WEB OF SYNERGY:
International Interdisciplinary Research Journal
Volume 2 Issue 2, Year 2023 ISSN: 2835-3013
https://univerpubl.com/index.php/synergy

Analysis of Promising Technologies for Creating New Heterocomposite Polymer Materials (Hcpm) Using Local Materials and Energy Resources

Azimov Sarvarbek Qayumjon ugli, Isomiddinova Risolatxon Sayfiddin qizi, Norxo'jayeva Inoyatxon Olimjon qizi
Andijan machine-building institute – master student, Uzbekistan

Article Information

Received: December 10, 2022
Accepted: January 10, 2023
Published: February 11, 2023

Keywords: *Heterocomposite polymer materials (HCPM), UDA, Physico-Chemical mechanics, composite-222.*

ABSTRACT

This article presents information about new ways of creating heterocomposite polymer materials, their promising development, and the impact on our society.

Introduction

At present, various composite materials and nanocomposites based on polymers are widely used in Mechanical Engineering. Every year the extioj to them increases not only in mechanical engineering, but also in other spheres of the national economy, in the technology of making details from them, in terms of their lightness, decay, vibratory, sound and heat-separating properties. Interest in the use of polymer and composite materials in Mechanical Engineering, in particular, in technological devices, as a frost-resistant material, appeared in the 80s of the last century. However, in a wide range of uses, especially large-sized devices such as pneumatic and drive transporter, separator and cleaner on the working surface, they are used in them. One of the main reasons for this is the lack of rasional technology for obtaining quality coatings made of heterocomposites on the surface of a large-sized device.[1]

Literature analysis

Heterocomposites are a type of composite materials that usually take into their composition various organic, polymer and inorganic, mineral, metal and other similar compositions that practically do not chemically bind between themselves and at the level of the macro structure. In this case, each component has its own target property. The traditional 3-component technology of obtaining a composite material with the properties required today (pressure, temperature,

time) needs to harmonize and develop parts of colloidal chemistry and physics in particular in the methods of obtaining nanoqisms of obtaining ul'tra fine particles. This new direction, which is developing all over the world today, bears the name "nanotechnology", as a result of which "nanocomposites" appear, which meet the modern requirements of the material structure.[2]

In our opinion, the characteristics of the initial and necessary conditions for obtaining nanocomposites and nano particles, which are distinguished by their physico-mechanical properties, arise in the form of separate chemical bonds in a separate nanocomplex compound at the micro level even in the activation of technologies in a particular (universal, disinfectant, activator) UDA in a certain energetic state. Taking into account the introduction into the development and application of composite materials, when choosing and substantiating the object of research, this chapter takes a principled approach to the selection of the main structural and structure-forming parts, in terms of their technologicity and economy.[3]

By mechanical activity, various phenomena were understood. For example, when grinding in a vibro mill, substances increase in size properties, accelerate chemical reactions, increase in strength in the compression of various materials, in particular, in natural minerals. Mechanical activity was understood as a change in the structure of the material, shape, through the action of mechanical stresses, which give it new physical and chemical properties. Thus, a new direction appears, which will be nominated for the fourth technology, this technology is called UDA - technology by the authors, that is, it is - universal, D - disinfectant, a - activator. The interpretation of such an appearance to the new technology is not very successful in giving the Autor in his opinion, he has a desire for further perfection so we present the UDA - technology ultira dispersion (UD) - active (F) technology.[4]

According to the aforementioned impression, it can be said that the range or degree of mechanical activity caused by the change in substances due to mechanical activity of the material depends on its structure as well as on the magnitude and appearance of the forces acting on the mechanics, since in the case of temporary moving forces, the amplitude and frequency also depend. By UDA - installation processing, it is possible to achieve momentum's voltages and frequencies many times larger than processing the material in a ball or vibro mill. The deformation process and content structure processes in the distribution (to some extent opposite each other are studied for a certain period of time, so kinetic laws play a key role here'.[5]

Results

In the technology for the production of fillers for composite polymer materials (KPM), the main issue that determines the further technical development based on physical chemical mechanics is the following, which can be calculated:

- increased physico-chemical activity of substances on the surface of the phase compartment;
- recyclable mixture to achieve maximum homogenous(uniformity)GI, especially in the multi-component system range as well as in the compaction;
- all technological processes follow the principle of minimum energy capacity;
- Increased acceleration of processes (expansion of production) in order to rapidly shorten the duration of processes. The term "physico-chemical mechanics", or, in other words," active - technological mechanics " is a synthesis of the concept of activity, technology and mechanics.[6]

In this case, activity is the molecule that moves the last ones, indicating the excitation of the atoms, in which they easily react chemically. It can be seen from this that the general designation of the term "active-technological mechanics" can be formulated. HCM mineral fillers is the correspondence of the scientific principles of the method of their physical chemical (surface, capacitance, cohesion) activity, which is based on technological processes, optimally

harmonizing the heterocomposite composition with mechanical action.[7]

Thus, it can be said that the activity of components refers to the type of energy focused on the activating object Regardless any can understand the effect that increases their chemical activity. In our opinion, yanayam is a "composite-222" dismemberment equipment that more accurately meets the above requirements, performs a shock wobbler and a slippery effect. The main issue of the implementation of FTM is the formation of HCM, which has the property of structural continued stability. This determines the need for Metrological supply of individual components of the CPC and quality control corresponding to the finished product, and not to their mixing. The formation process in the necessary structure of the CPM for the construction of the machine is carried out in the following 3 stages. In the first of them(activity), a chemical bond is formed, which is not so much until the composition of the composites combines with each other mechanically; in the second (mixing) eTap, the polymer film on the surface of parts of mineral materials is the first solid adhesion bonds between the components due to the rapid formation of the structure; in the third (compaction) eTap, the formation of a monolithic structure knot occurs due to mechanical influences.[8]

At the moment, the so-called is considered unconventional and environmentally friendly, the wider and greater use of generating an energy source that does not pollute the environment is actual. Such sources include solar energy, wind energy, sea wave energy, as well as other eneogies. Among the sources of generating energy, the source of solar energy on the scale of the resource is desirable for its environmental friendliness and prevalence. The potential possibilities of energy based on the use of direct solar radiation are very high.[9]

If it were possible to use only 0.5% of the sunlight falling on Earth, taking into account the 100th anniversary, it would be possible (perhaps even more) to ensure the world's craving for energy. Solar energy could be of great importance, primarily for countries in tropical and subtropical areas with up to 300 days of sunshine a year. When passing through the atmosphere, the solar radiation voltage decreases due to the spread of dust, soot, aerosol and gas molecules. Part of the descending energy is reflected in space. Part of the reflected heat depends on what surface it is falling on in radiation, so the density of the heating current is not the same at different latitudes. Land is diverse in different seasons and at different times of the day. In subtropics and deserts, its average annual value is 210-250 W/m2.[10]

Solar radiation can be used to supply energy to various technological processes, such as minerals, salinity of waters, drying agricultural products, growing plants in greenhouses, etc. The main climate-forming factor is a significant influx of sun radiation, which in the summer reaches 800-1000 MDj/m2 in 1 month. This creates optimal conditions for the development of helioenergetics in the Republic. In the remote Northern points of Uzbekistan with a width of 45°35', the highest sun output on a summer day reaches almost 68°C, while in the southern parts of the edge with a width of 37°10' it is equal to 76°C. At the exit of the winter coyote, its height is equal to 21 and 29°C. In connection with this, the energy of sunlight in Uzbekistan is much greater. In addition to Latitude, the flow of solar radiation, which provides the duration of the day, is also influenced by the cloud coverage of the sky. The average annual duration of solar illumination in the north of Uzbekistan is about 2800 C. As it moves south, its importance increases, and the duration of solar illumination reaches 30-500s, especially in the southernmost part (Termez). The duration of sunbathing in the winter - spring season will be minimal – 80-100 c per month. Sunless days are little observed in Uzbekistan. In the northern and mountainous regions, its amount is 45 - 50 days a year, while in the most remote southern part it is 25 days. From June to September, sunless days are only 1 to 4 days in 10 years. In moderately cloudy conditions, direct sunlight in January and April falls approximately twice, but due to the increase in radiated radiation, the radiation balance decreases from 3 to 1 or 4 to 1 part. In July, the clouds are much more transparent, and the radiation balance does not decrease much. The annual amount of sunlight falling directly on the horizontal surface in the clear sky is 5324-6938

MDj/m2. the maximum amount in a large part of Uzbekistan is 700-843 MDj/m2 in June.[11]

Discussion

The following 1.1 table shows the amount of direct radiation from the atmosphere on a horizontal surface, from 1 m2 it is possible to obtain an estimated 1,700 kWh per year using 100 percent of solar energy, that is, much more used in everyday life per person in the regions of the Republic than today. However, solar energy is still not massively used in the Republic, which is explained by several reasons. Currently, the technology of direct conversion of solar energy into electric current is still very complex and expensive, which is why it is still used in a limited state in highly developed industrial countries. However, to consider solar energy in Uzbekistan as a reliable source of electricity on an industrial scale is not hopeless today. 1.1 table the amount of direct radiation on the horizontal surface from the atmosphere.

1.1-table

Month	Place					
	Karakalpakstan	Tashkent	Fergana	Samarkand	Termez	Qizilcha
January	202	223	193	274	299	311
February	295	302	263	344	379	393
March	486	488	439	533	542	595
April	611	584	560	626	634	774
May	768	728	688	744	744	861
June	787	745	700	723	729	843
July	772	733	686	739	719	799
August	672	647	604	656	662	726
September	512	497	461	507	528	574
October	397	367	340	404	447	454
November	244	263	216	283	305	326
December	184	149	174	235	269	272
Average annual	5930	5726	5324	6058	6257	6938

However, it can and is suitable for domestic use for the production of low-quality thermal energy. This, of course, according to the available investment opportunities, can well master the installation and simple design of collectors of this type and mass production of solar collectors in the Republic. Calculations show that even with a very low effect, solar energy used for household needs can meet the general needs of the population by 60-80% for at least 10 months a year throughout the territory of Uzbekistan. In addition, to date, solar energy is not used reasonably enough to create composite materials. In addition, natural sunlight has a unique radiation, wave and thermal effect, which allows you to create various nanocomplexes in heterocomposites with a polymer matrix and obtain high-performance composite materials and coatings for multifunctional purposes. Initial mechanical activation of solids, then mixing them with surfactant chemicals and introducing them into a polymer matrix, creates a new condition for the formation of a structure in heterocompositions.[12]

Modern polymer composite materials-heterophasic, compositions-have a new combination of properties that differ from the properties of the original components, but retain their individuality. The combination of polymers with fillers makes it possible to obtain materials with a new technological or operational property, which differs mainly in mechanical strength. The composition is a dispersed system consisting of a polymer matrix in which solid particles of the filler are scattered. The properties of such a system are determined not only by the properties of polymers and fillers, but also by the nature of the distribution of particles in the Matrix and the

processes of interaction at the interface.[13]

Fine mineral fillers, like all bulk materials, are characterized by the phenomenon of aggregation. In this regard, mixing polymer with highly dispersed fillers prone to aggregation is a difficult task. Falling into a liquid medium, aggregates decompose into separate particles of the medium with equal polar and solid phases. The greater the polarization difference between the dispersed phase and the dispersed medium, the stronger the tendency of the dispersed phase particles to aggregate. It is known that ul'trabineurous rays cause the erosion of polymer coatings, their premature extinction in atmospheric conditions. The intensity of aging depends on the chemical composition and physical hosts of polymers. To protect polymer coatings from ultraviolet rays, various antioxidants, light stabilizers, inert additives are used.[14]

Conclusions

1. The scientific research work carried out by a number of scientists of the Republic on the modern state of the issue of the development of antifriction, antifriction-eilishbardoshli, eilishbardoshli HCP materials for the working bodies of cotton processing technological equipment was carried out.
2. The specificity of the frictional interaction of HCP materials with cotton raw materials and its influence on the natural quality of raw materials has been studied.
3. Mechanical injury of cotton elements (fiber, seeds) the main factor that is formed in frictional exposure and which affects the wound both in number and quality is Htyu, and its formation and number quantities have been found to vary absoluously in traditional tribojufts.
4. It was substantiated that the natural property of cotton can be achieved not only by optimizing the properties of the surface of the materials from which the details of the working bodies of the machines are made, but also by developing a technology for obtaining HCP coatings directly involved in frictional contact.[15]
5. As you know, the physical-mechanical and operational properties of materials can be improved by physicochemical modification methods, but traditional methods cannot be applied to modification of composite polymer coatings on surfaces of large - sized technological equipment.
6. The analysis of the result of existing studies showed that the selective elements used for HCPM (for example, vollostanite and glass fiber) intensively wound cotton fiber due to its rigid and sharp edge.[16]

Therefore, it is advisable to pre-chemical modification of HCPM selective silk processing waste. The reason: firstly, the details of these technological equipment have a complex configuration, that is, they are not even or flat, and secondly, their geometric dimensions are large, which does not justify the costs that went to make them a special technological device for thermal or physico-chemical processing.[17]

References

1. Azimov Sarvarbek Qayumjon ugli, Shirinboyev Mirzabek Ilhomjon ugli. (2022). DEVELOPMENT OF TECHNOLOGY FOR CREATING POLYMERIC COMPOSITE MATERIALS BASED ON POLYVINYLIDENFTORIDE AND DISPERSED FILLERS. EURASIAN JOURNAL OF ACADEMIC RESEARCH, 2(13), 828–835. https://doi.org/10.5281/zenodo.7467355
2. Ro‘zimatov Muxammadjon Abdumo’min o’g’li, Azimov Sarvarbek Qayumjon o’g’li, Shirinboyev Mirzabek Ilhomjon o’g’li, DVIGATELLARINING QUVVATI VA TEJAMKORLIGINI ORTTIRISH YO‘LLARINI TAXLIL QILISH , Новости образования: исследование в XXI веке: Том 1 № 5 (2022): Новости образования: исследование в XXI

веке

3. MEN SEVGAN YETUK OLIMLAR Karimova Muyassarxon Abduqayumovna, Azimov Sarvarbek Qayumjon o‘g’li Journal of new century innovations 19 (5), 125-129, 2022
4. Muxammadjon Abdumo’min o’g’li, R. , Sarvarbek Qayumjon o’g’li, A. и Safarali Sulaymonovich, T. 2022. DEVELOPMENT OF A MACHINE FOR CUTTING COTTON. Новости образования: исследование в XXI веке. 1, 5 (дек. 2022), 192–198.
5. YER OSTI QUVURLARIGA GRUNT BOSIMI. BIR JINSLI GRUNTDA JOYLASHGAN QUVURGA GRUNTNING O ‘RTACHA VERTIKAL BOSIMI QI Tavakkal o'g’li, SM Ilhomjon o'g'li, AS Qayumjon o'g'li - Новости образования: исследование в XXI веке, 2022
6. Muxammadjon Abdumo’min o’g’li, R. ., Sarvarbek Qayumjon o’g’li, A., & Mirzabek Ilhomjon o’g’li, S. . (2022). DVIGATELLARINING QUVVATI VA TEJAMKORLIGINI ORTTIRISH YO‘LLARINI TAXLIL QILISH. Новости образования: исследование в XXI веке, 1(5), 199–206. извлечено от http://nauchniyimpuls.ru/index.php/noiv/article/view/2305
7. Carriers lifetime in silicon bases solar cell Sarvar Azimov, Avazbek Alisherovich Mirzaalimov Молодой ученый, 97-101, 2020
8. Potential barrier in silicon solar cells Sarvar Azimov, Avazbek Alisherovich Mirzaalimov Молодой ученый, 94-97, 2020
9. Temperature characteristics of semiconductor diode Sarvar Azimov, Avazbek Alisherovich Mirzaalimov Молодой ученый, 85-89, 2020
10. Mathematical analyze of optical properties of solar cells Hajrullo Aslonov, Odilbek Dehkonboev, Sarvar Azimov Молодой ученый, 6-9, 2020
11. THE LIFETIME OF CHARGE CARRIERS IN SILICON-BASED SOLAR CELLS U Ismoilov, N Mirzaalimov, S Jurayeva, B Negmatov, S Azimov, A Alijonov, M Zulunova Deutsche Internationale Zeitschrift für zeitgenössische Wissenschaft, 27-29, 2021
12. IV CHARACTERISTICS OF SEMICONDUCTOR DIODE Jasurbek Gulomov, Sarvar Azimov, Irodakhon Madaminova, Hayrullo Aslonov, Odilbek Dehqonboyev Студенческий вестник, 77-80, 2020
13. Exploring working principle of vacuum diode by virtual laboratory Sarvar Azimov American Journal of Technology and Applied Sciences Volume 8, Jan., 2023 P a g e | 6 www.americanjournal.org
14. Azimov Sarvarbek Qayumjon ugli, Yusupov Bunyodbek Abdukarim ugli, & Madina Zarbotova Qaxromon qizi. (2023). Important Aspects in the Application of Composite Materials and New Methods of Application. Texas Journal of Engineering and Technology, 16, 11–14. Retrieved from https://zienjournals.com/index.php/tjet/article/view/3170
15. ugli, A. S. Q. ., qizi, N. I. O. ., & ugli, S. M. I. . (2023). Areas of Creation, Promising Development and Use of Composite Material. AMERICAN JOURNAL OF SCIENCE AND LEARNING FOR DEVELOPMENT, 2(1), 16–19. Retrieved from https://interpublishing.com/index.php/AJSLD/article/view/868
16. Norxo’jayeva Inoyatxon Olimjon qizi, Shirinboyev Mirzabek Ilhomjon ugli, & Azimov Sarvarbek Qayumjon ugli. (2023). APPLICATION OF FILLERS TO CREATE COMPOSITE MATERIALS AND CREATION OF NEW PROPERTIES. *American Journal of Technology and Applied Sciences, 8*, 1–6. Retrieved from https://americanjournal.org/index.php/ajtas/article/view/315
17. https://univerpubl.com/index.php/synergy/article/view/220/153