

Литература

1. Grinev, S. V. Vvedenie v terminovedenie / S.V. Grinev. – Moscow : Moskov. licej, 1993. – 309 s.
2. Lejchik, V. M. Terminovedenie: predmet, metody. struktura. Izd. 3-e. Moscow : Izd-vo LKI, 2007. – 256 s.
3. Nabila, A. W. et al. The impact analysis of information technology alignment for information sharing and supply chain integration on customer responsiveness // *Procedia Computer Science*, Vol. 197, 2022. – URL: <https://www.sciencedirect.com/science/article/pii/S1877050921024170> (date of access: 02.09.22). – Text: online.
4. Nasiri, F. et al. Data Analytics and Information Technologies for Smart Energy Storage Systems: A State-of-the-Art Review // *Sustainable Cities and Society*, Vol. 84, Sep. 2022. – URL: <https://www.sciencedirect.com/science/article/pii/S2210670722003249> (date of access: 02.09.22). – Text: online.
5. Shen, Ching-Cheng et al. Using the perspective of business information technology technicians to explore how information technology affects business competitive advantage // *Technological Forecasting and Social Change*, Vol. 184, Nov. 2022. – URL: <https://www.sciencedirect.com/science/article/pii/S0040162522004942> (date of access: 02.09.22). – Text: online.
6. Tihonov, A. A. *Английский язык. Теория и практика перевода : учеб. пособие.* – Moscow : TK Velbi, Izd-vo Prospekt, 2005. – 120 s.
7. Xu, Jinying et al. Developing a human-organization-technology fit model for information technology adoption in organizations // *Technology in Society*, Vol. 70, Aug. 2022. – URL: <https://www.sciencedirect.com/science/article/pii/S0160791X22001518> (date of access: 02.09.22). – Text: online.

Н.Н. Зяблова, Р.А. Карван, Д.А. Киселев
Национальный исследовательский
Томский политехнический университет

Special lexical units in the field of nuclear physics and power engineering in modern English: codifiability and frequency

The present article deals with the linguistic problem of identifying codified and non-codified special lexical units in the field of nuclear energy and power engineering in modern English by online dictionaries. The article represents the results of the analysis of codification and frequency of the use of the special lexical units belonging to the specified scientific fields by online dictionaries. The amount of non-codified special lexical units has been identified.

Key words: special lexical units; codifiability; frequency; English; nuclear physics; power engineering.

Rapid development of technologies in the field of nuclear physics and power engineering is accompanied by the emergence of new special lexical units. Scientists note that due to the growth of energy consumption nuclear energy is one of the promising areas [3]. Sustainable growth and security in this area is available only with the close cooperation of scientists and regulators (e.g. International Atomic Energy Agency) at the international level. Due to the fact that English is used for communication in the scientific and technical environment between scientists from different countries there is a need to codify special lexical units to unify them and avoid uncontrollable use [2, 7].

Special lexical units, which are used to nominate special objects and notions, have been chosen from scientific journals. A selection of 56 special lexical units of the field of nuclear energy and power engineering has been made from 6 popular scientific articles in English publications such as «Journal of Nuclear Materials», «Nuclear Materials and Energy», «Progress in nuclear energy», «Nuclear engineering and Design» [4, 5, 8, 9] on the basis of the traits of special lexical units: ability to nominate special objects and notions, the absence of emotionality, the absence of polysemy and synonymy, motivation [1, p. 48, 171].

The analysis of codification of special lexical units has been carried out with the help of the following online dictionaries: «*Multitran*» and «*ABBYY Lingvo*». The choice has been made in preference to the use of online dictionaries due to their rapid updating and replenishment in comparison with printed and electronic analogues.

Codification is the explicit recognition of the normativity of linguistic phenomena or facts recorded in dictionaries, grammars, the creation of rules and regulations that contribute to the preservation of literary norms and their scientifically based updating. According to Semenjuk N. N. normativity is a main feature of written forms of languages (Standard English) [6, p. 24].

As a result of the analysis of codification of special lexical units, it has been determined that online dictionary *Multitran* codified special lexical units in the amount of 51 out of 56, or 91%, online dictionary *Lingvo* – 28 out of 56 or 50%. Based on these results, it can be concluded that a greater number of special lexical units presented in the sample are codified. In addition, the special lexical units of the studied spheres are more fully represented in online dictionary *Multitran* in comparison with online dictionary *Lingvo*, which indicates its regular replenishment and convenience for translating terms from the field of nuclear physics and power engineering (Fig. 1).

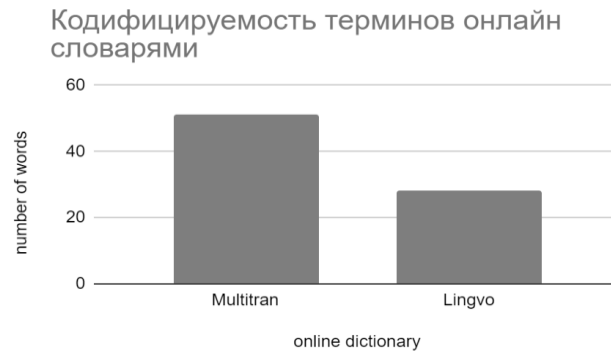


Fig. 1. Codification of special lexical units by online dictionaries

To determine the frequency of use of special lexical units in the field of nuclear physics and power engineering by the online dictionaries we used a scale to calculate the frequency of use of the specified special lexical units: 0, 1, 2 or more times (Fig. 2).

Thus, the special lexical units that have not been codified (0 special lexical units have been found in the abovementioned dictionaries) are either neologisms (new words) or special lexical units containing lexical elements that have not been codified by the dictionaries in the fixed combinations found out in special texts relating to the specified scientific fields, e.g. *cross-sectional structures, integral pressurized water reactor, low power density core, plasma facing material, zirconium-based fuel*; special lexical units occurring 1 time (23 units) – *accident tolerant fuel, displacement damage, fission, flexible energy, fuel pellets*); units codified by both dictionaries (28 units) – *nuclear chain reaction, decontamination, deionized water, artificial intelligence, artificial neural networks*.

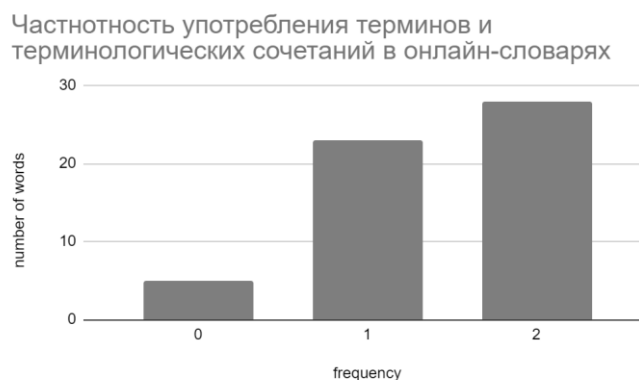


Fig. 2. Frequency of use of special lexical units in online dictionaries

Five terminological units that are not listed in any of the above online dictionaries can be translated into Russian by us using the following translation

techniques: *cross-sectional structures* – transverse structures (literal translation); *integral pressurized water reactor (IPWR)* is an integral pressurized water reactor (literal translation); *low power density core* – an active zone with a low energy density (descriptive translation); *plasma facing material* – a material sprayed with plasma (descriptive translation); *zirconium-based fuel* – fuel used on the basis of zirconium (descriptive translation).

The scientific fields of nuclear energy and power engineering are being updated with new special lexical units. Codification of special lexical units by dictionaries is necessary for specialists and scientists for successful communication and exchange of information including experimental data, therefore, studies of codification of special lexical units allow identifying non-codified units and, thus, standardize terminological systems of the specified scientific fields.

Литература

1. Grinev, S. V. Vvedenie v terminovedenie / S.V. Grinev. – Moscow : Moskov. Licej, 1993. – 309 s.

2. Mauranen, A. Exploring ELF: Academic English shaped by non-native speakers. Cambridge, UK : Cambridge University Press, 2012. – 271 p.

3. Krymm, R., Zheludev, I. S. et al. Future trends in nuclear power. <https://www.iaea.org/sites/default/files/publications/magazines/bulletin/bull19-4/19404764754.pdf> (date of access: 06.11.2020). – Text: online.

4. Nian, V., Zhong, S. Economic feasibility of flexible energy production by small modular reactors from the point of view of integrated planning // Progress in nuclear energy, Vol. 118, 2020. – URL: <https://www.sciencedirect.com/science/article/abs/pii/S0149197019302070> (date of access: 06.11.2020). – Text: online.

5. Novakova, J., et al. Secondary Ion Mass Spectrometry as an advanced tool for meteorite classification// Planetary and Space Science. – Vol. 192, 1 Nov. 2020. – URL: <https://www.sciencedirect.com/science/article/pii/S0032063319304799> (date of access: 06.11.2020). – Text: online.

6. Semenjuk, N. N. Formirovanie literaturnyh norm i tipy kodifikacionnyh processov / N. N. Semenjuk // Jazykovaja norma: tipologija normalizacionnyh processov. Moscow : In-t jazykoznanija RAN, 1996. – 384 s.

7. Sonntag, S. K. The local policy of the global English language: case studies in the field of linguistic globalization. Lexington Books, 2003. – 168 p.

8. Tsitsimpelis, I. et al. A review of ground-based robotic systems for the characterization of nuclear environments // Progress in nuclear energy, T. 111, 2019. – URL: <https://www.sciencedirect.com/science/article/pii/S0149197018302750> (date of access: 06.11.2020). – Text: online.

9. Qiao, L. et al. Effect of displacement damage due to heavy ion irradiation on deuterium retention in CLF-1 steel // Nuclear materials and energy. – Vol. 25, 2020. – URL: <https://www.sciencedirect.com/science/article/pii/S2352179120300703> (date of access: 06.11.2020). – Text: online.

Н.Н. Зяблова, С.А. Мелконян
Национальный исследовательский
Томский политехнический университет

Formation of terminology in the fields of astronomy, nuclear physics and geology in modern English: structural aspect

The present article examines the formation of terminologies via the analysis of grammatical structure of terminological units in the scientific spheres such as astronomy, geology and nuclear physics in modern English. Grammatical analysis of terminological units of the abovementioned spheres has helped to identify common, less common and not common ways of formation.

Key words: terms; terminological units; English; grammatical structure; astronomy; geology; nuclear physics.

This article examines the formation of terminological systems in the topical scientific spheres (subject areas) such as astronomy, geology and nuclear physics in modern English. The linguistic analysis of the grammatical structure (part of speech) of terms and terminological units in scientific fields of astronomy, nuclear physics and geology in modern English has been carried out. Common, less common and not common methods of formation of terminologies in the specified subject areas have been identified which will enable us to predict the most and least popular ways of nominating special notions and objects of the abovementioned scientific spheres.

Research in such subject areas as astronomy, nuclear physics and geology is relevant: a large number of publications written by scientists from different countries that appear in scientific and technical journals are written in English. Today English is a means of international communication and exchange of experience and knowledge throughout the world. The exchange of information is carried out thanks to special vocabulary (terms and terminological units).

Terminological units are special lexical units that are used to designate special concepts and objects belonging to special subject areas. The use of terms and terminological units in scientific and technical publications arouses the interest of linguists and terminologists who study terminology in subject areas in order to identify the most common and less common methods of term