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to insure the minimal yield of sweet composites and ole ns. In the petrochemical assiduity, hydrocatalytic isomerization depends on colorful normal chain para ns. Hydrocatalytic isomerization of C4-C7 hydrocarbons is used in the product of gasoline with a high octane number. Hydrocatalytic isomerization of C7- C15 hydrocarbons is used to produce diesel energy with bettered low- temperature characteristics while maintaining high cetane gures of the original diesel fragments. Isomerization of hydrocarbons with a chain length lesser than C15 is used to gain slicking canvases with a high density indicator and bettered low temperature parcels. As the hydrocarbon chain attached to sweet or naphthenic rings branches and the number of side chains increases, the melting point of hydrocarbons decreases. Para n hydrocarbons starting with C12H26 have advanced melting points than fanned bones [4]. Also, the low- temperature parcels of isopara nic hydrocarbons of the same molecular weight are di erent and depend on the length and number of alkyl revolutionaries. e end of the exploration is to develop individual approaches to the use of the gasoline bit of the Zhanazhol oil painting and gas condensate eld as a raw material for the process of hydrocatalytic isomerization. ese styles will help to e ectively break the issue of the need for high- quality energy, lubricants, petroleum coke and petrochemical feedstock. e main task of the exploration is to gain information on the chemical composition of oil painting from the Zhanazhol eld grounded on gas chromatography and to determine the relationship between the molecular characteristics of gasoline fragments of oil painting and the e ectiveness of hydrocatalytic isomerization [5].

Ma erial and Me hod

e exploration object is light gasoline fragments of oil painting from the Zhanazhol eld of the Mugalzhar District of the Aktobe Region. e process of hydrocatalytic isomerization to ameliorate energy quality has been studied in detail. Also, the paper gives a chemical assessment of the gasoline fragments of oil painting from the Zhanazhol eld, according to the state standard styles for the study of oil painting and gas feedstock GOST 33364 – 2015 " oil painting and petroleum products, liquid [6]. system for determining viscosity, relative viscosity, and API graveness determination with a hydrometer ", GOST 31391 – 2009 " Petroleum products. Transparent and opaque liquids. Determination of kinematic density and computation of dynamic density "(22), GOST 2177 – 99 " Petroleum products. system for determining the fractional composition of petroleum products "(23), GOST 20287 – 91 " Petroleum products styles for determining the temperatures of uidity and solidi cation "(24), GOST 32139 – 2019 " Petroleum and petroleum products. Determination of sulfur content by energy dispersiveX-ray luminescence spectrometry system ", GOST R 51941 – 2002. " Gasolines [7]. Determination of aromatics in nished gasoline by gas chromatography system ". Fractional composition according to ASTM D86 " Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure ". e distillation of the petroleum feedstock was carried out in a batch laboratory unit at ambient pressure under conditions that are designed to give separation with roughly- one theoretical plate. At the same time, the boiling point and the volume of the condensate were recorded. A analogous fractional system for the determination of C2- C5 hydrocarbons in gasolines was carried out by gas chromatography ASTM D2427- 06 " Standard Test system for Determination of C 2 through C 5 Hydrocarbons in Gasolines by Gas Chromatography ", also applicable for the determination of the content of monoole ns, cyclic ole ns, diole ns or acetylenes. e anatomized samples shouldn't contain a signi cant quantum of factors, the boiling point of which is lower than the boiling point of ethylene. According to this ASTM D4420- 94 " Standard Test

system for Determination of Aromatics in Finished Gasoline by Gas Chromatography " system, sweet hydrocarbons in the composition of gasolines were determined by the system of a chromatographic system of two columns connected to a thermal conductivity sensor and two cathodes(or two sensors with one cathode). A reproducible volume of samples entered the column containing the polar liquid phase [8].

e range of attention of sweet factors determined in gasoline benzene from0.1 to5.0; toluene from1.0 to20.0; sweet C8 from3.0 to25.0; sweet C9 and heavier from5.0 to30.0; total volume bit of sweet hydrocarbons ranges from10.0 to80.0. ASTM D4052 " Standard Test Method for Density, Relative viscosity, and API graveness of Liquids by Digital Density Meter " gasoline viscosity was measured according to the standard system for determining the viscosity and relative viscosity of liquids using a digital viscosity cadence. e system comported in changing the oscillation frequence of a liquid sample in an oscillating tube and determining the viscosity of the sample from the change in the mass of the tube. e isomerization of n- alkanes of the gasoline bit was studied in a high- pressure in ow unit with a stationary catalyst bed, at a certain temperature, pressure and space haste. e main element of the n- alkane isomerization device is a pristine- sword reactor with a catalyst volume of 50 – 100 cm3 under high pressure. e reactor is equipped with a line of heaters. e temperature in the reactor and the catalyst bed is controlled by a system of calibrated thermocouples connected to a potentiometer. Hydrogen is supplied from a cylinder for hydroprocessing response and catalyst recovery [9].

Re 1 and Di c ion

Ca al charac eri a ion

As forenamed in Section2.2, the catalysts, as well as the support, have been characterized by several ways in order to relate their features with their physicochemical parcels. e e ect of essence deposit can be seen by comparing these results with those of the support, whose top parcels can be set up. e pervious structure is slightly a ected by the objecti cation of the essence. Pt deposit substantially a ects the drop of the micropore volume, while Pd deposit a ects the mesopore volume [10]. is isn't only related to the lower quantum of platinum with respect to precaution, but also to its lower yspeck size, suggesting the deposit of Pt inside or at the mouth of the micropores, while Pd is deposited on the mesopores. On the other hand, both total acidity and acid strength drop more oppressively for Pd, indicating that its deposit takes place on the stronger acid spots, blocking the availability to Brönsted and Lewis spots, as Pt is placed on weaker centers. e N2 adsorption/ desorption isotherms have been depicted. It can be seen that the donation of the micropores(measured at relative pressures<0.2) to the speci c face is relatively poor, which is in concordance with the low content of zeolite of the equilibrium FCC catalyst(13.8 wt). On the negative, the presence of meso and macropores is openly egregious, ex. egC003 Tw 0ct of ehe meatrixused in the px. essivn of ohe support, In dee, both tsotherms hispelay type H3hydseredss ocircls, w]T .

hydrocracking of HT- LCO with both Pd/ FCC and Pt/ FCC catalysts for the whole range of temperatures studied. It can be seen that in all cases that conversion decreases until it reaches a steady value, which is kept along the time. It should be noted that high temperatures held up the reaching of the steady values, as catalyst exertion is promoted at high temperatures, especially the cracking one. e drop may be caused by(i) the deposit of heteroatoms, i.e. S and N, preferentially on the metallic function of the catalysts,(ii) the deposit of essence on both the acidic and metallic functions of the catalysts; and(iii) the deposit of coke causing a partial collapse of the hydrocracking exertion. From the forenamed causes, the possible goods of the deposit of S, N and essence can be considered minor, since the LCO has been hydrotreated in a former stage to minimize their contents and alleviate the poisoning they may beget. Indeed, comparing the results depicted a with those preliminarily reported by Gutiérrez etal.in the hydrocracking of LCO on precious essence- grounded catalysts, the conversion decay attained by them is signi cantly more pronounced. Hence, it can be considered that the deposit of coke is the most in uential factor in catalyst deactivation. is statement is supported not only by the fact that the quantum of N and S will be lower in the hydrotreated LCO but also by the e ect of temperature on the mechanisms of coke conformation. In general, catalyst deactivation by coke conformation tends to increase with adding the response temperature by favoring the extent of the condensation responses of the coke precursors still, the degree of deactivation, in this case, dropped with adding the response temperature. is could be credited to the creation of the hydrogenation responses of coke precursors, modifying the coke quantum and its nature.

Concl ion

e hydrocracking of apre-hydrotreated light cycle oil painting(HT- LCO) has been delved with the end of carrying a high- quality gasoline bit. Both catalysts show a great performance since the gasoline bit has been easily maximized in the whole range of temperatures studied, but it has been easily promoted at 400 °C. e values attained for a TOS = 8 h at this temperature have been of 64 and 79 wt for Pd/ FCC and Pt/ FCC catalysts, independently. Likewise, this high yield of gasoline has come with a negligible conformation of feasts(below 1 wt with both catalysts). Concerning the composition of the gasoline bit, Pt/ FCC catalyst has allowed for carrying a gasoline bit with attention of aromatics below the limits established by the current legislation. It should be stressed that for a temperature of 400 °C the attention of aromatics has been only 16 wt. Pd/ FCC catalyst has reached the legal limits just at 360 and 400 °C, being the ultimate temperature the

bone that o ers the lowest attention of aromatics(20 wt). e TPO biographies of the spent catalysts have exposed the presence of two fragments of coke deposited on the matrix and in the micropores of the HY zeolite of the catalyst. e low combustion temperature of this last type of coke(speci c of a low advanced coke) indicates that the presence of the matrix and the exertion of the catalyst for the hydrocracking of the coke precursors avoid their condensation towards further advanced structures and the posterior blocking of the micropores of the zeolite.

is restriction of the deactivation explains the pseudoestable state of exertion reached by the catalysts(advanced in the case of the Pt/ FCC catalyst) that ensures good results for the hydrocracking of the HT-LCO.

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