INTRODUCTION

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The gasoline or naphtha fraction in the crude oil has a boiling range of ~ 30-200°C. This range is practically subdivided into light naphtha with a boiling range of ~ 30-100°C and heavy naphtha with a boiling range of ~ 100-200°C. The heavy naphtha is upgraded via the catalytic reforming process which includes the following reactions:

1- Dehydrogenation of C_6 naphthenes to aromatics.
2- Dehydroisomerization of C_5 naphthenes to aromatics.
3- Dehydrocyclization of paraffins to aromatics.
4- Isomerization of n-paraffins to isoparaffins.
5- Hydrocracking of higher molecular weight paraffins to lower molecular weight n-paraffins and isoparaffins.

Aromatics, isoparaffins and lower molecular weight paraffins have higher octane numbers than those of the corresponding naphthenes, n-paraffins and higher molecular weight paraffins. On the other hand, light naphtha contains a major proportion of n-paraffins and a low proportion of isoparaffins, naphthenes and aromatics. The n-paraffins in light naphtha comprise pricipally n-pentane and n-hexane, where n-hexane largely surpasses n-pentane, therefore the hydrisomeriztion of light naphtha is considered the process of choice for improving the octane number in these straight-run light naphthas.

In the present work, the major component in straight-run light naphtha (n-hexane) is hydroisomerized to the corresponding mixture of isoparaffins which possess higher octane numbers. Different modified H-ZSM-5 zeolite containing catalysts on which platinum in concentrations of 0.15-0.60 wt. % have been used to investigate the hydrogenation-dehydrogenation activity change, provided by the metal, vise-versa the zeolite modification which changes the acid sites number and strength.