found themselves moderately competent in being technology literate. Technology literacy should be integrated with all curricula and the content of curricula should be arranged accordingly.	https://www.webofscience.com/wos/woscc/full-record/WOS:000772618100011	0

70.	Sarsembayeva, G. A.) [1] ; Krasnobaeva, NL [2] ; Makhmetova, NA [1] ; Stolyarova, EO [2] ; Aubakirova, ZS [2] ; Alekseyenko, AN	Historical prerequisites for the formation of the Kazakhstan "model" of fertility: mid-20th - early 21st centuries	The article is devoted to the stages of transformation and formation of the Kazakh variant of fertility in the context of socio-political and socio-economic changes that accompanied the development of the republic in the second half of the 20(th) - first quarter of the 21(st) centuries. The ethnodemographic and socio-cultural reasons for the preservation of high birth rates of the Kazakh ethnic group, formed in the Soviet period of history, are considered. The analysis of the prospects for the preservation of currently fixed reproductive trends in the conditions of rapid urbanization of Kazakhs is given.	https://www.webofscience.com/wos/woscc/full-record/WOS:000880431600016	0
71.	Baizhan, D. R.) [1] , [3] ; Rakhadilov, BK [1] , [2] ; Zhurerova, LG [1] ; Torebek, K	Preparation of bio-ceramic composite coatings on Ti6Al4V titanium alloy by gas-detonation spraying	The paper presents study of a new approach to manufacturing carrier implants with a combination of bioactivity, biocompatibility, and mechanical properties, composite powders of hydroxyapatite and titanium with a mass content of 50:50 % when sprayed by gas detonation spraying. Experimental studies of the surface morphology and cross-section microstructure, phase composition and mechanical properties of HATi composite coatings are obtained. The experimental results showed that the cross-section microstructures of HATi composite coatings are typical plate structures comprising curved strips formed by well-deformed and oxidized Ti plates and limited deformed HA plates. Composite coatings' morphology and phase states were studied using scanning electron microscopy and X-ray diffractometry. It was found that the deprived coatings mainly consist of the phases HA, Ti and TiO. The elemental composition study results designated that the atomic ratio of calcium and phosphorus in the obtained coatings is Ca/P similar to 1.64, which is close to the value of the initial powder - Ca/P similar to 1.67. This indicates a limited change in the chemical composition during the coating formation.	https://www.webofscience.com/wos/woscc/full-record/WOS:000782837300010	3
72.	Nugumanova, Aliya) [1] ; Maulit, A [1] ; Sutula, M	Clustering Analysis Applied to NDVI Maps to Delimit Management Zones for Grain Crops	This research studies the possibility of applying data mining methods to determine homogeneous management zones in fields sown with cereals. For the study, satellite images of two fields in the East Kazakhstan region were used, obtained by the Sentinel-2 satellite in different periods of time (images of the first field were obtained from May to September 2020, images of the second field - from May to August 2021). Based on these images, a dataset of seasonal NDVI values was formed for each field. Four different clustering algorithms were applied to each of the datasets, the clustering results were visualized and rasterized as color maps, which were then offered for comparison and verification by an expert agronomist. Based on the expert review, recommendations were formulated for determining zones of homogeneous management.	https://www.webofscience.com/wos/woscc/full-record/WOS:000916496900036	0
73.	Aubakirova, Zh S.) [1] ; Omyrzak, TY [2] ; Stolyarova, EO [1] ; Sarsembayeva, GA [3] ; Alekseyenko, AN [1] ; Kenzhebayev, GK	Demographic development of Kazakhstan in the second half of the 20th - early 21st centuries: contradictions and risks	The article discusses the features of demographic development of Kazakhstan in the second half of the 20(th) - early 21(st) centuries. The concept of demographic policy, implemented in Kazakhstan since the early 2000s, was aimed at population growth due to fertility, ethnic immigration. At the same time, the policy of modernization acceleration was implemented, an active process of urbanization began, which led to the concentration of the population in a few large cities. Currently, the pace of socio-economic development is noticeably lagging behind the dynamics of population growth. As a result,	https://www.webofscience.com/wos/woscc/full-record/WOS:000880431600017	0

			the problems of the healthcare system, education, and employment are becoming more and more apparent, which can lead to serious social threats.		
74.	Sutula, Maxim Yu) [1] ; Khosnutdinova, TS [1] ; Zhakmanova, YA [1] ; Akhmadiyeva, AN	The Prevalence of Recombinant Strains of Potato Virus Y in the East Kazakhstan Region		https://www.webofscience.com/wos/woscc/full-record/WOS:000875817400001	0
75.	Tolegen, M. A.) [1] ; Ryakova, YG [1] ; Savchuk, YV	Human in the ideology of globalism	In this article the authors reveals the peculiarities of human understanding and vision for the future of mankind in the ideology of globalism took shape and gained considerable influence on the minds of the people in the second half of the 20th century - early 21st century. Platforms and specialized institutes are organized to develop ideas and mechanisms for their implementation by transnational business elites and representatives of other social groups adjacent to them. Their worldview, formed in the context of a society of alienation, inevitably becomes part of the ideology. Turning to the analysis of the ideology of globalism from the point of view of the relationship to human and the humanity seems promising for an adequate understanding of the essence of globalism and its role in the formation of modern public consciousness, as well as the contours of the future society. Considering globalism as a sociocultural phenomenon, the authors identify the foundations for the formation of the globalist worldview and its ideological sources that lie in the liberal intellectual tradition. The key intellectual moves in the rhetoric of globalists are an appeal to economism, humanism, and the need to correct the world order in the spirit of liberal values. The authors of the article identify key milestones in the formation of the globalist worldview associated with socio-cultural transformations and changes in the configuration of the world socio-political structure, which are reflected in ideological constructions and scientific research. In the course of understanding texts and programs written in the spirit of globalism, the analysis of ideologies and terms, the system of arguments familiar to globalists, is carried out through the prism of understanding the role and place assigned by them to a human.	https://www.webofscience.com/wos/woscc/full-record/WOS:000890511700013	0
76.	Nugumanova, Aliya) [1] ; Akhmed-Zaki, D (Akhmed-Zaki, Darkhan) [2] ; Mansurova, M (Mansurova, Madina) [3] ; Baiburin, Y (Baiburin, Yerzhan) [1] ; Maulit, A	NMF-based approach to automatic term extraction	This work describes automatic term extraction approach based on the combination of the probabilistic topic modelling (PTM) and non-negative matrix factorization (NMF). Topic modeling algorithms including NMF-based ones do not require expensive and time-consuming manual annotations for domain terms, but only a corpus of domain documents. The topics emerge from the corpus documents without any supervision as sets of most probable words. This work is aimed to investigate how fully and precisely these most probable words from topics can reflect domain terminology. We run a series of experiments on the novel, qualitatively annotated dataset ACTER that was first used in the TermEval 2020 Shared Task. We compare five different NMF algorithms and four different NMF initializations when changing the number of topics extracted from documents and the number of most probable words extracted from topics in order to determine optimal combinations for best performance of term extraction. Finally, we compare the obtained optimal combinations of NMF with the competitive methods in TermEval 2020 and prove	https://www.webofscience.com/wos/woscc/full-record/WOS:000794192300002	3

			that our approach is second only to two much more sophisticated, domaindependent supervised methods.		
77.	Aubakirova, Zh S.) [1] ; Stolyarova, EO [1] ; Krasnobaeva, NL [1] ; Alekseyenko, AN [1] ; Omyrzak, TY [2] ; Ualieva, SK	Population of the KASSR in 1920-1926	The article examines the peculiarities of the formation of the population of the Kyrgyz Autonomous Soviet Socialist Republic (KASSR) formed in August 1920 in the period between the population censuses of 1920 and 1926. At that time, administrative borders were being actively redrawn, new national-state associations were emerging, which significantly complicates the study of the population in a comparable territory. The famine of 1921-1922 also had a serious impact on the population of KASSR. The authors come to the conclusion about the reliability of the census materials of 1926, which in general adequately reflected the number and national composition of the population of the KASSR after the shocks of the first half of the 1920s.	https://www.webofscience.com/wos/woscc/full-record/WOS:000880431600015	0
78.	Rakhadilov, Bauyrzhan) [1] , [2] ; Kakimzhanov, D [1] , [3] ; Buitkenov, D [1] ; Abdulina, S [3] ; Zhurerova, L [1] ; Sagdoldina, Z	Structural Phase Transformations in Detonation Coatings Based on Ti3SiC2 after Pulse-Plasma Effect	This work presents the results of the study on the effect of pulse-plasma treatment on the structural-phase states of the surface layer of detonation coatings based on Ti3SiC2. Structural-phase studies were carried out by three main methods: scanning electron microscopy, transmission electron diffraction microscopy on thin foils and X-ray structural analysis. It was determined that after the pulse-plasma treatment, an increase in the intensity of the Ti3SiC2 peaks was observed, and the appearance of new reflections (101, 102, 112, 204, 1110, 0016) of this phase was detected, which indicates the increase in the MAX-phase content. It was determined that after the pulse-plasma treatment, the fraction of voids (pores) and the particle area decreased and the microstructure became more homogeneous, which resulted in the densification of the Ti3SiC2-based detonation coating. It was found that the process of detonation spraying with subsequent pulse-plasma treatment resulted in the formation of a Ti3SiC2-based coating, with TSC carbosilicide (Ti3SiC2) 0] plane reflexes, lamellar layered structure, and reduced porosity.	https://www.webofscience.com/wos/woscc/full-record/WOS:000872468400001	1
79.	Sagdoldina, Zhuldyz) [1] ; Shestakov, K [2] ; Yermolenko, M [3] ; Kylyshkanov, M [1] , [2] ; Podoinikov, M [2] ; Rakhadilov, B [1] , [4] ; Kambarov, Y	Magnesium Oxide Production by Plasma Chemical Conversion from Fluorine-Containing Industrial Waste	This work discusses the possibility of decomposing magnesium fluoride by ionized water vapor to form solid magnesium oxide and hydrogen gas in the reaction: MgF2 + H2O -> MgO + 2HF. The technology and individual apparatuses of the plasma-chemical installation are described, and the influence of the fractional composition of magnesium fluoride powder on the productivity of the plasma conversion process is considered. To improve the efficiency of the plasma pyrolysis process, a method for making magnesium fluoride briquettes was developed. The completeness of the conversion process of magnesium fluoride to an oxide was evaluated by energy dispersive X-ray spectroscopy in the study of objects in scanning electron microscopy (SEM) and by X-ray diffractometry. It was found that the conversion process of magnesium fluoride to magnesium oxide has a relatively high degree of decomposition of magnesium fluoride fraction <= 75 mu m. The use of the proposed processing method makes it possible to obtain pure magnesium oxide as a commercial product and to utilize fluorine-containing industrial waste.	https://www.webofscience.com/wos/woscc/full-record/WOS:000880870500001	1
80.	Kengesbekov, Aidar) [1] , [2] ; Rakhadilov, B [2] ; Sagdoldina, Z [1] ; Buitkenov, D [1]	Improving the Efficiency of Air Plasma Spraying of	The operation modes of a plasmatron for powder coating spraying have been studied. The plasmatron has a node of annular input and a gasdynamic focusing of the powder, and the outlet holes of the nozzle-anode are made in the form of rectangular narrowing-expanding channels (No.34334 RK: IPC H05H 1/42). The dynamics and trajectories of the powder	https://www.webofscience.com/wos/woscc/full-	1

	; Dosymov, Y [3] ; Kylyshkanov, M	Titanium Nitride Powder	particles in the plasmatron were investigated. The paper analyzes the influence of plasmatron arc current and working gas flow rate on the structure and properties of the obtained coatings. It is established that the phase composition of the sprayed coatings and the initial powder is the same: the main phase is the compound TiN, in addition, the structure contains the phase TiO2. The results of tribological tests of the coatings under dry friction conditions according to the ball-on-disk scheme are presented. Within the framework of this study, it can be said, from the point of view of obtaining denser coatings with high performance characteristics, that the optimal modes of plasma spraying of TiN powder are a current of 250 A and the working gas flow rate of argon 34 L/min.	record/WOS:000881053200001	
81.	Rakhadilov, B. K.) [1] , [2] ; Baizhan, DR [2] , [3] ; Sagdoldina, ZB [1] ; Torebek, K	Research of regimes of applying coats by the method of plasma electrolytic oxidation on Ti-6Al-4V	In this work, ceramic coatings were formed on Ti6Al4V titanium alloy using a technique of plasma electrolytic oxidation. Plasma electrolytic oxidation was carried out in electrolytes with different chemical compositions and the effect of the electrolyte on the macro-and microstructure, pore size, phase composition and wear resistance of coatings was estimated. Three types of electrolytes based on sodium compounds were used, including phosphate, hydroxide, and silicate. The composition of the electrolyte affects the intensity and size of microcharges and the volume of gas release of various electrolytes. The plasma electrolytic oxidation processes were carried out at a fixed voltage (270 V) for 5 minutes. The results showed that the coating was mainly composed of rutile- and anatase TiO2, but a homogeneous structure with lower porosity and a large number of crystalline anatase phases was obtained in the coating prepared in the silicate-based electrolyte. The diffractogram electrolytes did not reveal the peaks of the crystalline phases associated with the PO43- and SiO32- anions. This means that these anions included only oxygen in the coatings. The morphology and phase composition of the samples were studied using a scanning electron microscope and an X-ray diffractometer, respectively. Wear resistance was evaluated by the "ball-disc" method on the TRB3 tribometer. The wear resistance of various coatings formed on Ti6Al4V titanium alloys showed completely different wear resistance. The lowest coefficient of friction (mu = 0.3) was demonstrated by the coating obtained based on phosphate. This may be due to a large number of crystal phases of rutile. The sample prepared in a hydroxide-based electrolyte showed a high wear coefficient (mu=0.52). This effect can be obtained by eliminating surface defects (microcracks and micropores).	https://www.webofscience.com/wos/woscc/full-record/WOS:000782837300011	3
82.	Kengesbekov, Aidar) [1] , [2] ; Sagdoldina, Z [1] ; Torebek, K [3] ; Baizhan, D [1] ; Kambarov, Y[1] ; Yermolenko, M [4] ; Abdulina, S [5] ; Maulet, M	Synthesis and Formation Mechanism of Metal Oxide Compounds	In this work, the influence of the technological parameters of the detonation method on the formation of metal oxide compounds on the basis of titanium was investigated. The aim of the work was to investigate the method of the effective control of the phase composition and microstructure of titanium-based coatings during detonation spraying. The main parameters that varied in detonation spraying were the volume of filling the detonation barrel with explosive mixture and the oxygen/fuel ratio. The mechanism of formation of the gradient structure of coatings based on metal oxide compounds depending on the technological parameters of detonation spraying was considered. The structural-phase states and tribological properties of detonation coatings were investigated by the following methods: X-ray phase analysis (XRD), scanning electron microscopy (SEM), energy	https://www.webofscience.com/wos/woscc/full-record/WOS:000872726100001	1

			dispersive spectroscopy (EDX-mapping), profilometry, and the test for wear-resistance according to the "ball-disk" scheme. It is shown that the phase composition of coatings may significantly change relative to the initial titanium powder during the detonation spraying due to the interaction of particles of powders with components of the gas atmosphere. Varying the spraying parameters may control the chemical reaction and provide conditions for the synthesis of the desired phases in the coatings (titanium oxide TiO2 and Ti2O3).		
83.	Temirbekov, Almas) [1] ; Zhaksylykova, Z [2] ; Malgazhdarov, Y [3] ; Kasenov, S	Application of the Fictitious Domain Method for Navier-Stokes Equations	To apply the fictitious domain method and conduct numerical experiments, a boundary value problem for an ordinary differential equa-tion is considered. The results of numerical calculations for different values of the iterative parameter ?? and the small parameter ?? are presented. A study of the auxiliary problem of the fictitious domain method for Navier - Stokes equations with continuation into a fictitious subdomain by higher coefficients with a small parameter is carried out. A generalized solution of the auxiliary problem of the fictitious domain method with continuation by higher coefficients with a small parameter is determined. After all the above mathematical studies, a computational algorithm has been developed for the numerical solution of the problem. Two methods were used to solve the problem numerically. The first variant is the fictitious domain method associated with the modification of nonlinear terms in a fictitious subdomain. The model problem shows the effectiveness of using such a modification. The proposed version of the method is used to solve two problems at once that arise while numerically solving systems of Navier-Stokes equations: the problem of a curved boundary of an arbitrary domain and the problem of absence of a boundary condition for pressure in physical formulation of the internal flow problem. The main advantage of this method is its universality in development of computer programs. The second method used calculation on a uniform grid inside the area. When numerically implementing the solution on a uniform grid inside the domain, using this method it???s possible to accurately take into account the boundaries of the curved domain and ensure the accuracy of the value of the function at the boundaries of the domain. Methodical calculations were carried out, the results of numerical calculations were obtained. When conducting numerical experiments in both cases, quantitative and qualitative indicators of numerical results coincide.	https://www.webofscience.com/wos/woscc/full-record/WOS:000806722000044	1
84.	Bauyrzhan, Rakhadilov) [1] ; Alexander, P [2] , [3] ; Zhuldyz, S [1] ; Dastan, B [1] ; Vyacheslav, B [4] ; Mukhamedova, A	Effect of Bilayer Thickness and Bias Potential on the Structure and Properties of (TiZr/Nb)N Multilayer Coatings as a Result of Arc-PVD Deposition	This work is devoted to the study of the formation of nanostructured multilayer coatings (TiZr/Nb)N on the surface of an AISI 321 steel substrate depending on the deposition parameters of the Arc-PVD method. The results of the X-ray diffraction analysis showed the formation of solid solution (TiNb)N and ZrN in the multilayer coatings with an FCC structure, epsilon-NbN with a hexagonal structure, as well as with a small volume fraction of the epsilon-Ti2N and beta-Nb2N phase. On the basis of phase composition data, it is possible to assume that an increase in the number of bilayers leads to a decrease in the nitrogen concentration in the bilayers and, consequently, to a decrease in the volume fraction of epsilon-NbN and beta-Nb2N nitrides. In all investigated systems obtained at -100 V and -200 V bias potentials, epsilon-NbN is the main phase. The study of the element distribution over the thickness of the (TiZr/Nb)N coating confirms the results of the X-ray diffraction analysis. The use of the structure model in the form of alternating layers allows	https://www.webofscience.com/wos/woscc/full-record/WOS:000884143500001	2

			for significantly improving the adhesion characteristics of the protective coating, as well as ensuring their high hardness. Based on the experimental results, it is possible to analyze changes in the mechanical and tribological properties of multilayer coatings depending on the number of applied bilayers. The results of the study of the elastic modulus and hardness of multilayer coatings (TiZrNb)N with different numbers of bilayers showed that a large number of bilayers (small thickness of each individual layer) shows the lowest value of hardness. It is assumed that as the bilayer thickness decreases, the coating characteristics are closer to the monolayer alloy than to the multilayer structure.		
85.	Nugumanova, A. B. [1] ; Apayev, KS [2] ; Baiburin, YM [1] ; Mansurova, M [3] ; Ospan, AG	Qurma: a table extraction pipeline for knowledge base population	This paper is proposed a pipeline aimed at automatically extracting tables from heterogeneous Web sources, such as HTML pages, pdf files and images. Table extraction is one of the actively developing areas of Information Extraction, for which many applications, libraries and frameworks are currently being developed. Nevertheless, most of these tools are focused on solving some specific tasks, for example, only on recognizing tables presented in the form of images. We propose to combine these tasks into a single pipeline that will support the full cycle of table processing - from the stages of their search, recognition and extraction to the stages of semantic analysis and interpretation, that is, the understanding of tables. Understanding tables and population of knowledge bases (knowledge graphs) with meaningful information contained in these tables is the ultimate goal of our design. The first part of the work presents methods for detecting tables on web pages, in pdf documents, as well as methods for automatically detecting attributes and values of objects. The second part presents the conceptual architecture of the Qurma system, designed to extract tables from heterogeneous sources on the Internet. The results section provides an example of a parser that parses the input resource type and passes control to one of the table lookup modules. Next, an operation is performed to determine the main column and link the entities contained in the main column with the corresponding categories in the external knowledge base.	https://www.webofscience.com/wos/woscc/full-record/WOS:000848849100010	0
86.	Nurekenova, E.) [1] ; Sholpanbayeva, K [2] ; Apysheva, A [2] ; Rakhimberdinova, M [1] ; Shaikhanova, N	Assessment of the economic efficiency of industrial enterprise management during the kazakhstan integration into the eaeu	The purpose of this study is to examine the effectiveness of the measures taken and to identify areas for further integration cooperation. The originality of the study is determined by the fact that the formalisation of Kazakhstan integration into the Eurasian Economic Union (EAEU) structures allows expanding the possibilities of building cooperative ties. This requires greater involvement of enterprises in the integration and the development of a unified state system to assess the effectiveness of integration associations. The authors show that, in general, the integration of Kazakhstan and the EAEU can be assessed based on a common methodology for the economic efficiency of individual enterprises. The authors suggest the adapted methodology of the balanced scorecard system since it is appropriate in this case. The practical significance of the study is determined by the need to clarify the structural features of integration and calculate efficiency in general based on the results of the cooperation of Kazakh enterprises with external partners. The development of such an assessment system can also be implemented taking into account the need to counter the global economic crisis.	https://www.webofscience.com/wos/woscc/full-record/WOS:000965665600004	0

87.	Orsayeva, Raissa) [1] ; Vasyaev, A (Vasyaev, Alexander) [2] ; Shestak, V	Mechanisms for protecting children's rights and the role of psychological services in the juvenile justice system of Russia against the background of international practices (Retracted article. See vol. 13, 2023)	Background: The study examines children's rights as a social and legal institution, adapting to the modern context, associated with new views on the psychology of the child and his legal personality. In addition, the study raises the question of the role of medical psychology and psychological practice in the juvenile justice system of Russia from the point of view of the foundations of legal regulation. The research outlines the problems of the implementation of the protection of children's rights in Russia and suggestions for the legislative improvement of the mechanism. Through the use of the interpretative approach, the United Nations Convention on the Rights of the Child is considered as a source of soft law, requiring pluralization of practice pursuant to international rules. Results: The comparison of the two key approaches to the Convention, the dual status of the child and the public/private dilemma, is a basis for studying current problems in Russia through discourses on rights of a child. The comparison highlights the limitations and peculiarities common to both Russia and foreign states clarifying possible strategies for improving the implementation of rights of a child in different countries. The article examines the current legislation, which sets incentives for the development of the juvenile justice system. The foreign experience has been analyzed and the possibility of its implementation into the national legal system has been considered. It was the legal norms that the research was based on. The analytical framework of the study relies on both qualitative and quantitative methodologies. The aim of the current research is to analyze the degree of protection of children's rights in Russia, as well as the system of juvenile justice. This required the assessment of the current political and cultural context, as well as the moral aspect that affects the development of the mechanism for protecting children's rights in Russia. Conclusions: The practical significance of the research carried out implies the possibility of using the results obtained in the development of legislative acts in the field of protecting the rights of children and the juvenile justice system.	https://www.webofscience.com/wos/woscc/full-record/WOS:000759556500002	0
88.	Yensenov, Kanat) [1] ; Naimanbayev, B [2] ; Orazbakov, A [3] ; Nurbekova, R [4] ; Bulgynbaeva, A	Rehabilitation of Deportees to Kazakhstan	During the Soviet era, in the 20s and 50s of the XX century, repressions and forced migration were widespread. We have used methods of historical retrospective, analysis and synthesis. Documents of the Archives of the President of the Republic of Kazakhstan were used in the study. It was found that during the Soviet era, mass deportations to Kazakhstan led to the deportation of Poles in 1936, Koreans in 1937-1938, Iranians in 1938-1939, Germans in 1941, Karachays in 1943, and Chechen-Ingush in 1944. In addition, there was a case of forcible dissolution of the National Autonomies of nations. As a result, thousands and millions of people of different nationalities were forcibly evicted. The fate of deported peoples changed after I.V. Stalin's death in 1953. In 1956, XX Congress was held in the Soviet Union. It paved the way for the liberation from the "cult of personality" and the restoration of the rights of repressed and deported peoples, the process of rehabilitation. The rehabilitation process was carried out from 1954 to 1960, the rights of persecuted peoples were restored and the autonomies were reorganised.	https://www.webofscience.com/wos/woscc/full-record/WOS:000922511100011	0
89.	Skakov, Mazhyn) [1] , [2] ; Zhilkashinova, A	Effect of Heat Treatment on the	The article describes the effect of heat treatment on the structural-phase state and properties of a multilayer Cr-Al-Co-Y coating obtained by magnetron sputtering. Heat treatment was	https://www.webofscience.com/wos/w	1

	[1] ; [1] ; Abilev, M [1] , [3] ; Prokhorenkova, N [1] , [4] ; Agelmenev, M [5] ; Ismailova, A	Structural-Phase State and Properties of a Multilayer Co-Cr-Al-Y Coating	carried out at 400, 800 and 1000 degrees C. The study of the microstructure was carried out by electron microscopy with energy dispersive analysis and powder X-ray diffraction. The surface of the samples was studied by atomic force microscopy. The thickness of the Co-Cr-Al-Y coatings was 1.5-1.7 +/- 0.2 mu m. The obtained coatings are characterized by a hardness of 4.7-6.4 GPa. A distinctive feature of the layers is the absence of a crystalline structure in some areas of the coating. The main process occurring during the thermal treatment is the formation of a spinel-type phase. For a single-layer sample after heat treatment at 400 degrees C, it was not possible to fix extraneous reflections except for the reflections of the silicon substrate 111 and 220. For the rest of the samples, the appearance of reflections of a number of phases was noticed, such as: SiO2, CoO, AlSi0.5O2.5 and CrAl(0.4)2Si(1.58). An increase in the treatment temperature up to 800 degrees C did not lead to significant changes. In the case of the multilayer sample, the reflections of various impurity phases disappeared and the Co3O4 phase was formed. For samples treated at 1000 degrees C, the formation of a spinel-type phase (Co3O4-CoCr2O4) was observed in all cases. Data on the structural-phase state and properties of the multilayer Co-Cr-Al-Y coating can be used to predict the nature of such coatings after heat treatment.	oscc/full-record/WOS:000847189300001	
90.	Zhilkashinova, Almira) [1] ; Abilev, M [1] , [2] ; Ocheredko, I [1] ; Tuyakbayev, B [1] ; Nurbayev, M [1] ; Azamatov, B	Mini-Hydropower Plant Based on Lenyov Hydrobelt and Volume-Sectional Hydraulic Engine	The use of the energy of small watercourses with the help of small hydropower plants is one of the promising directions for the development of renewable energy. This article presents the designs of two different hydraulic engines, each of which has its own advantage. Therefore, the task of calculating the real parameters of the design of a mini-hydropower plant based on Lenyov hydrobelt has been solved. Theoretical calculations were validated numerically by the finite volume method and computational fluid dynamics modeling; both methods gave similar results. According to the results of calculations, this design based on the Lenyov hydrobelt with the capacity of 16 kW is advisable to place in a river with a flow velocity of at least 4.5 m/s. The article also presents an alternative type of developed mini-hydropower plant, -a volume-sectional hydraulic engine. The proposed rotary-type positive displacement hydraulic engine can operate at low pressure on a flat surface. The advantage of the hydraulic engine is the sectional operation of several working chambers. It was established that a high water velocity and a large volume of passing water was not required. The total force acting in the hydraulic engine is 5430.19 N. Due to the use of conical inlet channels, the water flow velocity was increased and the water flow became directional. The frequency of rotation of the hydraulic engine shaft at a river flow velocity of 4 m/s was 60.43 rpm. The received power in these modes was 22.25 kW.	https://www.webofscience.com/wos/woscc/full-record/WOS:000767491600001	0
91.	Niyazbekova, Shakizada U.) [1] , [2] ; Anzorova, SP [3] ; Zubets, AZ [1] ; Issayeva, AZ [4] ; Abylaikhanova, TA	Prospects for the Development of Mobile Technology in the Global Market in the Digital Age	The paper considers and analyzes the sales of the largest manufacturers of smartphones (e.g., Samsung, Xiaomi, Apple, and Oppo) in the global smartphone market. In the global market, Samsung, for the first time, managed to sell the largest number of smartphones in Q3 2011, replacing the former market leader - Nokia. By the beginning of 2021, Apple outperformed Samsung in the global smartphone market for five consecutive quarters. The South Korean company managed to break the 30% mark several times. This dominance was observed several years ago. Samsung's lead is shrinking and is especially overtaken by	https://www.webofscience.com/wos/woscc/full-record/WOS:000759460600041	0

			Chinese manufacturers. As of 2021, there is an increase in the number of smartphone users. The conclusion highlights the importance of smartphones in a digitized environment.		
92.	Temirbekov, Nurlan) [1] ; Imangaliyev, Y [1] ; Baigereyev, D [2] ; Temirbekova, L [3] ; Nurmangaliyeva, M	Numerical simulation of inverse geochemistry problems by regularizing algorithms	Currently, methods and approaches of scientific visualization based on additional data analysis are being intensively developed due to the rapid development of computer technology in geology. The general concept is that the main data field on the day surface and additional conditions are specified at the input. Further, the methods of mathematical geophysics are used for their analysis and processing, as a result of which new information is obtained for deep exploration. Then visualization tools are applied to the obtained information and main data field in an information system. Thus, the information system is based on the synthesis of visual representation methods, methods of mathematical geophysics, computational mathematics, and various branches of science. This paper presents a description of the geoinformation system module for deep forecast search modeling of deposits developed on the base of the methods of intelligent anomalies detection of hidden deposits. Operation of the software module is based on the application of the theory of mathematical geophysics inverse problems using geological data on the Earth's surface, geophysical measurements and geochemical analyses as input data. The software module for the inverse problem of the continuation of potential fields in the direction of perturbing masses is used for real data of a particular mineral deposit.	https://www.webofscience.com/wos/woscc/full-record/WOS:000738789200001	1
93.	Rakhadilov, B. K.) [1] ; Maksakova, OV [2] ; Buitkenov, DB [1] ; Kylyshkanov, MK [1] , [3] ; Pogrebnjak, AD [2] , [4] , [5] ; Antypenko, VP [2] ; Konoplianchenko, YV	Structural-phase and tribo-corrosion properties of composite Ti3SiC2/TiC MAX-phase coatings: an experimental approach to strengthening by thermal annealing	Composite Ti3SiC2/TiC MAX-phase coating was obtained by the detonation spraying onto U9 steel substrate using the mixed powder in the molar ratio of 74Ti/20SiC/6C as raw material. At the as-sprayed state, the synthesized composite had a stable double-phase composition: the main TiC phase and secondary Ti3SiC2 MAX-phase. After thermal annealing at 700, 800 and 900 degrees C, oxidation occurred in the coatings, as indicated by the appearance of high-temperature-stable anatase TiO2 phase at the diffraction patterns. It was found that annealed at 800 degrees C coating demonstrated the best structural, compositional, tribo-mechanical and corrosion resistance characteristics. In particular, hardness increased to 1400 +/- 75HV(0.2), coefficient of friction decreased to 0.35, adhesion strength was 14 N, and corrosion potential was 1.88 x 10(-2) A/cm(2). The corrosion potential of the annealed composite was 5.5 times less than that of the steel substrate, which indicates its strong corrosion protection. The relatively higher density, the formation of the main TiC phase that inhibits the grain growth and TiO2 thin surface layer that serves as good diffusion barriers were the main reasons for the improvement of the functional parameters.	https://www.webofscience.com/wos/woscc/full-record/WOS:000746622200002	7
94.	Baizhan, Daryn) [1] , [2] ; Rakhadilov, B [1] , [3] ; Zhurerova, L [1] ; Tyurin, Y [4] ; Sagdoldina, Z [1] , [2] ; Adilkanova, M [5] ; Kozhanova, R	Investigation of Changes in the Structural-Phase State and the Efficiency of Hardening of 30CrMnSiA Steel by the Method of	Electrolytic plasma thermocyclic surface hardening is an attractive solution for both chemical and heat treatment used to improve the properties of the steel surface by structural and phase transformation. Structural and phase transformations occurring during the process of electrolytic plasma thermocyclic hardening are performed repeatedly at varying heating-cooling temperatures, which radically improve the quality of the part and give them properties unattainable by means of one-time processing. The impact of electrolytic plasma thermocyclic hardening modes on the structure and mechanical and tribological properties of 30CrMnSiA steel is investigated. The structural and phase components were examined	https://www.webofscience.com/wos/woscc/full-record/WOS:000894713200001	2

		Electrolytic Plasma Thermocyclic Surface Treatment	using optical and scanning electron microscopy, as well as X-ray phase analysis. It is established that the structure of the cross-section is characterized by the following zonality: zone 1-a near-surface hardened zone, which is composed of hardened martensite; zone 2-thermal influence; and zone 3-a matrix consisting of pearlite and ferrite. The microhardness and wear resistance of the hardened surface were evaluated by nanoindentation and "ball on disk" methods, respectively. Nanoindentation analysis demonstrated that the indentation hardening process provides a maximum increase in hardness by three times and an increase in stiffness with a decrease in the elastic modulus by 38% compared to the original steel. The results of tribological studies show that electrolytic plasma thermocyclic hardening increases the resistance of steel to friction by increasing the surface hardness and reduces the area of actual contact during friction. It is established that the microhardness of the cross-section decreases proportionally from the surface to the depth of the layer, which is associated with a decrease in the volume content of martensite.		
95.	Pogrebnjak, A. D.) [1] , [2] , [3] ; Buranich, VV (Buranich, V. V.) [1] ; Horodek, P (Horodek, P.) [4] ; Budzynski, P (Budzynski, P.) [5] ; Konarski, P (Konarski, P.) [6] ; Amekura, H [7] ; Okubo, N [8] ; Ishikawa, N [8] ; Bagdasaryan, AA [1] ; Rakhadilov, BK [9] ; Tarelnik, V [10] ; Sobaszek, L ([5] ; Zukowski, P ([5] ; Opielak, M	EVALUATION OF THE PHASE STABILITY, MICROSTRUCTURE, AND DEFECTS IN HIGH-ENTROPY CERAMICS AFTER HIGH-ENERGY ION IMPLANTATION	The location and distribution of atoms in the crystal lattice play a major role in controlling the mechanical and tribological properties of high-entropy alloy (HEA) ceramic materials. Herein, vacuum arc-deposited (TiZrHfVNb)N coatings have been implanted with 200 MeV xenon (Xe14+) ions at room temperature and fluences of 5 x 10(11), 5 x 10(12), and 5 x 10(13) ions/cm(2). The defect structure evolution of Xe-related defects and their effects on the structural, nanomechanical, and tribological properties of HEA nitride were characterized. The results show redistribution of lattice atoms and defects. Further-more, it is found that the decrease of the wear rate in the implanted coating (5 x 10(11) ions) from 9.7 x 10(-)6 to 4.85 x 10(-5) mm(3).m(-1).mN(1) has resulted from new defect combinations (vacancies, interstitial voids, and dislocations). Another source responsible for deterioration of properties was the breaking disorder of the elemental composition revealed by mapping the elemental composition by secondary-ion mass spectrometry (SIMS). These findings enhance the fundamental understanding of the high-energy irradiation effect on HEA ceramics.	https://www.webofscience.com/wos/woscc/full-record/WOS:000829946300004	1
96.	Sagdoldina, Zhuldyz) [1] , [2] ; Zhurerova, L [1] ; Tyurin, Y [3] ; Baizhan, D [1] , [2] ; Kuykabayeba, A [4] ; Abildinova, S [5] ; Kozhanova, R	Modification of the Surface of 40 Kh Steel by Electrolytic Plasma Hardening	The high-strength, medium-carbon alloy construction steel 40 Kh is commonly used in the manufacture of tools and machine parts. This paper experimentally investigates the effect of electrolytic plasma thermocyclic hardening on the surface hardening and microstructure modification of 40 Kh steel. The research was carried out using optical microscopy, scanning electron microscopy, X-ray diffraction analysis and micro-hardness measurements. Modified samples were obtained at different electrolyte plasma thermal cycling modes. As a result of the heat treatment, hardened layer segments of different thicknesses and structural composition formed on the surface of the steel. The parameters and mechanisms of surface hardening were determined by examining the microstructural modification and phase transformation both before and after treatment. It was revealed that	https://www.webofscience.com/wos/woscc/full-record/WOS:000903360400001	1

			the main morphological structural-phase component of the initial state of 40 Kh steel was a ferrite-pearlite structure, and after electrolytic plasma thermocyclic hardening, the hardened martensite phase was formed. It was found that in order to achieve a hardening depth of 1.6 mm and an increase in hardness to 966 HV, the optimum time for electrolytic plasma treatment of 40 Kh steel was 2 s. The technology under discussion gives an insight into the surface hardening potential for improving the service life and reliability of 40 Kh steel.		
2023 год					
97.	(Rakhadilov, B. K.) [1] , [2] ; Berdimuratov, NE [1] , [2] ; Zhurerova, LG [1] , [2] ; Bayatanova, LB [2] ; Kurbanbekov, SR [3] ; Satbayeva, ZA	Study of the VAC of the EPCTT process with varying electrode parameters	Nowadays the treatment of machine parts, instruments is one of the actual topics in the modern world. One of the modern processing method is chemical-thermal treatment of parts, in which there is an increase of hardness in the surface part to increase wear resistance, while the core of the part remains in a ductile state for resistance to shock loading. The solution to this problem could be the electrolytic plasma chemical-thermal treatment of the parts. This method has a number of advantages over traditional methods, such as cost-effectiveness and speed of processing. In the present work the influence of changes in technological parameters on the volt-ampere characteristics of electrolyte-plasma chemical-thermal treatment unit is presented. A solution of soda ash (Na2CO3), urea (CH4N2O) in distilled water was used as an electrolyte. According to the results of the study current-voltage diagrams were plotted by varying the diameter of the anode (D=90; 110;130 mm) and the distance between the electrodes (L=50;70; 90 mm). According to the analysis, in the voltage range of 180-220 V, with anode diameter D=110 mm and electrode spacing D=70 mm, a more stable vapor-gas envelope is formed. It was found that by changing the anode diameter, respectively the ratio of active and passive electrodes we can significantly influence the formation of stable vapor gas shell and establishment of the optimum mode of treatment of parts.	https://www.webofscience.com/wos/woscc/full-record/WOS:001083204800016	0
98.	Sagdoldina, Zh. B.) [1] , [2] ; Baizhan, DR [1] , [2] ; Rakhadilov, BK [1] , [3] ; Buitkenov, DB [1] ; Berdimuratov, NE[1] ; Zhaparova, MS	Microstructure and mechanical properties of HA/Ti composite coatings applied by detonation spraying	This work presents the results of experimental studies of the structure and mechano-tribological properties of composite coatings based on hydroxyapatite (HA) and titanium in different ratios (wt. %): 30HA-70Ti, 50HA-50Ti, 70HA-30Ti. Composite coatings with a thickness of 40-50 & mu;m were applied to a substrate made of Grade 2 titanium by detonation spraying. Microstructures and phase compositions of as-sprayed coatings were analyzed by scanning electron microscopy and X-ray diffraction. The deposition mechanism of HA-Ti composite coatings was also examined. The results of the study showed that during detonation powder spray-ing from a mixture of HA-Ti, porous coatings are formed, consisting of the phases of hydroxyapatite Ca10(PO4)6(OH)2, tricalcium phosphate, titanium, and titanium oxide. It was found that with a decrease in the content of hydroxyapatite in the composite, there is a decrease in the relative content of B-type carbonate ions in the structure, as well as a decrease in the content of the mineral phase as a whole. Composite coating 30HA-70Ti wt. % is the closest in structure to stoichiometric crystalline HA (Ca/P = 1.67). At ratios of coat-ings 50HA-50Ti wt. %, an increase by 1.5-2 times in wear resistance is observed.	https://www.webofscience.com/wos/woscc/full-record/WOS:001012777300003	0

99.	Skakov, Mazhyn) [1] , [2] ; Ocheredko, I [2] ; Tuyakbayev, B [2] ; Bayandinova, M [2] ; Nurizinova, M	Development and Studying of the Technology for Thermal Spraying of Coatings Made from Ultra-High-Molecular-Weight Polyethylene	UHMWPE is resistant to acids, alkalis and radiation. Its combination of unique properties makes this material attractive for obtaining multifunctional coatings. However, in practice, obtaining coatings based on UHMWPE is associated with difficulties associated with low thermal conductivity and high viscosity of the material. The possibility of overcoming the technological problems of obtaining gas-thermal coatings based on UHMWPE was studied in the present work. A physical model of a flame with UHMWPE particles moving along the central axis was developed by the finite element method. The temperature along the central axis of the plume was determined. The interaction between a gas-thermal torch and a UHMWPE particle was established. It was determined that the residence time of UHMWPE particles in a gas-thermal flame is not enough for its complete penetration, which is the reason for the appearance of various defects. The interrelation of the particle heating rate in the torch depending on its diameter was determined. A new variant of coating deposition with preliminary heating of the powder in a fluidized bed was proposed. The thermal characteristics of UHMWPE powder were determined by differential scanning calorimetry and thermogravimetric analysis. The allowable temperature interval for UHMWPE deposition was established. Coatings were obtained under various deposition modes. It was established using the methods of X-ray diffraction analysis and infrared spectroscopy that the structure of the crystal lattice of UHMWPE did not change after deposition. Significant oxidation processes do not occur during spraying. It was found using scanning electron microscopy that the coatings obtained with preliminary heating of the powder in a fluidized bed do not have air inclusions. The obtained results make it possible to obtain higher quality coatings.	https://www.webofscience.com/wos/woscc/full-record/WOS:000977403800001	1
100.	Pavlov, Alexandr) [1] ; Sagdoldina, Z [1] ; Zhilkashinova, A [2] ; Magazov, N [1] , [3] ; Turar, Z [1] ; Gert, S	Synthesis and Investigation of Properties of Beryllium Ceramics Modified with Titanium Dioxide Nanoparticles	Samples of beryllium ceramics, with the addition of micro- and nanoparticles TiO2, have been obtained by the method of thermoplastic slip casting. The microstructure of batch ceramics, consisting of micropowders and ceramics with TiO2 nanoparticles sintered at an elevated temperature, has been investigated. It was found that the introduction of TiO2 nanoparticles leads to changes in the mechanisms of mass transfer and microstructure formation, and the mobility of TiO2 at interfacial grain boundaries increases, which leads to the formation of elements of a zonal shell structure. The reduction of intergranular boundaries leads to an increase in density, hardness, and mechanical strength of ceramics. The whole complex of properties of the synthesized material, with the addition of TiO2 nanoparticles in the amount of 1.0-1.5 wt.%, leads to an increase in the ability to absorb electromagnetic radiation in the frequency range of electric current 8.2-12.4 GHz. The analysis and updating of knowledge on synthesis, and the investigation of properties of beryllium ceramics modified by nanoparticles, seems to be significant. The obtained results can be used in the creation of absorbers of scattered microwave radiation based on (BeO + TiO2) ceramics.	https://www.webofscience.com/wos/woscc/full-record/WOS:001084631400001	0
101.	Shurshitbay, Maira) [1] , [2] ; Kabdrakhmanova, F [1] , [2] ;	The Philosophy of Upbringing Healthy and Well-bred	The article deals with the role, peculiarities and philosophical issues of upbringing healthy and well-bred generation in Kazakh ethnomedicine, which has been passed down from generation to generation and has not lost its importance. Attention is paid to the peculiarities of the Kazakh people's attitudes to nature, formed in connection with the	https://www.webofscience.com/wos/woscc/full-	1

	Seitembetov, Y [1] , [2] ; Zhirenova, A	Generation of Kazakh Nationality	natural environment, and the method of treatment based on shamanic beliefs. Philosophical concepts of nobility norms preservation of the Kazakh nation, following the tradition of exogamy in the formation of generation health, have been analysed. The doctrine of blood purity is discussed in Treatise on Healing by Uteiboydak Tleu-kabyluly, a scientist-healer of 15th century. Tleukabyluly considers debauchery, love relationships outside of marriage, unacceptable. He gives a reason why Kazakhs should be banned from related marriages up to the seventh generation, since, according to his observations, this leads to infertility and miscarriages or the birth of an imbecile child.The role of the mother in the healthy generation was studied in the national philo-sophical context.	record/WOS:001029630000010	
102.	Skakov, Mazhyn) [1] , [2] ; Bayandinova, M [2] ; Ocheredko, I [2] ; Tuyakbayev, B [2] ; Nurizinova, M [2] ; Gradoboev, A	Influence of Diabase Filler on the Structure and Tribological Properties of Coatings Based on Ultrahigh Molecular Weight Polyethylene	This article presents the results of a study of a composite coating made of ultrahigh molecular weight polyethylene (UHMWPE) with a diabase filler obtained by flame spraying. Diabase of 10 wt.%, 20 wt.%, 30 wt.% and 40 wt.% was chosen as a filler. The polymer coating was applied to the St3 metal substrate using temperature control in a conventional flame spraying process. The coating was studied using scanning electron microscopy, X-ray phase analysis, infrared spectroscopy, abrasive wear resistance, microhardness testing and determination of the friction coefficient. It has been shown that diabases do not have a negative effect on the initial chemical structure of UHMWPE and it is not subjected to destruction during flame spraying. The introduction of diabase into the composition of UHMWPE with a content of 10-40% of the total mass does not adversely affect the crystalline structure of the coating. It has been established that with an increase in the volume of the diabase filler, the wear resistance of the composite coating based on UHMWPE increases. It has been determined that with the addition of diabase, the microhardness of the coatings increases.	https://www.webofscience.com/wos/woscc/full-record/WOS:001056628200001	0
103.	Bondarovich, Andrey) [1] ; Illiger, P (Illiger, Patrick) [2] ; Schmidt, G (Schmidt, Gerd) [2] ; Ponkina, E (Ponkina, Elena) [1] ; Nugumanova, A (Nugumanova, Aliya) [3] ; Maulit, A (Maulit, Almasbek) [1] ; Sutula, M	Effects of Agricultural Cropping Systems on Soil Water Capacity: The Case in Cross-Border Altai	Temperate grasslands are called the breadbaskets of the world. Due to most continental climate conditions, humus-rich soils have been developed. These soils are very well suited for grain production. This is why extensive conversions from natural steppe to arable land have been implemented in this biome. The Kulunda Steppe, in Southwest Siberia and Central Asia, occupies large parts of the driest regions of the Eurasian Steppe Belt. It was one of the sites of the Virgin Land Campaign realized in the former Soviet Union in the 1950s and 1960s. Intensive agricultural practices have caused significant soil degradation, mainly through humus loss and soil erosion. This results in the degradation of organic carbon, altering the physical and chemical structure of the chestnut soils and impacting their water storage capacity. Against the background of climatic changes, a further intensification of these processes and conditions is to be expected. To stabilize soil carbon and optimize moisture utilization, it is necessary to extensively introduce worldwide experiences in conservation cropping technologies (such as no-till, min-till, and direct seeding) in the area. This study aimed to determine the effects of different cropping systems on soil water storage and water availability. The study's initial hypothesis was that the soil conservational cropping system has advantages against the traditional deep tillage (24 cm). This hypothesis was based on extensive global experience studying the effects of different agricultural management systems on soil-water balance. In 2013-2016, an experiment was	https://www.webofscience.com/wos/woscc/full-record/WOS:001047877100001	0

			conducted for the first time in the Kulunda steppe to instrumentally measure soil moisture and matrix potential at 30-60-120 cm depth under traditional and conservation technology using innovative meteorological and soil hydrological stations. Statistically significant advantages of no-till over deep tillage (24 cm) in terms of moisture retention were found, confirming the hypothesis of this study. Besides, this groundbreaking study reveals new possibilities for soil monitoring in the region. The acquired data are applicable for predictive models using remote sensing. Moreover, the results on the management effects for the soil water balance provide basic approaches to soil water monitoring, offering important data for evaluating model results and remote sensing products for the region.		
104.	Batyrbekov, Erlan) [1] ; Khasenov, M [2] ; Skakov, M [1] , [3] ; Gordienko, Y [2] ; Samarkhanov, K [2] , [3] ; Kotlyar, A [2] ; Miller, A [2] ; Bochkov, V	High-Energy Tritium Ion and α-Particle Release from the Near-Surface Layer of Lithium During Neutron Irradiation in the Nuclear Reactor Core	This paper examines in situ spectroscopic measurements of nuclear-excited plasma of noble gases excited by Li-6(n,& alpha;)H-3 nuclear reaction products in the core of a nuclear reactor. A thin layer of lithium applied on the walls of the experimental device, stabilized in the matrix of the capillary-porous structure, serves as a source of gas excitation. During in-pile tests conducted at the IGR research reactor, thermal neutrons interact via the Li-6(n,& alpha;)H-3 reaction, and the emergent & alpha;-particles with a kinetic energy of 2.05 MeV and tritium ions with a kinetic energy of 2.73 MeV excite the noble gas (Ar) medium. The intensity of tritium release from the lithium layer in noble gases was estimated by the intensity of the & alpha;-line of the Balmer series of the tritium atom H-3(& alpha;) (656.2 nm). A tritium release was observed at 710 K due to the beginning of desorption of thermalized tritium atoms dissolved in the liquid phase of lithium. The results are of interest in terms of clarifying the mechanisms and developing models that allow for describing the processes of generation, diffusion, and release of tritium from lithium during neutron irradiation.	https://www.webofscience.com/wos/woscc/full-record/WOS:001050981900001	0
105.	Efremenkova, Maria N.) [1] ; Murashcenkova, NV [2] ; Gritsenko, VV [1] ; Stelmakh, SA [3] ; Burdina, EI	Perceptions of the Present and Future of the Country as a Factor of the Emigration Activity of Student Youth: Cross-Cultural Analysis	Objective. Analysis of the relationship between perceptions of the present and future of the resi-dence country and the emigration activity of students in Belarus, Kazakhstan and Russia.Background. The study of the perceptions of residence country as predictors of students' emigration ac-tivity can improve the effectiveness of youth policy in preserving valuable human capital at the country level.Research design. Using multiple regression analysis, the results of the January-April 2021 online survey identified the specifics of the relationships between perceptions of the present and future of the residence country and emigration activity of youngpeople in three countries.Participants. University students are citizens of Belarus (208 people), Kazakhstan (200) and Rus -sia (250) aged 18 to 25 years. Measurements. Research questionnaire included 6 statements, based on the theory of planned be-havior, developed by I. Ajzen, for studying emigration intentions and behavior in their realization, as well as two sets of characteristics from "Scale of temporary attitudes" by J. Nutten for studying the present and future of the country of residence.Results. Factors of emigration activity of Russian student youth are perceptions of the present of their residence country as not long-lasting, not free, significant, but boring, as well as perceptions of fu-ture in Russia as significant, but not eventful and not innovative. Belarusian emigration-oriented youth perceive their country's present as related to the past, not cohesive, but their own, and the country's fu-ture as not cohesive and related to Belarus'	https://www.webofscience.com/wos/woscc/full-record/WOS:001004200000007	0

			present. Kazakhstani emigration-oriented students perceive the present of their country as beautiful, active, but not close, not chaotic and not bright, and the future as not their own and not related to the present of Kazakhstan.Conclusions. There are differences in the relationships between perceptions of the present and fu-ture of the residence country and emigration activity of youngpeople in Belarus, Kazakhstan and Rus -sia. The effective implementation of youth policy to preserve valuable human capital at the country level requires considering the social and cultural context in which these relationships are formed.		
106.	Maulit, Almasbek) [1] ; Nugumanova, A [2] ; Apayev, K [3] ; Baiburin, Y [1] ; Sutula, M	A Multispectral UAV Imagery Dataset of Wheat, Soybean and Barley Crops in East Kazakhstan	This study introduces a dataset of crop imagery captured during the 2022 growing season in the Eastern Kazakhstan region. The images were acquired using a multispectral camera mounted on an unmanned aerial vehicle (DJI Phantom 4). The agricultural land, encompassing 27 hectares and cultivated with wheat, barley, and soybean, was subjected to five aerial multispectral photography sessions throughout the growing season. This facilitated thorough monitoring of the most important phenological stages of crop development in the experimental design, which consisted of 27 plots, each covering one hectare. The collected imagery underwent enhancement and expansion, integrating a sixth band that embodies the normalized difference vegetation index (NDVI) values in conjunction with the original five multispectral bands (Blue, Green, Red, Red Edge, and Near Infrared Red). This amplification enables a more effective evaluation of vegetation health and growth, rendering the enriched dataset a valuable resource for the progression and validation of crop monitoring and yield prediction models, as well as for the exploration of precision agriculture methodologies. Dataset: https://doi.org/10.5281/zenodo.7749239, https://doi.org/10.5281/zenodo.7749362, https://doi.org/10.5281/zenodo.7748792, https://zenodo.org/record/7860751. Dataset License: Creative Commons Attribution 4.0 International	https://www.webofscience.com/wos/woscc/full-record/WOS:000996160400001	1
107.	Rakhadilov, Bauyrzhan) [1] ; Kakimzhanov, D [1] ; Dautbekov, M [2] ; Sagdoldina, Z [3] ; Adylkanova, M [2] ; Abylkalykova, R	Influence of Spraying Parameters on the Structure and Tribological Properties of Cr3C2-NiCr Detonation Coatings	In this work, the influence of spray parameters on the formation of the microstructure, phase composition, and the tribological properties of detonation flame sprayed coatings was studied. It was determined that the chemical composition of Cr3C2-NiCr coatings during detonation spraying depends on the degree of filling the barrel with an explosive gas mixture. The degree of filling the barrel with an explosive gas mixture at 73% leads to a decrease in the content of carbide phases, and at 57% filling of the barrel, an increase in carbide phases is observed. It is established that the decrease of the filling degree leads to the increase of hardness and wear resistance of the Cr3C2-NiCr coatings since the hardness and wear resistance of the coating material deposited at 57% is higher than at 65% and 73%; this is due to the increase in the carbide phase Cr3C2. Detonation flame sprayed Cr3C2-NiCr gradient coatings have been developed in this study, which is carried out by varying the spray parameters. It was found that in the gradient coating, Cr3C2-NiCr carbide phases gradually increase from the depth to the surface. The obtained gradient coating closer to the substrate consists of the CrNi3 phase, while the coating surface consists of CrNi3 and Cr3C2 phases.	https://www.webofscience.com/wos/woscc/full-record/WOS:000965231400001	0
108.	Raimbekov, Zhanarys) [1] ;	The Impact of Agri-Food Supply	Improving the efficiency in the links in the supply chains of agri-food products is relevant in terms of the assessment methodology and practical aspects for ensuring and supporting	https://www.webofscience.com/wos/w	0

	Syzdykbayeva, B [1] ; Rakhmetulina, A (Rakhmetulina, Aigerim) [2] ; Rakhmetulina, Z [1] ; Abylaikhanova, T [2] ; Ordabayeva, M [2] ; Doltes, L	Channels on the Efficiency and Links in Supply Chains	sustainable supply chains of products not only in individual channels of product movement but also in the end-to-end supply chain of products, i.e., from the field to the end consumer. However, it is still unclear which supply chain opportunities in commodity distribution channels are more effective for creating end-to-end sustainable supply chains for agri-food products. The purpose of the study is to develop a methodology for assessing the impact of agri-food supply channels on the efficiency and link in supply chains, taking into account the factors affecting them and developing recommendations for their improvement. Quantitative methods based on correlation and regression analysis using the EViews program on the basis of Kazakh statistical data for 2008-2022 were used. A methodology is proposed for assessing the effectiveness of the functioning and links in commodity movement in the supply chains of agricultural products at the macroeconomic level based on the consideration and use of important factors affecting the efficiency and links: production and sales volumes, total costs, and profitability for each supply channel: "production-processing-industrial production-trade". The relationship between the efficiency and the links in supply chains and also the key factors that affect them have been established. The results showed that the increase in the efficiency in supply channels in the commodity distribution system leads to a decrease in the coefficient of the link in commodity movement and inventory availability. To reduce the link ratio in the supply chains of agri-food products, it is necessary to increase the efficiency in supply chains in each supply chain link and reduce the share of retail trade in the gross turnover. Recommendations are proposed to improve supply chain efficiency and reduce links to support and create end-to-end sustainable supply chains of agri-food products. The study makes an essential contribution to providing empirical evidence of the relationship between the effectiveness of agri-food supply channels and the link in the supply chain. Since few works describe the relationship between the links of product distribution and the efficiency in supply chains in the literature, in this work, it was possible to propose a methodology and identify factors and gaps in research to identify potential areas for future research.	oscc/full-record/WOS:001057679100001	
109.	Berdyshev, Abdumauvlen) [1] , [2] ; Baigereyev, D [1] , [3] ; Boranbek, K	Numerical Method for Fractional-Order Generalization of the Stochastic Stokes-Darcy Model	This paper is aimed at efficient numerical implementation of the fractional-order generalization of the stochastic Stokes-Darcy model, which has important scientific, applied, and economic significance in hydrology, the oil industry, and biomedicine. The essence of this generalization of the stochastic model is the introduction of fractional time derivatives in the sense of Caputo's definition to take into account long-term changes in the properties of media. An efficient numerical method for the implementation of the fractional-order Stokes-Darcy model is proposed, which is based on the use of a higher-order approximation formula for the fractional derivative, higher-order finite difference relations, and a finite element approximation of the problem in the spatial direction. In the paper, a rigorous theoretical analysis of the stability and convergence of the proposed numerical method is carried out, which is confirmed by numerous computational experiments. Further, the proposed method is applied to the implementation of the fractional-order stochastic Stokes-Darcy model using an ensemble technique, in which the approximation is carried out in such a way that the resulting systems of linear equations	https://www.webofscience.com/wos/woscc/full-record/WOS:001061242700001	0

			have the same coefficient matrix for all realizations. Furthermore, evaluation of the discrete fractional derivatives is carried out with the use of parallel threads. The efficiency of applying both approaches has been demonstrated in numerical tests.		
110.	Khasenov, Mendykhan) [1] ; Samarkhanov, K [1] , [2] ; Batyrbekov, E [3] ; Gordienko, Y [1] ; Kenzhina, IE [4] , [5] ; Tulubayev, Y	Optical Radiation during Sputtering of Lithium into a Noble Gas Using a Nanosecond Electron Beam	The optical radiation in a gaseous medium upon the irradiation of a lithium layer with a fast electron beam of a 5 ns duration has been studied. The irradiation chamber was filled with argon, krypton, or xenon at a pressure of 10 kPa up to 60 kPa. The lines of lithium atoms appear in the emission spectrum at a lithium layer temperature of 650-680 K, and the intensity of these lines sharply increases with the increasing temperature of the lithium layer. The optical radiation arises from both the transitions of noble gas atoms and the transition of the lithium atom in a time of about 20-30 ns. The duration of the radiation pulses at half maximum at temperatures above 800 K was 60-100 ns at a wavelength of 610.4 nm and 140-220 ns at 670.8 nm in krypton and argon. The various mechanisms for the population of lithium levels during the radiation pulse are discussed.	https://www.webofscience.com/wos/woscc/full-record/WOS:000957456200001	1
111.	Zhambakin, Dauren) [1] ; Zhilkashinova, A [2] ; Abilev, M [1] , [2] ; Latka, L [3] ; Pavlov, A [2] ; Tuyakbaev, B [2] ; Zhilkashinova, A	Structure and Properties of Spark Plasma Sintered SiC Ceramics with Oxide Additives	This article describes spark plasma sintering of ceramics based on silicon carbide with nanoadditives, as follows: MnOnano 5.5 wt. % + Al2O3nano 2.0 wt. % + SiCnm (37-57 wt. %) + SiC & mu;m (31-51 wt. %) + SiO2 & mu;m 4.5 wt. %. Sintering was carried out at 2000 & DEG;C. The diffraction pattern of the analyzed sample showed the presence of silicon carbide with a hexagonal crystal lattice. Residual amounts of rhombohedral SiC, & alpha;-Fe, and a solid solution of silicon in iron were also found. The method of thermogravimetric analysis established the change in mass, heat flow, temperature of the samples, and the change in the partial pressures of gases during the experiment. Samples obtained by SPS show a higher density of the material at the level of 3.3 g/cm(3), average mechanical strength of 454 MPa, and microhardness of 35 GPa, compared with samples obtained by liquid-phase sintering. The SPS method also made it possible to obtain materials with a higher density (by 8%) and practically no significant crystal growth compared to samples obtained by liquid phase sintering. The results of the study facilitate the achievement of a combination of new approaches to the design of compositions and the technology of manufacturing SiC ceramics, which significantly expands their areas of application.	https://www.webofscience.com/wos/woscc/full-record/WOS:001035085400001	0
112.	(Abilev, Madi) [1] , [2] ; Zhilkashinova, A [1] ; Pavlov, A [1] ; Zhambakin, D [2] ; Tuyakbayev, B	Structural-Phase State and Properties of SiC Ceramics Obtained by Ultrasound-Assisted Liquid-Phase Sintering with Eutectic Additives	This study proposes an experimental charge composition for sintering carbide ceramics with additives forming a liquid phase: MnO 2.5 wt. % + Al2O3 2.0 wt. % + SiC 91.0 wt. % + SiO2 4.5 wt. %. The results of the structural-phase state and physical-mechanical properties of SiC ceramics obtained by ultrasound-assisted liquid-phase sintering with eutectic additives are presented. Densification with the participation of the liquid phase formed by SiO2, SiO, Si and MnO led to the formation of equiaxed grains with an average size of <= 10 mu m. The formation of the ceramic microstructure based on silicon carbide using eutectic additives made it possible to choose a composition that provided a decrease in the sintering temperature to 1800 degrees C. The main phase components of the synthesized ceramics were modification of the ring radical of silicate Si3O6, silicon dioxide SiO2, and anorthoclase (SiAl)O-4. The resulting material based on silicon carbide with a grain size of 10 mu m with the addition of 9 wt. % eutectic additive, after firing in a weakly	https://www.webofscience.com/wos/woscc/full-record/WOS:000921572400001	2

			reducing CO atmosphere at 1800 degrees C and holding for 2 h, has the following controlled indicators: ultimate strength in bending 440 +/- 20 MPa, microhardness (HV) 30 GPa. This is promising for use as an armored material and for obtaining materials with high physical and mechanical properties at significantly lower energy, resource, and material costs.		
113.	Noskov, Fedor M.) [1] ; Kveglis, LI [1] ; Mali, VI [2] ; Esikov, MA [2] ; Sakenova, RY	Investigation of the Processes of Structure Formation during Explosion Welding of Copper and Molybdenum	This article examines the processes of structure formation occurring during joint plastic deformation by the explosion of copper and molybdenum. These components are dissimilar metals with very limited mutual solubility under normal conditions, and the circumstances allowing for their interaction, as well as the products of the mechanochemical reactions of such interactions, have not been sufficiently studied and require new approaches. A cluster approach was used to describe the processes of structure formation, which describes phase formation as the process transitioning of the polyhedron of the initial phase into the polyhedron of the final phase. This work shows that under the conditions under consideration, not only is the formation of solid solutions in the contact zone with smooth concentration transitions from one component to another possible, but also the formation of new structural states, which can be represented as localized icosahedral atomic configurations (amorphous metal clusters). Such a structure is capable of locally strengthening the composite, which is confirmed by microhardness studies.	https://www.webofscience.com/wos/woscc/full-record/WOS:001092484200001	0
114.	Apakhayev, Nurlan Z.) [1] ; Ramazanova, AS [2] ; Bugybay, DB [3] ; Adilova, KA [4] ; Kopbayev, DZ	Adoption of the administrative procedural code as the implementation of Kazakhstan's legal policy concept	The purpose of this study is to investigate the features and innovations of the Administrative Procedural Code of the Republic of Kazakhstan (APCRK) within the framework of Concept adopted by the Kazakh government. To achieve this purpose, the following methods were employed: analysis, synthesis, comparison, and induction. In particular, the study employed the method of comparative analysis of approaches to the study of administrative justice of European states. The main conclusion of the study is that at present, the APCRK constitutes a combination of laws that contained disconnected norms for the regulation of relations between citizens and public authorities. The applied value of this study lies in offering recommendations for improving the introduced innovations in the APCRK.	https://www.webofscience.com/wos/woscc/full-record/WOS:001077048000001	0
115.	Karassayev, Ganiy M.) [1] ; Yensenov, KA [1] ; Naimanbayev, BR [2] ; Bakirova, ZS[3] ; Kabdrakhmanova, FK	Mutual Cooperation of the Republic of Kazakhstan with the States of Central Asia in 1991-2000 Cooperacion mutua de la Republica de Kazajstan con los Cooperación mutua de la República de Kazajstán con los estados de Asia	The relevance of this article is based on the processes of revising the systems of relationships in various sectors of Central Asia that are important for 2023, and not least among them is agriculture. Studying the history of cooperations between these countries is the relevant theme for the research, and to analyse the accepted and implemented agreements of the Central Asian states after the fall of the Soviet Union: Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, and Turkmenistan in the field of political and economic cooperation, defense, cultural, social and humanitarian spheres. Therefore, scientific literature and archival documents were brought to scientific analysis in order to study their initiatives and agreements on cooperation with each other at the international level in the field of historical science, and consider them in the historical and political aspect. From a theoretical and methodological point of view, the study of the political, economic, and sociocultural development of the states of Central Asia in the historical and	https://www.webofscience.com/wos/woscc/full-record/WOS:000996243300014	0

		Central en 1991-2000	political aspect, as well as in the system of international relations, is one of the most important tasks.		
116.	Russakova, Alyona) [1] ; Zhilkashinova, A [1] ; Alontseva, D[2] ; Abilev, M [3] ; Khozhanov, A [2] ; Zhilkashinova, A	Effect of the Dislocation Substructure Parameters of Hadfield Steel on Its Strain Hardening	This article presents a study of changes in the microstructure of Hadfield steel depending on the tensile deformation and cold rolling with the strain/stress level. It has been established that the change in the "sigma-epsilon" curve (at epsilon = 5%) is accompanied by a 1.5-times decrease in the strain-hardening coefficient. At epsilon = 0 to 5%, the structure contains dislocation loops, the interweaving of elongated dislocations, single-layer stacking faults. At epsilon = 5%, the structure contains multilayer stacking faults and mechanical microtwins. At epsilon > 5%, there is an intense microtwinning with no long dislocations and stacking faults. The most intense twinning develops in the range of deformation degrees of 5-20%, while the number of twins in the pack increases from 3-4 at epsilon = 10% to 6-8 at epsilon = 20%. When mechanical twinning is included, a cellular dislocation substructure begins to develop intensively. The cell size decreases from 700 nm at epsilon = 5% to 150 nm at epsilon = 40%. Twinning develops predominantly in systems with the largest Schmid factor and facilitates the dislocation glide. The results may be of interest to the researchers of the deformation processes of austenitic alloys.	https://www.webofscience.com/wos/woscc/full-record/WOS:000940708500001	0
117.	(Saparbaikyzy, Sholpan) [1] ; Assilbayeva, F [2] ; Botabayeva, A [3] ; Kim, O [4] ; Akparova, Z [2] ; Bekbayeva, M	A Study on Scientific Thinking Skills and Professional Experience of Teachers	Scientific thinking is considered as a cognitive process in which the underlying causes of a basic problem are solved. It is of great importance for teachers to have scientific thinking skills to improve their professional lives, to create effective learning environments, to continuously question the events and processes in the classroom, to carry out research, to identify problems and to produce solutions. The aim of this study is to determine whether there is a significant difference between teachers' scientific thinking skills and variables such as gender, seniority and branch. The research was conducted based on the comparative descriptive survey model. The data obtained concerning the demographic characteristics of the teachers were analyzed with frequency and percentage techniques. In the analyses between the demographic characteristics of the subjects and their scientific thinking skills, arithmetic mean, t-test and one-way analysis of variance (ANOVA), which were selected according to the characteristics of the groups, were used. For the research, the Scientific Thinking Skills Scale developed by Gokturker (2005) was adapted into Kazakh and applied to the teachers. According to the findings of the study, the scientific thinking skills of the participant teachers were found to be at a medium level. In addition, significant differences were found in teachers' scientific thinking skills according to gender, branch and professional seniority factors.	https://www.webofscience.com/wos/woscc/full-record/WOS:001076466800002	0
118.	Rakhadilov, Bauyrzhan) [1] , [2] ; Bayatanova, L [2] ; Kurbanbekov, S [3] ; Sulyubayev, R [4] ; Shektibayev, N [3] ; Berdimuratov, N	Investigation on the effect of technological parameters of electrolyte-plasma cementation method on phase structure and mechanical	This article presents the results of a study on the effect of electrolyte -plasma cementation on the phase composition of the surface -modified layer and the mechanical properties of 20X steel using different solutions. It has been determined that electrolyte -plasma cementation followed by quenching in solutions containing (a) 10% calcined soda (Na2CO3), 10% urea (CH4N2O), 10% glycerin (C3H8O3) and 70% distilled water and (b) 10% calcined soda (Na2CO3), 20% urea (CH4N2O) and 70% distilled water, results in the formation of a modified structure on the surface of 20X steel. This structure mainly consists of the alpha-Fe phase, along with separate particles of reinforcing phases, Fe3C and Fe3C7	https://www.webofscience.com/wos/woscc/full-record/WOS:001089588800002	0

		properties of structural steel 20X	carbides and martensitic alpha '-Fe phase. The plasma of the electrolyte was used to heat the samples. Then these samples were partially immersed in the electrolyte and held at a temperature of 950 degrees C for 5 min, followed by quenching. As a result of this process, it was found that 20X steel exhibits higher hardness. After the electrolyte plasma cementation, it was observed that the friction coefficient of the modified surface of the steel samples significantly decreased. Additionally, the wear volume was reduced by more than 6.5 times compared to the initial state. The average microhardness after the electrolyte - plasma cementation is 660 HV, which is nearly four times higher than that of the initial material.		
119.	Bayatanova, Lyaila) [1] , [2] ; Rakhadilov, B [2] ; Kengesbekov, A [1] , [2] ; Kylyshkanov, M [3] ; Abdulina, S [1] , [4] ; Adilkanova, M [4] ; Sagdoldina, Z	Production of Anhydrite Binder from Waste Fluorangydrite	The technology for obtaining hydrofluoric acid and the peculiarities of its production were studied, and the physical and chemical properties of the waste were examined. Activators that accelerated the hardening of the anhydrite binder were selected. The process of recycling fluorine hydrite waste from the production of hydrofluoric acid at Ulba Metallurgical Plant JSC was studied, and anhydrite unburnt binder with a setting time of 30 min was obtained. On the basis of the obtained data, a technological scheme of anhydrite binder production was developed. The effectiveness of the technological scheme was confirmed experimentally. This work aimed to study the possibility of the integrated use of secondary and anthropogenic raw materials from Ulba Metallurgical Plant, which represents an important means of not only increasing production efficiency and economic benefits and reducing the irrational alienation of land resources, but also protecting against the pollution of water and air basins, as the environmental policy of UMP JSC is nowadays of great importance.	https://www.webofscience.com/wos/woscc/full-record/WOS:000978140500001	0
120.	Kurbanova, Bayan) [1] ; Aimaganbetov, K [2] ; Ospanov, K [2] ; Abdrakhmanov, K [2] ; Zhakiyev, N [3] , [4] ; Rakhadilov, B [5] ; Sagdoldina, Z [5] ; Almas, N	Effects of Electron Beam Irradiation on Mechanical and Tribological Properties of PEEK	In this work, the mechanical and tribological characteristics of polyetheretherketone (PEEK) sheets were enhanced by electron beam irradiation. PEEK sheets irradiated at a speed of 0.8 m/min with a total dose of 200 kGy achieved the lowest specific wear rate of 4.57 +/- 0.69 (10 6 mm(3)/N(-1)m(-1)), compared to unirradiated PEEK with a rate of 13.1 +/- 0.42 (10 6 mm3/N(-1)m(-1)). Exposure to an electron beam at 9 m/min for 30 runs, with a dose of 10 kGy per run for a total dose of 300 kGy, resulted in the highest improvement in microhardness, reaching 0.222 GPa. This may be due to the decrease in crystallite size, as indicated by the broadening of the diffraction peaks in the irradiated samples. According to the results of thermogravimetric analysis, the degradation temperature of the irradiated samples remained unchanged at 553 +/- 0.5 degrees C, except a sample irradiated at dose 400 kGy, where the degradation temperature shifted towards a lower position of 544 +/- 0.5 degrees C. Differential scanning calorimetry results revealed that the melting temperature (T-m) of the unirradiated PEEK was about 338 +/- 0.5 degrees C, while a high temperature shift of the T-m was observed for the irradiated samples.	https://www.webofscience.com/wos/woscc/full-record/WOS:000960416700001	0
121.	Magazov, Nurtoleu) [1] , [2] ; Satbaeva, Z [3] ; Rakhadilov, B [3] ; Amanov, A	A Study on Surface Hardening and Wear Resistance of AISI 52100 Steel by Ultrasonic	In this study, a surface hardening of AISI 52100 bearing steel was performed by ultrasonic nanocrystal surface modification (UNSM), and electrolytic-plasma thermo-cyclic surface modification (EPSM), and their effects on the wear resistance were investigated. To evaluate the impact of these treatments on the wear resistance, the friction tests under dry conditions were conducted using a ball-on-disk tribometer in accordance with ASTM G99.	https://www.webofscience.com/wos/woscc/full-record/WOS:001089840900001	0

		Nanocrystal Surface Modification and Electrolytic Plasma Surface Modification Technologies	The microstructure of the samples before and after treatment was characterized by scanning electron microscopy. The micro-hardness with respect to the depth from the top surface was measured using a Vickers micro-hardness tester. Microstructural observations showed that EPSM treatment led to the formation of residual austenite in the surface layer, while UNSM treatment led to the formation of a surface severe plastic deformation layer on the surface of the samples. The increase in the micro-hardness of the treated layer was confirmed after UNSM at room temperature and after EPSM at different cycles. The highest increase in wear resistance was observed for the specimen treated by UNSM treatment at 700 degrees C and five cycles of EPSM treatment. In addition, the wear volume, which has correlation with the friction coefficient and hardness, was determined.		