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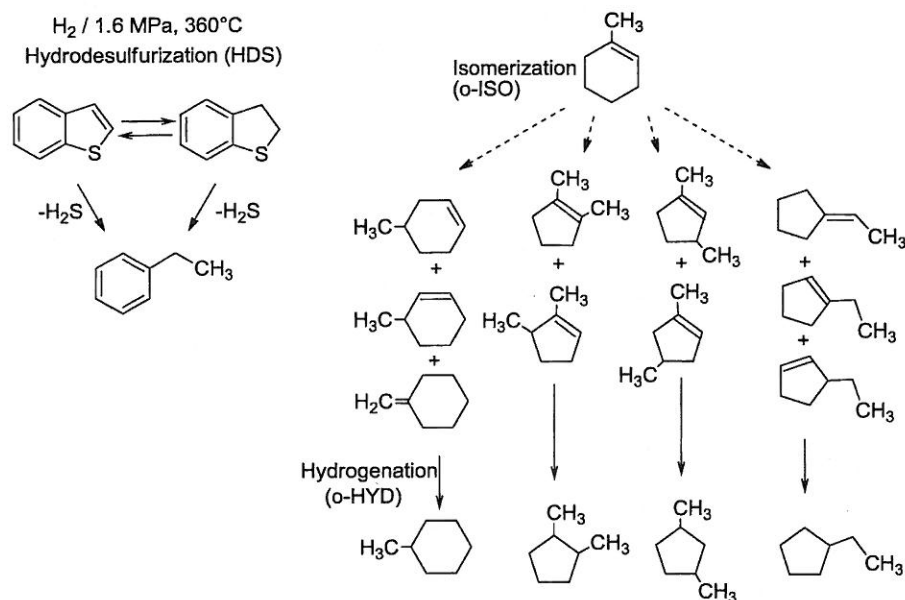
THE ISOLATION AND IDENTIFICATION OF BRANCHED CYCLIC C7 OLEFINS IN THE REARRANGEMENT OF 1-METHYLCYCLOHEX-1-ENE DURING HYDRODESULFURIZATION OF MODEL FCC GASOLINE

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In our recent study we have compared hydrodesulfurization (HDS) and olefin hydrogenation (o-HYD) selectivity in a large set of sulfide catalysts containing various metals and supports; Co(Ni)Mo/Al₂O₃ sulfide catalysts. Our model feed was a solution of 1-benzothiophene (BT) and 1-methylcyclohex-1-ene (1-MCH) in n-decane. The reaction was performed in the gas phase in a fixed-bed tubular flow microreactor at 360 °C and 1.6 MPa. During the first step of the catalytic process of the simultaneous HDS of 1-benzothiophene and o-HYD of 1-methylcyclohex-1-ene (1-MCH) we had to deal with the problem of the olefin isomerization (o-ISO). The reaction then further proceeds to o-HYD. The identification of the o-ISO products required for a detailed kinetic study of the process represents an analytical challenge under given condition. GC/MS analysis showed that the major portion of 1-MCH was transformed into 3- and 4-methylcyclohex-1-ene (3- and 4-MCH) and approximately 5 % of 1-methylcyclohex-1-ene has been converted into ethylcyclopentene (ECP) and dimethylcyclopentene (DMCP) isomers.



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