REFERENCES

Abdelkahhar Aguedach, Stephan Brosillon, Jean Morvan, El Kbir Lhadi (2005) Photocatalytic degradation of azo-dyes reactive black 5 and reactive yellow 145 in water over a newly deposition titanium dioxide. Applied Catalyst B: Environmental, 57, 55-62.

A. Bhattacharyya, S. Kawi, M.B. Ray (2004) Photocatalytic degradation of orange II by TiO2 catalysts supported on adsorbents. Catalysis Today, 98, 431–439.

Agnieszka Wr´oblewska (2005) Liquid phase epoxidation of allylic compounds with hydrogen, peroxide over titanium silicalite catalysts. Journal of Molecular Catalysis A: Chemical, 229, 207–210.

A. Hagen, K. Schueler, F. Roessner (2002) The performance of Ti-MCM-41 in aqueous media and after mechanical treatment studied by in situ XANES, UV/Vis and test reactions. Microporous and Mesoporous Materials, 51, 23–33.

Asim Bhaumik and Takashi Tatsumi, (2000) Organically Modified Titanium-Rich Ti-MCM-41, Efficient Catalysts for Epoxidation Reactions. Journal of Catalysis, 189, 31–39.

Chi-Feng Cheng, Zhaohua Luan, and Jacek Klinowski (1995) The Role of Surfactant Micelles in the Synthesis of the Mesoporous Molecular Sieve MCM-41. Langmuir, 11, 2815-2819.

Clark C. Williams: John G. Ekerdt, Jih-Mirn Jehng, Franklin D. Hardcastle, Andrzej M. Turek, and Israel E. Wachs. (1991) A Raman and Ultraviolet Diffuse Reflectance Spectroscopic Investigation of Silica-Supported Molybdenum Oxide. J. Phys. Chem., 95, 8781-8791.

C. Tang and V. Chen (2004) The photocatalytic degradation of reaction black 5 using TiO2/UV in an annular photoreactor. Water research., 38, 2775-2781.

E.Pelizzetti, C. Minero and E. Pramauro (1991) Photocatalytic processes for destruction of organic water contaminants. Applied Sciences, 225, 577-608.

Gamal M.S. El Shafei, M. Mokhtar M. (1995) Interaction between molybdenum and silica: FT-IR/PA studies of surface hydroxyl groups and pore structure

assessment. Colloids and Surfaces A: Physicochemical and Engineering Aspects, 94, 267-277.

Houas A, Lachheb H, Ksibi M, Elaloui E, Guillard C, Herrmann JM. (2001) Photocatalytic degradation pathway of methylene blue in water. Applied Catalysis B, 31. 145-57.

H.W. Eng and P.M. Woodward. Band Gaps of d0 Oxides: From Ti to W, Department of Chemistry, The Ohio State University.

J. Leyrer, M. I. Zaki, H. Knoezinger. (1986) Solid/solid interactions. Monolayer formation in molybdenum trioxide-alumina physical mixtures. J. Phys. Chem. 90, 4775-4780.

J.S. Beck, qt J. C. VartUli. W. J. Roth, M. E. Leonowicz, C. T. Kresge, K. D. Schmitt,' C. T-W. Chu,t D. H. Olson,t E. W. Sheppard, S. B. McCullen,t J. B. Higgins, and J. L. Schlenke. (1992) A New Family of Mesoporous Molecular Sieves Prepared with Liquid Crystal Templates. Journal of American Chemical Society, 114, 10834-10843.

J. Sudhakar Reddy. (1995) Abdelhamid Sayari, Oxidation of propylamine over titanium silicate molecular sieves. Applied Catalysis A: General, 128 231-242

J.-Y. Piquemal, J.-M. Manoli, P. Beaunier, A. Ensuque, P. Tougne, A.-P. Legrand, J.-M. Bre´geault, (1999) Using inorganic silicate precursor/molybdenum peroxo complexes/onium salt interfaces in aqueous acidic media to design mesoporous silica with high molybdenum content and high dispersion. Microporous and Mesoporous Materials 29, 291–304.

K.A. Koyano, T. Tatsumi. (1996) Synthesis of titanium-containing MCM-41. Microporous Material, 10, 259-271.

K. Dajka, E. Takacs, D. Solpan, L. Wojnarovits, O. Guven (2003) High-energy irradiation treatment of aqueous solutions of C.I. Reactive Black 5 azo dye: pulse radiolysis experiment. Radiation Physics and Chemistry. 67, 535-538.

Kresge, C. T.; Leonowicz, M. E.; Roth, W. J.; Vartuli. J. C.; Beck. J. S. (1992) Nature. 359, 710-12.

L.A. Rios, P. Weckes, H. Schuster, W.F. (2005) Hoelderich Mesoporous and amorphous Ti–silicas on the epoxidation of vegetable oils. Journal of Catalysis, 232, 19–26.

Leonardo Marchese, Thomas Maschmeyer, Enrica Gianotti, Salvatore Coluccia, and John M. Thomas. (1997) Probing the Titanium Sites in Ti-MCM41 by Diffuse Reflectance and Photoluminescence UV-Vis Spectroscopies. J. Phys. Chem. B, 101, 8836-8838.

Lev Davydov, Ettireddy P. Reddy, Paul France, and Panagiotis G. Smirniotis. (2001) Transition-Metal-Substituted Titania-Loaded MCM-41 as Photocatalysts for the Degradation of Aqueous Organics in Visible Light. Journal of Catalysis, 203, 157–167.

Mariana Neamtu, Ilie Siminiceanu, Ayfer Yediler, Antonius Kettrup. (2002) Kinetic of decolorization and mineralization of reactive azo dyes in aqueous solution by the UV/H_2O_2 oxidation. Dyes and Pigments, 53, 93-99.

M.Chatterjee, H.Hayashi, N.Saito. (2003) Role and effect of supercritical fluid extraction of template on the Ti(IV) active sites of Ti-MCM-41. Microporous and Mesoporous Materials, 57, 143–155.

Michal Kruk and Mietek Jaroniec, Abdelhamid Sayari. (1999) A Unified Interpretation of High-Temperature Pore Size Expansion Processes in MCM-41 Mesoporous Silicas. Journal of Physical ChemistryB, 103, 4590-4598.

Morey, M. S.; Bryan, J. D.; Schwarz, S.; Stucky, G. D. (2000) Pore Surface Functionalization of MCM-48 Mesoporous Silica with Tungsten and Molybdenum Metal Centers: Perspectives on Catalytic Peroxide Activation. Chem. Mater. 12, 3435-3444.

M. Saquib and M. Muneer (2002) Semiconductor mediated photocatalysed degradation of an anthraquinone dye, Remazol Brilliant Blue R under sunlight and artificial light source. Dyes and Pigments, 53, 237-249

M.V. Landau, S.P. Varkey, M. Herskowitz, O. Regev, S. Pevzner, T. Sen, Z. Luz, (1999) Microporous and Mesoporous Materials, 33, 149–163.

N. Phonthammachai, T. Chairassameewong, E. Gulari, A.M. Jamison, S. Wongkasemjit. (2003) Structural and rheological aspect of mesoporous nanocrystalline TiO_2 synthesized via sol–gel process. Microporous and Mesoporous Materials, 66, 261-271.

N. Thanabodeekij, S. Sadthayanon, E. Gulari, S. Wongkasemjit. (2005) Extremely high surface area of ordered mesoporous MCM-41 by atrane route. Materials Chemistry and Physics, Article in press.

N. Thanabodeekij, W. Tanglumlert, E. Gulari, S. Wongkasemjit. (2005) Synthesis of Ti-MCM-41 directly from silatrane and titanium glycolate and its catalytic activity. Applied Organomethallic Chemistry, 19, 1047-1054.

Phonthammachai, N., Chairassameewong, T., Gulari, E., Jamieson, A.M., and Wongkasemjit, S., (2002) Oxide one pot synthesis of a novel titanium glycolate and its pyrolysis. Journal of Metals Materials and Minerals, 12 , 23-28.

Piboonchaisit, P., Wongkasemjit, S., and Laine, R. (1999) A Novel Route to tris(silatanyloxy-ethyl)amine Directly from Silica and Triiospropanolamine, Part I, Science-Asia. Journal of Science and Society. Thailand, 25, 113.

Reutergardh LB, Iangphasuk M. (1997) Photocatalytic declorization of reactive azo dye : a comparison between TiO2 and CdS photocatalyst. Chemosphere. 35, 585-96.

Shicheng Zhang, Nobuyuki Fujii, Yoshio Nosaka. (1998) The dispersion effect of TiO loaded over ZSM-5 zeolite. Journal of Molecular Catalysis A: Chemical., 219–224

Shinya Higashimoto, Yun Hu, Rie Tsumura, Kiyoshi Iino, Masaya Matsuoka, Hiromi Yamashita, Yong Gun Shul, Michel Che, Masakazu Anpo, (2005) Synthesis, characterization and photocatalytic reactivities of Mo-MCM-41 mesoporous molecular sieves: Effect of the Mo content on the local structures of Mo-oxides. Journal of Catalysis, 235, 272–278.

Sutara S, Gulari E and Wongkasemjit, S. Proceeding of the international Conference on Smart Material (SmarMat-'04) December 1-3, 2004 Chiang Mai, Thailand.

S.V. Awate, N.E. Jacob, S.S. Deshpande, T.R. Gaydhankar, A.A. Belhekar. (2005) Synthesis, characterization and photo catalytic degradation of aqueous eosin over Cr containing Ti/MCM-41 and SiO2-TiO_2 catalysts using visible light. Journal of Molecular Catalysis A: Chemical, 226, 149–154.

T. Blasco, A. Corma, M. T. Navarro, and J. Pérez Pariente. (1995) Synthesis, Characterization, and Catalytic Activity of Ti-MCM-41 structures. Journal of catalysis, 156, 65-74.

Thomas E.W. Nießen, John P.M. Niederer, Torbjørn Gjervan, Wolfgang F. Hölderich. (1998) Synthesis and characterization of titanium-containing MCM-41 using (NH4)3[Ti(O2)F5] as the titanium source. Microporous and mesoporous Materials, 21, 67-74.

Van der Zee, F.P. (2002) Anaerobic azo dey reduction.Wageningen University, The Netherlands: Prof. dr. ir. G. Lettinga.

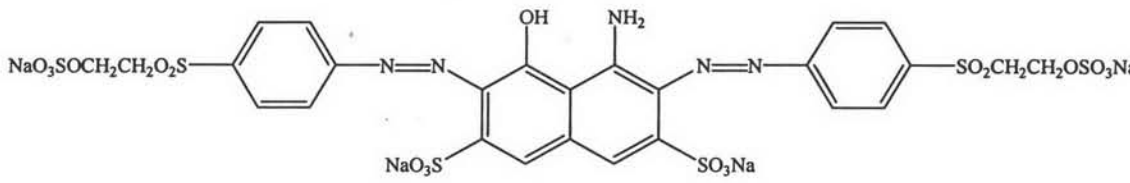
Wr´oblewska. (2005) Liquid phase epoxidation of allylic compounds with hydrogen peroxide over titanium silicalite catalysts. Journal of Molecular Catalysis A: Chemical, 229, 207–210.

W.S. Ahn, D.H. Lee, T.J. Kim, J.H. Kim, G. Seo, R. Ryoo. (1999) Post-synthetic preparations of titanium-containing mesopore molecular sieves. Applied Catalysis A: General, 181, 39-49.

Zhengping Li, Lian Gao, Shan Zheng, (2002) Investigation of the dispersion of MoO_3 onto the support of mesoporous silica MCM-41. Applied Catalysis A: General 236, 163–171.

APPENDIX

Structure of reactive Black 5 dyes



CURRICULUM VITAE

Name: Miss Kansiri Pakkethati

Date of Birth: Feb 7, 1982

Nationality: Thai

University Education:

2000-2003 Bachelor Degree of Chemistry, Faculty of Science, Khonkaen University, Khonkaen, Thailand