

Fire Ceramic Sculpture in the Context of Contemporary Ukrainian Art: Art and Technology

Tetiana Zinenko^{1*}, Alisa Zinenko², Nina Chopenko³, Volodymyr Muravlov⁴

¹Poltava National Technical Yuri Kondratyuk University, Poltava, Ukraine

²Institute of Contemporary Art Problems of the National Academy of Arts of Ukraine, Kyiv, Ukraine

³Poltava National Technical Yuri Kondratyuk University, Poltava, Ukraine

⁴Poltava National Technical Yuri Kondratyuk University, Poltava, Ukraine

*Corresponding author E-mail: zirta@ukr.net

Abstract

This article explores the phenomenon of fiery ceramic sculpture as a part of contemporary art culture, also here researches projection of this phenomenon into Ukrainian reality. Information includes data about this genre of art, its history, theoretical and terminological aspects. The article analyzes and systematizes artistic achievements of Ukrainian artists Andrei Sobyenin, Vyacheslav Vinkovsky, Alexander Shehanin, Vyacheslav Gudenok. Additionally, the paper explores the experience of introducing the author's ceramic sculpture at the symposiums in Opishne, Gaspra, Nikopol (Ukraine) and Daugavpils (Latvia).

Keywords: fire sculpture, art of ceramics, contemporary Ukrainian art, identity in art, art ceramics technology

1. Introduction

Fiery sculpture is a modern and relatively new means of expression in art and deserves detailed study and coverage by art historians.

The fire sculpture is a ceramic sculpture of any configuration and size that is molded without a bottom and with a hole in the top, is installed on the tributaries (a special foundation) of brick and burned with firewood or gas in the open air. Thus, this is a sculpture and a stove in one dimension. The burning from interrupting the temperature from the outside prevented here because sculpture is thermally insulated (coated with kaolin wool that removed at the end of the burning process). The finale of burning is the main goal of "the spectacle of public burning" - "clothing" (thermal insulation) falls, and viewers see a hot, shining sculpture that cools for some time in the eyes of the surprised audience. The spectacular openings and the through openwork, through which the heat of the fire breaks through, adds festive to the mysterious action. Moreover, for each sculpture, this action is possible only once, which is consistent with the motto of contemporary art: "here and now."

2. Analysis of recent research and publications

Research of fire ceramic sculpture as a phenomenon of contemporary art is the subject of consideration of a small number of scholars around the world. Technology issues are still a matter of interest mainly to artists-practitioners, not scholars. There are several reasons for this. Firstly, a relatively new phenomenon of ceramic blazing sculpture has not yet formed a stable circle of art critics who are studying this problem; and secondly, the scientific problem focuses mainly on the study of the creativity of individual figures of ceramic artists who make ceramic blazing sculptures.

Yes, there are monographs devoted to the work of Nin Hool - the founder of the flow of burning ceramic sculpture. These are the works of Mark Lankest, Glen Brown, Sigrid Zerner, catalogs, editions by Lorentz Mincker. At the same time, the bulk of sources of research of this problem are articles in periodicals, Internet sources. A valuable source of research is also the numerous video materials captured by journalists. The viewers and the artists themselves during numerous shows ending with the process of creating fire ceramic sculptures. The ceramic sculpture as a whole is the subject of scientific interests by Julie Murphy, Casey Ruble, Glen Brown, Magdi Gluzek.

As for Ukrainian researchers, the ceramic sculpture as a whole is being studied by Doctor Orest Holubets, Zoya Chegusova, Vladimir Mishanych, and Tetyana Zinenko. Among the artists who, besides the practice of building and firing ceramic fire sculptures, write and tell about the artistic and technological side of the fire ceramic sculpture, the artists of different countries Tatyana Punans, Artem Goryslavetz, Ritis Konstantinavicus., Andrei Sobyenin, Vyacheslav Vinkovsky, Paul Miller, Mir-Teimur Mamedov, Thomas Daunoor, Mutlu Baskya and other.

2.1. The purpose of the paper

The purpose of this work is to study a new type of art - fire sculpture. The urgency of this study is due to the need to pay attention to the fire ceramic sculpture - a new, very bright and popular type of art. The fiery sculpture occupies a significant place in the contemporary art of ceramics, is very popular, but not sufficiently researched and systematized by art historians. This article shows the origin of fire sculpture as a type of art, lists the names and characteristics of founders and famous masters of fiery sculpture, shows the history of the development of fire sculpture in Ukraine.

At the origin of fire sculpture, there are many specific technological subtleties and rules, and firing is a complex and delicate process. The need to work with large-scale sculptures in

3. Basic material and results

The history and conceptual basis of modern fiery sculpture as a cultural and artistic phenomenon begin with the work of the artist Nina Hole from Denmark. "Nina Hole began to build his sculptures as an artist who was" tightly "in the usual size as a teacher who wanted to show the lack of boundaries (in all senses) in ceramics **Error! Reference source not found.** Hindu artist Wali Haves travels around the world with his "Express-Furnace" program, teaching the ceramists independence from technical amenities and professional insolence" His seven-day course focused on creating stoves "out of nothing", from materials that were at hand, sometimes paradoxical (T. Punnass was in such a master class in France in the late 1990's and penetrated his philosophy)**Error! Reference source not found.** "Heated" sculpture was part of this program.

At the origin of fire sculpture, there are many specific technological subtleties and rules, and firing is a complex and delicate process. The need to work with large-scale sculptures in ceramics, the separation of ceramic works into parts, if necessary, and then fell out - are very enthusiastic milestone tests of skill. And these tasks of "sculptor of fire" make a great impression on others and require the artist to work on complex tasks. Fiery sculptures are characterized by the brightness of the artistic image and all the qualities inherent in any sculpture. At the same time, extreme burning may be dangerous for sculptors with inadequate qualifications in this kind of roasting.

With regard to temperature, it can be burned in the range of 1000 - 1300 degrees Celsius, depending on the tasks, skills of the authors and the available technical capabilities. Of great importance is the degree of readiness of the sculpture - falling out may be unsuccessful when the sculpture of crude or has hidden defects. And because the fallout is carried out before the viewers, purely technological problems lead to the loss of the reputation of the artist.

Although, fire sculpture is a relatively new genre in contemporary art ceramics, and according to Tatyana Punnass, the artist, curator, and researcher of fiery sculpture, "... the genre and the old at the same time, as borrowed by contemporary artists in various ethnic groups, thus burying their ritual sculptures and even houses. So, do so far in India, Africa and Latin America **Error! Reference source not found.**

There are some reasons for burning ceramic sculptures separately outside the furnace. The main of them is that the size of the sculpture does not allow it to enter the space of the furnace. Another, but also very important, the reason is that the active and bright, even enchanting scapegoat opaque creates a vivid show that in many respects changes the view of the viewers about the possibilities and essence of ceramics. Popularizes this kind of art and makes the spectator a participant in the sacrament of creating artistic the product - we have a finished performance. The versatility of ceramics as a material is brought to the mind of the viewer by the fact that, practically in the eyes of an enthusiastic public, the clay turns into artistic work. And the magic of open fire complements the entertainment of the event. Such an unusual approach to ceramics requires only the interaction of all four elements and the goodwill of the artist who needs his artistic expression.

The fire sculpture is:

- 1) a peculiar system of roasting of ceramic sculptures with elements of performance;
- 2) the type of ceramic sculpture, which includes the production of sculpture from clay and its display directly during roasting in open space.

The production of fire sculptures is complex from a technical and technological point of view. From the standpoint of ceramic technology, the proper composition of clay is essential, considering air and fire shrinkage, fusibility and clay coating. But the main technical difficulty is the production of the correct sculptural shape from the outside (for uniform shrinkage) and from the middle (it is necessary to understand the process of burning out from the inside for the proper production of channels that provide traction and flame in the required direction and even fell firing) **Error! Reference source not found.**

Therefore, it can be argued that fire sculpture as a means of expression includes elements of performance and show. This means the wizard's simultaneous contact with your work and viewers.

The phenomenon of the visual show and performance in fire sculpture is achieved by the following means: during the exhibition, the viewer is located near an open flame, a live fire. Sometimes on the burning sculpture throws sawdust, which creates additional decorative effects of the sculpture itself. All this creates the illusion of the presence of the viewer in work itself so to speak from the middle, gives the viewer a sense of his direct participation in the creation of this thing, in fact, the process of presenting the sculpture turns the viewer into a co-author. That is, the external and internal content of the work is combined (the author and the spectator become the accomplices of the creative process). So, with the combination of four elements (earth (clay), water, fire, and air) the artist proves that the work, the creator, the viewer and the environment - one whole.

The most famous master of fiery sculpture and the founder of this trend of contemporary art is Danish artist Nina Hole. Its monumental ceramic structures, built and burnt on the ground in different parts of the world. Her works are in organic unity with the architecture of buildings, and at the same time as architectural forms, these works are made of clay slabs, which function as modular building blocks. According to Nina Hole, the received forms of houses serve as metaphors for their own body; she described them as "home - ego."

The process of creating each fire sculpture labor-intensive and Nina Hole relied on the assistance of a team of assistants. After several weeks of construction, the sculpture reveals all its qualities during the multi-day roasting. "At sunset on the last day of roasting, part of the sculpture unfolds to reveal a finished but still burning shape." Nina Hole's fire sculptures extend both the performance and the overall experience of creating a composition **Error! Reference source not found.**

The first fire sculpture of Nina Hole was created in 1994. She also created fire sculptures in Germany, Japan, Turkey, Brazil, Wales, Mexico, Hungary, Denmark, Greece, Taiwan, Australia, Canada, and the United States. Known for her fiery enthusiasm for clay, creativity and ceramic community, Nina Hole was originally recognized for a series of large stoves she called "Sculpture of Fire." "I have developed the concept of building large open sculptures that include all the elements: a burning, structural surface, a form that controls the fire and changes it. In a creative approach that Nina Hole used, there is an element of risk due to the specifics of fire sculpture, joint work of a group of like-minded people and even signs of a certain artistic ritual. Moreover, the ritual of the process of creating a sculpture is one of the main elements of creativity Nina Hole. "She uses many assistants and examines the process of creating and firing fire sculptures as a collaborative work of an entire team created from a group of people. And this team was as important to her as the work"**Error! Reference source not found.** The study of tension and harmony between nature and the built environment remained the central element of the evolution of images in many of its sculptures of fire **Error! Reference source not found.**

Nina Hole's technical quest has become the result of experiments with building technologies and materials. This included the use of heat-insulating coatings that became available to artists after studying the designs of high-tech furnaces and the achievements

of space technology. Like the Californian artist John Roloff, who began to create unique street work in the mid-1980s, Nina Hole used fiberglass thermal insulation coatings to integrate the roast into new work. These technological innovations were needed to bake large ceramic sculptures built in the landscape **Error! Reference source not found.**

Nina Hole's creativity ultimately influenced the further development of the entire ceramic art. Its revolutionary ideas and technologies have been picked up by hundreds of followers in different countries around the world. Also, the aspect of collective creativity plays a vital role in burning ceramic sculpture, as well as the effect of interactive interaction with the viewer - and these elements of the creative process were also initiated by Nina Hole. Nina Hole died at the beginning of 2016. In memory of Nina Hole, the International Ceramic Center-Guldgergaard created a special Nina Hole Memorial Award in her honor **Error! Reference source not found.**

The phenomenon of fire sculpture as a new genre of artistic ceramics for Ukraine attracts the attention of the public, is a professional interest of ceramists, art critics, and critics, but this phenomenon in the Ukrainian art has not yet succeeded sufficiently in scientific analysis and not sufficiently highlighted in the works of art historians.

The work of potter Vasyl Omelyanenko can be considered as a kind of harbinger of fire sculpture in Ukraine. She was created at the symposium at the National Museum-Reserve of Ukrainian Pottery in Opishne in 1997. Her name is "Ukrainian Lion". The peculiarity of this sculpture was that for a firing of a two-meter lion a special ceramic kiln with two furnaces was built. It was burning the firewood. It lasted for 2 days. This was the first and absolute experiment. Today, this sculpture is part of the National Gallery of Monumental Ceramic Sculpture in Opishne (Figure 1).

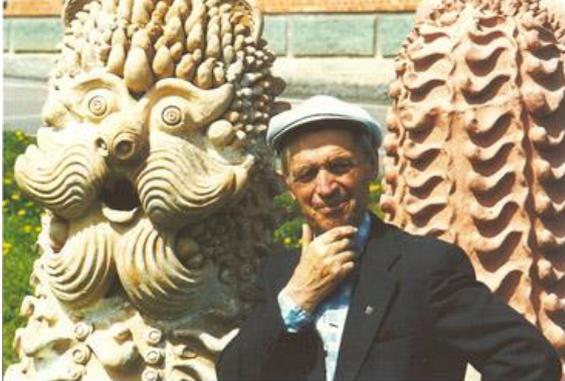


Fig.1: Potter Vasyl Omelyanenko near the sculpture the "Ukrainian lion". Opishne. 1997. Photo from the archive of the museum.

In Ukraine, a peculiar "fashion" on fire ceramic sculpture came in 2009, gradually acquiring signs of national mood and stylistics. Then in Poltava, the first symposium of fire ceramic sculpture "Flash" was held. Its participants became known in Ukraine by artists Andrei Sobyenin, Vyacheslav Vinkovsky, Myroslava Rosul, Alexander Miroshnichenko, Sergei Zhuravlev, Oleg Perets. The innovative moment of this project was that it was technologically constructed 12 sculptures-stoves. They were formed from parts, burned, and then mounted. Unlike Nina Hole's experience, the artists did not use refractory cotton wool but constructed sculptures-stoves that could be transported and burned in any place. The main "burning" effect of these sculptures was that in the process of laying wood in the furnace, to achieve a breakthrough of fire into the openings of sculptures. The most interesting works of this project are "Tower 1709" (A. Sobyenin) (Figure 2), "Molfar" (S. Rosul), "Grieving" (O. Miroshnichenko), "Aeneid" (O. Perets) (Ill. 3), "Snake" (S. Juralevlev).



Fig. 2: Andrei Sobyenin. Sculpture «Tower 170»9. Kyiv 2009. Photo from the private archive Tetyana Zinenko

In the future, in autumn 2009, this project was presented in Kyiv in the country gallery "Kolo Zaspas" and in 2010 in the ceramic center of Ukraine at the National Museum of Ukrainian Pottery during the First Interiors of the Congress. This project clearly showed the spectacular nature of the fire sculpture. The audience also had the opportunity not only to observe but also to participate in the creative process.



Fig. 3: Oleg Perets Sculpture "Aeneid" Kyiv. 2009. Photo from the private archive Tetyana Zinenko

The second important stage in the history of Ukrainian burning ceramic sculpture began in 2012 in the Crimean city of Gaspra. Here at the symposium of artistic ceramics "Island of Crimea" artists Andrei Sbyenin, Vyacheslav Vinkovsky and Alexander Shehanin presented a sculpture created by the technology of Nina Hawl, which was called "Simargl" ("Sirko") **Error! Reference source not found.** (Figure 4). . The work of the "Simargl" that defines the orientation of the Symposium "The Island of Crimea" is characterized by specific artistic peculiarities in which the historical background, mythology, folklore with modernity actively combines the art of art - in order to bring the "eternal" characteristics of universal values to the viewer's consciousness, such as: fidelity, family warmth, identity, the transfer of cultural experience, the preservation of culture and art and the need for the continuous development of society.



Fig. 4: Vyacheslav Vinkovsky, Andrei Sobyenin, Alexander Shehanin. Sculpture "Semargl" ("Sirko"). Gaspra 2012. Photo from the private archive of Vyacheslav Vinkovsky

This Symposium "Island of Crimea" **Error! Reference source not found.** was held annually, and already in 2013, the "Island of Crimea" symposium has become international. At the symposium "The Island of Crimea" in 2013, six fire ceramic lighthouse sculptures were fired simultaneously, united by one theme: the discovery of the image of the light of the lighthouse - as a reflection of the eternity of art, enlightening and pointing the way to the traveler **Error! Reference source not found.**



Fig. 5: Andriy Sobyenin, Maxim Vasiliev. Sculpture «Beacon spirits». Gaspra 2013. Photo from Andriy Sobyenin's private archive

The most successful works of the Symposium "Island of Crimea" in 2013 were the following works: "Beacon spirit" (A. Sobyenin, M. Vasiliev) (Figure 5)., "Fern" (V. Vinkovsky, O. Shehanin). Ceramists from Georgia (Georhiy Pakchoria, Maka Mzareulishvili), Belarus (Ales Kostka, Levon Tracewski), Moldova (Svetlana Shudizha) also participated in this symposium, in addition to Ukrainian artists. Over each of the sculptures mentioned above, worked on two authors, thus ensuring the exchange of creative and technological experience between the participants of the symposium.

The fire ceramic sculpture is quite popular among Ukrainian artists. The most successful artists presenting Ukraine in the genre of fire ceramic sculptures are Andrey Sobyenin, Vyacheslav Vinkovsky, Alexander Shihanin, Vyacheslav Goodenok. All these artists can be called promoters in the field of technology and ideology of fire ceramic sculpture. Among these artists should be noted Andrei Sobyenin, a professional contribution, which in the development of this genre of art is perhaps the largest in Ukraine.

The work of Andrei Sobyenin as an artist, one of the first in Ukraine to open fire sculptures to the audience, is a little-studied and still not yet completed page of the history of contemporary Ukrainian art ceramics. The formation of Andrei Sobyenin as an artist took place in such cities as Poltava, Lviv, Opishne, Slavyansk and Kyiv - generally recognized centers of Ukrainian culture and art **Error! Reference source not found.**

In the fiery ceramic sculptures of Andrei Sobyenin, there are features of postmodern attitude towards art. "In order not to create Andrew: burning towers, or dark X-vaults, volumetric ceramic pictures or" archaeological burials "- in all sounds the search for the meaning of life, the victorious affirmation of the value of each person. This is precisely the case when thoughts "of eternal" do not cause depressive and oppressive associations, but on the contrary, they sound like the anthem of the immortality of the human soul" **Error! Reference source not found.** The sculpture "Hell" was created on the territory of the museum-reserve of Trypillian culture in the village of Legedzino (Cherkasy region, Ukraine) by Andriy Sobyenin. In this paper, the Ukrainian Christmas decoration was depicted allegorically through the puppet theater. In the iron boxes from under glass containers were abstractly shaped figures, the faces of people and animals. The composition was complemented by keys, bolts, nuts, and nails, which formed silhouettes of figures and sculptures in general. The purpose of this work, from art, was to reveal the struggle between good and evil.

An important result of Andriy Sobyenin's artistic and technological creative pursuits is the "Portal" ("Brama") (Figure 6) sculpture (2015), made in the framework of the international ceramic symposium "Ceramic Laboratory - 2015" in Daugavpils, Latvia. The author chose the theme of the war image in the language of art. The artist himself best describes his work in an interview with the authors of this article: "I wanted to make a sculpture about the war in Ukraine, but without politics and ideologies. For me, the war is a living entity, which like a whirlwind may occur anywhere. I have long felt the presence of this essence in my life and wanted to realize it in clay. I made a metal frame of a multistory building in which the hole was broken, which turned it into a gate. Inside this house there are characters, the windows unfold small stories..."The sculpture was constructed and presented at the Mark Rothko Art Center in Daugavpils. This art space is located inside the fortress and has four gates, and the sculpture of Andrei Sobyenin forms the fifth, giving it another new, additional value of the quintessence of being **Error! Reference source not found.**



Fig. 6: Andrei Sobyenin. Sculpture " Portal ". Daugavpils 2015. Photo from Andriy Sobyenin's private archive

Another Ukrainian artist, whose work is devoted to the genre of fire ceramic sculpture - Vyacheslav Vinkovsky **Error! Reference source not found.** (Ill 7).



Fig. 7: Vyacheslav Vinkovsky near his sculpture during the firing. Little Belozerka 2015. Photo from Vyacheslav Vinkovsky's private archive

Also, the bright and strong chord of the progress of the fire ceramic sculpture in Ukraine is the holding of symphonies of the fire ceramic sculpture "Scythia" in the city of Nikopol (2016-2018) (Ill. 8). The organizer and curator of these symposiums were Vyacheslav Gudenok. During three years of symposiums near the city hall of the city of Nikopol, a park of clay sculptures, which are made at workshops, grew. As the artist himself says, the symposiums "Scythia" became part of the creation of the cultural environment of the city of Nikopol. According to Vyacheslav Gudenok: "Fiery sculpture is an invaluable kind of creativity, in which not only the artist participates, but also interactively participates the viewer when he looks: on the sculpture, on fire, on these sparks, and on the flame. The combination of fire and ceramics are so impressive that there is a high probability of "getting to" people, their emotions, and the desire to start to create. For me, the most important thing is to light a person. The name of the symposium "Scythia" is concentrated in the inextricable link between generations and peoples. To accumulate the phenomenon of multiculturalism of this territory of the South of Ukraine. In the subject, the symbolism used the culture of the Scythian tribes" **Error! Reference source not found.** Of great importance in the production of fire ceramic sculptures at the symposiums "Scythia" had a technological aspect. The artists worked in close cooperation with the factory of ceramic masses in the city of Slavyansk. The Slavic Plant of Ceramic Masses "Ceramic Masses of Donbass" created special mixtures for the production of burning ceramic sculptures, which the artists tested. Such cooperation has yielded positive results for both artists and producers.



Fig. 8: The night out fire sculptures. Symposium "Scythia". Nikopol 2017. Photo from Vyacheslav Gudenko's private archive

The curator of the symphony "Scythia" of fire ceramic sculpture Vyacheslav Gudenok created a burning ceramic sculpture called "Female sacrament" at the Burning Mann festival in the USA in 2017. The meaning of the work is that the sculpture portrayed the woman giving birth. That is, the artistic interpretation of the sacred moment of the transformation of a woman into her mother is given. The height of the sculpture was about 2 meters. But the artist claims that for the Nevada Desert work, which lowers 80 meters does not work. Space burns everything **Error! Reference source not found.**

As noted by Vyacheslav Goodenok: "Fiery sculpture is an opportunity to give people a key to creativity. Grasp the human inside. With the help of fire, attract the viewer to art. This is a peculiar need to be realized" **Error! Reference source not found., Error! Reference source not found.**

4. Conclusions

The fiery sculpture has entered the modern artistic space. This type of ceramic art embodies the basic principles of the aesthetic features of contemporary art, namely: the expansion of the influence of art on the artistic organization of the surrounding space. The works of Ukrainian ceramic artists absorbed the most essential and brightest principles of fire sculpture as a creative means of expression. Therefore, their works are an issue that is attractive to scholars, culturologists, critics, technologists - in the context of studying the phenomenon of fiery sculpture and its representatives.

Ukrainian artists involved in fiery ceramic sculptures are open for a variety of experiments: with the forming mass, with the approach to the burning of works, and others like that. So especially for the Symphony "Scythia" in Nikopol, Ukrainian artists commissioned Ukrainian clay producers and special experimental molding masses that were tested during the symposium.

To date, the phenomenon of fire sculpture is not fully disclosed, and its achievements are not sufficiently or systematized.

Also unexplored the main achievements of the leading artists of the genre of fire sculpture both in Ukraine and throughout the world.

Thus, this study may be useful in determining the location of fire sculptures in

ceramic art. The art analysis should consider fire sculpture in the context of the development of contemporary art in general, as well as in the sense of the forming role of a school of fiery sculpture, the representatives of which are the authors of the investigated artistic phenomenon. It is also necessary to consider and explore the personality and the creative path of individual artists working with fire sculptures.

References

- [1] Goryachaya tema ognennykh skul'ptur <https://ceramgzhel.ru/novosti/goryachaya-tema-ognennyix.html>
- [2] Nina Hole - Fire sculptures. Ed. Lawrence Minsker. Denmark 2006, I-II, 50 p.
- [3] Nina Hole <http://www.ninahole.com>
- [4] Interview with Tatiana Zinenko with artist Andriy Sobyenin September 20, 2013
- [5] Interview with Tatiana Zinenko with artist Andriy Sobyenin on August 28, 2015
- [6] James Shackell Huge Fire Sculptures Are About To Light Up The Botanic Gardens <https://www.theurbanlist.com/melbourne/artist/melbourne-festival>
- [7] Fire sculpture <http://lanterncompany.co.uk/fire-sculpture/>
- [8] Fire Sculptures by Philip Bews, Diane Gorvin <http://www.blurb.co.uk/b/8788852-fire-sculptures>
- [9] Clifton Sears Ceramic sculpture for the absolute Beginner – FiringClay&Glase <https://www.instructables.com/id/Ceramic-Sculpture-for-the-Absolute-Beginner-Firing/>
- [10] U Yalti vstanovyly vognyanyj rekord. Fotoreportazh https://www.ukrinform.ua/rubric-other_news/1553283-u_yalti_vstanovili_vognyanyj_rekord_fotoreportazh_1867796.html
- [11] Palayuchyj nikopolecz Gudenok predstavlyaye Ukrainu na najepatazhnishomu festi u sviti <http://nikopol.net.ua/news/10241.html>
- [12] Interview with Tetyana Zinenko with Vyacheslav Gudenok on September 21, 2018
- [13] Myshanych Volodymyr. Zakarpatci vzyaly uchast u pleneri na Zaporizhchyni [Elektronnyj resurs] // Zakarpattya onlajn : sajt. – Rezhy m dostupu : <http://zakarpattya.net.ua/News/86911-Zakarpatci-vzyaly-uchast-u-pleneri-na-Zaporizhchyni-FOTO>.
- [14] Lukyanchikov Roman Obzhygayushchee yskusstvo: kak v Kazaxstane sozdayut ognennyye skul'ptury . <https://the-steppe.com/news/gorod/2017-11-11/obzhigayushchee-remeslo-kak-v-kazahstane-sozdayut-ognennyye-skul'ptury>
- [15] Ognennaya skul'ptura <http://loftkeramika.ru/fire/>
- [16] Ognennaya skul'ptura <https://www.art-miller.ru/ru/collection/868-2/>
- [17] Fire Sculptures – Art, Flame, and Robotics Collide
- [18] <https://makezine.com/2014/09/29/7-fire-sculptures-art-flame-and-robotics-collide/>