AJEMA GLOBAL RESEARCH NETWORK

AMERICAN Journal of Engineering, Mechanics and Architecture
Volume 01, Issue 10, 2023 ISSN (E): 2993-2637

Preparation of Fiber Waste of Carpet and Carpet Product Manufacturing Enterprises for Complex Recycling - Research Steps of Separation into Fractions

M. M. Murodov, A. A. Elmurodov
Tashkent Innovative Chemical Technology Scientific Research Institute

Today, a great emphasis is being placed on the production of new types of organic substances and composite products based on the waste of products produced in various industrial sectors, their conversion into secondary and intermediate raw materials through complex processing, and their use on a large scale. This, in turn, increases the demand for the products of this processing.

During the processing of various wastes of industrial enterprises, dividing them into fractions and developing guidelines for processing each type of intermediate raw materials, and based on these, forming a quality raw material base for industry sectors are important factors. Among such industries, carpet and carpet processing enterprises are considered to have a multifunctional production process. From the initial stage of their production to the appearance of the finished product, various fiber wastes are produced. The development of technology for obtaining organic substances and various composite materials by processing them is considered characteristic.

The development of technology for obtaining various products, including facade liquid wall paper, as a result of complex processing of fiber waste from carpet and rug production enterprises, is explained by the creation of an innovative environment in the construction industry. The analysis of the literature showed that the practical works in the world experience are almost not finished, that is, the practical works that should be done in order to master the technology of obtaining facade liquid wallpaper by complex processing of fibrous waste of enterprises producing carpets and carpet products are not as shown.

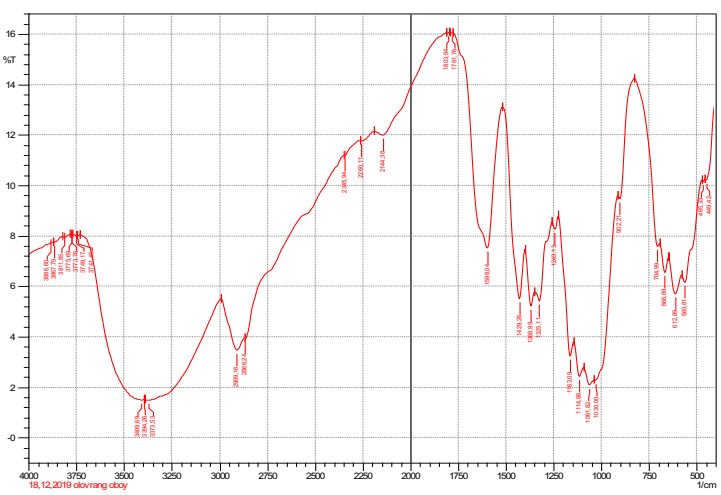
It is known that every year the number of enterprises producing carpets and carpet products in our country is increasing. As a result of the initial and final technological processes of their production processes, i.e., at the formatting stage, cotton waste with different fiber content is separated. This, in turn, can have a negative impact on the environment if not processed.

It is known that the composition of carpet products is composed of fiber composites that combine different fractions and functional groups. They are made up of polyacrylamide fibers, synthetic and polyester fibers and similar composites. On the basis of the research, the technology of obtaining facade liquid wall paper based on fiber waste of carpet production enterprises with this composite content has been mastered and introduced into production is considered one of the important activities.

Taking into account the above, before technical processing and using it as a raw material for the production of organic composite products, separation into different fractions was carried out. That is, preparation of fiber waste of enterprises producing carpets and carpet products for complex processing - research stages of fractionation.

The expansion of the production of carpets and carpet products requires complex processing of fiber waste.

First, the phase of separation of waste into fractions was carried out. After processing, the colored fractions were separated according to the type of product, and the IR spectra of their fibers were taken and analyzed.

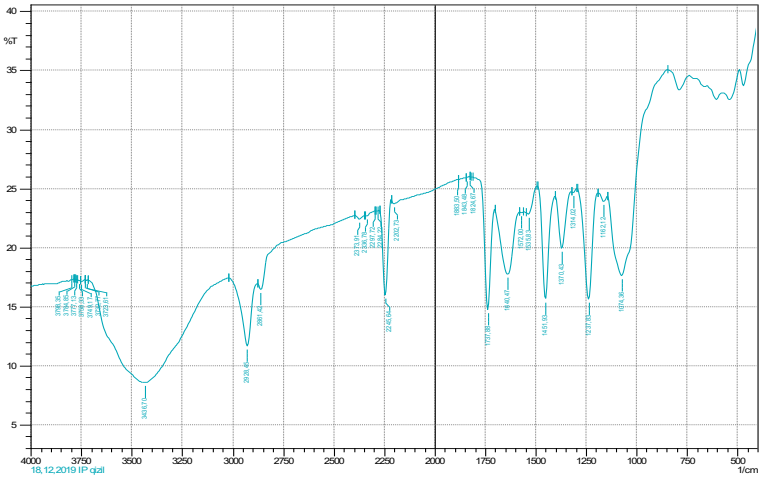


Pic - 1. Fractional infrared spectrum of fire-colored fiber waste (Infrared spectroscopy)

Below is the IR-spectrum of carpet products with fire color, the mass presence of artificial and synthetic composites in the fiber processing process, the classification of dyes that color the fibers, and the use as raw materials in the subsequent processes, i.e. in the initial stages of obtaining liquid wallpaper - allows to choose the type of glue, which is the main binder that serves to improve the adhesion properties of the liquid wall flower paper with the wall.

It is possible to observe that the spectrum peaks in the pictures showing such situations are connected to irregular fiber fibers in a suspended composite manner, that is, in picture-1, it can be observed that the following peaks in the spectrum are located between 3750 and 750 in the range of composite polymer solutions and the order of the dyes in the fiber fiber part, thus it is important to observe that it is important to increase the strong color performance. possible

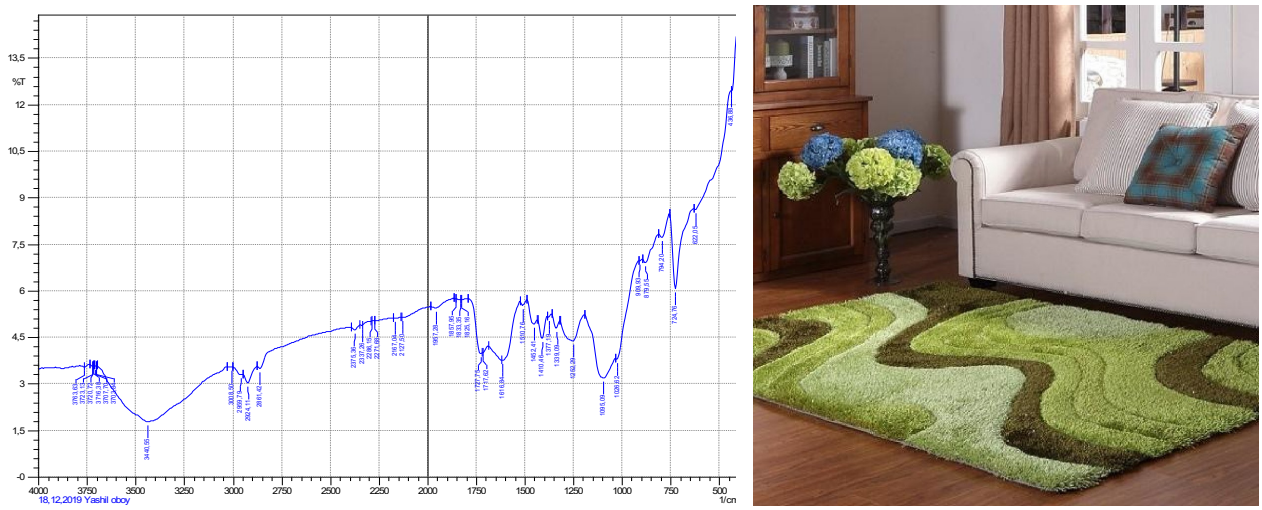
The IR-spectrum of the carpet products with a red color below is presented in Pic. 2. The mass presence of artificial and synthetic composites in the process of processing fibers, the classification of dyes that give color to fibers, the following processes, i.e., the production of composite products based on it, the adhesion properties of the obtained product. allows to determine.



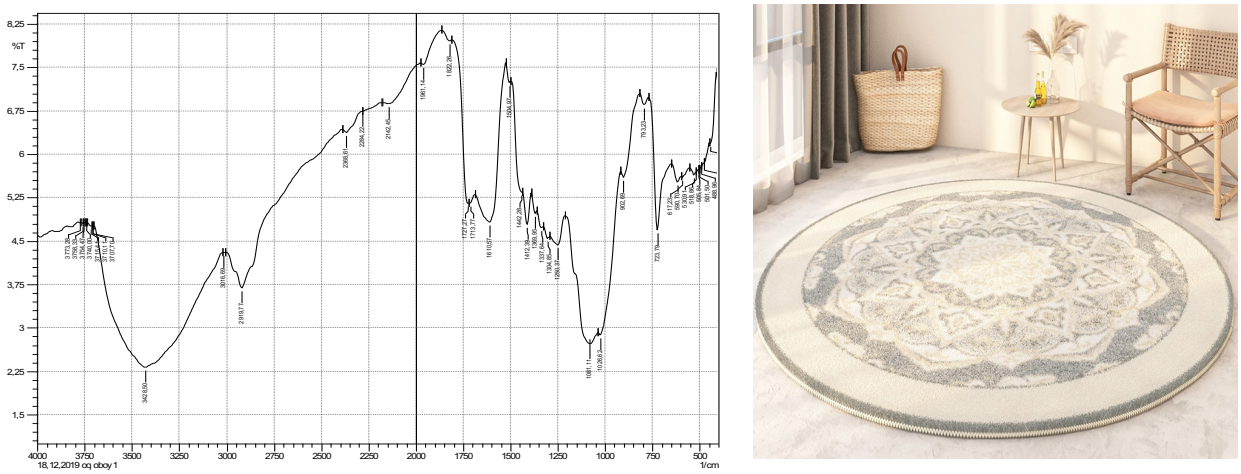
Pic – 2. Fractionated IR spectrum of red colored fiber waste

Such situations can be seen in figures 3 and 4, where the spectrum peaks are attached to irregular fiber fibers in a suspended composite manner, i.e., in pic 1, the following peaks in the spectrum range from 3750 to 500, and in pic. 3, it is confirmed that the order of dyes is located in the fiber fiber part with composite polymer solutions. it can be observed that the increase of color tolerance is of great importance.

The green fraction below is shown in pic-3, and the IR-spectrum of the carpet products with a red color is shown in pic-4, that is, the mass presence of artificial and synthetic composites in the process of processing fibers, in the classification of dyes that give color to fibers, in subsequent processes, that is, its allows determining the adhesion properties of the obtained product when obtaining composite products.



Pic – 3. Fractionated IR spectrum of green fibrous waste



Pic – 4. Fractionated IR spectrum of white fibrous waste

The stage of fractionation of carpet format waste has been implemented. After processing, the colored fractions were separated according to the type of product, and the IR spectra of their fibers were taken and analyzed.

REFERENCES

1. M.M. Murodov. «Technology of making cellulose and its ethers by using raw materials» // *International Conference* "Renewable Wood and Plant Resources: Chemistry, Technology, Pharmacology, and Medicine". *Saint-Petersburg, Russia*. June 21-24., 2011. 142-143.
2. M.M. Murodov. «The technology of making carboxymethyl cellulose (cmc) by method monoapparatus» // *International Conference* «Renewable Wood and Plant Resources:

Chemistry, Technology, Pharmacology, and Medicine». *Saint-Petersburg, Russia*. June 21-24., 2011. 141-142.

3. Ўзбекистон Республика Вазирлар Маҳкамаси “РЕСПУБЛИКАДА ТЕЗ ЎСУВЧИ ВА САНОАТБОП ПАВЛОВНИЯ ДАРАХТИ ПЛАНТАЦИЯЛАРИНИ БАРПО ҚИЛИШ ЧОРА-ТАДБИРЛАРИ ТЎҒРИСИДА” 2020 йил 27 августдаги 520-сонли қарори.
4. Интернет: https://xs.uz/uzkr/post/ hududlarda –pavlovniya -plantatsiyalari -tashkil-qilinadi/
5. Муродов, М. Х., & Муродов, Б. Х. У. (2015). Фотоэлектрическая станция с автоматическим управлением мощностью 20 кВт для учебного заведения. *Science Time*, (12 (24)), 543-547.
6. Murodov, M. M., Rahmanberdiev, G. R., Khalikov, M. M., Egamberdiev, E. A., Negmatova, K. C., Saidov, M. M., & Mahmudova, N. (2012, July). Endurance of high molecular weight carboxymethyl cellulose in corrosive environments. In *AIP Conference Proceedings* (Vol. 1459, No. 1, pp. 309-311). American Institute of Physics.
7. Murodov, M. M., Yusupova, N. F., Urabjanova, S. I., Turdibaeva, N., & Siddikov, M. A. (2021). OBTAINING A PAC FROM THE CELLULOSE OF PLANTS OF SUNFLOWER, SAFFLOWER AND WASTE FROM THE TEXTILE INDUSTRY.
8. Murodov, M. M., Yusupova, N. F., Urabjanova, S. I., Turdibaeva, N., & Siddikov, M. A. Obtaining a Pac From the Cellulose of Plants of Sunflower, Safflower and Waste From the Textile Industry. *European Journal of Humanities and Educational Advancements*, *2*(1), 13-15.
9. Murodov, M. M., Xudoyarov, O. F., & Urozov, M. Q. (2018). Technology of making carboxymethylcellulose by using local raw materials. Advanced Engineering Forum Vols. 8-9 (2018) pp 411-412/©. *Trans Tech Publications, Switzerland. doi*, *10*, 8-9.
10. Primqulov, M. T., Rahmonbtrdiev, G., Murodov, M. M., & Mirataev, A. A. (2014). Tarkibida sellyuloza saqlovchi xom ashyoni qayta ishlash texnologiyasi. *Ozbekiston faylasuflar milliy jamiyati nashriyati. Toshkent*, 28-29.
11. Рахманбердиев, Г. Р., & Муродов, М. М. (2011). Разработка технологии получения целлюлозы из растений топинамбура. *Итисодиёт ва инновацион технологиялар" илмий электрон журнали,(2)*, 1-11.
12. Elievich, C. L., Khasanovich, Y. S., & Murodovich, M. M. (2021). TECHNOLOGY FOR THE PRODUCTION OF PAPER COMPOSITES FOR DIFFERENT AREAS FROM FIBER WASTE.
13. MURODOVICH, M. M., QULTURAEVICH, U. M., & MAHAMEDJANOVA, D. (2018). Development of Technology for Production of Cellulose From Plants of Tissue and Receiving Na-Carboxymethylcellulose On its Basis. *JournalNX*, *6*(12), 407-411.
14. Rahmonberdiev, G., Murodov, M., Negmatova, K., Negmatov, S., & Lysenko, A. (2012). Effective Technology of Obtaining The Carboxymethyl Cellulose From Annual Plants. In *Advanced Materials Research* (Vol. 413, pp. 541-543). Trans Tech Publications Ltd.
15. Murodovich, M. M., Murodovich, H. M., & Qulturaevich, U. M. (2020). Obtaining technical carboxymethyl cellulose increased in main substance. *ACADEMICIA: AN INTERNATIONAL MULTIDISCIPLINARY RESEARCH JOURNAL*, *10*(12), 717-719.
16. Murodovich, M. M., Qulturaevich, U. M., & Mahamedjanova, D. Comparative Researches of the Composition and Properties Cmc in Different Degree of Polymerization. *JournalNX*, *6*(12), 412-415.
17. Йулдашева, Г. И., & Тешабаева, О. Н. (2020). Развитие цифровой экономики Республики Узбекистан. *Universum: экономика и юриспруденция*, (7 (72)), 4-6.

18. Teshabaeva, O., Yuldasheva, G., & Yuldasheva, M. (2021). DEVELOPMENT OF ELECTRONIC BUSINESS IN THE REPUBLIC OF UZBEKISTAN. *Интернаука*, (3-3), 16-18.

19. Ibragimovna, Y. G. (2022). ADVANTAGES OF CREDIT-MODULE SYSTEM IN THE FIELD OF EDUCATION. *INTERNATIONAL JOURNAL OF SOCIAL SCIENCE & INTERDISCIPLINARY RESEARCH ISSN: 2277-3630 Impact factor: 7.429*, *11*, 14-16.

20. Йўлдашева, М. (2021). ЭФФЕКТИВНОЕ УПРАВЛЕНИЕ ИНВЕСТИЦИОННОЙ ДЕЯТЕЛЬНОСТЬЮ ИНФОРМАЦИОННО-КОММУНИКАЦИОННЫХ ТЕХНОЛОГИЙ УЗБЕКИСТАНА. *Студенческий вестник*, (3-4), 11-13.

21. Shermatova, G. Y. H. (2022). ANIQ FANLARNI O'QITISHDA AXBOROT TEXNOLOGIYALARIDAN FOYDALANISH. *Scientific progress*, *3*(1), 372-376.

22. Yuldasheva, G. I., & Shermatova, K. M. (2021). THE USE OF ADAPTIVE TECHNOLOGIES IN THE EDUCATIONAL PROCESS. *Экономика и социум*, (4-1), 466-468.

23. Худаёрова, С. И. (2022). ОСОБЕННОСТИ МОРФОЛОГИЧЕСКОГО ФОРМИРОВАНИЯ ЛИСТЬЕВ У СОРТОВ ЛИМОНА (CITRUS L.) В ЗАЩИЩЕННЫХ МЕСТАХ. *БАРҚАРОРЛИК ВА ЕТАКЧИ ТАДҚИҚОТЛАР ОНЛАЙН ИЛМИЙ ЖУРНАЛИ*, 15-18.

24. Қодирова, Г. О. Қ., & Худоёрова, Ф. (2021). РОЛЬ ОБРАЗОВАТЕЛЬНЫХ ТЕХНОЛОГИЙ В ПРЕПОДАВАНИИ ЯЗЫКА. *Scientific progress*, *2*(3), 894-898.

25. Itolmasovna, K. S. (2022). DEVELOPMENT OF MARKETABLE PROPERTIES OF PROCESSED LEMON. *The American Journal of Agriculture and Biomedical Engineering*, *4*(02), 21-25.

26. Хамидов, О. Р., & Кудратов, Ш. И. (2022, March). ИНТЕГРАЛЬНАЯ ОЦЕНКА ТЕХНИЧЕСКОГО СОСТОЯНИЯ СИСТЕМ ЭНЕРГЕТИЧЕСКИХ УСТАНОВОК ЛОКОМОТИВОВ. In *" ONLINE-CONFERENCES" PLATFORM* (pp. 165-168).

27. Грищенко, А. В., & Хамидов, О. Р. (2018). Оценка технического состояния локомотивных асинхронных тяговых электродвигателей с использованием нейронных сетей. *Транспорт Российской Федерации. Журнал о науке, практике, экономике*, (6 (79)), 19-22.

28. Сафаров, А. М., Жураева, К. К., & Рустемова, А. Р. (2020). ВОПРОСЫ ПОВЫШЕНИЯ ЭФФЕКТИВНОСТИ ИСПОЛЬЗОВАНИЯ ЭНЕРГОРЕСУРСОВ. *ИННОВАЦИОННОЕ РАЗВИТИЕ: ПОТЕНЦИАЛ НАУКИ И СОВРЕМЕННОГО ОБРАЗОВАНИЯ*, 20-23.

29. Хамидов, О. Р., & Грищенко, А. В. (2013). Вибродиагностика повреждения подшипников качения локомотивных асинхронных электродвигателей. In *Подвижной состав XXI века: идеи, требования, проекты* (pp. 174-176).

30. Bedritsky, I. M., Jurayeva, K. K., & Bozorov, L. K. (2020). USING OF PARAMETRIC NONLINEAR LC-CIRCUITS IN STABILIZED TRANSDUCERS OF THE NUMBER OF PHASES. *Chemical Technology, Control and Management*, *2*, 42-48.

31. Komilovna, J. K., & Rustemovna, R. A. (2020). The role of vacuum circuit breakers in traction substations. *International Journal on Orange Technologies*, *2*(5), 1-2.

32. Qulturaevich, U. M., Elievich, C. L., Murodovich, M. M., & Fattahovna, Y. N. (2021, May). TECHNOLOGIES FOR PRODUCING CELLULOSE FROM SAFLOR PLANTS AND PRODUCING CARBOXYMETHYL CELLULOSE BASED ON IT. In *Euro-Asia Conferences* (Vol. 5, No. 1, pp. 1-4).

33. Qulturaevich, U. M., Elievich, C. L., Murodovich, M. M., & Uralovich, K. S. (2021, May). TECHNOLOGY OF PATS GETTING BY MONOAPPARAT. In *Euro-Asia Conferences* (Vol. 5, No. 1, pp. 5-7).

34. Murodovich, M. M., & Mahamedjanova, D. (2020). Technologies for producing cellulose from saflor plants and producing carboxymethyl cellulose based on. *ACADEMICIA: AN INTERNATIONAL MULTIDISCIPLINARY RESEARCH JOURNAL*, *10*(12), 730-734.

35. Халиков, М. М., Рахманбердыев, Г. Р., Турабджанов, С. М., & Муродов, М. М. (2016). ИНГИБИРОВАНИЕ ДЕСТРУКЦИИ НАТРИЕВОЙ СОЛИ КАРБОКСИМЕТИЛЦЕЛЛЮЛОЗЫ В ПРОЦЕССЕ ЕЁ ПОЛУЧЕНИЯ. *Химическая промышленность сегодня*, (11), 22-26.

36. Murodov, M. M., Yusupova, N. F., Urabjanova, S. I., Turdibaeva, N., & Siddikov, M. A. (2021). OBTAINING A PAC FROM THE CELLULOSE OF PLANTS OF SUNFLOWER, SAFFLOWER AND WASTE FROM THE TEXTILE INDUSTRY.

37. Turabovich, D. A., & Murodovich, M. M. Processing And Development Of Technology For Development Of Equipment For Sustainable Promotions For Maximum Communities. *International Journal on Integrated Education*, *3*(12), 498-504.

38. Murodovich, M. M. Creation of Innovative Technology to Be Involved in Popular and Wine Tours (Marmar Popular, Another Bentonit and Maxali Homes). *International Journal on Integrated Education*, *3*(12), 494-497.