



Received: 3 July 2012

Accepted: 18 September 2012

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Dear Dr. Nasser H. Shalaby

We are delighted to inform you that your paper entitled:

**" CATALYTIC PERFORMANCE OF ORGANICALLY TEMPLATED  
NANO NICKEL INCORPORATED- RICE HUSK SILICA IN  
HYDROCONVERSION OF CYCLOHEXENE AND  
DEHYDROGENATION OF ETHANOL "**

**By:**

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has been accepted for publication in the *Egyptian Journal of Petroleum* (EGYJP) and will be published in vol. 22 part 1, 2013.

We appreciate considering the *Egyptian Journal of Petroleum* (EGYJP) for publishing your research papers and hopefully we look forward to the pleasure of hearing from you.

Best regards,

Editor-in-Chief

Prof. Dr. Ahmed M. Al-Sabagh

## **Abstract**

Silica was extracted from local rice husk (RH) by the acid digestion and calcined at 650° C. The amorphous extracted silica was texturally modified with cetyltrimethylammonium bromide (CTAB) and span 40. The surface of RHS xerogel and CTAB-MS, were organically functionalized with amine-terminated groups through an easy and swift pathway via condensation method. Both nickel and platinum nanoparticles were anchored on the surface functionalized silica. Nanonickel particles were incorporated into pore regulated RHS xerogel using p-amino benzoic acid and p-phenylene diamine. RHS-nanonickel was also prepared as a reference catalyst for comparison. The as-prepared samples were characterized through XRD, FTIR, TEM, TGA-DSC and BET techniques. All prepared catalysts were applied in dehydrogenation of ethanol for selective production of acetaldehyde and cyclohexene hydroconversion using a fixed-bed flow reactor. The catalytic results were correlated with various characteristics to determine the most active and selective samples for application.

The Egyptian bentonite clay (EB) was modified with p-amino benzoic acid (MEB). Different loadings of nanonickel particles were intercalated into MEB and MEB-Pt was also prepared. The textural and morphology characteristics of all catalysts were investigated through XRD, FTIR, TEM, TGA-DSC and BET techniques. The catalytic performance test in ethanol dehydrogenation using a fixed bed flow reactor showed that the optimum Ni loading is 1%. Also, Pt-MEB showed a higher activity and phase stability than the nanoplatinum anchored to the surface of the functionalized RHS xerogel.

## **Keywords:**

Rice husk silica; Functionalized silica; Nanonickel; Nanoplatinum; Ethanol Dehydrogenation; modified clay.

## Acknowledgment

Looking back on the past four years, I am very thankful to many people. This thesis can not be completed without their constant help and support.

My best gratitude goes first and foremost to my supervisor, Professor **Salah A. Hassan**. Professor **Salah** has led me into the world of research, walked me through all of the stages of my Ph.D studies and taught me tremendous skills in every aspect of my research. I admire greatly his profound knowledge in physical chemistry and rich experience in research. His insightful in guidance and illuminating suggestions constantly help me overcome obstacles in my studies. From Professor **Salah**, I have been learning the rigorous attitude toward research, the resilience toward pressures and difficulties and the assiduous pursuit toward dreams. I am very fortunate and honored to be one of his students.

Second, I would like to express my heartfelt gratitude to my supervisor, Professor **Ahmed M. Al-Sabbagh**, the manager of Egyptian Petroleum Research Institute (EPRI), who cares about my research and my work in EPRI. He offers me helpful suggestions on research and on accommodating myself to the work style in EPRI. I am also greatly indebted to my supervisor Professor **Samia A. Hanafi**, I have benefited a lot from regular communication with her in the past two years.

I am very thankful to Dr.**Hamdi A. Hassan**, who has helped me a lot since I started my research. Without his consistent help and support, this thesis could not have reached its present stage. I have learnt a lot from him in terms of research.

Sincere gratitude also goes to Professor **Mamdouh Saad** who helped, consoled and encouraged me when I first started in EPRI.

A very special appreciation is due to **my family** not only for their constant encouragement, but also for their patience and understanding throughout. My God bless her in all those endeavors because without her unreserved support, completion of this study would not have been possible.

Finally, I thank **each person** had helped me in accomplishing this work.

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

"قالو سبحانك لا علم لنا إلا ما علمتنا

إنك أنت العليم الحكيم"

صدق الله العظيم

البقرة : الآية 32

## 3.1 Rice Husk Silica

## 3.2 Modified Egyptian Bentonite Clay as a Support for Nanometallic Particles

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# List of Tables, Figures and Schemes

## Papers Published from the thesis

1) Catalytic Performance of Organically Templated Nano Nickel Incorporated Rice Husk Silica [*The 15<sup>th</sup> International Conference on Petroleum, Mineral Resources and Development, Egyptian Petroleum Research Institute, Cairo, Egypt, 8-10 April, 2012.*] (Accepted in *Egyptian Journal of Petroleum* in 18 September 2012).

2) Surface Functionalized Rice Husk Silica Xerogel-Anchored Nickel and Platinum Nanocatalyst for dehydrogenation of Ethanol [*The 15<sup>th</sup> International Conference on Petroleum, Mineral Resources and Development, Egyptian Petroleum Research Institute, Cairo, Egypt, 8-10 April, 2012.*]

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