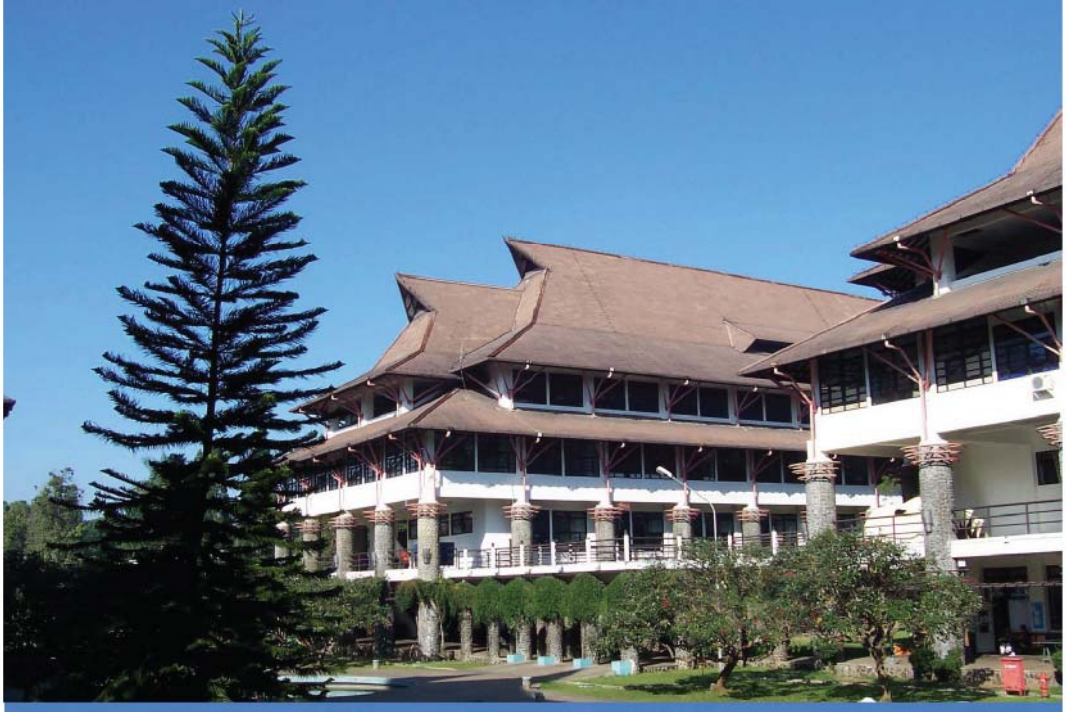
ITB Catalysis Symposium

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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International Year of CHEMISTRY 2011

This proceeding was compiled by

Husni W. Wijaya

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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 Yuliati (**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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Bandung, July 12, 2011

List of Abstracts

Abstracts for keynote lectures at ITB Catalysis Symposium

Abstracts for poster presentation at ITB Catalysis Symposium

PP20

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

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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 widen 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.

References

[1] J. Gu, W. Fan, A. Shimojima, T. Okubo, *Small*, **2007**, *3*, 1740.
[2] Y. Hoshikawa, H. Yabe, A. Nomura, T. Yamaki, A. Shimojima, T. Okubo, *Chem. Mater.*, **2010**, *22*, 12.