

## DAFTAR PUSTAKA

- Ahmed, M.A. and Mohamed, A.A., 2024, Advances in Ultrasound-Assisted Synthesis of Photocatalysts and Sonophotocatalytic Processes: A Review, *iScience*, 27, 108583.
- AlAreeqi, S., Bahamon, D., Polychronopoulou, K., and Vega, L.F., 2024, Understanding the Role of Ni-Based Single-Atom Alloys on The Selective Hydrodeoxygenation of Bio-Oils, *Fuel Processing Technology*, 253, 108001.
- Ali, S., Abbas, Y., Zuhra, Z., and Butler, I.S., 2019, Synthesis of  $\gamma$ -alumina (Al<sub>2</sub>O<sub>3</sub>) Nanoparticles and Their Potential for Use as An Adsorbent in The Removal of Methylene Blue Dye from Industrial Wastewater, *Nanoscale Adv.*, 1, 213–218.
- Ameen, M., Azizan, M.T., Ramli, A., Yusup, S., and Abdullah, B., 2020, The Effect of Metal Loading Over Ni/ $\gamma$ -Al<sub>2</sub>O<sub>3</sub> and Mo/ $\gamma$ -Al<sub>2</sub>O<sub>3</sub> Catalysts on Reaction Routes of Hydrodeoxygenation of Rubber Seed Oil for Green Diesel Production, *Catal. Today*, 355, 51–64.
- Ardini, M.A., Triyono, Hara, T., Ichikuni, N., and Trisunaryanti, W., 2025, Study of Metal Sequenced Spray Impregnation Method towards Co-Mo/  $\gamma$ -Al<sub>2</sub>O<sub>3</sub> Catalytic Performance in Hydrotreating of Used Coconut Oil to Liquid Biohydrocarbon, *Microporous and Mesoporous Mater.*, 382, 113357.
- Argyle, M.D. and Bartholomew, C.H., 2015, Heterogeneous Catalyst Deactivation and Regeneration: A Review, *Catalysts*, 5, 145–269.
- Asikin-Mijan, N., Juan, J.C., Taufiq-Yap, Y.H., Ong, H.C., Lin, Y.C., AbdulKareem-Alsultan, G., and Lee, H. V., 2023, Towards Sustainable Green Diesel Fuel Production: Advancements and Opportunities in Acid-Base Catalyzed H<sub>2</sub>-Free Deoxygenation Process, *Catal. Commun.*, 182, 106741.
- Baldauf, E., Sievers, A., and Willner, T., 2016, Hydrodeoxygenation of Cracked Vegetable Oil using CoMo/Al<sub>2</sub>O<sub>3</sub> and Pt/C Catalysts, *Int. J. Energy Environ. Eng.*, 7, 273–287.
- Balogun, S.A., Ghazali, I., Mohammed, A.T., Hermansyah, D., Amanah, A., and Kurnia, M.T., 2022, Renewable Aviation Fuel: Review of Bio-Jet Fuel for Aviation Industry, *Eng. Sci. Let.*, 1, 7–11.
- Bang, J.H. and Suslick, K.S., 2010, Applications of Ultrasound to The Synthesis of Nanostructured Materials, *Adv. Mater.*, 22, 1039–1059.
- Bekele, E.A., Korsa, H.A., and Desalegn, Y.M., 2024, Electrolytic Synthesis of  $\gamma$ -Al<sub>2</sub>O<sub>3</sub> Nanoparticle from Aluminum Scrap for Enhanced Methylene Blue Adsorption: Experimental and RSM Modeling, *Sci. Rep.*, 14, 16957.

- Bhattacharjee, S. and Tan, C.S., 2022, Production of Biojet Fuel from Octadecane and Derivatives of Castor Oil Using a Bifunctional Catalyst Ni-Pd@Al-MCF in a Pressurized CO<sub>2</sub>-Hexane-Water Solvent, *Energy and Fuels*, 36, 3119–3133.
- Brandão, R.D., de Freitas Júnior, A.M., Oliveira, S.C., Suarez, P.A.Z., and Prauchner, M.J., 2021, The Conversion of Coconut Oil into Hydrocarbons within The Chain Length Range of Jet Fuel, *Biomass Convers. Biorefin.*, 11, 837–847.
- Budukva, S. V., Uvarkina, D.D., Klimov, O. V., and Noskov, A.S., 2023, Deactivating Hydrotreatment Catalysts: A Review, *Catal. Ind.*, 15, 43–68.
- Busca, G., 2014, The Surface of Transitional Aluminas: A Critical Review, In, *Catal. Today.*, 2–13.
- Caligiani, A., Marseglia, A., Leni, G., Baldassarre, S., Maistrello, L., Dossena, A., and Sforza, S., 2018, Composition of Black Soldier Fly Prepupae and Systematic Approaches for Extraction and Fractionation of Proteins, Lipids and Chitin, *Food Res. Int.*, 105, 812–820.
- Cancino-Trejo, F., Santes, V., Cardenas, J.A.A., Gallardo, M., Maldonado, Y.G., Miranda A, L., Valdes, O., de los Reyes, J.A., and Santolalla-Vargas, C.E., 2022, Active Ni and Fe Species on Catalysts Ni/Al<sub>2</sub>O<sub>3</sub> and NiFe/Al<sub>2</sub>O<sub>3</sub> for The Oxidative Dehydrogenation (ODH) of Ethane to Ethylene Assisted by CO<sub>2</sub>, *Chem. Eng. J. Adv.*, 12, 100404.
- Carli, M.F., Susanto, B.H., and Habibie, T.K., 2018, Sythesis of Bioavture Through Hydrodeoxygenation and Catalytic Cracking from Oleic Acid Using NiMo/Zeolit Catalyst. In, *E3S Web Conf.* EDP Sciences.
- Carrasco-Suárez, M.T., Romero-Izquierdo, A.G., Gutiérrez-Antonio, C., Gómez-Castro, F.I., and Hernández, S., 2022, Production of Renewable Aviation Fuel by Waste Cooking Oil Processing in a Biorefinery Scheme: Intensification of The Purification Zone, *Chem. Eng. Process.: Process Intensif.*, 181, 109103.
- Chaiprasert, P. and Vitidsant, T., 2009, Effects of Promoters on Biomass Gasification Using Nickel/Dolomite Catalyst, *Korean J. Chem. Eng.*, 26, 1545–1549.
- Chen, L., Janssens, T.V.W., Skoglundh, M., and Grönbeck, H., 2019, Interpretation of NH<sub>3</sub>-TPD Profiles from Cu-CHA Using First-Principles Calculations, *Top. Catal.*, 62, 93–99.
- Chen, S., Leng, M., Liao, Z., Zeng, J., Xie, H., and Zhou, G., 2024, Synergistic Effects of Surface Acidity and Alkalinity of Ni/γ-Al<sub>2</sub>O<sub>3</sub> Catalysts in Fats and

- Oils Hydrodeoxygenation Product Distribution, *Ind. Crops Prod.*, 211, 118227.
- Cheng, S., Wei, L., Julson, J., and Rabnawaz, M., 2017, Upgrading Pyrolysis Bio-Oil through Hydrodeoxygenation (HDO) Using Non-Sulfided Fe-Co/SiO<sub>2</sub> Catalyst, *Energy Convers. Manag.*, 150, 331–342.
- Chowdhury, T.A., 2024, XPS Studies on Electroless As-Deposited and Annealed Ni-P Films, *Engineering*, 16, 123–133.
- Chu, P.L., Vanderghem, C., MacLean, H.L., and Saville, B.A., 2017, Process Modeling of Hydrodeoxygenation to Produce Renewable Jet Fuel and Other Hydrocarbon Fuels, *Fuel*, 196, 298–305.
- Cotillo, M.H., Unsihuay, D., Santolalla-Vargas, C.E., Doig, A.P., Kou, R.S., and Picasso, G., 2020, Catalysts Based on Ni-Fe Oxides Supported on  $\gamma$ -Al<sub>2</sub>O<sub>3</sub> for The Oxidative Dehydrogenation of Ethane, *Catal. Today*, 356, 312–321.
- Cruz-Tirado, J.P., dos Santos Vieira, M.S., Ferreira, R.S.B., Amigo, J.M., Batista, E.A.C., and Barbin, D.F., 2025, Prediction of Total Lipids and Fatty Acids in Black Soldier Fly (*Hermetia illucens* L.) Dried Larvae by NIR-Hyperspectral Imaging and Chemometrics, *Spectrochim. Acta A Mol. Biomol. Spectrosc.*, 329, 125646.
- Dabros, T.M.H., Stummann, M.Z., Høj, M., Jensen, P.A., Grunwaldt, J.D., Gabrielsen, J., Mortensen, P.M., and Jensen, A.D., 2018, Transportation Fuels from Biomass Fast Pyrolysis, Catalytic Hydrodeoxygenation, and Catalytic Fast Hydropyrolysis, *Prog. Energy Combust. Sci.*, 68, 268–309.
- Diebold, J.P., 2000, *A Review of the Chemical and Physical Mechanisms of the Storage Stability of Fast Pyrolysis Bio-Oils*, Thermalchemie, Inc., Colorado.
- Dong, S.T., Yang, P., and Yang, Q., 2024, Study on the Effect of Structure and Acidity of Hydrocracking Catalyst Support on The Selectivity of Middle Distillate, *ACS Omega*, 9, 49259–49271.
- El-Araby, R., Abdelkader, E., El Diwani, G., and Hawash, S.I., 2020, Bio-Aviation Fuel via Catalytic Hydrocracking of Waste Cooking Oils, *Bull. Natl. Res. Cent.*, 44, 1–9.
- Farahmandjou, M., Khodadadi, A., and Yaghoubi, M., 2020, Low Concentration Iron-Doped Alumina (Fe/Al<sub>2</sub>O<sub>3</sub>) Nanoparticles Using Co-Precipitation Method, *J. Supercond. Nov. Magn.*, 3425–3432.
- Fard, S.K.N. and Besharati-Seidani, A., 2025, Optimization of Pd/Al<sub>2</sub>O<sub>3</sub> Catalysts Preparation and Process Conditions Catalysts for The Removal of Hydrogen from Air, *Fuel*, 396, 135252.

- Gabrovskas, M., Nikolova, D., Radonjić, V., Karashanova, D., Baeva, A., Parvanova-Mancheva, T., Tzvetkov, P., Petrova, E., Zarkova, G., and Krstić, J., 2024, Structure Engineering of Ni/SiO<sub>2</sub> Vegetable Oil Hydrogenation Catalyst via CeO<sub>2</sub>, *Int. J. Mol. Sci.*, 25, 7585.
- Gao, H.B., Qiu, L. Le, Wu, F.P., Xiao, J., Zhao, Y.P., Liang, J., Bai, Y.H., Liu, F.J., and Cao, J.P., 2023, Highly Efficient Catalytic Hydrogenolysis of Lignin Model Compounds Over Hydrotalcite-derived Ni/Al<sub>2</sub>O<sub>3</sub> Catalysts, *Fuel*, 337, 127196.
- García-Gómez, N., Valecillos, J., Remiro, A., Valle, B., Bilbao, J., and Gayubo, A.G., 2021, Effect of Reaction Conditions on The Deactivation by Coke of a NiAl<sub>2</sub>O<sub>4</sub> Spinel Derived Catalyst in The Steam Reforming of Bio-Oil, *Appl. Catal. B*, 297, 120445.
- Gawande, M.B., Goswami, A., Felpin, F.X., Asefa, T., Huang, X., Silva, R., Zou, X., Zboril, R., and Varma, R.S., 2016, Cu and Cu-Based Nanoparticles: Synthesis and Applications in Catalysis, *Chem. Rev.*, 116, 3722–3811.
- Guo, X., Wang, W., Liu, P., Lu, Y., Zhao, P., Xu, J., and Jiang, J., 2024, Re Metal Addition Promotes The Stability of Catalytic Fatty Acid Conversion Over Ni-Fe Catalysts, *Fuel*, 364, 131115.
- Han, D., Yin, W., Luo, D., He, H., Wang, S., and Xia, S., 2021, Hydrodeoxygenation of Aliphatic Acid Over NiFe Intermetallic Compounds: Insights into The Mechanism via Model Compound Study, *Fuel*, 305, 13–22.
- Han, Q., Rehman, M.U., Wang, J., Rykov, A., Gutiérrez, O.Y., Zhao, Y., Wang, S., Ma, X., and Lercher, J.A., 2019, The Synergistic Effect Between Ni Sites and Ni-Fe Alloy Sites on Hydrodeoxygenation of Lignin-Derived Phenols, *Appl. Catal. B*, 253, 348–358.
- Hidayat, S., Han, J., Vo, T.A., Jeon, J.R., Kim, J., Hwang, H.T., Zhou, X., and Kim, S.S., 2025, Hydrodeoxygenation of Bis(2-Hydroxyethyl) Terephthalate as a Model Compound of Polyethylene Terephthalate Waste Using Spray Pyrolysis Synthesis of  $\gamma$ -Al<sub>2</sub>O<sub>3</sub> Supported Ni-Fe Catalyst, *Chem. Eng. J. Adv.*, 23, 100832.
- Järvinen, E., Velasco, J.A., Karinen, R., and Puurunen, R.L., 2025, Characterization of Unmodified and Zinc-modified ZSM-5 Zeolites with Temperature-programmed Desorption of Ammonia and Isopropylamine, *Top. Catal.*, 68, 2393–2403.
- Jiang, S., Late, E.K.Y., Jeromé, F., Amaniampong, P.N., and Mushrif, S.H., 2024, Ultrasound-Assisted Catalysis: A Pathway to Novel and Selective Chemical Transformations in Condensed Phase, *ChemistrySelect*, 9, 04785461.

- Jing, L., El-Houjeiri, H.M., Monfort, J.C., Littlefield, J., Al-Qahtani, A., Dixit, Y., Speth, R.L., Brandt, A.R., Masnadi, M.S., MacLean, H.L., Peltier, W., Gordon, D., and Bergerson, J.A., 2022, Understanding Variability in Petroleum Jet Fuel Life Cycle Greenhouse Gas Emissions to Inform Aviation Decarbonization, *Nat. Commun.*, 13, 7853.
- Jung, S., Jung, J.M., Tsang, Y.F., Bhatnagar, A., Chen, W.H., Lin, K.Y.A., and Kwon, E.E., 2022, Biodiesel Production from Black Soldier Fly Larvae Derived from Food Waste by Non-Catalytic Transesterification, *Energy*, 238, 121700.
- Kamari, A., Ishak, S., Hussin, M.I.A.M., Wong, S.T.S., Jumadi, J., and Yahaya, N.M., 2020, Optimisation and Characterisation Studies of Biodiesel Production from Black Soldier Fly Larvae Fed by Soya Residue, *IOP Conf. Ser.: Mater. Sci.*, 980, 012057.
- Kamarulzaman, M.K., Abdullah, A., and Mamat, R., 2019, Combustion, Performances, and Emissions Characteristics of *Hermetia illucens* Larvae Oil in a Direct Injection Compression Ignition Engine, *Energy Sources A: Recovery Util. Environ.*, 41, 1483–1496.
- Kameswara, S.A.R., Trisunaryanti, W., Triyono, Tazkia, A.M., Bhagaskara, A., Pratiwi, P.A., and Rozana, K., 2026, Ultrasonic-Assisted Synthesis of Ni/ZSM-5 Catalyst for Efficient Bio-Jet Fuel Production via Atmospheric Hydrotreatment of Processed Palm Oil, *React. Kinet. Mech. Catal.*, 1007.
- Kazmi, W.W., Syed, M.W., Waqas, M., Bhatti, U.H., Omer, A., Ali, M., Zulqarnain, Kariim, I., Hussain, A., and Al-Khulaifi, F.M., 2026, A Review on Sustainable Aviation Fuel Production via Diverse Biomass and Waste-Derived Feedstocks and Cutting-Edge Conversion Technologies, *Biomass Bioenergy*, 212, 109281.
- Keshaini, S., Zainab-L, I., and Sudesh, K., 2026, Black Soldier Fly Larval Oil as a Renewable Substrate for Tailored PHA Production, *Sci. Rep.*, 16, 489.
- Khaleel, A., Adamson, A., and Pillantakath, A.R., 2024, The Impact of Surface-Impregnated versus Support-Dispersed Fe in Fe–Ni/γ-Al<sub>2</sub>O<sub>3</sub> Catalysts for Partial Oxidation of Methane: Insights into The Effect of Fe Incorporation Method on Coking and on The Reaction Mechanism, *Int. J. Hydrogen Energy*, 81, 643–653.
- Khan, H.M., Iqbal, T., Ali, C.H., Yasin, S., and Jamil, F., 2020, Waste Quail Beaks as Renewable Source for Synthesizing Novel Catalysts for Biodiesel Production, *Renew. Energy*, 154, 1035–1043.
- Khivantsev, K., Jaegers, N.R., Kwak, J.H., Szanyi, J., and Kovarik, L., 2021, Precise Identification and Characterization of Catalytically Active Sites on the Surface of γ-Alumina\*\*, *Angew. Chem. Int. Ed.*, 60, 1002.

- Kim, K.M., Kwak, B.S., Park, N.K., Lee, T.J., Lee, S.T., and Kang, M., 2017, Effective Hydrogen Production from Propane Steam Reforming over Bimetallic Co-Doped NiFe/Al<sub>2</sub>O<sub>3</sub> Catalyst, *J. Ind. Eng. Chem.*, 46, 1–13.
- Kolobe, S.D., Manyelo, T.G., Malematja, E., Sebola, N.A., and Mabelebele, M., 2023, Fats and Major Fatty Acids Present in Edible Insects Utilised as Food and Livestock Feed, *Vet. Anim. Sci.*, 22, 100312.
- Kubička, D. and Kaluža, L., 2010, Deoxygenation of vegetable oils over sulfided Ni, Mo and NiMo catalysts, *Appl. Catal. A Gen.*, 372, 199–208.
- Lee, J., Kong, K.Y., Jung, C.R., Cho, E., Yoon, S.P., Han, J., Lee, T.G., and Nam, S.W., 2007, A Structured Co–B Catalyst for Hydrogen Extraction from NaBH<sub>4</sub> Solution, *Catal. Today*, 120, 305–310.
- Lee, J.E., Jang, H.S., Yun, Y.J., Han, G.B., Park, Y.K., Yang, Y.C., and Jang, J.H., 2024, Application of The Hydrodeoxygenation of Black Soldier Fly Larvae Lipids in Green Diesel Production, *Sustainability*, 16, 584.
- Leng, S., Wang, X., He, X., Liu, L., Liu, Y., Zhong, X., Zhuang, G., and Wang, J.G., 2013, NiFe/γ-Al<sub>2</sub>O<sub>3</sub>: A Universal Catalyst for the Hydrodeoxygenation of Bio-Oil and Its Model Compounds, *Catal. Commun.*, 41, 34–37.
- Li, Q., Zheng, L., Cai, H., Garza, E., Yu, Z., and Zhou, S., 2011, From Organic Waste to Biodiesel: Black Soldier Fly, *Hermetia illucens*, Makes It Feasible, *Fuel*, 90, 1–13.
- Li, X., Benstead, M., Peeters, N., and Binnemans, K., 2024, Recycling of Metals from LiFePO<sub>4</sub> Battery Cathode Material by Using Ionic Liquid Based-Aqueous Biphasic Systems, *RSC Adv.*, 14, 9262–9272.
- Lin, H., Chen, X., Chu, Y., Fu, J., and Yang, L., 2025, Dilemma and Strategies for Production of Diesel-like Hydrocarbons by Deoxygenation of Biomass-Derived Fatty Acids, *Green Energy Environ.*, 10, 1153–1186.
- Lin, M., Zhang, X., Zhan, L., Li, X., Song, X., and Wu, Y., 2021, The Products Distribution-Tuned and Inhibiting Cracking of Fatty Acid Hydrogenation Over 2 Co@SiO<sub>2</sub> Porous Nanorattles, *SSRN J.*, 10, 1-32.
- Liu, T., Klammsteiner, T., Dregulo, A.M., Kumar, V., Zhou, Y., Zhang, Z., and Awasthi, M.K., 2022, Black Soldier Fly Larvae for Organic Manure Recycling and Its Potential for a Circular Bioeconomy: A Review, *Sci. Total Environ.*, 833, 155122.
- Lycourghiotis, S., Kordouli, E., Bourikas, K., Kordulis, C., and Lycourghiotis, A., 2023, The Role of Promoters in Metallic Nickel Catalysts Used for Green Diesel Production: A Critical Review, *Fuel Process. Technol.*, 244, 107690.

- Munnik, P., De Jongh, P.E., and De Jong, K.P., 2015, Recent Developments in the Synthesis of Supported Catalysts, *Chem. Rev.*, 115, 6687–6718.
- Nono, L.B.W., Tangka, J.K., Ngomade, S.B.L., Djousse, B.M.K., Dongmo, D.N., and Atray, N., 2025, Bioconversion Approach for The Valorization of Jatropha Curcas Seed Cake into Biodiesel Using Black Soldier Fly (*Hermetia illucens*) Larvae, *Biomass Convers. Biorefin.*, 15, 3617–3630.
- Nugroho, A., Candra Dewi, P.D., Sudiyarmanto, Hidayati, L.N., Kristiani, A., Aulia, F., Bakti, A.N., Prasetyo, J., Rinaldi, N., and Dahnum, D., 2026, Catalytic Deoxygenation of Coconut Oil to Bio-Jet Fuel Range Hydrocarbon Over Nickel on ZIF-67-Derived Metal Oxide, *Fuel*, 407, 137430.
- Nuryadin, D., Nurcholis, M., and Rahmanda, G.A., 2023, Sustainable Bioavtur: A System Dynamics Approach to Addressing the Aviation Industry's Environmental Impact, *IOP Conf. Ser.: Earth Environ. Sci.*, 1242, 012032.
- Ochoa, A., Bilbao, J., Gayubo, A.G., and Castaño, P., 2020, Coke Formation and Deactivation During Catalytic Reforming of Biomass and Waste Pyrolysis Products: A Review, *Renew. Sustain. Energy Rev.*, 119, 109600.
- Paksoy, A., Kurtoglu-Öztulum, S.F., Yağcı, M.B., and Balci-Çağiran, Ö., 2022, Low-Cost and Reusable Iron- and Nickel-Based Metal Boride Nanoparticles for Efficient Catalytic Hydrolysis of Sodium Borohydride, *Int. J. Hydrogen Energy*, 47, 36898–36913.
- Panarmasar, N., Hinchiranan, N., and Kuchonthara, P., 2022, Catalytic Hydrotreating of Palm Oil for Bio-Jet Fuel Production Over Ni Supported on Mesoporous Zeolite, *Mater. Today. Proc.*, 57, 1082–1087.
- Park, J.Y., Jung, S., Na, Y.G., Jeon, C.H., Cheon, H.Y., Yun, E.Y., Lee, S.H., Kwon, E.E., and Kim, J.K., 2022, Biodiesel Production from The Black Soldier Fly Larvae Grown on Food Waste and Its Fuel Property Characterization as a Potential Transportation Fuel, *Environ. Eng. Res.*, 27, 200704.
- Peters, M.A., Alves, C.T., and Onwudili, J.A., 2023, A Review of Current and Emerging Production Technologies for Biomass-Derived Sustainable Aviation Fuels, *Energies (Basel)*, 16, 6100.
- Pham, T.M., Kim, H.J., Han, Jeonghun, Im, K., Han, Jonghee, and Kim, J., 2026, Investigation of Pt, Ru, and Pd Catalysts Supported on Alumina Synthesized by Spray Pyrolysis for Monobenzyl Toluene Hydrogenation, *Fuel*, 405, 136676.
- Prihadiyono, F.I., Lestari, W.W., Putra, R., Aqna, A.N.L., Cahyani, I.S., and Kadja, G.T.M., 2022, Heterogeneous Catalyst based on Nickel Modified into

Indonesian Natural Zeolite in Green Diesel Production from Crude Palm Oil, *Int. J. Technol.*, 13, 931–943.

Prins, R., 2020, On the Structure of  $\gamma$ -Al<sub>2</sub>O<sub>3</sub>, *J. Catal.*, 392, 336–346.

Rüzgar, A., Karataş, Y., Yurderi, M., Şener, L., Gülcan, M., and Zahmakiran, M., 2025, Synthesis, Characterization, and Determination of The Catalytic Roles of Tungsten (VI) Oxide-Supported Pd (0) Nanoparticles in The Reduction of Nitroaromatic Pollutants, *Mater. Chem. Phys.*, 346, 131368.

Samuel, A.K., Ertekin, Z., Moses Abraham, B., Yang, Z., Symes, M.D., and Ganin, A.Y., 2025, Catalytic Reduction of 4-Nitrophenol Using 2D-Molybdenum Dinitride, *Dalton Trans.*, 54, 16525–16534.

Saputra, D.A., Amin, A.K., Wijaya, K., Triyono, T., Trisunaryanti, W., Fitroturokhmah, A., and Oh, W.-C., 2024, MgO/ $\gamma$ -Alumina and CaO/ $\gamma$ -Alumina Catalysts for The Transesterification of Castor Oil (*Ricinus Communis*) into Biodiesel, *J. Chem. Chem. Eng.*, 43, 1622.

Sarjadi, M.S., Ling, T.C., and Khan, M.S., 2019, Analysis and Comparison of Olive Cooking Oil and Palm Cooking Oil Properties as Biodiesel Feedstock, *J. Phys. Conf. Ser.*, 1358, 012007.

Selimi, J., Kristensen, T.A., Qureshi, Z.S., Hultberg, C.P., and Abdelaziz, O.Y., 2026, Catalytic Hydrodeoxygenation of Black Soldier Fly Larval Lipids and Co-Processing with Vacuum Gas Oil into Biofuel Intermediates, *Sustain. Energy Fuels*, 10, 620–632.

Seo, J.G., Youn, M.H., Jung, J.C., and Song, I.K., 2009, Effect of preparation method of mesoporous Ni-Al<sub>2</sub>O<sub>3</sub> catalysts on Their Catalytic Activity for Hydrogen Production by Steam Reforming of Liquefied Natural Gas (LNG), *Int. J. Hydrogen Energy*, 34, 5409–5416.

Shi, L., Zhang, Z., Wang, R., Zhou, C., and Sun, C., 2020, Study on Ultrasound-Assisted Precipitation for Preparing Ni/Al<sub>2</sub>O<sub>3</sub> Catalyst, *Ultrason. Sonochem.*, 67, 105107.

Silitonga, A.S., Sebayang, A.H., Benu, S.M., Riayatsyah, T.M.I., Nurulita, B., Zainal, B.S., Hafriz, R.S.R.M., Ideris, F., Putra, N., Deswita, and Muraza, O., 2026, Catalytic Deoxygenation of Oils Derived from Black Soldier Fly Larvae and Sardine and Squid Wastes for Renewable and Sustainable Biojet Fuel Production, *Fuel*, 410, 137960.

Smets, R., Verbinnen, B., Van De Voorde, I., Aerts, G., Claes, J., and Van Der Borght, M., 2020, Sequential Extraction and Characterisation of Lipids, Proteins, and Chitin from Black Soldier Fly (*Hermetia illucens*) Larvae, Prepupae, and Pupae, *Waste Biomass Valor.*, 11, 1007.

- Song, M., Zhang, X., Chen, Y., Zhang, Q., Chen, L., Liu, J., and Ma, L., 2023, Hydroprocessing of Lipids: An Effective Production Process for Sustainable Aviation Fuel, *Energy*, 283, 129107.
- Song, X., Fagiani, M.R., Gewinner, S., Schöllkopf, W., Asmis, K.R., Bischoff, F.A., Berger, F., and Sauer, J., 2016, Gas Phase Structures and Charge Localization in Small Aluminum Oxide Anions: Infrared Photodissociation Spectroscopy and Electronic Structure Calculations, *J. Chem. Phys.*, 144, 244305.
- Song, Z., Wang, Q., Guo, C., Li, S., Yan, W., Jiao, W., Qiu, L., Yan, X., and Li, R., 2020, Improved Effect of Fe on The Stable NiFe/Al<sub>2</sub>O<sub>3</sub> Catalyst in Low-Temperature Dry Reforming of Methane, *Ind. Eng. Chem. Res.*, 59, 17250–17258.
- Sonthalia, A. and Kumar, N., 2019, Hydroprocessed Vegetable Oil as a Fuel for Transportation Sector: A Review, *J. Energy Inst.*, 92, 1–17.
- Srifa, A., Faungnawakij, K., Itthibenchapong, V., Viriya-empikul, N., Charinpanitkul, T., and Assabumrungrat, S., 2014, Production of Bio-Hydrogenated Diesel by Catalytic Hydrotreating of Palm Oil over NiMoS<sub>2</sub>/γ-Al<sub>2</sub>O<sub>3</sub> Catalyst, *Bioresour. Technol.*, 158, 81–90.
- Srisuksai, K., Limudomporn, P., Kovitvadhi, U., Thongsuwan, K., Imaram, W., Lertchaiyongphanit, R., Sareepoch, T., Kovitvadhi, A., and Fungfuang, W., 2024, Physicochemical Properties and Fatty Acid Profile of Oil Extracted from Black Soldier Fly Larvae (*Hermetia illucens*), *Vet. World*, 17, 518–526.
- Trisunaryanti, W., Triyono, Wijaya, K., Kartini, I., Purwono, S., Rodiansono, Mara, A., and Budiansyah, A., 2023, Preparation of Mo-Impregnated Mordenite Catalysts for The Conversion of Refined Kernel Palm Oil into Bioavtur, *Commun. Sci. Technol.*, 8, 226–234.
- Trisunaryanti, W., Wijaya, K., Kartini, I., Purwono, S., Rodiansono, Mara, A., and Rahma, A.S., 2024, Hydrodeoxygenation of Refined Palm Kernel Oil (RPKO) into Bio-Jet Fuel Using Mo/H-ZSM-5 Catalysts, *React. Kinet. Mech. Catal.*, 137, 843–878.
- Trisunaryanti, W., Wijaya, K., and Saputro, M.D.I., 2025, The Effect of Ni/AC and Mo/AC Catalyst Arrangements on the Activity and Selectivity for Hydrotreating Palm Cooking Oil into Biojet Fuel, *Indones. J. Chem.*, 25, 404–419.
- Trisunaryanti, W., Wijaya, K., and Tazkia, A.M., 2024, Preparation of Ni/ZSM-5 and Mo/ZSM-5 Catalysts for Hydrotreating Palm Oil into Biojet Fuel, *Commun. Sci. Technol.*, 9, 161–169.

- Wang, E., Zhu, Z., Li, R., Wu, J., Ma, K., and Zhang, J., 2024, Ni/CaO-Based Dual-Functional Materials for Calcium-Looping CO<sub>2</sub> Capture and Dry Reforming of Methane: Progress and Challenges, *Chem. Eng. J.*, 482, 148476.
- Wang, H., Rehman, K.U., Liu, X., Yang, Q., Zheng, L., Li, W., Cai, M., Li, Q., Zhang, J., and Yu, Z., 2017, Insect Biorefinery: A Green Approach for Conversion of Crop Residues into Biodiesel and Protein, *Biotechnol. Biofuels*, 10, 304.
- Wang, H.T., Li, Z.K., Yan, H.L., Lei, Z.P., Yan, J.C., Ren, S.B., Wang, Z.C., Kang, S.G., and Shui, H.F., 2022, Catalytic Hydrogenolysis of Lignin and Model Compounds over Highly Dispersed Ni-Ru/Al<sub>2</sub>O<sub>3</sub> Without Additional H<sub>2</sub>, *Fuel*, 326, 125027.
- Wang, X., Jin, R., Yan, W., Li, H., and Wang, Z. jun, 2022, An Al<sub>2</sub>O<sub>3</sub>-Supported NiFe Bimetallic Catalyst Derived from Hydrotalcite Precursors for Efficient CO<sub>2</sub> Methanation, *Catal. Today*, 402, 38–44.
- Wang, Y., Craven, M., Yu, X., Ding, J., Bryant, P., Huang, J., and Tu, X., 2019, Plasma-Enhanced Catalytic Synthesis of Ammonia over a Ni/Al<sub>2</sub>O<sub>3</sub> Catalyst at Near-Room Temperature: Insights into The Importance of the Catalyst Surface on The Reaction Mechanism, *ACS Catal.*, 10780–10793.
- Wang, Y.-S. and Shelomi, M., 2017, Review of Black Soldier Fly (*Hermetia illucens*) as Animal Feed and Human Food, *Foods*, 6, 3390.
- Xin, H., Yang, H., Lei, X., Du, X., Zhou, K., Li, D., and Hu, C., 2020, Ni-Fe Catalysts Supported on  $\gamma$ -Al<sub>2</sub>O<sub>3</sub>/HZSM-5 for Transformation of Palmitic Acid into Hydrocarbon Fuel, *Ind. Eng. Chem. Res.*, 59, 17373–17386.
- Xu, L., Chen, C., Huo, J.B., Chen, X., Yang, J.C.E., and Fu, M.L., 2019, Iron Hydroxyphosphate Composites Derived from Waste Lithium-Ion Batteries for Lead Adsorption and Fenton-Like Catalytic Degradation of Methylene Blue, *Environ. Technol. Innov.*, 16, 100504.
- Yu, X., Chen, J., and Ren, T., 2014, Promotional Effect of Fe on Performance of Ni/SiO<sub>2</sub> for Deoxygenation of Methyl Laurate as a Model Compound to Hydrocarbons, *RSC Adv.*, 4, 46427–46436.
- Zhang, J.F., Hu, W., Zou, J., Wang, X., Li, P., Peng, D., Li, Y., Zhao, R., and He, D., 2022, Directional High-Value Regeneration of Lithium, Iron, and Phosphorus from Spent Lithium Iron Phosphate Batteries, *ACS Sustain. Chem. Eng.*, 10, 13424–13434.
- Zhang, Lan, Li, Z., Gao, Y., Li, Q., Deng, Z., Miao, B., He, H., Poh, C.K., Zhang, Lili, and Chan, S.H., 2025, Recent Advances in Supported Metal Catalysts for

CO<sub>2</sub> Methanation: Mechanisms, Materials Design, and The Promise of Perovskite-Based Supports, *Energy Convers. Manag.*: X., 27, 101066.

Zheng, L., Li, Q., Zhang, J., and Yu, Z., 2012, Double the Biodiesel Yield: Rearing Black Soldier Fly Larvae, *Hermetia illucens*, on Solid Residual Fraction of Restaurant Waste After Grease Extraction for Biodiesel Production, *Renew. Energy*, 41, 75–79.

Zheng, Y., Wang, F., Yang, X., Huang, Y., Liu, C., Zheng, Z., and Gu, J., 2017, Study on Aromatics Production via The Catalytic Pyrolysis Vapor Upgrading of Biomass Using Metal-Loaded Modified H-ZSM-5, *J. Anal. Appl. Pyrolysis*, 126, 169–179.

Zhu, P., Abdelaziz, O.Y., Hultberg, C.P., and Riisager, A., 2020, New Synthetic Approaches to Biofuels from Lignocellulosic Biomass, *Curr. Opin. Green Sustain. Chem.*, 21, 16–21.

Žula, M., Grilc, M., and Likozar, B., 2022, Hydrocracking, Hydrogenation and Hydro-Deoxygenation of Fatty Acids, Esters and Glycerides: Mechanisms, Kinetics and Transport Phenomena, *Chem. Eng. J.*, 444, 136564.

Zulkepli, S., Abd. Rahman, N., Voon Lee, H., Kui Cheng, C., Chen, W.H., and Ching Juan, J., 2022, Synergistic effect of bimetallic Fe-Ni supported on hexagonal mesoporous silica for production of hydrocarbon-like biofuels via deoxygenation under hydrogen-free condition, *Energy Convers. Manag.*, 273, 116371.

Zuo, A., Feng, H., Yuan, T., Gan, J., Xu, L., Shu, K., Luo, Y., Tian, J., Wang, Z., Xue, K., and Wang, D., 2026, Photo-driven Selective Recycling of Spent LiFePO<sub>4</sub> Batteries and Valuable Photocatalytic Utilization of Recovered Ferric Oxalate, *J. Hazard. Mater.*, 501, 140753.