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شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



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**"SYNTHESIS OF MESOPOROUS MOLECULAR SIEVES
AND THEIR USE IN PARAFFINS
HYDROCONVERSIONS"**

541,39

A Thesis Submitted

*For the M. Sc. Degree (Chemistry)
(In Partial fulfillment)*

To

*The Department of Chemistry
Faculty of Science
Cairo University*

By

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

"يَرْفَعُ اللَّهُ الَّذِينَ آمَنُوا مِنْكُمْ وَالَّذِينَ أُوتُوا الْعِلْمَ

دَرَجَاتٍ وَاللَّهُ بِمَا تَعْمَلُونَ خَبِيرٌ"

صَدَقَ اللَّهُ الْعَظِيمُ

DEDICATED

TO

MY Mother

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APPROVAL SHEET FOR SUBMISSION


Title of the M. Sc. Thesis:

"Synthesis of mesoporous molecular sieves and their use in paraffins hydroconversions"

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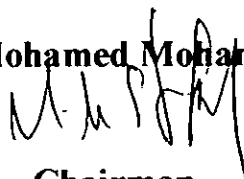
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ABSTRACT

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Nowadays, isomerization of n-paraffins plays an important role in the petroleum industry. Isomerization reaction generally takes place over bifunctional metal /acid catalysts.

Pure siliceous SBA-15 and AISBA-15 of different n_{Si}/n_{Al} ratios (5, 7 and 14) were synthesized by well- known procedures and used as supports for preparation of Ni and Pt catalysts with different percentage. The catalysts were prepared by impregnation technique.

Supports and the prepared catalysts were characterized by X-ray diffraction (XRD), Nitrogen physisorption, Differential Scanning Calorimetry (DSC) and Thermal Gravimetric Analysis (TGA).The results showed that by Ni or Pt loading, both SBA-15 and AISBA-15 supports preserve their hexagonal porous arrangement. All the samples are thermally stable up to 600 °C. BET surface area, pore volume and pore diameter were decreased as the Ni or Pt loading increased, also the intensities of d_{100} diffraction peaks were affected.

The catalytic activity and selectivity of the prepared catalysts were studied through the dehydrogenation of cyclohexane and through the hydroconversion (hydroisomerization and hydrocracking) of n-hexane in pulse flow system.

0.6 wt%Pt/SBA-15 and 0.3 wt%Pt/AlSBA-15(5) catalysts were active and selective toward cyclohexane dehydrogenation into benzene. Also the latter one showed high activity for n-hexane isomerization. Whereas Ni/SBA-15 and Ni/AlSBA-15 catalysts showed high activity for cyclohexane and n-hexane hydrocracking.

Keywords: *SBA-15; AlSBA-15; Pt catalysts; Ni catalysts; hydroconversion; Dehydrogenation; n-hexane; cyclohexane.*

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