

第29回 日本サウジアラビア合同シンポジウム開催について

11月3～4日の両日、サウジアラビア KFUPM Dhahran Techno Valley において、Saudi Aramco 社、KFUPM、公益社団法人石油学会 (JPI)、JCCP の4社共催で「第29回日本サウジアラビア合同シンポジウム」を開催しました。初日のオープニングではKFUPM サヘル学長、アラムコ アル・コウエイターCTO、JCCP 平岡常務理事、並びにJPI 富重団長兼東北大学教授が挨拶を、キーノートスピーチではJPI 五十嵐副会長兼 JX リサーチ社長が講演を行い、140名を超える研究者や学生、地元邦人企業からの出席を得て盛大なシンポジウムとなりました。「石油精製および石油化学技術」(Technology in Petroleum Refining & Petrochemicals) をテーマに Crude oil to chemicals、AI を用いた触媒技術開発等、新たな分野の講演が多く実施され、女性による3講演も含む講演数は23件(内、日本から6件)であった。また初めてポスターセッションが開催され、若手研究者による17件の発表があり、活発な質疑応答等が交わされました。

なお、同シンポジウムに先立ち、講演者6名は Saudi Aramco 社からの要請により同社が中心となり10月29～31日にバーレーンで開催した ChemIndix2019 に参加しました。JPI 五十嵐副会長はパネルディスカッションへ参加し、5名の講演者は各セッションにて講演を行い、活発な質疑応答等が交わされました。

【オープニング】



【会場風景】





Technology in Petroleum Refining & Petrochemicals

Venue: KFUPM Dhahran Techno Valley, Innovation Cluster Bldg., Auditorium 1111: Nov. 3-4, 2019

Day One: Sunday, November 3, 2019

8:30 OPENING REMARKS SESSION

Chairman: *Dr. Hassan Al-Asiri*

1. H.E. Dr. Sahel Abuduljawwad, Rector, KFUPM
2. Mr. Eiji Hiraoka, Senior Executive Director, JCCP
3. Mr. Ahmed Al-Khowaiter, CTO, Saudi Aramco
4. Dr. Keiichi Tomishige, Professor, Tohoku University

SESSION ONE FUTURE REFINING TRENDS

Chairman: *Dr. Keiichi Tomishige*

- 9:00 1. **Keynote:** Technical trends and research topics in the Japanese refining industry
Dr. Jinichi Igarashi, JX Nippon Research Institute, Ltd.
- 9:30 2. An economic perspective of light naphtha upgrading
Dr. Yaming Jin, Dr. Omer R. Koseoglu, Saudi Aramco
- 9:50 Coffee Break

SESSION TWO NEW CHALLENGES: CHEMICALS/FUELS

Chairman: *Dr. Omer R. Koseoglu*

- 10:15 3. **Keynote:** Recent advances in zeolite catalysis for production of petrochemicals
Dr. Suheil Abdo, Honeywell UOP, USA
- 10:45 4. Catalyst technology to maximize light olefin yield in FCC unit
Dr. Takaki Mizuno, Petroleum Refining Catalysts Research Center, R&DC, JGC C&C Lt
- 11:05 5. Recent advances and overviews of Ni(Co)Mo supported mesoporous silica catalysts for HDS activity of liquid fuel, *Dr. Saheed Ganiyu, Dr. K. Alhooshani, Dr. A. Tanimu, KFUPM/CHEM*
- 11:25 6. Effects of titania coatings on HDS catalysts: insights from first principles calculations
Dr. Hiroki Iriguchi, Central Technical Research Lab., JXTG Nippon Oil & Energy Corp.
- 11:45 Prayer & Lunch Break

SESSION THREE NEW CHALLENGES: PROCESS/FUELS

Chairman: *Dr. Mamdouh Al-Harathi*

- 13:00 7. Application of inferential models to crude distillation process: integrating laboratory feedback in closed-loop quality control, *Dr. Rashid Ansari, Saudi Aramco*
- 13:20 8. Catalytic dealkylation of alkyl polycyclic aromatic hydrocarbons towards innovation of petroleum refinery, *Dr. Naonobu Katada, Center for Research on Green Sustainable Chemistry, Tottori University*
- 13:40 9. Selective aerobic oxidation of hydrocarbons by N-hydroxyphthalimide-based catalyst for cetane enhancement, *Dr. Maryam Altaher, C. Kalamaras, M. Alqahtani, Saudi Aramco*

POSTER SESSION

- 14:00 14 Poster contributions from KFUPM Chemistry, CENT, CRP and Jazan University-CHE
- Reviewing and commending excellent poster presentation (5-min each)
- 15:30 Day One Ends

Each presentation includes 5-minutes Q&A

<http://catsymp.kfupm.edu.sa/>



Technology in Petroleum Refining & Petrochemicals

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Day Two: Monday, November 4, 2019

SESSION FOUR NEW CHALLENGES: CATALYST TECHNOLOGY -1 Chairman: Dr. Khalid Alhooshani

8:00 Registration & Coffee Break

8:20 10. Catalytic technology for production of C4 chemicals via erythritol from biomass

Dr. Keiichi Tomishige, Dept. Applied Chemistry, Tohoku University

8:40 11. Effects of residual catalyst structure and electronic environment on polyethylene crystallization and degradation, *Dr. Muhammad Atiqullah, KFUPM/CRP*

9:00 12. Sintering- and coking- resistant core-shell nanoparticles in dry reforming of methane

Dr. Noor Al-Mana, Saudi Aramco

9:20 13. Oxidative dehydrogenation of propane to propylene over VO_x/CaO- γ Al₂O₃

Dr. M. Mozahar Hossain, KFUPM/CHE, Saudi Aramco

9:40 Coffee Break

SESSION FIVE NEW CHALLENGES: CATALYST TECHNOLOGY -2 Chairman: Dr. Ali Alzaid

10:00 14. Effect of catalyst dilution and binders on the alkylation activity of USY zeolites

Dr. Mohammed R. Aldossary, Vladimir Zholobenko, Arthur Garforth, Saudi Aramco

10:20 15. Heavy naphtha reforming of C₁₂ over variable-morphological MFI zeolites, *Dr. Oki Muraza, M. Sanhoob, E. Shafei, M. Al-Bahhar, A. Al-Jishi, K. Choi, A. Khan, KFUPM/CHE-CENT, Saudi Aramco*

10:40 16. New generation of naphtha reforming catalysts, *Dr. Ali Jahel, Axens, France*

11:00 17. The effect of zeolite crystal structure on hydrocarbon conversion, *Dr. Mohammad Al Bahhar, E. Al-Shafei, A. Al-Jishi, O. Muraza, M. Sanhoob, A. Jamil, K-H. Choi, A. Alnaser, H. Al-Badairy, Saudi Aramco*

11:20 18. Machine learning approach for prediction of reaction yield with simulated catalyst parameters, *Dr. Akira Yada, National Institute Adv. Industrial Science & Technology (AIST)*

11:40 Prayer & Lunch Break

SESSION SIX CRUDE TO CHEMICALS/CRACKING Chairman: Dr. Naonobu Katada

13:00 19. **Keynote:** Advancing the frontier in shape selective catalysis to enable the production of petrochemicals in the modern refinery, *Dr. Eelco Vogt, Advisor Albemarle, Utrecht University*

13:30 20. Upgrading oil using a non-conventional charged droplets approach

Dr. Chanbasha Basheer, KFUPM/CHEM

13:50 21. Catalytic cracking of pentene to propene and ethene over ZSM-5 zeolite

Dr. Abeer Arjah, Dr. Arthur Garforth, Saudi Aramco

14:10 22. Application of hierarchical zeolites in FCC catalyst, *Dr. Shakeel Ahmed, KFUPM/CRP*

14:30 23. Crude oil-to-chemicals in the global petrochemical industry: Applications of nano-technology, *Dr. Tawfik A. Saleh, KFUPM/CHEM*

14:50 Closing Remarks, Symposium Ends

Each presentation includes 5-minutes Q&A

Program as of October 13, 2019

For Registration (Free): <http://catsymp.kfupm.edu.sa/register.htm>

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29th Annual Saudi-Japan Symposium – 2019

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Saudi Aramco



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Day One: Sunday, November 3, 2019

POSTER SESSION (TIME: 14:00-15:30)

01. **Synthesis of Nickel/zeolite catalyst by chemical deposition: pathway to highly dispersed and stable Nickel catalyst, *Yahia Hakmi, KFUPM-Chemistry.***
02. **Facile synthesis of ultrathin interconnected carbon nanosheets as a robust support for small and uniformly-dispersed iron phosphide for the hydrogen evolution reaction *Munzir Suliman, KFUPM-CENT/Chemistry.***
03. **Investigating the effect of Ammonium Fluoride (NH₄F) Media in Synthesis and Characterization of a Metal Containing Zeolite Catalyst Material *Alhassan Ibrahim, KFUPM-Chemistry.***
04. **Sodium Octanoate Functionalized Graphene Oxide (SO-GO): A Green Corrosion Inhibitor for Oil Well Acidizing Environment, *Kabiru Haruna, KFUPM-Chemistry.***
05. **Pd-NHC - Catalyzed Effective Synthesis of Biaryl ketones and Biaryl diketones by Carbonylative Suzuki-Miyaura Coupling Reactions *Waseem Mansour, KFUPM-Chemistry.***
06. **Modified ZSM-5 Supported NiMo-S for Hydrodesulfurization application *Umar Mustapha, KFUPM-Chemistry.***
07. **Novel mesoporous cobalt iron sulfide for efficient hydrogen evolution reaction *Dr. Alaadin Adam, KFUPM-CENT.***
08. **Effect of Si/Al Ratio of MFI-type Zeolite Catalyst on Light Naphtha Aromatization *Mohammed Ellouh, KFUPM-CRP.***
09. **Synthesis of Methyl t-Butyl Ether using low cost activated carbon-based catalyst *Dr. M. Ashraf Ali, ChE-Jazan University.***
10. **Carbon Nanofiber-Doped Zeolite as Support for Molybdenum Based Catalysts for Enhanced Hydrodesulfurization of Dibenzothiophene *Islam Ali, T. A. Saleh, KFUPM-Chemistry.***
11. **Hydrodesulfurization of Dibenzothiophene over NiMo Dispersed on Carbon-TiO₂ Composites, *Umar Cheche Abubakar, KFUPM/Chemistry.***
12. **SOMC-generated single-site VO_x species on silica for ODH of propane *Dr. Samir Barman, KFUPM-CRP.***
13. **Effect of Screw Speed and Material Type on the Energy Consumption of Multiscrew Extruders, *Dr. Mansour Albareeki, KFUPM-CRP.***
14. **LaCO₃OH Nanoprisms: Photoluminescence and toxic NO_x reduction properties *Dr. Hassan Zahir, KFUPM/CoRE-RE***
15. **Removal of Polyromatic hydrocarbon (PAH) Pollutant from Contaminated Water Using Modified MWCNT, *Adeola Akeem Akinpelu CEW/RI***
16. **Synthesis of ZnO/RGO Catalysts for Photocatalytic Degradation of Basic Blue *Khaled M. AlAqad, Chemistry, KFUPM***
17. **Kinetics of oxidative cracking of propane to propylene Over VO_x/CaO-Al₂O₃, *Hussein K. Amusa, CHE/KFUPM.***