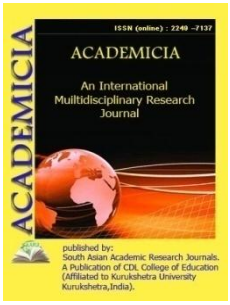
ACADEMICIA

ISSN: 2249-7137 Vol. 11, Issue 10, October 2021 Impact Factor: SJIF 2021 = 7.492

ACADEMICIA
An International Multidisciplinary Research Journal
(Double Blind Refereed & Peer Reviewed Journal)



DOI: 10.5958/2249-7137.2021.02299.0

STUDY AND ANALYSIS OF THE CONVERTION PROCESS OF PROPANO-BUTANN MIXTURE IN HIGH SILICATE CEOLITIC CATALYSTERS OF DIFFERENT SILICATE MODULES AND DIFFERENT STRUCTURES

Javharov Jonibek Joraqul ogli*; Xolliyev Shamsiddin Xudoyberdiyvich; Tursunova Nargiza Samariddinovna*****

[1,3]Samarkand State University,
UZBEKISTAN

ABSTRACT

The catalytic aromatization reaction of the propane-butane fraction was carried out on a mesoporous catalyst containing Pt, Zn, Ga and Cd / N-ZSM-5 under the following optimal conditions: Catalytic conversion of propane-butane alkanes at atmospheric pressure went. The reaction was carried out under conditions of temperature 723 to 873 K and volumetric velocity of the raw material from 50 to 150 h. The conversion reaction of a mixture of alkanes containing C2H6 = 2.2; C3H8 = 73.7; N-S4N10 = 24.1%. In high-silicate zeolite catalysts with the structure ZSM-5 (⟦SiO⟧ _2 / ⟦Al⟧ _2 O_3 = 30, 50, 70 and 100) and ZSM-11 (⟦SiO⟧ _2 / ⟦Al⟧ _2 O_3 = = 100), the catalytic contacts the relationship between their structural and acidic characteristics and their activity in the formation of conversion products was studied. Depending on the silicate modulus, it was found that the conversion rate of the alkane mixture S_2-S_4 varies and is 96% at ⟦T = 823K and v = 100 s⟧ ^ (- 1). The distribution curves of the volume of the pores to the equivalent diameters were compared. The largest part of the pores is 13 to 20 diametri in diameter. YuK zeolites also have medium (25-50 Å) and large (50-90 Å) mesocytes. The distribution corresponds to 32–35 bo'yicha along the curves. The sizes of the largest mesocytes for these catalysts vary - from 63 to 80 Å.

KEYWORDS: *Propane, Butane, Chromatographic Analysis, Volumetric Velocity, High Silicon Zeolite, Catalyst, Texture Characteristic, Meso Porosity, Acidity Center, IR Spectrum, Adsorption-Desorption Of Benzene, Adsorption Of Ammonia, Propane Adsorption Isotherms, Propane Adsorbers.*

REFERENCES

1. Recent progress in methane dehydroaromatization: from laboratory curiosities to promising technology / S. Ma, X. Guo, L. Zhao,S. Scott, X. Bao // J. Energy Chem. – 2013. – V. 22. – № 1. –P. 1–20.
2. Spivey J.J., Hutchings G. Catalytic aromatization of methane //Chem. Soc. Rev. – 2014. – V. 43. – P. 792–803.
3. Direct conversion of natural gas to higher hydrocarbons: a review// S. Majhi, P. Mohanty, H. Wang, K.K. Pant // J. Energy Chem.– 2013. – V. 22. – P. 543–554.
4. Металлцеолитные катализаторы дегидроароматизации метана //Н.А. Мамонов, Е.В. Фадеева, Д.А. Григорьев, М.Н. Михайлов, Л.М. Кустов, С.А. Алхимов // Успехи химии. – 2013. – Т. 82. –№ 6. – С. 567–585.
5. Файзуллаев Н. И., Туробжонов С. М. Метан ванефтнингйўлдошгазлариникаталитикароматлаш // Кимёвакимётехнологияси. 2015. – No. 2. – Б. 3–11.
6. Catalytic chemistry for Methane Dehydroaromatization (MDA) on a bifunctional Mo/HZSM5 catalyst in a packed bed / C. Karakaya, S.H. Morejudo, H. Zhu, R.J. Kee // Ind. Eng. Chem. Res. –2016. – V. 55. – P. 9895–9906.
7. Methane dehydroaromatization by Mo/HZSM5: Monoor bifunctional catalysis? / N. Kosinov, F.J.A.G. Coumans, E.A. Uslamin, A.S.G. Wijpkema, B. Mezari, E.J.M. Hensen // ACS Catal. – 2017. – V. 7. – № 1. – P. 520–529.
8. Дергачев А.А., Лапидус А.Л. Каталитическая ароматизация низших алканов // Рос.хим. журн. (Журн. Рос. хим. об-ва им. Д.И. Менделеева). 2008. Т. LII. № 4. С. 15–21.
9. Ахметов А.Ф., Каратун О.Н. Модифицированные пентасилсодержа-щие катализаторы для ароматизации углеводородных газов // Химия и технология топлив и масел. 2001. № 5. С. 33–36.
10. Victor de O. Rodrigues, Arnaldo C. Faro Junior. On catalyst activation and
11. reaction mechnisms in propane aromatization on Ga/HZSM5 catalysts // Applied Catalysis A: General 435–436. 2012. Pp. 68–77.
12. Дергачев А.А., Лапидус А.Л. Превращения низкомолекулярных алифатических углеводородов на цеолитных катализаторах // Газохимия. 2008. № 4. С. 16–20.
13. Восмерикова Л.Н., Волынкина А.Н., Восмериков А.В., Зайковский В.И. Ароматизация этана и пропана на металлсодержащих цеолитах структурного типа ZSM-5 // НефтеГазоХимия. 2015. № 1. С. 37–41.
14. Козлов А.М., Худяков Д.С., Лапидус А.Л., Дергачев А.А. Ароматиза-ция пропан-бутановой фракции на пентасиле, модифицированном солями цинка // Технологии нефти и газа. 2011. № 1. С. 7–10.

15. M. Tian, T.Q. Zhao, P.L. Chin, B.S. Liu, A.S.-C. Cheung, Methane and propane co-conversion study over zinc, molybdenum and gallium modified HZSM-5 catalysts using time-of-flight mass-spectrometry // Chemical Physics Letters 592. 2014. Pp. 36–40.

16. Fayzullayev N.I., S.M.Turobjonov. Catalytic Aromatization of Methane // International Journal of Chemical and Physical Science. -2015. -Vol. 4, No-4. P 27-34

17. Fayzullayev N.I., B.Sh. Shukurov., A. Normuminov.Kinetics and Mechanism of the Reaction of Catalytic Dehydroaromatization of Methane // Petroleum Science and Engineering. India. -2017; N6: 36-42pp.

18. Файзуллаев Н. И., Туробжонов С. М. Метан ванефтнингйўлдошгазлари-ни каталитикароматлаш // Кимёвакимётехнологияси. 2015. – No. 2. – Б. 3–11.

19. Fayzullaev N. I., Shukurov B. Sh. Catalytic aromatization of methane with non-mo-contained catalysts //Austrian journalof technical andnatural sciences. № 7–8. - 2018. –PP-73-80.

20. N. I. Fayzullaev., B. Sh. Shukurov., A. O'. Normuminov. Kinetics and mechanism of the reaction of catalyticdehydroaromatization of methane// International Journal of Oil, Gas and Coal Engineering. 2017; 5(6): 124-129. http://www.sciencepublishinggroup.com/j/ogce. doi: 10.11648/j.ogce.20170506.11