



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



DOI: 10.5958/2249-7137.2021.02137.6

**SCIENTIFIC BASIS OF CATALYST REGENERATION OF METHANE
 OXYCONDENSATION PROCESS**

Sh.B.Raxmatov* ; N.I.Fayzullaev**

* Bukhara Medical Institute,
 Bukhara, UZBEKISTAN

** Samarkand State University,
 Samarkand, UZBEKISTAN

ABSTRACT

In the study, the coking mechanism of the methane oxycondensation reaction catalyst was developed and the optimal conditions for catalyst regeneration were selected. Based on the results obtained, the process of catalyst regeneration of the methane oxycondensation reaction was modelled and the rate constant and activation energy of the coke formation process was evaluated based on experimental data.

KEYWORDS: *Catalyst, Coke, Regeneration, IR Spectrum, Thermogravimetry, The Velocity Constant, Activation Energy, Mathematical Modelling.*

REFERENCES

1. Daneshpayeh M., Khodadadi A., Mostoufi N., Mortazavi Y., Sotudeh-Gharebagh R., Talebizadeh A. Kinetic modeling of oxidative coupling of methane over Mn/Na₂WO₄/SiO₂ catalyst.//Fuel Processing Technology. –2009. 90(3). № 5. –p.403-410.
2. Ji S., Xiao T., Li Sh., Chou L., Zhang B., Xu Ch., Hou R., York A.P.E., and Green M.L.H. Surface WO₄ tetrahedron: these sence of the oxidative coupling of methane over M–W–Mn/SiO₂ catalysts // Journal of Catalysis. 2003. Vol. 220. P. 47-56.
3. Tyunyaev A.A., Nipan G.D., Koltsova T.N., Loktev A.S., Ketsko V.A., Dedov A.G., Moiseev I.I. Polymorphic ODM catalysts Mn / W / Na (K, Rb, Cs) / SiO₂ // Journal of Inorganic Chemistry. - 2009. - T. 54. - No. 5. - S. 723-726.
4. Dedov A.G., Loktev A.S., Telpukhovskaya N.O., Parkhomenko K.V., Gerashchenko M.V., Moiseev I.I. Oxidative condensation of methane in the presence of lanthanum-cerium

- catalysts: the fundamental nature of the nonadditivity effect // Chemistry and technology of fuels and oils. -2010. -Т.46.-№2. -S.43-46.
5. Makhlin V.A., Podlesnaya M.V., Dedov A.G., Loktev A.S., Telpukhovskaya N.O., Moiseev I.I. Oxidative dimerization of methane: kinetics, mathematical modeling and process optimization on La / Ce catalysts // Russian Chemical Journal. -2008. -Т.52. -№5. -S.73-79.
 6. Dedov A.G., Loktev A.S., Telpukhovskaya N.O., Parkhomenko K.V., Moiseev I.I. New catalysts for oxidative condensation of methane - mesoporous amorphous silicates of rare earth elements // Reports of the Academy of Sciences. 2008. –Т.422. -№4. -S.498-500.
 7. Н.И.Файзуллаев. Метанни каталитик оксиконденсатлаб этилен олиш.// Самарканд, СамДУ, 2019. Монография. 108-бет.
 8. Fayzullayev N.I., Tursunova N.S. Marganes saqlovchi katalizatorlarda metandan etilen olish // Химия и химическая технология. – 2018, №1, -С.24-28.
 9. Fayzullayev N.I., N.S.Tursunova, H.M.Nasimov. Metanni katalitik dimerlash reaksiyasi yordamida etilen olish.// СамДУ, Илмий ахборотномаси. 2017-йил, 5-сон (105), 130-136-бетлар.
 10. Fayzullayev N.I., Sh.B. Rahmatov. Metanni katalitik oksikondensatlash.// СамДУ, Илмий ахборотномаси. 2018-йил, 3-сон (109), 97-104-бетлар.
 11. Lomonosov V.I., Gordienko Yu.A., Sinev M.Yu. Kinetic laws of oxidative condensation of methane in the presence of model catalysts // Kinetics and Catalysis. 2013. Т. 54. No. 4. P. 474–486.
 11. Davletshin A.R., Khamzin Yu.A., Shiriyazdanov R.R., Makhmutova O.N., Abdushev R.R., Kuzmenko M.Yu., Yakupov N.V., Telyashev E.G. Improvement of the process of regeneration of heterogeneous catalysts using supercritical technologies // World of oil products. 2016. No. 4. P. 33 - 36.
 12. Bogdan V.I., Koklin A.E., Kazansky V.B. Regeneration of deactivated palladium catalysts for selective hydrogenation of acetylene with supercritical CO₂ // Supercritical fluids: theory and practice. 2006. Т. 1.No. 2.P. 5 - 12.
 13. Ostrovsky N.M. Kinetics of catalyst deactivation. - М.: Nauka, 2001 .-- 209 p.
 14. Khamzin Yu.A., Shiriyazdanov R.R., Davletshin A.R., Murzabekova A.B., Yakupov N.V., Shadrina A.E. Application of oxidative regeneration of zeolite-containing catalysts in the process of solid-acid alkylation of isobutane with olefins // Chemistry and technology of fuels and oils. 2018. No. 3. P. 23-26.
 15. Khamzin Yu.A., Shiriyazdanov R.R., Davletshin A.R., Shadrina A.E. Alkylation of isobutane with olefins on zeolite-containing catalysts with in situ regeneration // Chemistry and technology of fuels and oils. 2018. No. 2. P. 18-21.
 16. Klingmann R., Josl R., Traa Y., Glaser R., Weitkamp J. Hydrogenative Regeneration of a Pt/La-Y Zeolite Catalyst Deactivated in the isobutane/n-butene Alkylation // Applied Catalysis A: General. 2005. No. 281. P. 215-223.
 17. Fayzullayev N.I., Mamadoliyev I.I. Yuqori kremniyli seolitning faollanish sharoitini maqbullashtirish// SamDU, Ilmij axborotnomasi. 2019-йил, 3-сон (115), 8-12-бетлар.

18. Shukurov V.Sh., Raxmatov Sh.B., Fayzullayev N.I. Kaolindan yuqori kremniyli seolitlar olish. SamDU ilmiy axborotnomasi. №5. 2018. 106-111-betlar.
19. Н.И.Файзуллаев. C₁-C₄-alkanlarning katalitik sintezi.//SamDU ilmiy axborotnomasi. 2018. №3. 135-141-betlar.
20. Fayzullaev N.I., Mukhamadiev N.K., Achilov D.Kh., Sarimsokova N.S. Nanocatalyst for the process of obtaining C₂ hydrocarbons from natural gas // Third international conference of the CIS countries "Sol-gel synthesis and study of inorganic compounds, hybrid functional materials and dispersed systems" September 8-12, 2014 (Suzdal, Russia). - 2014.-- p. 164.
21. Faizullaev.NI Prospective methods of obtaining ethylene from natural gas of Uzbekistan "Chemistry and chemical technology". - 2014. - N 4. - Pages 18-26.
22. Faizullaev.NI Modeling and approval of methane ethylene synthesis reactor // SamSU Bulletin. -2016. -№ Pages 5.-147-153.
23. Fayzullayev.N.I. Catalytic Oxidation of Methane // International Journal of Chemical and Physical Science. – 2015. - V. 4. - N 2. – P. 49-54.
24. N.I.Fayzullaev, O.O.Fayzullaev, K.M.Muradov. Synthesis of ethylene from methane on piled catalysts//223h National Meeting, April 7-11, Orlando, F1.P.54.
25. Tsarev N.I., Tsarev V.I., Katrakov I.B. "Practical Gas Chromatography". Barnaul 2000.
26. Fayzullaev N.I., Kurbanov A.M., Turdiev M.F. Generalization of the results of the analysis and kinetic regularities of the global optimization of the oxidative condensation of methane // Bulletin AING, 2016, No. 4 (40). –S-35-39.
27. Fayzullayev N.I., Kurbanov A.M., Turdiev M., Saginayev A.T. Global optimization of oxidative condensation reaction of methane.// Scientific journal of the modern education & research institute. The Kingdom of Belgium. -2017. PP. 43-47.
28. Fayzullaev N.I.,Raxmatov Sh.B. Kinetics and mechanism of the reaction of the catalytic oxycondensation reaction of methane.// Austrian Journal of Technical and Natural Sciences Scientific journal №5–6 2019 (May– June). PP 62-69.
29. Raxmatov Sh.B., NI Faizullaev. Catalytic oxycondensation of methane. SamSU scientific bulletin. №3. Pages 97-104.
30. Fayzullayev N.I. Metandan etilen sintezi reaktorini modellashtirish va maqbullashtirish.// SamDU ilmiy axborotnomasi. -2016. -№ 5.-147-153 betlar.
31. Fayzullayev N.I., Sh.B. Raxmatov., U.M. Norqulov. Metanni katalitik oksikondensatlab etilen olish texnologiyasi.// SamDU, Ilmiy axborotnomasi. 2018-yil, 5-son (109), 122-129-betlar.