

DAFTAR PUSTAKA

- Abidin, S.Z., Patel, D., and Saha, B., 2013, Quantitative analysis of fatty acids composition in the used cooking oil (UCO) by gas chromatography-mass spectrometry (GC-MS), *Canadian Journal of Chemical Engineering*, 91, 1896–1903.
- Adhani, L., Aziz, I., Nurbayti, S., and Octavia, C.A., 2016, Pembuatan Biodiesel dengan Cara Adsorpsi dan Transesterifikasi Dari Minyak Goreng Bekas, *Jurnal Kimia VALENSI*, 2, 71–80.
- Agung, G.S. and Rismaya, R., 2024, Pengaruh Suhu Pemanasan terhadap Karakteristik Mutu Minyak Goreng Bekas Pakai Pedagang Gorengan, *AGRITEKNO: Jurnal Teknologi Pertanian*, 13, 15–23.
- Aleman-Ramirez, J.L., Moreira, J., Torres-Arellano, S., Longoria, A., Okoye, P.U., and Sebastian, P.J., 2021a, Preparation of a heterogeneous catalyst from moringa leaves as a sustainable precursor for biodiesel production, *Fuel*, 284, .
- Aleman-Ramirez, J.L., Moreira, J., Torres-Arellano, S., Longoria, A., Okoye, P.U., and Sebastian, P.J., 2021b, Preparation of a heterogeneous catalyst from moringa leaves as a sustainable precursor for biodiesel production, *Fuel*, 284, .
- Al-Saadi, A., Mathan, B., and He, Y., 2020, Esterification and transesterification over $\text{SrO-ZnO/Al}_2\text{O}_3$ as a novel bifunctional catalyst for biodiesel production, *Renew Energy*, 158, 388–399.
- Alsalbokh, M., Fakeri, N., Rownaghi, A.A., Ludlow, D., and Rezaei, F., 2021, Aminosilane-grafted bismuth-alumina adsorbents: Role of amine loading and bismuth content in iodine immobilization from aqueous solutions, *Chemical Engineering Journal*, 409, .
- Asri, N.P., Yuniati, Y., Hindarso, H., Hidayat, N., Siswa, I., Puspitasari, D.A., and Suprpto, S., 2020, Transesterification of kesambi oil (*Schleichera oleosa* L.) using nano $\text{ZnO-CuO}/\gamma$ -alumina solid catalyst, *Environmental and Earth Science*, 460, .

- Bakharev, T., 2005, Geopolymeric materials prepared using Class F fly ash and elevated temperature curing, *Cem Concr Res*, 35, 1224–1232.
- Barthotomew, C.H. and Farrauto, R.J., 2006, Fundamentals of Industrial Catalytic Processes, 2nd ed. John Wiley and Sons, Inc, Hoboken.
- Bhatia, S., Mohamed, A.R., and Shah, N.A.A., 2009, Composites as cracking catalysts in the production of biofuel from palm oil: Deactivation studies, *Chemical Engineering Journal*, 155, 347–354.
- Biernat, K., 2018, Biofuel-State of Development, Biernat, K. (ed) Intechopen Limited, London.
- Bintang, Muh.T.M., Aisyah, and Saleh, A., 2015, SINTESIS BIODIESEL DARI MINYAK BIJI NYAMPLUNG (*Calophyllum innoxium* L.) DENGAN METODE ULTRASONOKIMIA, *Chimica et Natura Acta*, 3, 84–89.
- Cai, J., Zhang, Q.Y., Wei, F.F., Huang, J.S., Feng, Y.M., Ma, H.T., and Zhang, Y., 2018, Preparation of copper (II) containing phosphomolybdic acid salt as catalyst for the synthesis of biodiesel by esterification, *J Oleo Sci*, 67, 427–432.
- Chai, F., Cao, F., Zhai, F., Chen, Y., Wang, X., and Su, Z., 2007, Transesterification of vegetable oil to biodiesel using a heteropolyacid solid catalyst, *Adv Synth Catal*, 349, 1057–1065.
- Chauhan, A.K., Aswal, D.K., Koiry, S.P., Gupta, S.K., Yakhmi, J. V., Sürgers, C., Guerin, D., Lenfant, S., and Vuillaume, D., 2008, Self-assembly of the 3-aminopropyltrimethoxysilane multilayers on Si and hysteretic current-voltage characteristics, *Appl Phys A Mater Sci Process*, 90, 581–589.
- Dantas, J., Leal, E., Mapossa, A.B., Cornejo, D.R., and Costa, A.C.F.M., 2017, Magnetic nanocatalysts of $\text{Ni}_{0.5}\text{Zn}_{0.5}\text{Fe}_2\text{O}_4$ doped with Cu and performance evaluation in transesterification reaction for biodiesel production, *Fuel*, 191, 463–471.
- Degfie, T.A., Mamo, T.T., and Mekonnen, Y.S., 2019, Optimized Biodiesel Production from Waste Cooking Oil (WCO) using Calcium Oxide (CaO) Nano-catalyst, *Sci Rep*, 9, .

- Devaraj, K., Mani, Y., Rawoof, S.A.A., Thanarasu, A., Dhanasekaran, A., and Subramanian, S., 2020, Feasibility of biodiesel production from waste cooking oil: lab-scale to pilot-scale analysis, *Environmental Science and Pollution Research*, 27, 25828–25835.
- Devita, L., 2015, BIODIESEL SEBAGAI BIOENERGI ALTERNATIF DAN PROSPEKTIF, *Agrica Ekstensi*, 9, 23–26.
- Du, D., Tang, Y., Yang, L., and Tang, C., 2020, Effects of different grafting density of amino silane coupling agents on thermomechanical properties of cross-linked epoxy resin, *Polymers (Basel)*, 12, .
- Efendi, R., Aulia, H., Faiz, N., and Firdaus, E.R., 2018, PEMBUATAN BIODIESEL MINYAK JELANTAH MENGGUNAKAN METODE ESTERIFIKASI-TRANSESTERIFIKASI BERDASARKAN JUMLAH PEMAKAIAN MINYAK JELANTAH BIODIESEL PRODUCTION FROM WASTE COOKING OIL BY ESTERIFICATION-TRANSESTERIFICATION METHODS BASED ON AMOUNT OF USED COOKING OIL,. In, *9 th Industrial Research Workshop and National Seminar*. Subang, pp. 402–409.
- Elimbinzi, E., Nyandoro, S.S., Mubofu, E.B., Osatiashtiani, A., Manayil, J.C., Isaacs, M.A., Lee, A.F., and Wilson, K., 2018, Synthesis of amine functionalized mesoporous silicas templated by castor oil for transesterification,. In, *MRS Advances*. Materials Research Society, pp. 2261–2269.
- Ghazali, W.N.M.W., Wan, N.M., Mamat, R., Masjuki, H.H., and Najafi, G., 2015, Effects of biodiesel from different feedstocks on engine performance and emissions: A review, *Renewable and Sustainable Energy Reviews*, 51, 585–602.
- Hoffmann, T., Rieck, C., Bück, A., Peglow, M., and Tsotsas, E., 2015, Influence of granule porosity during fluidized bed spray granulation,. In, *Procedia Engineering*. Elsevier Ltd, pp. 458–467.

- Iliade, P., Miletto, I., Coluccia, S., and Berlier, G., 2012, Functionalization of mesoporous MCM-41 with aminopropyl groups by co-condensation and grafting: A physico-chemical characterization, *Research on Chemical Intermediates*, 38, 785–794.
- Indriyani, L.A., Arif, Z., Linda, R., Purwaningsih, H., and Rafi, M., 2019, Optimization of Cd(II) adsorption condition by glycine-modified silica-based adsorbent using central composite design, *Jurnal Kimia Sains dan Aplikasi*, 22, 184–191.
- Irvantino, B., Wahyuni, S., Subiyanto, and Saputro, H., 2013, Preparasi Katalis Ni/ZA dengan Metode Sonokimia untuk Perengkahan Katalitik Polipropilen dan Polietilen, *J. Chem. Sci*, 2, .
- Jin, F. and Li, Y., 2009, A FTIR and TPD examination of the distributive properties of acid sites on ZSM-5 zeolite with pyridine as a probe molecule, *Catal Today*, 145, 101–107.
- Khodadadi, D.A., Kianinia, Y., and Taheri-Nassaj, E., 2013, Synthesis of nano-alumina powder from impure kaolin and its application for arsenite removal from aqueous solutions, *J Environ Health Sci Eng*, 11, .
- Ma, C.Y., Dou, B.J., Li, J.J., Cheng, J., Hu, Q., Hao, Z.P., and Qiao, S.Z., 2009, Catalytic oxidation of benzyl alcohol on Au or Au-Pd nanoparticles confined in mesoporous silica, *Appl Catal B*, 92, 202–208.
- Mahfud, H., 2020, MODIFIKASI CaO ALAM TERIMPREGNASI CuO SEBAGAI KATALIS PADA REAKSI TRANSESTERIFIKASI MINYAK KELAPA SAWIT,.
- Marimuthu, M., Marimuthu, P., Ashok, A.K., Palanivelu, S., and Rajagopalan, V., 2018, Tuning the basicity of Cu-based mixed oxide catalysts towards the efficient conversion of glycerol to glycerol carbonate, *Molecular Catalysis*, 460, 53–62.
- Mawarni, D.I. and Suryanto, H., 2018, PENGARUH SUHU PENGADUKAN TERHADAP YIELD BIODIESEL DARI MINYAK JELANTAH, *Jurnal SIMETRIS*, 9, .

- Mello, M.R., Phanon, D., Silveira, G.Q., Llewellyn, P.L., and Ronconi, C.M., 2011, Amine-modified MCM-41 mesoporous silica for carbon dioxide capture, *Microporous and Mesoporous Materials*, 143, 174–179.
- Miftahul Khoiri, H., Trisunaryanti, W., and Dewi, K., 2015, Synthesis of $\text{NH}_2/\text{MCM-41}$ Catalysts Using Silica of Sidoarjo Mud and Their Characterization for Palm Oil Transesterification, *IOSR Journal of Applied Chemistry (IOSR-JAC)*, 8, 50–56.
- Mumtaz, M.W., Adnan, A., Anwar, F., Mukhtar, H., Raza, M.A., Ahmad, F., and Rashid, U., 2012, Response surface methodology: An emphatic tool for optimized biodiesel production using rice bran and sunflower oils, *Energies (Basel)*, 5, 3307–3328.
- Nisar, J., Razaq, R., Farooq, M., Iqbal, M., Khan, R.A., Sayed, M., Shah, A., and Rahman, I. ur, 2017a, Enhanced biodiesel production from Jatropha oil using calcined waste animal bones as catalyst, *Renew Energy*, 101, 111–119.
- Nisar, J., Razaq, R., Farooq, M., Iqbal, M., Khan, R.A., Sayed, M., Shah, A., and Rahman, I. ur, 2017b, Enhanced biodiesel production from Jatropha oil using calcined waste animal bones as catalyst, *Renew Energy*, 101, 111–119.
- Okamoto, Y., Arima, Y., Nakai, K., Umeno, S., Katada, N., Yoshida, H., Tanaka, T., Yamada, M., Akai, Y., Segawa, K., Nishijima, A., Matsumoto, H., Niwa, M., and Uchijima, T., 1998, A study on the preparation of supported metal oxide catalysts using JRC-reference catalysts. I. Preparation of a molybdena±alumina catalyst. Part 1. Surface area of alumina, *Appl. Catal. A General*, 170, 315–328.
- Ore, M.S. La, Wijaya, K., Trisunaryanti, W., Saputri, W.D., Heraldy, E., Yuwana, N.W., Hariani, P.L., Budiman, A., and Sudiono, S., 2020, The synthesis of SO_4/ZrO_2 and Zr/CaO catalysts via hydrothermal treatment and their application for conversion of low-grade coconut oil into biodiesel, *J Environ Chem Eng*, 8, .

- Parida, K.M., Pradhan, A.C., Das, J., and Sahu, N., 2009, Synthesis and characterization of nano-sized porous gamma-alumina by control precipitation method, *Mater Chem Phys*, 113, 244–248.
- Pathak, S., 2015, Acid catalyzed transesterification, *Available online www.jocpr.com Journal of Chemical and Pharmaceutical Research*, 7, 1780–1786.
- Payawan, L.M., Damasco, J.A., and Sy Piecco, K.W., 2010, Transesterification of Oil Extract from Locally-Cultivated *Jatropha curcas* using a Heterogeneous Base Catalyst and Determination of its Properties as a Viable Biodiesel,.
- Qoyyima, D., Kimia, J., and Matematika dan Ilmu Pengetahuan Alam, F., 2021, Indonesian Journal of Chemical Science Modification of Magnesium Oxide from Bittern Waste with Strontium Oxide for Palm Oil Transesterification Process,.
- Rasyid, R., Prihartantyo, A., Mahfud, M., and Roesyadi, A., 2015, Hydrocracking of Nyamplung Oil (*Calophyllum inophyllum* Oil) Using $\text{CoMo}/\gamma\text{-Al}_2\text{O}_3$ and CoMo/SiO_2 Catalysts, *Mod Appl Sci*, 9, 43.
- Rita, S., Eti, R., and Tetty, K., 2018, Aminopropyltrimethoxysilane (APTMS) modified nano silica as heavy metal iron (Fe) adsorbents in peat water,. In, *AIP Conference Proceedings*. American Institute of Physics Inc.
- Rozyyev, V., Murphy, J.G., Barry, E., Mane, A.U., Sibener, S.J., and Elam, J.W., 2021, Vapor-phase grafting of a model aminosilane compound to Al_2O_3 , ZnO , and TiO_2 surfaces prepared by atomic layer deposition, *Appl Surf Sci*, 562, .
- Saiffudin, A. and Arsana, I.M., 2022, PROSES PREPARATION NANOFLUIDA HYBRID ($\text{CuO-Al}_2\text{O}_3$) PADA DOUBLE PIPE HEAT EXCHANGER, *JTM*, 10, 113–118.
- Salmahaminati and Jumina, 2016, Synthesis 1-Propanol from Propanoic Acid,. In, *PROCEEDING OF 3RD INTERNATIONAL CONFERENCE ON RESEARCH, IMPLEMENTATION AND EDUCATION OF MATHEMATICS AND SCIENCE*. ResearchGate, Yogyakarta.

- Schuchardt, U., Sercheli, R., and Vargas, R.M., 1998, Transesterification of Vegetable Oils: a Review,.
- 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 Commun*, 12, 739–743.
- Siburian, L.A.J., 2017, Pengaruh Kecepatan dan Lama Waktu Pengadukan terhadap Hasil Biodiesel pada Proses Transesterifikasi Minyak Jelantah,.
- Strle, D., Štefane, B., Trifkovič, M., Van Miden, M., Kvasić, I., Zupanič, E., and Mušević, I., 2017, Chemical selectivity and sensitivity of a 16-channel electronic nose for trace vapour detection, *Sensors (Switzerland)*, 17, .
- Su, M., Yang, R., and Li, M., 2013, Biodiesel production from hempseed oil using alkaline earth metal oxides supporting copper oxide as bi-functional catalysts for transesterification and selective hydrogenation,. In, *Fuel*, pp. 398–407.
- Suryani, A., Suprihatin, S., and Lubis, R.R., 2014, PENGGUNAAN MODEL PENGADUK PITCHED BLADE TURBIN DAN FIVE BLADE TURBIN PADA PRODUKSI BIODIESEL DARI RESIDU MINYAK DALAM TANAH PEMUCAT BEKAS (SBE) SECARA IN SITU THE APPLICATION OF PITCHED BLADE TURBINE AND FIVE BLADE TURBINE IMPELLERS MODELS ON BIODIESEL PRODUCTION FROM RESIDUAL OIL IN SPENT BLEACHING EARTH (SBE) BY IN SITU PROCESS, *Jurnal Teknologi Industri Pertanian*, 24, 72–81.
- Tan, H.W., Abdul Aziz, A.R., and Aroua, M.K., 2013, Glycerol production and its applications as a raw material: A review, *Renewable and Sustainable Energy Reviews*, 27, 118–127.
- Taslim, Andika Sinaga, B., Nathalia Sihaloho, M., Iriany, and Bani, O., 2019, Biodiesel Synthesis from Waste Cooking Oil using Heterogeneous Catalyst from Corncob Ash Impregnated with KOH,. In, *Journal of Physics: Conference Series*. Institute of Physics Publishing.
- Taushiyah, A., 2018, PENGARUH WAKTU REFLUKS DALAM KONVERSI BIODIESEL MINYAK DEDAK PADI (Rice Bran Oil) DENGAN,.

- Trisunaryanti, W. et al, Triyono, T., Hadjarningrum Siti A N, and Fatmawati, D.A., 2021, Activity of Ni-NH₂/Mesoporous Silica Material as Bifunctional Catalyst for Hydrocracking of Used Cooking Oil Mesoporous Material View project Catalyst for Biomass Hidrodeoxygenation View project Wega Trisunaryanti,.
- Trisunaryanti, W., Triyono, Paramesti, C., Larasati, S., Santoso, N.R., and Fatmawati, D.A., 2020, Synthesis and characterization of ni-nh₂/mesoporous silica catalyst from lapindo mud for hydrocracking of waste cooking oil into biofuel, *Rasayan Journal of Chemistry*, 13, 1386–1393.
- Trisunaryanti, W., Triyono, T., Nandini, E.S., and Suarsih, E., 2022, Biomass Valorization to Chemicals over Cobalt Nanoparticles on SBA-15, *Bulletin of Chemical Reaction Engineering & Catalysis*, 17, 533–541.
- Varughese, A., Kaur, R., and Singh, P., 2020, Green Synthesis and Characterization of Copper Oxide Nanoparticles Using Psidium guajava Leaf Extract,. In, *IOP Conference Series: Materials Science and Engineering*. IOP Publishing Ltd.
- Venkatesan, C., Chidambaram, M., and Singh, A.P., 2005, 3-Aminopropyltriethoxysilyl functionalized Na-Al-MCM-41 solid base catalyst for selective preparation of 2-phenylpropionitrile from phenylacetonitrile, *Appl Catal A Gen*, 292, 344–353.
- Wendi, Cuaca, V., and Taslim, 2015, PENGARUH SUHU REAKSI DAN JUMLAH KATALIS PADA PEMBUATAN BIODIESEL DARI LIMBAH LEMAK SAPI DENGAN MENGGUNAKAN KATALIS HETEROGEN CaO DARI KULIT TELUR AYAM, *Jurnal Teknik Kimia USU*, 4, 35–41.
- Wongrakpanich, A., Mudunkotuwa, I.A., Geary, S.M., Morris, A.S., Mapuskar, K.A., Spitz, D.R., Grassian, V.H., and Salem, A.K., 2016, Size-dependent cytotoxicity of copper oxide nanoparticles in lung epithelial cells, *Environ Sci Nano*, 3, 365–374.

- Wu, H.Y., Zhang, 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 ratios, *Appl Surf Sci*, 270, 590–595.
- Xu, X., Ding, W., Lin, Y., and Song, Q., 2015, Cu-catalyzed aerobic oxidative esterification of acetophenones with alcohols to α -ketoesters, *Org Lett*, 17, 516–519.
- Zahran, M.K., Negm, N.A., Mahmoud, W.A., and El-Raouf, M.A., 2021, Influence of chemical structure on physical properties of homogeneously converted (Castor-Linseed) mixed biofuel under optimized conditions, *Egypt J Chem*, 64, 1041–1046.
- Zeffry, R., Ratnawulan, and Yohandri, 2015, PENGARUH TEMPERATUR KALSINASI TERHADAP STRUKTUR TEMBAGA OKSIDA DARI DAERAH PINTI KAYU KEC. KOTO PARIK GADANG DIATEH KABUPATEN SOLOK SELATAN, *PILLAR OF PHYSICS*, 5, 65–72.
- Zhang, P., Han, Q., Fan, M., and Jiang, P., 2014, Magnetic solid base catalyst $\text{CaO/CoFe}_2\text{O}_4$ for biodiesel production: Influence of basicity and wettability of the catalyst in catalytic performance, *Appl Surf Sci*, 317, 1125–1130.
- Zhang, Q., Yue, C., Ao, L., Lei, D., Ling, D., Yang, D., and Zhang, Y., 2021, Facile one-pot synthesis of Cu-BTC metal-organic frameworks supported Keggin phosphomolybdic acid for esterification reactions, *Energy Sources, Part A: Recovery, Utilization and Environmental Effects*, 43, 3320–3331.
- Zhu, X., Cho, H.R., Pasupong, M., and Regalbuto, J.R., 2013, Charge-enhanced dry impregnation: A simple way to improve the preparation of supported metal catalysts, *ACS Catal*, 3, 625–630.