МИНИСТЕРСТВО ВЫСШЕГО ОБРАЗОВАНИЯ, НАУКИ И ИННОВАЦИЙ РЕСПУБЛИКИ УЗБЕКИСТАН

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13. Саидов, Р. М., Рахимов, Р. Х., Юсупов, Б. Д. У., & Холдоров, М. К. Б. У. Эффективность сушки и прокалки сварочных электродов в печах с использованием излучения наноструктурированной функциональной керамики (НФК). *Computational nanotechnology*, (2020). (2), 64-70.
14. Холдоров, М.Б.Ў. Основные физико-химические принципы получения высокочастотной конденсаторной керамики. *Scientific progress*, *3*(1), (2022). 412-418.
15. Саидов, Р. М., Рахимов, Р. Х., Юсупов, Б. Д. У., & Холдоров, М. К. Б. У. Новый метод сушки и прокалки сварочных электродов с использованием излучателей из функциональной керамики1. *Computational Nanotechnology*, (2020). (1), 44-51.
16. Egamberdiyevich, O. K., Malikovna, Z. S., X. M. B. Ugli, & Abdusattor-Ugli, E. E. Used for effect interpretation abnormal photo voltage. *Academicia: an international multidisciplinary research journal*, *11*(2), (2021). 783-786.
17. Холдоров, М. Б. Ў. Основные физико-химические принципы получения высокочастотной конденсаторной керамики. *Scientific progress*, *3*(1), (2022). 412-418.
18. Onarqulov, Karimberdi Egamberdiyevich, Raxmatov, G'ulomjon Raxmonberdiyevich, & Xoldorov, Muxammadkarim Botirali o'g'li. qishloq xo'jaligi mahsulotlarini infraqizil qurutish va sifatli saqlashdagi ayrim tahlillar. Oriental renaissance: Innovative, educational, natural and social sciences, 3 (4-2), (2023). 295-300.
19. Onarkulov, Karimberdi, & Kholdorov, Muhammadkarim. Study of processes of fruit and vegetable drying in infrared light drying device. Oriental renaissance: Innovative, educational, natural and social sciences, 3 (4), (2023). 932-937.
20. Onarkulov, K., Gaynazarova, K., & Tashlanova, D. (2022). Termoelektrik samaradorlikni qotishmalardagi elektronlar va teshiklarning harakatchanligiga bog'lanishi. Science and innovation, 1(A4), 56-59.
21. Q.I.Gaynazarova. CRYSTAL STRUCTURE OF CHALCOGENIDES OF THERMOELECTRIC ALLOYS BASED ON Bi**2(**BVI)**3** and Sb**2(**BVI)**3, (**BVI–Se, Te**).** Материалы международной конференции «Оптические и фотоэлектрические явления в полупроводниковых микро- и наноструктурах» Фергана-2023.с.110-112

BI_2B_3VI VA $SB_2B_3^{VI}(B^{VI}$-SE, TE) QOTISHMALARINING XUSUSIYATLARI VA TERMOELEKTRIK SAMARADORLIKLARINI NAZARIY TAHLILLARI

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Abstract. This article conducted a full study of the base's thermo electric power coefficient, precise thermal conductivity, temperature range and magnetic fields. This study was conducted when various levels of donor and recipient were added to Bi_2Sb_3 alloys.

Key words: The solid solution, solid alloy, thermoelectric materials, thermoelectric driving power, electrical conductivity, state scheme and concentration are all terms commonly used in the thermonuclear field.

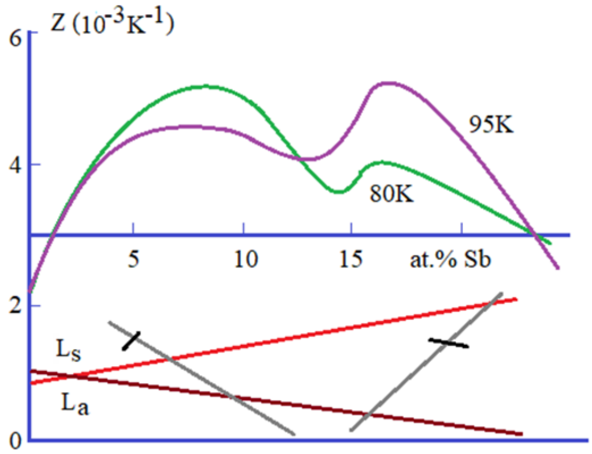
Determining the high thermoelectric efficiency of materials allows you to use science and technology in high-tech networks, creating a new generation of devices with higher characteristics than existing ones. In terms of practical application, the most promising and suitable compounds are Bi2B3VI and $Sb2B3^{VI}$(B^{VI}-Se, Te).

When it comes to p- and n-type materials, the thermoelectric quality factor can be improved by using vismuth wireuride surma telluride and vismut selenium alloy. These materials are suitable for use in room temperature modules. Because of the enormous amount of variation that can occur in electronic and thermal transportations, the composition of the alloy is the most important characteristic. The composition of the alloy is the most important parameter to consider because the electronic and shovel transportations can vary greatly from one another. In terms of thermoelectric conditions, the n-type Bi_2Te_3 alloy is not as advanced as the p-type alloy. Vismut's alloys with surma are the most typical members of the class of semiconductors and narrow semiconductors. The theoretical and practical interest in investigating these materials revealed the distinctive physical properties of the width of the energy sector of their chargers to be the most interesting. The $Bi_{1-x}Sb_x$ alloys undergo a transition from a semiconductor (0\x<0.07) to a semiconductor (0.07\x<0.22) and subsequently to a semiconductor (0.22\x<1) when the picture concentration increases.

Legislation of excess elements on the basis is one of the most widely used methods for influencing the electrophysical properties of bi-Sb alloys. This method, on the one hand, enables you to study the width of the energetic zone of the network structure of these materials, and on the other hand, it allows you to optimize the important parameters of the devices that contain sensitive elements.

There has been a comprehensive investigation into the kinetic parameters of the foundation when different quantities of donor and accent mixes (Te, Sn) are introduced into alloys of Bi_{1}-$_{x}Sb_{x}$ (05\x<0,19). These parameters include the coefficient, comparative thermal conductivity, temperature, and the range of magnetic fields.

The greatest values of thermoelectric efficiency have been demonstrated through experiments to be matched by heavy electrons in the La-zone and lightweight electrons in the T-zone, heavy holes in the LS zone and holes in the T-zones, and heavy electrons in the La-zone and lightweight electrons in the T-zone.



In the transportation events of vismuth, surma, and their alloys at temperatures greater than 77 degrees Kelvin, inter-extremity shaving is an extremely important factor.

The effectiveness of these materials in terms of thermoelectricity is also greatly determined by different shaving techniques. In the event when L-electrons, such as L and T, are falling on top of the extreme during reverse relaxation, the following equation can be formulated, taking into consideration the phenomenon of recombinant shaving:

$$\tau^{-1} = A_L g_L(\varepsilon) + W_{LL} S_{FL} g_L(\varepsilon) + W_{LT} S_{FT} g_T(\Delta\varepsilon_{LT} - \varepsilon)$$

Therefore, the shear time of L-electrons is dependent on electronic energy in an area where the network is compatible, and the values are close to zero. The thermoelectric power coefficient will have bigger values in scenarios where the shave is either internal or external.

A vismut-surma of the thermoelectric efficiency at a temperature of 80 degrees Celsius There is a similarity between the chart of changes in the parameters of the network structure and the dependence on the composition of alloys. In accordance with the approximate energy adjustment of the extremes of lightweight and heavy charge carriers in the tensile zone, the maximum values of thermoelectric efficiency are constant. The utilization of Bi-Sb alloys in practical applications includes the measurement of magnetic fields and the deformation of materials. Additionally, these alloys are utilized in the production of working components for thermoelectric, thermomagnetic, and anisotropic energy converters.

REFERENCES

1. Aminovna, Y. D., & Qizi, S. S. Z. (2022). Development of methods for studying intergranular surface features in semiconductor heterogeneous polycrystals of bismuth-antimony tellurides with the imposition of electric and deformation fields. *ACADEMICIA: An International Multidisciplinary Research Journal*, *12*(3), 248-253.

2. Yusupova, D. A., & Sirojiddinova, S. Z. (2023, November). ATOM FIZIKASI FANIDAN LABORATORIYA MASHG'ULOTLARINI BAJARISHDA INTERNET RESURSLARDAN FOYDALANISH. In *Fergana state university conference* (pp. 164-164).

3. Юсупова, Д. А., Сирожиддинова, С. З., & Толипов, Ж. (2023, November). ИССЛЕДОВАНИЕ ФИЗИЧЕСКИХ ПРОЦЕССОВ, ПРОТЕКАЮЩИХ В МНОГОКОМПОНЕНТНЫХ СОЕДИНЕНИЯХ ТЕЛЛУРИДОВ ВИСМУТА И СУРЬМЫ. In *Fergana state university conference* (pp. 71-71).

4. Kamolova, M., & Sirojiddinova, S. (2023). Enhancing school physics instruction: exploring innovative methods with computer technologies. In *International Conference On Higher Education Teaching* (Vol. 1, No. 5, pp. 154-156).

5. Юсупова, Д. А., & Сирожиддинова, С. З. (2021). ИЗУЧЕНИЕ СВОЙСТВ ПОВЕРХНОСТИ И ГЕТЕРОФАЗНОЙ ГРАНИЦЫ РАЗДЕЛА СТРУКТУРЫ НА ОСНОВЕ ТОНКИХ ПОЛИКРИСТАЛЛИЧЕСКИХ ПЛЕНОК ТЕЛЛУРИДОВ ВИСМУТА-СУРЬМЫ.

6. Юсупова, Д. А. (2024). Физика И Химия В Современном Образовании: Ключевые Аспекты Межпредметной Интеграции. *International Journal of Formal Education*, *3*(1), 177-181.

7. Onarkulov, K., Yusupova, D., & Sirojiddinova, S. (2024, March). Representation of the boundary of crystals and determination of intergranular surface conductivities in polycrystalline semiconductors. In *AIP Conference Proceedings* (Vol. 3045, No. 1). AIP Publishing.

8. Yusupova, D. A., & Sirojiddinova, S. Z. (2024). LISSAJU FIGURALARINI MATHCAD TIZIMIDAN FOYDALANIB QURISH. *SCHOLAR*, *2*(3), 67-73.

9. Sirojiddinova, S. Z. Q. (2024). Bi2B3VI va Sb2B3VI (BVI-Se, Te) QOTISHMALARIDA TERMOELEKTRIK SAMARADORLIK. *Oriental renaissance: Innovative, educational, natural and social sciences*, *4*(1), 285-289.

10. Sirojiddinova, S. Z. (2023). USING INTERNET RESOURCES IN PERFORMING LABORATORY EXERCISES IN ATOMIC PHYSICS. *YANGI* O'ZBEKISTON, YANGI TADQIQOTLAR JURNALI, *1*(1), 91-94.

11. Mamatova, Mahliyo Adhamovna, & Mamirjonova, Gulnoza Shokirjon Qizi (2024). EXTENSION AND APPLICATION OF NEWTON'S METHOD IN NONLINEAR OSCILLATION THEORY. Oriental renaissance: Innovative, educational, natural and social sciences, 4 (3), 607-613.
12. Хайдаров, З., Мухаммадаминов, С. Х., Гуфронова, Д. Ш., & Эргашева, Г. Ш. (2023, November). ИССЛЕДОВАНИЕ ФИЗИЧЕСКИЕ СВОЙСТВА КОНТАКТА ПОЛУПРОВОДНИК–ПЛАЗМА ГАЗОВОГО РАЗРЯДА. In Fergana state university conference (pp. 54-54).
13. Саидов, Р. М., Рахимов, Р. Х., Юсупов, Б. Д. У., & Холдоров, М. К. Б. У. Эффективность сушки и прокалки сварочных электродов в печах с использованием излучения наноструктурированной функциональной керамики (НФК). *Computational nanotechnology*, (2020). (2), 64-70.
14. Холдоров, М.Б.Ў. Основные физико-химические принципы получения высокочастотной конденсаторной керамики. *Scientific progress*, *3*(1), (2022). 412-418.
15. Саидов, Р. М., Рахимов, Р. Х., Юсупов, Б. Д. У., & Холдоров, М. К. Б. У. Новый метод сушки и прокалки сварочных электродов с использованием излучателей из функциональной керамики1. *Computational Nanotechnology*, (2020). (1), 44-51.
16. Egamberdiyevich, O. K., Malikovna, Z. S., X. M. B. Ugli, & Abdusattor-Ugli, E. E. Used for effect interpretation abnormal photo voltage. *Academicia: an international multidisciplinary research journal*, *11*(2), (2021). 783-786.
17. Холдоров, М. Б. Ў. Основные физико-химические принципы получения высокочастотной конденсаторной керамики. *Scientific progress*, *3*(1), (2022). 412-418.
18. Onarqulov, Karimberdi Egamberdiyevich, Raxmatov, G‘ulomjon Raxmonberdiyevich, & Xoldorov, Muxammadkarim Botirali o’g’li. qishloq xo’jaligi mahsulotlarini infraqizil qurutish va sifatli saqlashdagi ayrim tahlillar. Oriental renaissance: Innovative, educational, natural and social sciences, 3 (4-2), (2023). 295-300.
19. Onarkulov, Karimberdi, & Kholdorov, Muhammadkarim. Study of processes of fruit and vegetable drying in infrared light drying device. Oriental renaissance: Innovative, educational, natural and social sciences, 3 (4), (2023). 932-937.
20. Onarkulov, K., Gaynazarova, K., & Tashlanova, D. (2022). Termoelektrik samaradorlikni qotishmalardagi elektronlar va teshiklarning harakatchanligiga bog‘lanishi. Science and innovation**,** 1(A4), 56-59.
21. Q.I.Gaynazarova. CRYSTAL STRUCTURE OF CHALCOGENIDES OF THERMOELECTRIC ALLOYS BASED ON Bi**2(**BVI)**3** and Sb**2(**BVI)**3, (**BVI–Se, Te**).** Материалы международной конференции «Оптические и фотоэлектрические явления в полупроводниковых микро- и наноструктурах» Фергана-2023.с.110-112

ОСОБЕННОСТИ ТЕХНОЛОГИЯ ИЗГОТОВЛЕНИЯ ТВЕРДЫХ РАСТВОРОВ НА ОСНОВЕ $\mathbf{Bi_2Te_3 - Sb_2Te_3}$

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Аннотация. В статье исследована зависимость электрофизических свойств полупроводниковых тонких пленок $p-$ типа на основе примесей Bi, Sb и Te