

DAFTAR PUSTAKA

- Abdulloh., 2015, Preparasi dan Kajian Aktivitas Al^{3+} - Bentonit untuk Katalis Sintesis Biodiesel dari Asam-asam Lemak dalam Minyak Jarak , *Disertasi* , Fakultas MIPA Universitas Gadjah Mada, Yogyakarta
- Abello´, So`nia, Adriana, B., and Javier Pe´rez-Rami´rez., 2009, Mesopori ZSM-5 Zeolite Catalysts Prepared by Desilication with Organic Hydroxides and Comparison with NaOH Leaching, *Appl Catal A: Gen*, Vol. 364,191–198
- Anonim., 2015, *Kimia Katalis, Fisisorpsi dan Kemisorpsi*, https://www.google.co.id/?gws_rd=cr,ssl&ei=QKVjVmqNceBvwTWgLPag#q=kemisorpsi+dan+fisisorpsi, diakses tanggal 12 April 2015
- Armaroli, T., Simon, L.J., Digne, M., Montanari, T., Bevilacqua, M., Valtchev, V., Patarin J., and Busca, G., 2006, Effects of Crystal Size and Si/Al Ratio on The Surface Properties of H-ZSM-5 Zeolites, *J.Appl. Catal. A.*, Vol. 306, 78–84
- Aykac,H., and Yilmaz, S., 2008, Hydrogenation of Citral over Ni and Ni-Sn Catalysts, *Turk. J. Chem.*, 32 , 623– 636.
- Barrer, R. M., 1982, *Hydrothermal Chemistry of Zeolites*, Academic Press, London
- Baobalabuana,G.B., 2011, Hidrorengkah Katalitik Minyak Sawit Menjadi Fraksi Biofuel Cair Menggunakan Katalis Cr/Zeolit Alam Aktif, *Tesis*, Fakultas MIPA Universitas Gadjah Mada, Yogyakarta
- Belviso,C., Calvacante,F., Lettino,A., and Fiore,S., 2009, Zeolite Synthesised From Fused Coal Fly Ash at Low Temperatur Using Seawater for Crystallization, Coal Combution and Gasification Products, *J.Homepage:www.coalcgp-Journal.org*, ISSN 1946-0198
- Bhatia, S., Kee, H. J., Lan, L. M., and Mohamed, A.R., 1998, Production of BioFuel by Catalytic Cracking of Palm Oil: Performance of Different Catalysts,*Proceedings of the Biofuel*, PORIM International BioFuel and Lubricant Conference, 107–112
- Bielansky, P., Reichhold, A., and Schonberger, C., 2010, Catalytic Cracking of Rapeseed Oil to High Octane Gasoline and Olefins, *Chem.Eng.Process.*, 49 ,873–880
- Boucher, E.A., 1976, Porous Materials: Structure, Properties and Capillary Phenomena. *J. Mater. Sci.*, 11, 1734–1750
- Byrappa, K., and Adschiri,T., 2007, *Hydrothermal Technology for Nanotechnology*, Progress in Crystal Growth and Characterization of Materials, 53 , 117–166
- Chiappero, M., Do,P.T.M., Crossley ,S ., Lobban,L. L., and Resasco,D. E., 2011, Direct Conversion of Triglycerides to Olefins and Paraffins Over Noble Metal Supported Catalysts, *J.Fuel.*, 90, 1155–1165
- Christensen, C. H., and Schmidt, I., 2004, Improved Performance of Mesoporous Zeolite Single Crystals in Catalytic Cracking and Isomerization of n-Hexadecane, *Catal. Commun.*, 5(9), 543–546

- Djomgoue, P., and Njopwouo, D., 2013, FT-IR Spectroscopy Applied for Surface Clays, *J. Surf. Env. Mater. Adv. Technol.*, 3, 275–282
- Emeis, C.A., 1993, Determination of Integrated Molar Extinction Coefficients for Infrared Absorption of Pyridine Adsorbed on Solid Acid Catalysts, *J. Catal.*, 141, 347–354
- Faghihian, H., and Godazandeha, N., 2009, Synthesis of Nano Crystalline Zeolite Y from Bentonite, *J. Porous Mater.*, 16, 331–335
- Fakrizul, H.K., Amin, N.A.S., Uhardy, D., Saiful, S.A., and Nazry, S.M., 2007, Catalytic Conversion of Palm Oil to Gasoline. The Effect of Silica Alumina Ratio in HZSM-5, *J. Technol.*, 47(F), Universiti Teknologi Malaysia, 55–67
- Fessenden, R.J., and Fessenden, J.S., 1992, *Kimia Organik*, Edisi Ketiga, Aloysius Hadyana P., Erlangga, Jakarta
- Gadekar, L.S., S. S. Katkar., K. N. Vidhate, B. R. Arbad., and M. K. Lande., 2008, Modification, Characterization and Catalytic Potency of Modified Natural Zeolite for Knoevenagel Condensation Reaction, *Bull. Catal. Soc. Ind.*, 7, 76–83
- Gates, B.C., Katzer, J.R., and Schuts, G.C.A., 1979, *Chemistry of Catalytic Processes*, Mc Graw Hill Book Company, New York
- Geidel, E., Lechert, H., Dobler, J., Jobic, H., Calzaferri, G., and Bauer, F., 2003, Characterization of Mesoporous Materials by Vibrational Spectroscopic Techniques, *Micropore Mesopore Mater.*, 65, 31–42
- Goncalves, Marli, L., Ljubomir, D.D., Maura, H.J., Martin, W., and Ernesto, A. U., 2008, Synthesis of Mesoporous ZSM-5 by Crystallisation of Aged Gels in The Presence of Cetyltrimethylammonium Cations, *Catal Today*, Vol. 133–135, 69–79
- Goto, Y., Fukushima, Y., Ratu, P., Imada, Y., Kubota, Y., Sugi, Y., Ogura, M., and Matsukata, M., 2002, Mesoporous Material from Zeolite, *J. Porous Mater.*, 9, 43–48
- Groen, J.C., Moulijn, J.A., and Javier Pe´rez-Rami´rez, J., 2007, Alkaline Post Treatment of MFI Zeolites. From Accelerated Screening to Scale-up, *Ind. Eng. Chem. Res.*, 46, 4193–4201
- Guzman, A., Torres, J.E., Prada, L.P., and Nunez, M.L., 2010, Hydroprocessing of Crude Palm Oil at Pilot Plant Scale. *Catalysis Today*, 156 (1-2), 38–43.
- Hambali, E., Mujdalipah, S., Tambunan, A.H., Pattiwiri, A.W., dan Hendroko, R., 2007, *Teknologi Bioenergi*, Agromedia, Bogor
- Hamdan, H., 1992, *Introduction to Zeolites: Synthesis, Characterization, and Modification*, Universiti Teknologi Malaysia, Kuala Lumpur.
- Hanafi, S.A., Elmelawy, M.S., El-Syed, H.A., and Shalaby, N.H., 2015, Hydrocracking of Waste Cooking Oil as Renewable Fuel on NiW/SiO₂-Al₂O₃ Catalyst, *J. Adv. Catal. Sci. Technol.*, 2, 27–37
- Holmberg, B. A., Wang, H., and Yan, Y., 2004, High Silica Zeolite Y Nanocrystal by Dealumination and Direct Synthesis, *Microporous Mesoporous Mater.*, 74, 189–198

- Hossein,G.M., Hossein,K., Ali, M.A., and Reza ,M.P., 2008, Ion Exchange Behavior of Zeolites A and P Synthesized Using Natural Clinoptilolite, *Iran.J. Chem. Chem.Eng.*, Vol. 27, No.2, 111–117
- Hubert, G. W., O'Connor, P., and Corma, A., 2007, Processing Biomass in Conventional Oil Refineries: Production of High Quality Diesel by Hydrotreating Vegetable Oils in Heavy Vacuum Oil Mixtures , *Appl. Catal. A.*, 329 ,120–129
- Idem,R.O., Katekani,S.P.R., and Narendra, N. B.,1997,Catalytic Conversion of Canola Oil to Fuels and Chemicals: Roles of Catalyst Acidity, Basicity and Shape Selectivity on Product Distribution, *Fuel Process. Technol.*, 51, 101–125
- Isoda, T., Kusokabe,K., and Marooka,S., 1998, Reactivity and Selectivity for The Hydrocracking of Vacuum Gas Oil over Metal Loaded and Dealuminated Y-Zeolites, *ACS: Energy Fuels*, Vol. 12, No.3, 493–502
- Joo,H.S and Guin,JA., 1997, Hydrocracking of a Plastic Pyrolysis Gas Oil to Naptha, *ACS: Energy Fuels.*, 11, 586–592
- Kadarwati, S., Rahmawati,F., Rahayu,P.E., Wahyuni,S.,and Supardi,K.I., 2013, Kinetics And Mechanism of Ni/Zeolite-Catalyzed Hydrocracking of Palm Oil into Bio-Fuel, *Indo. J. Chem.*, 13 (1), 77–85
- Katada, N., Kageyama, Y., Takahara, K., Kanai, T., Begum, H.A., and Niwa M.,2004, Acidic Property of Modified Ultra Stable Y Zeolite: Increase in Catalytic Activity for Alkane Cracking by Treatment with Ethyl diamine – tetra acetic Acid Salt, *J. Mole. Catal. A: Chem.*, 211 (1-2), 119–130
- Ketaren, S., 1986, *Pengantar Teknologi Minyak dan Lemak Pangan*, Cetakan Pertama, UI-Press, Jakarta
- Kim, S.H., Park,M.B., Min,H-K., and Hong,S.B.,2009, Zeolite Synthesis in the Tetraethyl Ammonium Tetramethyl Ammonium Mixed-organic Additive System, *Microporous Mesoporous Mater.*,123 , 160–168
- Lee, H-J., Park, Y.S., Kim, T. S, Lee,Y-J., and Yoon,K.B., 2002, Separation of Mixtures of Zeolites and Amorphous Materials and Mixtures of Zeolites with Different Pore Sizes into Pure Phases with the Aid of Cationic Surfactants, *Chem. Mater.*, 14, 3260–3270
- Lee,K-M., and Jo,Y-M., 2010, Synthesis of Zeolite from Waste Fly Ash for Adsorption of CO₂, *J. Mater Cycles Waste Manag.*, 12,212–219
- Liu, Y., Gao, Y., Zhu, Y., An, D., Wei, G., Wang, Z., Ma, Y., and Wang, Z., 2011, A Sustainable Route of The Preparation of Activated Carbon and Silica from Rice Husk Ash, *J. Hazard. Mater.* , 186, 1314–1319
- Mazak, M. A., 2006, Modified Zeolite Beta as Catalysts in Friedel-Crafts Alkylation of Resorcinol, *Thesis*, UTM, Malaysia.
- Mumpton,F.A.,1984, Handbook of Moleculer Sieves, *Proc. of the Sixth International Zeolite Conference*
- Nasikin, M., Susanto,B.H., Hirsaman,M.A., and Wijarnako, A., 2009, Biogasoline from Palm Oil by Simultaneous Cracking and Hydrogenation Reaction over NiMo/Zeelit Catalyst, *World Appl. Sci. J.*,5, 74–79

- Nunez, V.M.S., and Torres, L.D.B., 2015, Synthesis of Zeolitic Materias from Volcanic Ash in Presence and Absence of Cetyl Trimethyl Ammonium Bromide, *Rev. Int. Contam. Ambie.*, 31 (2), 185–193
- Ooi, Y-S., Zakaria, R., Mohamed, A.R., and Bhatia, S., 2004, Catalysis Conversion of Palm Oil Based Fatty Acid Mixture to Liquid Fuel, *Biomassa Bioenergy.*, 27, 477–484
- Ooi, Y-S., Zakaria, R., Mohamed, A.R., and Bhatia, S., 2005, Catalytic Conversion of Fatty Acids Mixture to Liquid Fuels over Mesoporous Materials, *React.Kinet.Catal.Lett.*, Vol. 84, No. 2, 295–302
- Oudejans, J.C., 1984, *Zeolit Catalyst in Some Organic Reaction*, Suported by Netherlands Foundation For Chemical Research (SON), Hollands.
- Ozlem, E.K., and Isik, O., 2008, Synthesis of ZSM-5 from Modified Clinoptilolite and Its Catalytic Activity in Alkylation of Benzene to Ethylbenzene, *Chem. Eng. Comm.*, 195, 1043–1057
- Platon, A., and Thomson, W.J., 2003, Quantitative Lewis/Brønsted Rasios using DRIFTS, *Applied Catalysis, Ind. Eng. Chem. Res.*, Vol. 42, 5988–5992
- Penkova, A., Bobadilla, L. F., Romero-Sarria, F., Centeno, M. A., and Odriozola, J. A., 2014, Pyridine Adsorption on NiSn/MgO-Al₂O₃: An FTIR Spectroscopic Study of Surface Acidity, *Appl. Surf. Sci.*, 317, 241–251
- Prasad, Y.S., Bakhshi, N.N., Mathews, J.F., and Eager, R.L., 1986, Catalytic Conversion of Canola Oil to Fuels and Chemical Feedstocks Part I. Effect of Process Conditions on the Performance of HZSM-5 Catalyst, *Can. J. Chem. Eng.*, 64, 285–292
- Querol, X., Alastuey, A., Soler, A.L., Plana, F., Andres, J.M., Juan, R., Ferrer, P., and Ruiz, C.R., 1997, A Fasat Method for Recycling Fly Ash: Microwave-Assisted Zeolite Synthesis, *Environ. Sci. Techno.*, 31, 2527–2533
- Rajeshwer, D., Padmavathi, G., Sreenivasa, R.G., Subrahmanyam, N., Krishnamurthi, K.R., and Rachh, J., 2006, Kinetics of Liquid-Phase Hydrogenation of Straght Chain C₁₀ to C₁₃ Di-olefin Over Ni / Al₂O₃ Catalyst, *Int. J. Chem. React. Eng.*, Vol.4, 1–14
- Reddy, C.R., Bhat, Y.S., and Prakash, B.S.J., 2009, Brønsted and Lewis acidity of Modified Montmorillonite Clay Catalysts Determined by FT-IR Spectroscopy, *Catal. Today.*, 141, 157–60
- Sadowska, K., Wach, A., Olejniczak, Z., Kustrowski, P., and Datka, J., 2013, Hierarchic Zeolites: Zeolite ZSM-5 Desilicated with NaOH and NaOH/Tetrabutyl Amine Hydroxide, *Microporous Mesoporous Mater.*, 167, 82–88
- Santikunaporn, M., Herrera, J.E., Jongpatiwut, S., Daniel, E. R., Walter, E. A., and Sughrue, E.L., 2004, Ring Opening of Decalin and Tetralin on HY and Pt/HY Zeolite Catalysts, *J. Catal.*, 228, 100–113
- Santos, J. H. L., Lima, F. N. M., Duarte, M. M. M. B., Chiaro, S. S. X., and Barbosa, C. M. B. M., 2013, NaY Zeolites Impregnated with Nickel for Adsorption of Sulfur Compounds from Fuel Model Mixture, *Braz.J.Petrol.Gas.*, 7 (3), 119–127

- Schwab,A.W., Dykstra,G.J., Selke,E., Sorenson,S.C., and Pryde,E.H.,1988, Diesel Fuel from Thermal Decomposition of Soybean Oil, *J. Am. Oil. Chem. Soc.*,65,1781–1786
- Setiaji, B., 1990, Penentuan Keasaman Permukaan Padatan dengan Cara Termal Analisis, *Berkala Ilmiah MIPA*, FMIPA UGM, Yogyakarta
- Suarez,P.A.Z.,Ribeiro,E.B.,and Cardoso,E.C.V.,2009, Alternatif Fuel From The Thermocatalytic Cracking of Triglycerides, *Lab. Mater.Fuel.*, University of Brasilia, Brazil
- Sutarno., Arryanto, Y., dan Hamidah, N., 2001, Sintesis Zeolit Tipe Faujasit dari Abu Layang dengan Metoda Pembibitan dan Pemeraman, *Prosiding Seminar Nasional Kimia IX*, Jurusan Kimia Fakultas MIPA, Universitas Gadjah Mada, Yogyakarta, 241–248
- Sutarno dan Arryanto, Y., 2004, Synthesis of Faujasite With High Thermal Stability From Fly Ash, *Indo J. Chem.*,4(1), 26–34
- Tamunaidu, P and Bhatia, S., 2007, Catalytic Cracking of Palm Oil for the Production of Biofuels : Optimization Studies, *Bioresour Technol.*, 98, 3593–3601
- Tanaka,S., Okada,H.,Nakatani,N., Maruo,T Nishiyama,N., and Miyake,Y., 2009, Mesoporous Aluminosilicates Assembled from Dissolved LTA Zeolite and Triblock Copolymer in the Presence of Tetramethyl Ammonium Hydroxide, *J. Colloid Interface. Sci.*,333, 491–496
- Triantafillidis,C.,Vlessidis,A., and Evmiridis,N., 2000, Dealuminated H-Y Zeolite: Influence of The Degree and Type of Dealumination Method on Structural and Acidic Characteristic of H-Y Zeolite, *Ind.Eng.Chem.*, Vol 39. No.2, 3007–3019
- Trisunaryanti, W., Shiba, R., Miura, M., Nomura, Nishiyama,M., and Matsukata,N., 1996, Characterisation and Modification of Indonesian Natural Zeolites and Their Properties for Hydrocracking of a Paraffin, *J. Jpn. Pet. Inst.*, 39(1), 20–25
- Trisunaryanti, W., 2002, Optimation of Time and Catalyst/Feed Ration in Catalytic Cracking of Waste Plastics Fraction to Gasoline Fraction Using Cr/Natural Zeolite Catalyst, *Indo.J.Chem.*, 2(1), 30-40
- Trisunaryanti, W., Triwahyuni, E., dan Sudiono, S., 2005, Preparasi,Modifikasi dan Karakterisasi Katalis Ni-Mo/Zeolit Alam dan Mo-Ni/Zeolit Alam, *Teknoin.*, Vol. 10, 269-282, ISSN 0853-8697
- Trisunaryanti, W., Purwono,S.,and Putranto,A., 2008, Catalytic Hydrocarcking of Waste Lubricant Oil into Liquid Fuel Fraction Using ZnO, Nb₂O₅, Activated Natural Zeolite and Their Modification, *Indo.J.Chem.*, 8 (3), 342–347
- Triyono., 1994, *Kimia Fisika : Dasar-Dasar Kinetika Dan Katalisis*. DepDikBud, Dirjen Pendidikan Tinggi, Jakarta
- Twaiq, F. A., Zabidi, N. A. M., and Bathia, S., 1999, Catalytic Conversion of Palm Oil to Hydrocarbons: Performance of Various Zeolite Catalysts, *Ind. Eng. Chem. Res.*, 38, 3230–3237
- Twaiq, F.A., Zabidi, N.A.M., Mohamed, A.R., and Bhatia,S., 2003, Catalytic Conversion of Palm Oil Over Mesoporous Aluminosilicate MCM-41 for

- the Production of Liquid Hydrocarbon Fuels, *Fuel Process. Technol.*, 84, 105–120
- Twiggs, M.V., 1989, Selective Hydrogenation of Fats and Oils, *Catalyst Handbook*, Wolfe Publishing Ltd., London, UK.
- Vadapalli, V.R.K., Gitari, W.M., Ellendt, A., Petrik, L.F., and Balfour, G., 2010, Synthesis of Zeolite-P from Coal Fly Ash Derivative and Its Utilisation in Mine-water Remediation, *S. Afr. J. Sci.*, Vol. 106, No. 5/6, 2–7
- Van Laak, A.N.C., Gosselink, R.W., Sagala, S.L., Meeldijk, J.D., Petra E. de Jongh P.E., and de Jong, K.P., 2010, Alkaline Treatment on Commercially Available Aluminum Rich Mordenite, *Appl. Catal. A.*, 382, 65–72
- Vernon, S.S., Petrik, L.F., White, R.A., Klink, M.J., Key, D., and Iwuoha, E.I., 2005, Alkaline Hydrothermal Zeolites Synthesized from High SiO₂ and Al₂O₃ Co-Disposal Fly Ash Filtrates, *Fuel*, 84, 2324–2329
- Yiu, H. H. P., and Brown, D. R., 1998, Lewis and Brønsted Acid Catalysis with AlMCM-41 and AIMMS: Dependence on Exchange Cation, *Catal. Lett.*, 56, 57–64
- Wijanarko, A., Dadi, A.M., dan Nasikin, M., 2006, Produksi Biogasolin Dari Minyak Sawit Melalui Reaksi Perengkahan Katalitik γ -Alumina, *Makara Teknologi.*, Vol. 10, No. 2, 51–60
- Wijaya, K., Baobalabuana, G., Trisunaryanti, W., and Syoufian, A., 2013, Hydrocracking of Palm Oil into Biogasoline Catalyzed by Cr/Natural Zeolite, *Asian J. Chem.*, Vol 25, Issue 16, 8981–8986
- Xu, R., Pang, W., Yu, J., Huo, Q., and Chen, J., 2007, *Chemistry of Zeolites and Related Porous Materials: Synthesis and Structure*. John Wiley & Sons (Asia) Pte Ltd
- Zhang, S., Yan, Y., Li, T., and Ren, Z., 2005, Upgrading of Liquid Fuel from the Pyrolysis of biomass, *Bioresour. Technol.*, 96, 545–550
- Zhao, X.S., Liu, G.Q., and Zhu, H.Y., 1997, Effect of Ageing and Seeding on the Formation of Zeolite Y from Coal Fly Ash, *J. Porous Mater.*, 4(4), 245–252
- Zhu, J., Meng, X., and Xiao, F., 2013, Mesoporous Zeolites as Efficient Catalysts for Oil Refining and Natural Gas Conversion, *Front. Chem. Sci. Eng.*, 7(2): 233–248