



ITB Catalysis Symposium

July 12, 2011

Auditorium East Campus Center

Institut Teknologi Bandung, Indonesia

Book of Abstracts



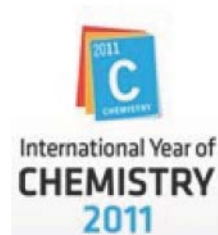
**Inorganic and Physical Chemistry
Research Division
Institut Teknologi Bandung**





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SYMPOSIUM PROGRAM

The symposium is held on July 12, 2011 at Auditorium East Campus Center, Institut Teknologi Bandung.

08.30 – 09.00	Opening Remark
09.00 – 09.30	Prof. Tatsuya Okubo (KL01 Abstract)
09.30 – 10.15	Poster Session and Coffee Break
10.20 – 10.50	Prof. Stephen A. Miller (KL02 Abstract)
11.00 – 11.30	Prof. Hadi Nur (KL03 Abstract)
11.35 – 12.05	George Tang (PT. Arfindo Bersinar)
12.05 – 13.00	Lunch
13.00 – 13.30	Dr. Wendy Shaw (KL04 Abstract)
13.40 – 14.10	Dr. Leny Yulianti (KL05 Abstract)
14.10 – 14.40	Poster Session and Coffee Break
14.45 – 15.15	Dr. Rino R. Mukti (KL06 Abstract)
15.20 - 16.00	Closing Remark and Announcement for Best Poster Presentation

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GENERATION OF ACIDIC SITES ON MESOPOROUS SILICA NANOPARTICLES FOR *n*-PENTANE ISOMERIZATION

Mohammad Reza Sazegar¹, Sugeng Triwahyono¹, Rino R. Mukti²,
Aishah Abdul Jalil³, and Madzlan Aziz⁴

¹Ibnu Sina Institute for Fundamental Science Studies,
Universiti Teknologi Malaysia, 81310 UTM Johor Bahru, Malaysia

²Inorganic and Physical Chemistry Research Division,
Institut Teknologi Bandung,
Jl. Ganesha 10 Bandung, 40132, Indonesia

³Department of Chemical Engineering, Universiti Teknologi Malaysia,
81310 UTM Johor Bahru, Malaysia.

⁴Department of Chemistry, Universiti Teknologi Malaysia, 81310
UTM Johor Bahru, Malaysia.
sugeng@utm.my

Mesoporous Silica Nanoparticles (MSN) have been considered as ideal carrier for large quantities of biogenic agents. The morphological control towards spherical-shape as well as minimization of particle size to the nanometer scale has brought this material applicable for anticancer drug delivery system [1]. Moreover, the well-dispersed state-of-phase has widened the MSN to be part for electronic fabrication in which they can be implemented to produce nanocomposite film embedded on support matrices [2]. Owing to a large pore compared to zeolitic materials, MSN could be of beneficial when utilized as catalyst, therefore generation of several strong acid types is required to create such catalytic active sites. Infrared (IR) spectroscopy is a powerful tool to characterize surface acidity of solids. The adsorption of pyridine has been used to probe Lewis and Brønsted acid sites in which they are observable by some specific IR absorption bands. Substituent group contained pyridine such as 2,6-dimethylpyridine or lutidine may induce steric effect benefitting the probe of such strength in Lewis acid site. In this study, the generation of acidic sites on mesoporous silica nanoparticles (MSN) was monitored from the IR spectra of adsorbed pyridine and 2,6-lutidine. In the presence of hydrogen, the strong Lewis and Brønsted acid sites were found to be active for isomerization of *n*-pentane resulting in 100% selective iso-pentane.

Keywords: mesoporous, nanoparticle, IR spectroscopy, pyridine, lutidine and isomerization.

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