

ABSTRACT&REFERENCES

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THE DEVELOPMENT OF THE TECHNOLOGY AIMED TO OBTAIN SERUM FOR DIAGNOSIS AND TREATMENT OF THE FELINE CALICIVIRUS

p. 6-9

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An effective scheme of immunization to obtain hyperimmune serum against FCV was developed. The antigen was being injected subcutaneously and intramuscularly with simultaneous use of immunostimulator "Imunofan". An allocation of globulin fraction of proteins by desalting ammonium sulfate was performed. The fractions of pure immunoglobulin G with specific gravity 2 times higher than in the neat serum were being received

Keywords: immunoglobulins, hyperimmune serum, virus, antigen, antibodies, feline calicivirus, globulin, treatment

References

1. Alieva, E. V., Tyumentseva, I. S., Afanasyev, E. N., Lavreshin, M. P., Afanas'ev, N. E., Gorobec, E. A. et. al. (2008). Opyt polucheniya immunnykh syvorotok dlya proizvodstva diagnosticheskikh preparatov [The experience of obtaining immune sera for the production of diagnostic drugs]. Kursk Scientific and Practical Bulletin "The Man and His Health", 1, 11–15.
2. Rakhmanina, M. M. (2005). Kalytsyvyrusnaya ynfektsyya koshek: byolohycheskye svoystva vobzdytelya, epyzootolohyya, spetsyfycheskye sredstva y metody profylaktyky [Calitsivirsnaya infection of cats: biological properties of the pathogen, epizootology, specific means and methods of prevention]. Moscow, 47.
3. Pronin, A. V., Ozherelkov, S. V., Deyeva, A. V., Sanin, A. V., Narovlyanskij, A. N. (2012). Poliprenilfosfaty kak ad'yuvanty, polyarizuyushchiye immunnyy otvet v storonu Th1 [Polyprenyl phosphates as adjuvants polarizing the immune response towards Th1]. Infection and immunity, 3, 645–650.
4. Poulet, H., Brunet, S., Leroy, V., Chappuis, G. (2005). Immunisation with a combination of two complementary feline calicivirus strains induces a broad cross-protection against heterologous challenges. Veterinary Microbiology, 106 (1-2), 17–31. doi: 10.1016/j.vetmic.2004.12.010
5. Mazur, N. V., Nedosekov, V. V., Nychyk, S. A., Polupan, I. N. (2016). Rozrobka sposobu otrymannya antyrabichnoyi hiperimmunnyy syrovatky krovi vid kroliv [Development process for

rabies hyperimmune serum from rabbits]. Veterinary Biotechnology, 28, 158–163.

6. Addie, D., Poulet, H., Golder, M. C., McDonald, M., Brunet, S., Thibault, J.-C., Hosie, M. J. (2008). Ability of antibodies to two new caliciviral vaccine strains to neutralise feline calicivirus isolates from the UK. Veterinary Record, 163 (12), 355–357. doi: 10.1136/vr.163.12.355

7. Kozlenko, T. G., Nedosekov, V. V. (2016). Optyimizatsiya metodiv ochystky ta inaktyvatsiyi zbudnyka kalitsyvrozu kotiv [Optimization methods for cleaning and inactivation of the pathogen Calitsyvrozu cats]. Herald of Poltava State Agrarian Academy, 4, 92–94.

8. Radford, A. D., Dawson, S., Coyne, K. P., Porter, C. J., Gaskell, R. M. (2006). The challenge for the next generation of feline calicivirus vaccines. Veterinary Microbiology, 117 (1), 14–18. doi: 10.1016/j.vetmic.2006.04.004

9. Volkov, G. L. (2006). Tekhnolohyya poluchenyya ymmunohlobulynov y tekhnolohycheskye aspekty ochystky [Technology of obtaining immunoglobulins and technological aspects of purification]. The Ukrainian Biochemical Journal, 78 (3), 88–98.

10. Ashmarin, I. P., Vorob'ev, A. A. (1962). Statisticheskiye metody v mikrobiologicheskikh issledovaniyakh [Statistical methods in microbiological studies]. Leningrad: Medgiz, 180.

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INVESTIGATION OF DEVELOPMENT STAGES OF THE FINANCIAL AND ECONOMIC ANALYSIS IN CONNECTION WITH THE NEEDS OF ENTERPRISE MANAGEMENT

p. 10-15

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The development of the financial-economic analysis is shown in connection with the possibility of its using in enterprise management. The discrepancy between the analysis methods and management requirements is disclosed. Theoretical fundamentals and tools that would allow to describe and predict the changes of economic processes in the enterprise has not developed in Ukraine. New approaches and directions for further research are discussed in the article

Keywords: stages of development of financial-economic analysis, needs of enterprise management, modern methods of analysis

References

1. Lahtionova, L. A. (2011). The analysis of financial stability of subjects of entrepreneurial activity. Kyiv: KNEU, 880.
2. Gylka, U. L., Klochko, Y. O. (2009). Guide for choosing methods of economic and financial analysis of enterprises. Kyiv: DUKIT, 58.
3. Lazarishina, I. D. (2005). Economic analysis in Ukraine: history, methodology, practice. Rivne: NUVGP, 369.
4. Volkova, N. A., Shevchuk, N. S., Boyko, L. O., Volchek, R. M., Podval'na, N. E. et. al.; Volkova, N. A. (Ed.) (2012). Modern problems of development of economic analysis as a tool of performance. Odessa, 292.
5. Simenko, I. V., Grechina, I. V., Vashenko, L. O. (2013). Financial and management analysis of enterprises: theory and methodology. Donetsk: DonNUET, 346.

6. Melnyk, O. G., Oleksiv, I. B., Podolchak, N. Y., Shuljar, R. V.; Kuzmin, O. E. (Ed.) (2009). Innovation systems of economic diagnostics of enterprises on the basis of indicators. Theoretical-methodological and methodical bases. Lviv: National University "Lvivska Politehnika" Publisher, 212.
7. Gylka, U. L. (2015). Possibilities of application of modern approaches in the practice of financial-economic analysis. Economics. Finance. Law, 10-1, 16–19.
8. Hutchinson, H. H., Dyers, L. S. (1987). Interpretation of Balance Sheet. Lincoln: The Institute of Bankers, 77.
9. Ozeran, A. V. (2015). Theory and methodology of formation of bookkeeping of enterprises. Kyiv: KNEU, 471.
10. Ginzburg, A. I. (2003). Ekonomicheskij analiz: predmet i metody. Modelirovanie situatsiy. Otsenka upravlencheskih resheniy. Saint Petersburg: Piter, 480.
11. Kuzmin, O. E., Melnyk, O. G. (2010). Normative and criterion providing diagnostics of the financial state of the company. Finances of Ukraine, 8, 105–114.
12. McKenzie, W. (2010). Financial Times Guide for Using and Interpreting Company Accounts. New Jersey: Prentice Hall, 560.
13. Brigham, E., Gapenski, L., Ehrhardt, M. (1999). Financial Management: Theory and Practice. New York: Dryden Press, 1087.
14. Dominiak, G. F., Louderback, J. G. (1992). Managerial Accounting. New York: PWS-KENT Publishing Company.
15. Kaplan, R. S., Norton, D. P. (1992). The Balanced Scorecard: Measures That Drive Performance. Harvard Business Review, 79.
16. Lawson, R., Desroches, D., Hatch, T. (2008). Scorecard Best Practices: Design, Implementation and Evaluation. Hoboken: John Wiley & Sons, 177.
17. Fishman, J. E., Pratt, S. P., Griffith, J. C., Wilson, D. K. (1994). Guide to Business Valuations. Fort Worth: Practitioners Publishing Company.
3. Gilyardi, Yu. A. (2009). Upravlenie innovatsionnoy deyatel'nostyu predprinimatelskih struktur v ryinonchnoy srede [Management of innovative activity of enterprises in market environment]. Velikiy Novgorod, 24.
4. Hryshko, V. A., Hryshko, V. A., Koleshchuk, O. Ya., Lesyk, L. I. (2011). Otsinyuvannya investytsiynoyi ta innovatsiynoyi aktyvnosti pidpryyemstv ta analizuvannya chynnykiv yikh investytsiyno-innovatsiynoho potentsialu [Enterprise investment and innovation evaluation and factor analysis its investment-innovative potencial]. Visnyk Natsional'noho universytetu «L'viv's'ka politehnika». Menedzhment ta pidpryyemnytstvo v Ukrayini: etapy stanovlennya i problemy rozvytku, 714, 194–200.
5. Illyashenko, N. S. (2009). Metodychnyj pidxid shhodo obg'runtuvannya docil'nosti realizatsiyi innovacijnyx proektiv [Methodical approach to study the feasibility of innovative projects]. Mexanizm regulyuvannya ekonomiky, 1, 184–193.
6. Kasyan, Z. E. (2012). Analiz ta formuvannya skladovy'x innovacijnoy aktyvnosti pidpryyemstv legkoyi promyslovosti [Analysis and formation of components of innovative activity of enterprises of light industry]. Visnyk KNUTD, 2, 168–172.
7. Makarevych, T. T. (2007). Metodychni pidhody do otcinyuvannya integralnogo vplyvu innovacijnoy diyalnosti pidpryyemstva [Methodological approaches to evaluating the impact of integrated enterprise innovation]. Visnyk Natsional'noho universytetu «L'viv's'ka politehnika». Logistyka ta marketyngove upravlinnya, 594, 269–273.
8. Melnikov, O. N., Shuvalov, V. N. (2005). Innovatsionnaya aktivnost kak faktor povysheniya konkurentosposobnosti predpriyatiya [Innovative activity as a factor of increasing the enterprise competitiveness]. Rossiyskoe predprinimatel'stvo, 9 (69), 100–104.
9. Nechepurenko, M. N. (2006). Organizatsionno-ekonomicheskij mehanizm upravleniya ustoychivym razvitiem predpriyatiya na osnove innovatsionnoy aktivnosti [Dissertation thesis: the Organizational-economic mechanism of management of a sustainable development of the enterprise on the basis of innovative activity]. Moscow, 19.
10. Nikitina, O. V. (2007). Metody otsenki innovatsionnoy aktivnosti promyshlennyih predpriyatiy [Methods of evaluation of innovative activity of industrial enterprises]. Saint Petersburg, 24.
11. Dictionary of Innovative Terms. Available at: http://infosystems.ru/library/slovar_ais_1218/slovar_innovaci_1222.html
12. Mochernyj, S. V., Gavrylyshyn, B. G., Ustenko, O. A. (Eds.) (2002). Encyclopedia of Economics. Vol. 3. Kyiv: Akademiya, 952.
13. Knyazeva, E. N., Kurdyumov, S. P. (1993). Sinergetika: Nachala nelineynogo myshleniya [Synergetics: the beginning of lateral thinking]. Obschestvennyie nauki i sovremennost, 2, 38–51.
14. Bogoyavlenskaya, D. B. (1983). Intellectual activity as a problem of creativity. Rostov-on-Don: Izdatelctvo Rostovskogo universiteta, 176.
15. Rukovodstvo OSLO. Rekomendatsii po sboru i analizu dannyih po innovatsiyam [Oslo Manual. Guidelines for Collecting and Interpreting Innovation] (2006). Moscow: GU «Tsentri issledovaniy i statistiki nauki», 192.
16. The Global Competitiveness Report 2016–2017 (2016). Available at: <https://www.weforum.org/reports/the-global-competitiveness-report-2016-2017-1>
17. Kyiv State Department of Statistic. Available at: http://ukrstat.org/uk/operativ/menu/menu_u/ekon/dil_u.htm
18. Tkachenko, M. O. (2014). Metodychnyj pidxid do vyznachennya vplyvu innovacijnoy aktyvnosti na finansovo-ekonomichnyj stan pidpryyemstva [The methodical approach to determining the impact of innovative activity in the financial and

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INNOVATIVE ACTIVITY AS TRANSFORMATION OF ITS INTELLECTUAL ACTIVITY

p. 15-21

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The attention is given to the nature of the category "innovative activity", which is based on assessment practice of the coherence of the concepts "intelligence of the organizations" and "innovative activity". It is also specified that it is necessary to develop a system of indicators for the evaluation of innovative activities by which it is possible to identify the internal factors of the organization on the basis of knowledge economics. The mathematical assessment model of "intellectual activity" is proposed

Keywords: innovative activity, innovative activity organization, intellectual organization, synergetics, knowledge economics

References

1. Balashov, A. I., Rogova, E. M., Tkachenk, E. A. (2010). Innovative Activity of Russian Enterprises: measurement issues and growth environment. Saint Petersburg: Izd-vo SPbGPU, 205.
2. Baranchev, V. P., Maslennikova, N. P., Mishin, V. M. (2011). Innovation management. Moscow: Yurayt, 671.

economic performance]. Komunalne gospodarstvo mist. Seriya: Ekonomichni nauky, 115, 98–104.

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“DENIM JEWELRY” IN THE CONTEXT OF THEATRICALITY OF EVERYDAY LIFE

p. 22-26

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The role of «denim jewelry» in theatricality of everyday life is investigated. It is found that denim has undergone several transformations and functional meaning when translated into different cultural contexts: as a material for working clothes, youth fashion, costume jewelry. Production of author's jewelry shows opportunities of “denim jewelry” to create not only different images, but also the stage space

Keywords: jewelry, denim, theatricality of everyday life, image, cultural context, fashion, design

References

1. Prokopovich, L. (2015). Ekologichnye novatsij v dizajnerskoj bizhuterii. Ekologija vizualnosti: strategii, koncepty, proekty. Cherkassy, 205–206.
2. Prokopovich, L. (2016). Functional, artistic and stylistic versatility of designer bijouterie. First independent scientific journal, 14, 16–20.
3. Ivanova, T. (2002). Mentalnost, kultura, iskusstvo. Obshchestvennye nauki i sovremennost, 6, 168–177.
4. Tolochko, P. (1996). Kyivska Rus. Kyiv: Abrys, 360.
5. Prokopovich, L. (2016). Kostumnye ukrashenija kak sredstvo vizualizatsii kulturnoj identichnosti. Problemy kulturnoi identichnosti v aktualnomu mystectvi ta muzejnij praktyci. Odesa, 55–56.
6. Prokopovich, L. (2016). Vizualizatsija kulturnoj identichnosti posredstvom kostumnyh ukrashenij kak forma teatralizatsii povsednevnosti. ScienceRise, 11, 15–19. doi: 10.15587/2313-8416.2016.82838
7. Bakanurskij, A., Bakanurskij, E. (2015). Immersivnyj teatr. Arkadija, 1, 8–13.
8. Stanislavskaja, E. (2010). Heppening kak dejstvenno-zreliszhnaja forma iskusstva XX v. Available at: <http://www.actual-art.org/en/k2010-2/st2010/96-viz/201-kheppening-dejstvenno-zreliszhnaya-forma-iskusstva.html>
9. Bakanurskij, A. (2015). Teatr kak eskejp: issledovatel'skij ocherk. Kherson: Grin D. S., 120.
10. Davydov, I. (2007). Teatralnost kak fenomen kultury. Available at: <https://www.mysciencework.com/publication/show/teatralnost-kak-fenomen-kultury>
11. Ishchenko, V. G. (2013). Teatral'nost' kak fenomen povsednevnosti: social'no-filosofskij aspekt. Servis v Rossii i za rubezhom, 4, 51–56. Available at: <http://elibrary.ru/item.asp?id=18876296>
12. Djinci. Wikipedia. Available at: <https://ru.wikipedia.org/wiki/Джинси>
13. Kolodko, A. (2015). Elitarna kultura v suchasnomu sviti jak protyvaga masovij kulturi spozhyvannja. Arkadija, 3, 105–111.

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FORMATION OF TOLERANCE THROUGH THE PRISM OF «FUSION OF CULTURES» – THE EXPERIENCE OF DEVELOPED COUNTRIES (USA, CANADA, AUSTRALIA, UK, GERMANY)

p. 27-30

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The article deals with demographic, socio-cultural and psychological preconditions of communicative tolerance through the prism of «fusion of culture». The essence of such concepts as «multiculturalism» «multiethnic environment», «tolerance» have been Identified. Approaches to identify and study the tolerance, ethnicity (ethnic) tolerance on the example of several countries (USA, Canada, Australia, UK, Germany) have been characterized.

The main directions of tolerance in terms of the national education system and the upbringing are presented based on international experience

Keywords: tolerance, multiculturalism, multiethnic environment, pluralism, cultural deprivation, assimilation, identification

References

1. Bahov, I. S.; Chernuha, N. M. (Ed.) (2016). Kanadskiy multikulturalizm: vid shvalennya do kritiki i fobiyi. Kyiv: Tsentru chbovoyi literatury, 174.
2. Ogienko, O. I. (2014). Polikulturni zasadi vischoyi osviti Velikoyi Britaniyi, SShA, Kanadi i Avstraliyi. Pedagogichni nauki: teoriya, istoriya, innovatsiyni tehnologiyi, 10, 173–181.
3. Gomilko, O. E. (Ed.) (2005). Kontseptsiya multikulturalizmu. Kyiv: Stilos, 143.
4. Banks, J. (1981). Multiethnic Education: Theory and Practice. Boston: Allyn and Bacon, 336.
5. Nieto, S., Bode, P. (2012). Affirming diversity: The sociopolitical context of multicultural education. London: Pearson, 480.
6. Sliter, K. (2012). Multicultural Education in Your Classroom. New York, 202.
7. Deklaratsiya printsipov terpmosti, utverzhdena rezolyutsiyey 5.61 Generalnoy konferentsii YuNESKO ot 16 noyabrya 1995 goda (1995). Available at: http://zakon1.rada.gov.ua/laws/show/995_503
8. Ekadumov, A. I. (2015). Dialog kultur i paradoksyi multikulturalizma v mnogopolyarnom mire. Minsk: BGU, 157.
9. Drozhzhina, S. V. (2010). Multikulturalizm: kontseptualna model ta prakseologichni vimiri yi realizatsiyi v ukrayinskomu sotsiumi. Simferopol, 31.
10. Kryisko, V. G. (Ed.) (1999). Etnopsihologicheskij slovar. Moscow: Moskovskij psihologo-social'nyj institut, 343.

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PROVISION OF MASKING OF TANKS IN OPEN FORTIFICATIONS

p. 31-36

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Results of laboratory tests of the mock battle tank from the means of air reconnaissance are analyzed. It is proved that the use of artificial forming for fencing surfaces based on the principles of building of caustic zones caustic with adjustable wave coincidence allows achieving full masking of tank on the resonance level of ultrasonic irradiation of external shell-like tunnel with partial immersion of its bottom into a soil

Keywords: fortification, methods of location, caustic zone, wave coincidence, ultrasonic irradiation

References

1. Karachun, V. V., Mel'nick, V. M. (2011). The tasks of maintenance and masking moving objects. Kyiv: Korniychuk, 264.
2. Mel'nick, V., Ladogubets, N. (2016). Wave problems in acoustic media. Kyiv: Korneichuk, 432.
3. Karachun, V. V., Mel'nick, V. M. (2009). Moving mirages. Kyiv: Korniychuk, 136.
4. Bakumenko, R. (2014). Armor for armor. Narodna armiya, 89, 4. Available at: <http://na.mil.gov.ua/12089-bronya-dlya-broni/>
5. Chobham armour. Wikipedia. Available at: https://uk.wikipedia.org/wiki/Броня_Чобхем
6. T-84U «Оплот». Wikipedia. Available at: https://uk.wikipedia.org/wiki/T-84U_«Оплот»
7. Armored troop-carrier GTK «Boxer». Tret'ya Mirovaya Vojna – voenno-politicheskoe obozrenie. Available at: http://3mv.ru/publ/vooruzhenie_drugikh_stran/bronetransporter_gtk_boxer_germanijg/13-1-0-9090
8. Deadly Russian tank Armat already in production (2016). Korrespondent.net. Available at: <http://ua.korrespondent.net/world/russia/3645157-NI-smertonosnyi-tank-rf-armata-vzhe-u-vyrobnystvivi/>
9. Tanks will hide behind the «forest» of nanotubes (2011). ZOOM.cnews. Available at: http://zoom.cnews.ru/rnd/news/line/tanki_spryachut_za_lesom_nanotrubok/
10. Zaborov, V. I. (1969). Theory of soundproofing of enclosing structures. Moscow: Publishing house of literature on construction, 187.
11. Shenderov, E. L. (1972). Wave problems of hydroacoustics. Leningrad: Shipbuilding, 352.

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SELECTION OF STATE VARIABLES AND ALGORITHMS OF PARAMETRIC IDENTIFICATION OF THE OBJECT BY ITS KINEMATIC CHARACTERISTICS

p. 37-41

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It is shown that algorithms of fuzzy clustering or algorithms of parametric classification can be used to solve the problem of qualitative identification under fuzzy data. It is suggested that in the conditions of masking the object as information signs for solving the recognition problem it is necessary to use the kinematic characteristics of their motion: the components of the velocity vectors and the acceleration of the characteristic points of the object in a system of generalized coordinates using Lame functions

Keywords: pattern recognition, fuzzy clustering, algorithms of parametric classification, generalized coordinates, Lame functions

References

1. Demin, D. A. (2014). Mathematical description typification in the problems of synthesis of optimal controller of foundry technological parameters. Eastern-European Journal of Enterprise Technologies, 1 (4 (67)), 43–56. doi: 10.15587/1729-4061.2014.21203
2. Vasenko, Yu. A. (2012). Sovershenstvovanie tekhnologii polucheniya iznosostojkogo chuguna. Tekhnologicheskij audit i rezervy proizvodstva, 1 (3), 17–21. Available at: <http://journals.uran.ua/tarp/article/viewFile/4870/4521>
3. Demin, D. A. (2010). Prinyatie reshenij v processe upravleniya ehlektroplavkoj s uchetom faktorov nestabil'nosti tekhnologicheskogo processa. Vestnik NTU «HPI», 17, 67–72.
4. Ponomarenko, O. I., Trenyov, N. S. (2013). Komp'yuternoe modelirovanie processov kristallizacii kak rezerv povysheniya kachestva porshnej DVS. Tekhnologicheskij audit i rezervy proizvodstva, 6 (2 (14)), 36–40. Available at: <http://journals.uran.ua/tarp/article/viewFile/19529/17205>
5. Demin, D. A., Bozhko, A. B., Zrajchenko, A. V., Nekrasov, A. G. (2006). Identifikaciya chuguna dlya opredeleniya racional'nyh rezhimov legirovaniya. Eastern-European Journal of Enterprise Technologies, 4 (1 (22)), 29–32.
6. Lin, Z., Lyu, M. R., King, I. (2011). MatchSim: a novel similarity measure based on maximum neighborhood matching. Knowledge and Information Systems, 32 (1), 141–166. doi: 10.1007/s10115-011-0427-z
7. Arsirii, E., Manikaeva, O., Vasilevskaja, O. (2015). Development of the decision support subsystem in the systems of neural network pattern recognition by statistical information. Eastern-European Journal of Enterprise Technologies, 6 (4 (78)), 4–12. doi: 10.15587/1729-4061.2015.56429
8. Frazee-Frazenko, O. (2012). Algorithm of study neural network for image recognition. Technology audit and production reserves, 4/1 (6), 33–34. Available at: <http://dspace.oneu.edu.ua/jspui/handle/123456789/259>
9. Ferceev, A. A. (2012). Uskorenie obucheniya nejronnoj seti dlya raspoznavaniya izobrazhenij s pomoshch'yu tekhnologii NVidia Cuda. Vestnik Samarskogo gosudarstvennogo tekhnicheskogo universiteta. Seriya Fiziko-matematicheskie nauki, 1 (26), 183–191.
10. Aouati, M. (2016). Localization of vectors–patterns in the problems of parametric classification with the purpose of increasing its accuracy. Eastern-European Journal of Enterprise Technologies, 4 (4 (82)), 10–20. doi: 10.15587/1729-4061.2016.76171
11. Unglert, K., Radic, V., Jellinek, A. M. (2016). Principal component analysis vs. self-organizing maps combined with hierarchical clustering for pattern recognition in volcano seismic spectra. Journal of Volcanology and Geothermal Research, 320, 58–74. doi: 10.1016/j.jvolgeores.2016.04.014
12. Fakhar, K., El Aroussi, M., Saidi, M. N., Aboutajdine, D. (2016). Fuzzy pattern recognition-based approach to biometric score fusion problem. Fuzzy Sets and Systems, 305, 149–159. doi: 10.1016/j.fss.2016.05.005

13. Perova, I. (2014). Adaptive treatment of these medico-biological researches by methods of computational intelligence. *Eastern-European Journal of Enterprise Technologies*, 1 (4 (67)), 24–28. doi: 10.15587/1729-4061.2014.21202

14. Demin, D. A. (2013). Mathematical modeling in the problem of selecting optimal control of obtaining alloys for machine parts in un-certainty conditions. *Problems of mechanical engineering*, 6, 15–23.

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RESEARCH OF HYDRODYNAMICS PROCESSES IN THE EVAPORATOR WITH FORCED CIRCULATION AND BOILING OF SOLUTION IN PIPES

p. 41-45

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The work is devoted to research and intensification of the process of boiling of solutions with different viscosities in evaporators of a tubular type with forced circulation and a drift boiling zone. The main factors that influence the change in the hydraulic resistance of the heating chamber under various operating conditions and the dependence of the loss on vapor content are determined on the developed laboratory device. The optimum value of the circulation velocity of the working solution at various temperatures and the boiling zones is also found in the article

Keywords: evaporator, separator, vapor-liquid mixture, vapor content, vacuum regime, circulation rate

References

1. Kutateladze, S. S. (1979). *Osnovy teorii teploobmena*. Moscow: Atomizdat, 416.
2. Fokin, V. S., Danilov, D. Yu., Nechiporenko, D. I. (2008). *Issledovanie protsessa kipeniya rastvora v schelevyih kanalah greyuschey kamery vyiparnogo apparata. Integrirovannyye tehnologii i energosberezhenie*, 3, 16–20.
3. Nechiporenko, D. I., Panasenko, V. A., Novozhilova, T. B. (2010). *Issledovanie protsessa kipeniya rastvorov v razbornoy shiro-*

kokanalnoy plastinchatoy greyuschey kamere vyiparnogo apparata. Trudy NIOHIM, 76, 107–112.

4. Tong, L. S. (1969). *Teplootdacha pri kipenii i dvuhfaznoe techenie*. Moscow: Mir, 344.

5. Danilov, Yu. B. (2008). *Nauchno-prakticheskie osnovy sozdaniya energosberegayuschego teploobmennogo i vyiparnogo oborudovaniya neftehimicheskogo kompleksa Ukrainy*. Kharkiv, 376.

6. Mineev, Yu. V. (2007). *Gidrodinamika i teploobmen pri kipenii smesevogo holodilnogo agenta R407C vnutri trubyy s lentochnyimi turbulizatorami*. Astrakhan, 205.

7. *Apparaty i mashiny kislorodnykh ustanovok* (1963). Moscow: Mashinostroenie, 6, 183.

8. Fokin, V. S., Koshel'nik, V. M., Koshel'nik, A. V., Zbaraz, L. I., Danilov, D. Yu. (2003). *Metodika opredeleniya parosoderzhaniya smesi na vyihode iz plastinchatogo isparitelya sistemyyi teplosnabzheniya. Kommunalnoe hozyaystvo gorodov*, 47, 168–171.

9. Golovchenko, O. A., Fokin, B. C., Marchenko, L. N., Akse'rod, L. S. (1977). *K raschetu razmerov zonyi razvitogo kipeniya v vyiparnykh apparatah normalizovannoy konstruksii. Himicheskoe mashinostroenie vyipusk*, 77, 36–40.

10. Kutepov, A. M., Sterman, L. S., Styushin, N. G. (1977). *Gidrodinamika i teploobmen pri paroobrazovanii*. Moscow: Vyisshaya shkola, 448.

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DEVELOPMENT OF METHODS FOR DETERMINATION OF KOTRECHKO HARDNESS OF WOOD AND LAMINATED PLASTICS

p. 45-48

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New methods for hardness determination of wood and laminated plastic taking into account anisotropy of their properties are developed. The hardness of the wood and laminated plastics explores at the angles to the direction of the fibers. Triangular prism with the ends that cut towards working blade is used as the indenter. Hardness indicators obtained using these methods is more accurate than using existing ones

Keywords: wood, laminated plastics, hardness, anisotropy, indenter, triangular prism, blade, loading

References

1. Schwarz, M. V., Buos, K. (1928). *Holz Härteprüfung mit dem Falhärteprüfer*. *Maschinenbau*, 12, 403.
2. Buruchenko, S. I. (1930). A. S. № 14853 SSSR. G01N03/42.
3. Shipilina, N. L. (1963). A. S. № 157145 SSSR. G01N03/42.
4. Rozengauz, B. F. (1956). *K izmereniyu torcevoj tverdsti drevesiny. Sbornik trudov ULTI*, 1.
5. Puppe, A. G. (1930). A. S. № 4081 SSSR. G01N03/40.
6. GOST 16483.17-81 (ST SEHV 2366-80 i ISO 3350-75) (1983). *Wood. Method for determination of static hardness*. Moscow.
7. Pamfilov, E. A., Sheveleva, E. V., Komissarov, A. P. (2008). *Pat. No. 2323428 RU. Sposob opredeleniya staticheskoy tverdsti drevesiny. MPK G01N3/42. declared: 08.09.2006; published: 27.04.2008, Bul. No. 12.*
8. GOST 24622-91 (ISO 2039/2-87) (1993). *Plastics. Determination of hardness. Rockwell hardness*. Moscow.

9. Kotrechko, O. O. (2006). Pat. No. 12460 UA. Indentor. MPK G01N3/42. No. u200506505; declared: 01.07.2005; published: 15.02.2006, Bul. No. 2.

10. Kotrechko, O. O. (2014). Pat. No. 90564 UA. Spisib vyznachennya statychnoy tverdosti derevyny za Kotrechkom. MPK G01N3/40. No. a201110631; declared: 11.03.2013; published: 10.06.2014, Bul. No. 11.

11. Kotrechko, O. O. (2013). Pat. No. 83113 UA. Indentor dlya vyznachennya tverdosti plastmas. MPK G01N 3/42. No. u201303076; declared: 12.03.2013; published: 27.08.2013, Bul. No. 16.

12. Kotrechko, O. O. (2012). Pat. No. 100471 UA. Metod vyznachennya tverdosti plastmas po Kotrechku. MPK G01N3/00. No. a201109936; declared: 10.08.2011; published: 25.12.2012, Bul. No. 24.

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MONITORING OF CASTINGS QUALITY FOR USE IN CAD SYSTEMS OF FOUNDRY PRODUCTION TECHNOLOGIES

p. 48-52

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The dimensional accuracy of the «bushing» casting, manufactured under the conditions of automated foundry production, is monitored. The real possibilities of the existing technological process for providing specified quality requirements to dimensional accuracy are established. The systematic errors are identified and their causes are analyzed. The described procedure, as an example, can be recommended for use in CAD system of foundry production

Keywords: computer-aided design, foundry technologies, casting, dimensional analysis, dimensional accuracy

References

1. Nosenko, T. I., Lysenko, T. V., Stanovskij, A. L. (2008). Adaptivnoe avtomatizirovannoe sinhroniziruyushchee proektirovanie sistemy "otlivka-peschanaya forma" NTI. Zbirnyk naukovykh prats' Odes'koyi natsional'noyi mors'koyi akademiyi, 13, 82–88.

2. Kostrova, G. V., Lysenko, T. V., Bondar, A. A. (2009). Metody samosinhronizacii dinamicheskikh processov SAPR litej-

nogo proizvodstva KGV. Trudy Odesskogo politekhnicheskogo universiteta, 2 (32), 7–10.

3. Demin, D. A. (2014). Mathematical description typification in the problems of synthesis of optimal controller of foundry technological parameters. Eastern-European Journal of Enterprise Technologies, 1 (4 (67)), 43–56. doi: 10.15587/1729-4061.2014.21203

4. Demin, D. A. (2013). Adaptive modeling in problems of optimal control search termovremennoy cast iron. Eastern-European Journal of Enterprise Technologies, 6 (4 (66)), 31–37. Available at: <http://journals.uran.ua/eejet/article/view/19453/17110>

5. Demin, D. A. (2013). Mathematical modeling in the problem of selecting optimal control of obtaining alloys for machine parts in un-certainty conditions. Problems of mechanical engineering, 6, 15–23.

6. Lysenko, T. V., Koryachenko, A. A., Docenko, V. P. (2010). Identifikaciya lica, vypolnivshogo reshenie, pri distancionnoj podgotovke specialistov-litejshchikov. Nauchnyj Vestnik Donbasskoj gosudarstvennoj mashinostroitel'noj akademii, 1, 132–137.

7. Akimov, O. V., Koval, O. S., Pulyaev, A. A., Dymko, E. P., Egorenko, T. A., Vysockij, S. V. (2015). Quality improvement of cast parts of ice: accounting technological aspects of the automated foundry. Eastern-European Journal of Enterprise Technologies, 6 (1 (78)), 56–62. doi: 10.15587/1729-4061.2015.56039

8. Akimov, O. V. (2003). Analiz pogreshnostej formoobrazovaniya otlivok koles turbin turbokompressorov dlya nadduva DVS na ehtape izgotovleniya ih voskovykh modelej. Eastern-European Journal of Enterprise Technologies, 3 (3), 16–24. Available at: http://nbuv.gov.ua/UJRN/Vejpte_2003_3_4

9. Chibichik, O. A. (2007). Analiz tekhnologicheskogo processa zalivki rotorov ehlektrovigatelya i vozmozhnye puti ego usovershenstvovaniya. Eastern-European Journal of Enterprise Technologies, 6 (1 (30)), 55–60.

10. Akimov, O. V., Chibichik, O. A., Red'kina, A. V. (2013). Improvement of technical processes for producing cast rotor parts to increase performance characteristics of traction electric drive. Problems of mechanical engineering, 16 (5), 7–12.

11. Ponomarenko, O. I., Trenyov, N. S. (2013). Computer modeling of crystallization processes as a reserve of improving the quality of pistons of ICE. Technology audit and production reserves, 6 (2 (14)), 36–40. Available at: <http://journals.uran.ua/tarp/article/viewFile/19529/17205>

12. Demin, D. A. (2013). Artificial orthogonalization in searching of optimal control of technological processes under uncertainty conditions. Eastern-European Journal of Enterprise Technologies, 5 (9 (65)), 45–53. Available at: <http://journals.uran.ua/eejet/article/view/18452/16199>

13. Berlizeva, T. V., Ponomarenko, O. I., Karateev, A. M., Litvinov, D. A. (2013). Vliyanie furfuraloksiipropilciklokarbonatov (FOPCK) s razlichnymi dobavkami na svojstva holodnotverdeyushchih smesey na zhidkom stekle. Kompresornoe i ehnergeticheskoe mashinostroenie, 3, 26–29.

14. Ponomarenko, O. I., Evtushenko, N. S., Berlizeva, T. V. (2011). Vliyanie zhidkih otverditelej s raznymi dobavkami na svojstva zhidkostekol'nyh smesey. Litejnoe proizvodstvo, 4, 21–24.

15. Demin, D. A. (2014). Quality Control at foundries technological aspects in selection of optimal strategies for technical reequipment. Bulletin of NTU "KhPI". Series: New desicions of modern technologies, 7 (1050), 42–52.

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DEVELOPMENT OF MATHEMATICAL MODEL OF CELLULAR SUSPENSION FREEZING PROCESS

p. 52-56

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Mathematical modeling of cellular suspension freezing process before freeze drying is considered in this article. Influence of the conditions of technological freezing operation can be evaluated by the distribution of temperatures of the microbial suspension during freezing.

The mathematical model makes it possible to determine the distribution of temperatures during freezing, as well as the freezing rate, depending on the properties of the frozen medium, the conditions for removing heat energy and the geometry of the region in which the process takes place

Keywords: cell suspension, microbial mass, mathematical modeling, freeze drying, temperature, freezing rate

References

1. Karpov, A. M., Ulumyev, A. A. (1982). Sushka produktov mikrobiologicheskogo sinteza. Moscow: Light and food industry, 216.
2. Bogdanov, S. N., Buchko, N. A., Guygo, E. I. et. al.; Guygo, E. I. (Ed.) (1986). Moscow: Agropromizdat, 320.
3. Gavrilov, V. P. (1977). Fisisiko-himicheskie svoystva vnutri vnechetochnyh sred pri nizkikh temperaturah. Biophysika, 22 (3), 544.
4. Androsov, V. V., Klyuchkina, T. V., Alekseev, N. G. (1982). Opredelenie evtkticheskikh temperature sublimiruemuh materialov. Himiya i himicheskaya tehnologia, 5 (9), 1158–1159.
5. Wong, H. (1979). Osnovnye formuly i dannie po teploobmenu dlya inzhenerov. Moscow: Atomizdat, 216.
6. Kotaladze, S. S. (1990). Teploperedachya i gidrodinamicheskoe soprotivlenye. Moscow: Energoizdat, 367.
7. Kotaladze, S. S. (1979). Osnovy teorii teploobmena. Moscow: Atomizdat, 367.
8. Leontyev, A. I. (Ed.) (1979). Teoriya teplomassoobmena. Moscow: Vyshaya shkola, 495.
9. Lykov, A. B. (1967). Teoriya teploprovodnosti. Moscow: Vyshaya shkola, 599.
10. Samarsky, A. A. (1977). Teoriya raznostnyh shem. Moscow: Nauka, 656.

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ANALYSIS OF TYPES OF OSCILLATIONS OF A DOUBLE-FREQUENCY PENDULUM AS OSCILLATION MODEL OF WATER MOLECULES

p. 57-62

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An analysis of the rotational oscillations of the protons of water molecules using a two-frequency pendulum model is made. The parameters showing the change in the type of pendulum oscillations are determined and the diagrams of the regions for different types of oscillations are constructed. The possibility of analyzing the type of vibrations of molecules in water; the boundary of the transition from independent two-frequency oscillations to ellipse-like rotations of protons of molecules near their bond axes in field of intermolecular interaction forces inhomogeneous in angle are shown

Keywords: water molecule, two-frequency pendulum, oscillation type, inhomogeneous field of force

References

1. Eisenberg, D., Kauzmann, W. (1975). The structure and properties of water. Leningrad: Gidrometeoizdat, 280.
2. Antonchenko, V. Ya., Davydov, A. S., Iliin, V. V. (1991). Osnovy fizyky vody. Kyiv: Naukova dumka, 672.
3. Malenkov, G. G. (2006). Struktura i dinamika zhidkoj vody [Structure and dynamics of liquid water]. Zhurnal strukturnoj himii [Journal structural chemistry], 47, 5–35.
4. Malafayev, N. T. (2011). O vzaimodejstviih i dynamike molekul v chystoy vode [About the interactions and dynamics of molecules in clean water]. Skhidno-Yevropeys'kyi zhurnal pere-dovykh tekhnolohiy [Eastern-European journal of enterprise technologies], 4 (8 (52)), 48–58. Available at: <http://journals.uran.ua/eejet/article/view/1465/1363>
5. Bersuker, I. (1987). The Jahn-Teller Effect and Vibronic Interactions in Modern Chemistry. Moscow: Nauka, 344.
6. Malafayev, N. T., Pogozhikh, N. I. (2015). Features rotational vibrations of water molecules. Eastern-European Journal of Enterprise Technologies, 2 (5 (74)), 27–35. doi: 10.15587/1729-4061.2015.40569
7. Malafayev, N. T. (2015). Power characteristics of dual frequency spherical pendulum oscillations in an inhomogeneous field of forces. ScienceRise, 10 (2 (15)), 68–75. doi: 10.15587/2313-8416.2015.51842
8. Malafayev, N. T. (2017). The elliptical oscillations of the protons of water molecules. ScienceRise, 1 (2 (30)), 48–54. doi: 10.15587/2313-8416.2017.89712
9. Malenkov, G. G., Naberukhin, Y. I., Voloshin, V. P. (2012). Collective effects in molecular motions in liquids. Russian Journal of Physical Chemistry A, 86 (9), 1378–1384. doi: 10.1134/s003602441209004x
10. Makhlaichuk, P. V., Malomuzh, M. P., Zhyhaniuk, I. V. (2013). Dimerization of Water Molecules. Modeling of the Attractive Part of the Interparticle Potential in the Multipole Approximation. Ukrainian Journal of Physics, 58 (3), 278–288.
11. Kumar, P., Franzese, G., Buldyrev, S. V., Stanley, H. E. (2006). Molecular dynamics study of orientational cooperativity

in water. *Physical Review E*, 73 (4), 041505. doi: 10.1103/phys-rev.73.041505

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ANALYSIS OF THE BEHAVIOR OF LOW-MOLECULAR CATIONIC AND HIGH-MOLECULAR ANIONIC SURFACTANTS ON THE INTERFACE OF PHASES «BINARY AQUEOUS SOLUTION – AIR»

p. 63-68

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Specific features of the behavior of hexadecylpyridinium bromide and sodium carboxymethyl cellulose at the interface between solution-air phases at different weight ratios of components in solutions, pH of the medium at a constant concentration of cationic surfactant are studied. The composition of adsorption layers and the parameter of intermolecular interaction of surfactants in them are calculated. Optimal conditions for surface concentration of cationic surfactants are proposed

Keywords: surface properties, binary solutions, hexadecylpyridinium bromide, carboxymethylcellulose sodium salt

References

- Holmberg, K., Jonsson, B., Kronberg, B., Lindman, B. (2007). *Surfactants and Polymer in Aqueous Solution*. Moscow: BEAN. Laboratory knowledge, 528.
- Kochkodan, O. D., Karmazin, T. V. (2014). The thermodynamic characteristics of micelle formation as a measure of interaction between the molecules of water and surfactant. *SWorld*, 30 (4), 91–96.
- Voliuvach, O. V., Streltsova, O. O. (2011). Adsorption of dodecylpyridinium chloride from solutions containing Tweens (Tween-40, Tween-60). *Ukrainian Chemical Journal*, 77 (3), 21–25.
- Voliuvach, O. V. (2013). Quantitative and thermodynamic assessment of the interaction of iodide hexadecylpyridinium and Tween-20 in mixed aqueous solutions and adsorption layers. *Herald of the National University “Lviv Polytechnic”*. Series: Chemistry, materials technology and their applications, 761, 64–70.
- Streltsova, E. A., Voliuvach, O. V. (2009). Analysis of adsorption hexadecylpyridinium bromide and sodium alkylsulfate on the binary surfactant solution – air phase interface. *Bulletin of the Odessa National University*. Series: Chemistry, 14 (12), 114–120.
- Voliuvach, O. V., Menchuk, V. V., Dragunovskaya, O. I. (2012). Pat. No. 70434 UA. Detergent based on a synergistic combination of cationic and non-ionic surfactants. MPK C11D 1/72. No. u201114074; declared: 29.11.2011; published: 11.06.2012. Bul. No. 11.
- Voliuvach, O. V. (2006). Colloidal-Chemical Regularities of Isolation of Hexadecylpyridinium Salts from Aqueous Solutions. *Kyiv*, 135.
- Voliuvach, O. V. (2011). Intensification of process flotation isolation sodium dodecylsulfate from aqueous solutions at the presence of Tweens. *Questions of chemistry and chemical technology*, 6, 194–199.
- Langevin, D. (2009). Complexation of oppositely charged polyelectrolytes and surfactants in aqueous solutions. *Advances in Colloid and Interface Science*, 147-148, 170–177. doi: 10.1016/j.cis.2008.08.013
- Llamas, S., Guzman, E., Ortega, F., Baghdadli, N., Cazeneuve, C., Rubio, R. G., Luengo, G. S. (2015). Adsorption of polyelectrolytes and polyelectrolytes-surfactant mixtures at surfaces: a physico-chemical approach to a cosmetic challenge. *Advances in Colloid and Interface Science*, 222, 461–487. doi: 10.1016/j.cis.2014.05.007
- Zhilyakova, E. T., Popov, N. N., Novikov, M. Yu., Novikov, O. O., Khalikov, M. A., Kazakov, V. S. (2011). Study of physico-chemical and technological characteristics of the sodium carboxymethylcellulose to create long-acting dosage form with a liquid dispersion medium. *Scientific statements Belgorod State University. Series: Medicine. Pharmacy*, 13-2 (4 (99)), 146–153.
- Ivankin, A. N., Panferov, V. I., Fahretdinov, H. A., Vostrikova, N. I., Golovanova, P. M. (2015). Nanomicrocomposite wound coverings on the basis of collagen and carboxymethylcellulose. *Forest Gazette. Rational use of forest resources and wood products*, 19 (1), 41–45.
- Dhar, N., Au, D., Berry, R. C., Tam, K. C. (2012). Interactions of nanocrystalline cellulose with an oppositely charged surfactant in aqueous medium. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 415, 310–319. doi: 10.1016/j.colsurfa.2012.09.010
- Mata, J., Patel, J., Jain, N., Ghosh, G., Bahadur, P. (2006). Interaction of cationic surfactants with carboxymethylcellulose in aqueous media. *Journal of Colloid and Interface Science*, 297 (2), 797–804. doi: 10.1016/j.jcis.2005.11.022
- Liu, J., Zheng, L., Sun, D., Wei, X. (2010). Salt effect on the complex formation between 1-dodecyl-3-methylimidazolium bromide and sodium carboxymethylcellulose in aqueous solution. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 358 (1-3), 93–100. doi: 10.1016/j.colsurfa.2010.01.034
- Wu, Q., Du, M., Shangguan, Y., Zhou, J., Zheng, Q. (2009). Investigation on the interaction between C16TAB and NaCMC in semidilute aqueous solution based on rheological measurement. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 332 (1), 13–18. doi: 10.1016/j.colsurfa.2008.08.022
- Antonov, N. M. (2015). Development of composite materials based on a polymer Na-CMC with metal powder fillers for the formation of functional coatings and porous films. *Novocherkassk*, 329.
- Koksharov, A. V. (2013). Improvement of fire-extinguishing capability low expansion foam. *Bulletin of Voronezh Institute of Russian Ministry for Emergency Situations*, 4 (9), 48–49.
- Zhang, H., Deng, L., Sun, P., Que, F., Weiss, J. (2016). Solubilization of octane in cationic surfactant–anionic polymer complexes: Effect of ionic strength. *Journal of Colloid and Interface Science*, 461, 88–95. doi: 10.1016/j.jcis.2015.09.028
- Tiitu, M., Laine, J., Serimaa, R., Ikkala, O. (2006). Ionically self-assembled carboxymethyl cellulose/surfactant complexes for antistatic paper coatings. *Journal of Colloid and Interface Science*, 301 (1), 92–97. doi: 10.1016/j.jcis.2006.04.072