

DAFTAR PUSTAKA

- AlOthman, Z.A., 2012, A Review: Fundamental Aspect of Silicate Mesoporous. *Materials*, 5, 2874-2902.
- Bagshaw, S.A., Prouzet, E., and Pinnavaia, T.J., 1995, Templating of Mesoporous Molecular Sieves by Nonionic Polyethylene Oxide Surfactants, *Science*, 269, 1242-1244.
- Bhagiyalaksmi, M., Yun, L.J., Anuradha, R., and Jang, T.H., 2010, Utilization of Rice Husk Ash as Silica Source for Synthesis of Mesoporous Silicas and their Application to CO₂ Adsorption Through TREN/TEPA Grafting, *J. Hazard. Mat.*, 175, 928-938.
- Bhoware, S.S., and Sigh, A.P., 2007, Characterization and Catalytic Activity of Cobalt Containing MCM-41 Prepared by Direct Hydrothermal, Grafting, and Immobilization Methods, *J. Mol. Catal. A: Chem.*, 266, 118-130.
- Brinker, C.J., and Scherer, 1990, *Sol-Gel Science: The Physics and Chemistry of Sol-Gel Processing*, Academic Press, San Diego.
- Cao, J., Wu, Y., Jjin, Y., Zilihan, P., and Huang, W., 2014, Response Surface Methodology Approach for Optimization of the Removal of Chromium (VI) by NH₂-MCM-41, *J. Taiwan Inst. Chem. Eng.*, 45, 860-868.
- Davies, R.J., Brumm, M., Manga, M., Rubiandini, R., Swarbrick, R., and Tingay, M., 2008, The East Java Mud Volcano (2006 to present) : An Earthquake or Drilling Trigger?, *Earth and Planetary Sci. Letters.*, 272, 627-638.
- de Almeida, P.F., da Silva Lanners, S.C., Calarge, F.A., de Brito Farias, T.M., and Santana, J.C., 2012, FTIR Characterization of Gelatin from Chicken Feet, *J. Chem Eng.*, 6, 1029-1032.
- Dewi, P.T., 1999, Pengaruh Pengecilan Ukuran Tulang Sapi dan Lama Perendaman Dalam Larutan Kalsium Hidroksida Terhadap Rendaman dan Karakterisasi Gelatin Tipe B, *Skripsi*, Jurusan Teknologi Industri Pertanian, Fakultas Teknologi Pertanian, Institut Pertanian Bogor, Bogor.
- Domb, A.J., and Kumar, N., 2011, *Biodegradable of Polymers in Clinical Use and Clinical Development*, John Wiley & Sons Inc., Hoboken.
- Fadli, A.F., Tjahjanto, R.T., dan Darjito, 2013, Ekstraksi Silika Dalam Lumpur Lapindo Menggunakan Metode Kontinyu, *Kimia Student Journal.*, 1, 182-187.

- Fauzi, S.M.M., 2014, Sintesis Fe-MCM-41 dengan Metode Sonokimia Sebagai Adsorben Ion Logam Cd (II) dan Ni (II) dalam Medium Air, *Tesis*, Jurusan Kimia FMIPA UGM, Yogyakarta.
- Fedeyko, J.M., Vlachos, D.G., and Lobo, R.F., 2006, Understanding The Differences Between Microporous and Mesoporous Synthesis Through The Phase Behavior of Silica, *Micropor. Mesopor. Mater.*, 90, 102-111.
- Hao, S., Li, L., Yang, X., Cen, J., Shi, H., Bo, Q., and He, J., 2009, The Characteristics of Gelatin Extracted from Sturgeon (*Acipenser baeri*) Skin Using Various Pretreatments, *Food Chem.*, 115, 124-128.
- Hasanzadeh, M., Sshadjou, N., Chen, S.T. and Sheikhzadeh, P., 2012, MCM-41-NH₂ as an Advanced Nanocatalyst for Electrooxidation and Determination of Amino Acid, *Catal. Commun.*, 19, 21-27.
- Hidayat, P.A.N., 2015, Sintesis dan Karakterisasi Katalis Co/MCM-41 Berbasis Silika Lumpur Sidoarjo untuk Hidrorengkah Minyak Sawit, *Skripsi*, Jurusan Kimia FMIPA UGM, Yogyakarta.
- Hsu, C.H., Lin H.P., Tang, C.Y., and Lin, C.Y., 2007, Synthesis of Mesoporous Silica and Mesoporous Carbon Using Gelatin as Organic Template, *Stud. Surf. Sci. Catal.*, 165, 385-388.
- Htay, M.M., dan Oo, M.M., 2008, Preparation of Zeolite Y Catalyst for Petroleum Cracking, *World Academy of Science Engineering and Technology* 48, *Prosiding*, 114-120.
- Ifah, Arini Al, 2016, Sintesis Katalis MCM-41-NH₂ dengan Metode Sonokimia Berbasis Silika Lumpur Sidoarjo Untuk Transesterifikasi Minyak Goreng Bekas, *Skripsi*, Universitas Gadjah Mada, Yogyakarta.
- Ifah, A.A., Trisunaryanti, W., Triyono., and Dewi, K., 2016, Synthesis MCM-41-NH₂ Catalyst by Sonochemical Method for Transesterification of Waste Palm Oil, *Inter. J. Chemtech. Research.*, 9(8), 382-387.
- Iler, R.K., 1979, *The Chemistry of Silica: Solubility, Polymerization, Colloid, and Surface Properties, and Biochemistry*, John Willey and Sons, New York.
- Iliade, P., Miletto, Shadjou, N., Chen, S.T. and Sheikhzadeh, P., 2012, Funcionalization of Mesoporous MCM-41 with Aminopropyl Groups by Co-condensation and Grafting: A Physico-chemical Chaeacterization, *Res. Chem. Intermed.*, 38, 785-794.
- Kandel, K., Frederickson, C., Smith, E.A., Lee, Y.J., and Slowing, I.I., 2013, Bifunctional Adsorbent-Catalytic Nanoparticles for the Refining Feedstocks, *ACS. Catal.*, 3, 2750-2758.

- Karim, A.A., and Basth, R., 2009, Fish Gelatin Properties, Challenges, and Prospects as an Alternative to Mammalian Gelatins, *Food Hydrocoll.*, 23, 563-576.
- Khoiri, H.M., 2015, Sintesis dan Karakterisasi Katalis NH₂/MCM-41 Berbasis Silika Lumpur Sidoarjo Untuk Transesterifikasi Minyak Sawit, *Skripsi*, Universitas Gadjah Mada, Yogyakarta.
- Kim, J.M., Kwak, J.H., Jun, S., and Ryoo, R., 1995, Ion Exchange and Thermal Stability of MCM-41, *J. Phys. Chem.*, 99 (45), 16742-16747.
- Klimova, T., Calderon, M., and Ramirez, J., 2003, Ni and Mo Interaction with Al-Containing MCM-41 Support and Its Effect on The Catalytic Behavior in DBT Hydrodesulfurization, *Appl. Catal. A-Gen.*, 335, 159-171.
- Klimova, T., Reyes, J., Gutierrez, O., and Lizama, L., 2008, Novel Bifunctional NiMo/Al-SBA-15 Catalyst for Deep Hydrodesulfurization: Effect of Support Si/Al Ratio, *Appl. Catal. A-Gen.*, 335, 159-171.
- Kusuma, R.I., Hadinoto, J.P., Ayucitra, A., Soataredjo, F.E., and Ismadji, S., 2013, Natural Zeolite from Pacitan Indonesia, as Catalyst Support for Transesterification of Palm Oil, *Appl. Clay. Caly Sci.*, 74, 121-126.
- Lin, S., Shi, L., Carrott, M.M.L.R., Carrott, P.J.M., Rocha, J., Li, M.R., and Zou, X.D., 2011, Direct Synthesis Without Addition of Acid of Al-SBA-15 with Controllable Porosity and High Hydrothermal Stability, *Micropor. Mesopor. Mat.*, 142, 526-534.
- Mahmoud, N.S., Ghaly, A.E., and Arab, F., 2007, Unconventional Approach for Demineralization of Deproteinized Crustacean Shell for Chitin Production, *Am J. Biochem. Biotechnol.*, 3, 1-9.
- Majid, A.B., Trisunaryanti, W., Triyono, dan Dewi, K. 2014, Synthesis and Characterization of MCM-41 Using Lapindo Mud as The Silica Resources, *The 6th International Symposium on Nano and Supramolecular Chemistry*, 10-14th August 2014, Bali.
- Malik, J., Santoso, G., Purwoto, S., dan Bagio, H.E., 2009, *Kajian Penggunaan Lahan Untuk Pembangunan Unit Produksi Bahan Bangunan*, Badan Penelitian dan Pengembangan Provinsi Jawa Timur, Surabaya.
- Mello, M.R., Phanon, D., Silveria, G.Q., Liewellyn, P.L., and Ronconi, C.M., 2011, Amina-modified MCM-41 Mesoporous Silica for Carbon Dioxide Capture, *Micropor. Mesopor. Mat.*, 143, 174-179.
- Mubarak, M.A.S.A., 2013, Sintesis dan Karakterisasi Mordenit dari Lumpur Lapindo dengan Variasi Sumber Alumina, *Skripsi*, Jurusan Kimia FMIPA UGM, Yogyakarta.

- Muyonga, J.H., Cole, C.G.B., and Duodu, K.G., 2004, Extraction and Physicochemical Characterization of Nile Perch (*Lates niloticus*) Skin and Bone Gelatin, *Food Hydrocoll.*, 18, 581-592.
- Nale, D.B., Rana, S., Parida, K., and Bhanage, B.M., 2014, Aminae Functionalized MCM-41 as A Green, Efficient, and Heterogeneous Catalyst for The Regiselective Synthesis of 5-aryl-2-oxazolidinones, from CO₂ and Aziridines, *Appl Catas A: Gen.*, 469, 340-349.
- Nandiyanto, A.B.D., Kim, S.G., Iskandar, F., and Okuyama, K., 2009, Synthesis of Spherical Mesoporous Silica Nanoparticle with Nanometer-Size Controllable Pores and Outer Diameters, *Micropor. Mesopor. Mater.*, 120, 447-453.
- Ortiz, H.I.M., Silva, A.M., Cerda, L.A.G., Castruita, G., and Mercado, Y.A.P., 2013, Hydrothermal Synthesis of Mesoporous Silica MCM-41 Using Commercial Sodium Silicate, *J. Mex. Chem. Soc.*, 57(2), 73-79.
- Ortiz, H.I.M., Mercado, Y.P., Silva, J.A.M., Maldonado, Y.O., Castruita, G. And Cerda, L.A.G., 2014, Functionalization with Amine-containing Organosilane of Mesoporous Silica MCM-41 and MCM-48 Obtained at Room Temperature, *Ceram. Int.*, 40, 9701-9707.
- Parida, K.M., and Rath, D., 2007, structural Properties and Catalytic Oxidation of Benzena to Phenol over CuO-impregnated Mesoporous silica. *App. Catal.*, 321, 101-108.
- Payawan Jr, L.M., Damasco, J.A., and Piecco, K. W. E. S., 2010, Transesterification of Oil Extract from Locally-cultivated *Jatropha Curcas* Using a Heterogenous Base Catalyst and Determination of It's Properties as a Viable Biodiesel, *Philipp. J. Sci.*, 139 (1), 105-116.
- Putri, G.E., 2012, Sintesis dan Karakterisasi Katalis Kobalt dan Tembaga yang Di Amobilisasi pada Silika Mesopori dan Uji Aktivitas Katalitik Dalam Reaksi Transensterifikasi Minyak Sawit, *Tesis*, Universitas Andalas, Padang.
- Rahmat, N., Abdullah, A.Z., and Mohamed, A.R., 2010, A Review: Mesoporous Santa Barbara Amorphous-15, Types, Synthesis and Its Aplications Towards Biorefinery Production, *Am. J. Appl. Sci.*, 7(12), 1579-1586.
- Rogers, H.J., Weidmann, S.M., and Parkinson, A., 1952, Studied on Skeletal Tissues. II. The Collagen Content of Bones from Rabbits, Oven, and Humans, *Biochem. J.*, 50(4), 537-542.
- Schrieber, R., and Gareis, H., 2007, *Gelatine Handbook: Theory and Industrial Practice*, WILLEY-VCH Verlag GmbH & Co. KgaA, Weingeim.

- Setiawan, L.P., 2014, Ekstraksi Gelatin dari Tulang Sapi dan Aplikasinya Sebagai Cetakan Silika Mesopori, *Skripsi*, Jurusan Kimia, Fakultas Matematika dan Ilmu Pengetahuan Alam, Universitas Gadjah Mada, Yogyakarta.
- Setyawan, H., and Balgis, R., 2011, Mesoporous Silica Prepared from Sodium Silicate Using Gelatin Templating, *Asia-Pac. J. Chem. Eng.*, 7, 3- 52.
- Shang, F., Liu, H., Sun, J., Liu, B., Wang, C., Guan, J., and Kan, Q., 2011, Synthesis, characterization and Catalytic Application of Bifunctional Catalyst: Al-MCM-41-NH₂, *Catal. Comm.*, 12, 739-743.
- Sing, K.S.W., Everett, D.H., Haul., R.A.W., Moscou, L., Pierotti, R.A., Rouquerol, L., and Siemieniewska, T., 1985, Reporting Physisorption Data for Gas/Solid Systems with Special Reference to The Determination of Surface Area and Porosity, *Pure & Appl. Chem.*, 54, 2201-2218.
- Susanto, Heru, 2015, Sintesis Silika Mesopori Menggunakan Cetakan Gelatin Tulang Sapi Dan Impregnasi Cr Untuk Katalis Hidrorengkah Pelumas Bekas, *Skripsi*, Universitas Gadjah Mada, Yogyakarta.
- Tanev, P. T., and Pinnavala, 1995, A Neutral Templating Route to Mesoporous Molecular Sieves, *Science*, 267, 865-867.
- Totre, J., Ickowicz, D., and Domb, A. J., 2011, *Properties and Hemostatic Application of Gelatin*, Domb, A. J., Kumar, N., and Ezra, A., *Biodegradable Polymers in Clinical Use and Clinical Development*, John Wiley & Sons Inc., Hoboken.
- Trisunaryanti, W., Purwono, S., dan Putranto, A., 2008, Hidrorengkah Katalitik Oli Bekas Menjadi Fraksi Bahan Bakar Cair Menggunakan ZnO, Nb₂O₅ Zeolit Alam Aktif dan Modifikasinya, *Indones. J. Chem.*, 8, 342-347.
- Trisunaryanti, W., 2014, *Material Katalis dan Karakternya*, Gadjah Mada University Press, Yogyakarta.
- Trisunaryanti, W., Triwahyuni, E., and Sudiono, S., 2005, Preparation, Characterizations and Modification of Ni-Pd/Natural Zeolite Catalysts, *Indones. J. Chem.*, 5 (1), 48 – 53.
- Trisunaryanti, W., Majid, A.B., Pratika, S.D.I., 2012, Sintesis dan Karakterisasi Katalis Mesopori MCM-41 Berbahan Dasar Lumpur Lapindo, *Laporan Penelitian*, LPPM UGM, Yogyakarta.
- Triyono, T., Trisunaryanti, W., and Sudiono, S., 2010, Compensation Effect in Heterogeneous Catalyst: Correlation Between Observed Pre-exponential Factor (A_{obs}) and Observed Activation Energies (E_{obs}) of Isoamylalcohol Hydrogenolysis on Platinum Catalyst, *J. Mater. Sci. Eng.*, 4 (1), 53-63.

- Triyono. T., Khoiri, H.M., Trisunaryanti, W., and Dewi, K., 2015, Synthesis of NH₂/MCM-41-Catalyst using Silica of Sidoarjo Mud and Their Characterization for Palm Oil Transesterification, *IOSR-JAC.*, 8 (8), 50-56.
- Ulfa, M., Trisunaryanti, W., Falah, I.I., Kartini, I., and Sutarno, 2014, Studies of Kinetics on Thermal by Thermogravimetric Technique, *ISSR. J.*, 7, 849-856.
- Uriarte-Muntoya, M.H., Santacruz-Ortega, H., Cinco-Moroyoqui, F.J., Rouzaud-Sandez, O., Plascencia-Jatomea, M., and Ezquerro-Brauner, J. M., 2011, GiantSquid Skin Gelatin: Chemical Compositon and Biophysical Characterization, *Food Chem. Toxicol.*, 72, 188-195.
- Venkatesan, C., Cidambaram, M, and Signh A.P., 2005, 3-Aminopropyltriethoxysilyl Functionalized Na-Al-MCM-41 Solid Base Catalyst for Selective Preparation of 2-Phenylpropionitrile from Phenylacetoneitrile, *Appl. Catal. A-Gen.*, 292, 344-353.
- Wan, Y., and Zhou, D., 2007, On the Controllable Soft-Templating Approach to Mesoporous Silicates, *Chem. Rev.*, 107(7), 2821-2860.
- Wang, X., Zhaou, G., Zhang, H., Du, S., Xu, Y., and Wang C., 2011, Immobilization and Catalytic Activity of Lipase on Mesoporous Silica Prepared from Biocompatible Gelatin Organic Tamplate, *J. Non-Cryst. Solids.*, 357, 3027-3032.
- Wu, H.Y., X.L., Yang, C.Y., Chen, X. And Zheng, X.C., 2013, Alkali-hydrothermal Synthesis and Characterization of W-MCM-41 Mesoporous Materials with Various Si/W Molar Ratio, *Appl. Surf. Sci.*, 270, 590-595.
- Yanagasiwa, T., Shimizu, T., and Kuroda, K., 1990, The Preparation of Alkyltriinethylaninonium-Kaneinite Complexes and Their Conversion to Microporous Materials, *Bull. Chem. Soc. Jpn.*, 63, 988-992.
- Yang, X., Liao, S., Liang Z., Li, Y., and Du, L., 2011, Gelatin-Assisted Templating Route to Synthesize Sponge-Like Mesoporous Silica with Bimodal Porosity and Lysozyme Adsorption Behaviour, *Micropor. Mater.*, 143, 263-269.
- Zappi, M., Hernandez, M., Spark, D., Horne, J., and Zhou, J., 2003, *A Review of the Engineering Aspect of the Biodiesel Industry*, MSU Environmental Technology Research and Applications Laboratory Dave C., Swalm School of Chemical Engineering Mississippi State University, Mississippi.

Zhao, D., Huo, Q., Feng, J., Chemelka, B.F., and Stucky G.D., 1998, Nonionic Triblock and Star Diblock Copolymer and Oligomeric Surfactant Syntheses or Highly Ordered, Hydrothermally Stable, Mesoporous Silica Structure, *J. Am. Chem.*, 120, 6024-6036.