

## DAFTAR PUSTAKA

1. Pribadi, A. *Potential Energy Business from Used Cooking Oil*. Published 2020.
2. Gouran, A.; Aghel, B.; Nasirmanesh, F. Biodiesel Production From Waste Cooking Oil Using Wheat Bran Ash As A Sustainable Biomass. *Fuel* 2021, 295.
3. Hendra, D.; Wibowo, S.; Wibisono, H. *Tanaman Hutan Tanaman Hutan Biodiesel dari Beberapa Jenis*; IPB Press: Bogor, 2018.
4. Khan, M. H.; Iqbal, T.; Haider Ali, C.; Javaid, A.; Iqbal Cheema, I. Sustainable Biodiesel Production From Waste Cooking Oil Utilizing Waste Ostrich (*Struthio Camelus*) Bones Derived Heterogeneous Catalyst. *Fuel* 2020.
5. Maneerung, T.; Kawi, S.; Dai, Y.; Wang, C. H. Sustainable Biodiesel Production Via Transesterification Of Waste Cooking Oil By Using Cao Catalysts Prepared From Chicken Manure. *Energy Convers. Manag.* 2016, 123, 487–497.
6. Aleman-Ramirez, J. L.; Moreira, J.; Torres-Arellano, S.; Longoria, A.; Okoye, P. U.; Sebastian, P. J. Preparation Of A Heterogeneous Catalyst From Moringa Leaves As A Sustainable Precursor For Biodiesel Production. *Fuel* 2021, 284.
7. Laskar, I. B.; Rajkumari, K.; Gupta, R.; Chatterjee, S.; Paul, B.; Rokhum, L. Waste Snail Shell Derived Heterogeneous Catalyst For Biodiesel Production By The Transesterification Of Soybean Oil. *RSC Adv.* 2018, 8 (36), 20131–20142.
8. Zhang, S.; Xiong, J.; Lu, J.; Zhou, N.; Li, H.; Cui, X.; Zhang, Q.; Liu, Y.; Ruan, R.; Wang, Y. Synthesis Of Cao From Waste Shells For Microwave-Assisted Catalytic Pyrolysis Of Waste Cooking Oil To Produce Aromatic-Rich Bio-Oil. *Sci. Total Environ.* 2022, 827, 154186.
9. Alif, M. F.; Aprillia, W.; Arief, S. A Hydrothermal Synthesis Of Natural Hydroxyapatite Obtained From Corbicula Moltkiana Freshwater Clams Shell Biowaste. *Mater. Lett.* 2018.
10. Piker, A.; Tabah, B.; Perkas, N.; Gedanken, A. A Green And Low-Cost Room Temperature Biodiesel Production Method From Waste Oil Using Egg Shells As Catalyst. *Fuel* 2016, 182, 34–41.
11. Foo, W. H.; Chia, W. Y.; Tang, D. Y. Y.; Koay, S. S. N.; Lim, S. S.; Chew, K. W. The Conundrum Of Waste Cooking Oil: Transforming Hazard Into Energy. *J. Hazard. Mater.* 2021.
12. Angelia, D.; Permatasari, G. P. W.; Redjeki, S. Kinetika Reaksi Transesterifikasi Biodiesel Dari Minyak Jelantah Menggunakan Katalis Cao Modifikasi. *J. Tek. Kim.* 2022, 16 (2), 93–100.
13. Robiah; Herawaty, N.; Chaterina, W. Regenerasi Minyak Goreng Bekas sebagai Bahan Baku Biodiesel Menggunakan Ampas Tebu sebagai Adsorben. *Distilasi* 2018, 3 (1), 41–46.
14. Sulistianingsih; Wahyuningtyas, D. Optimasi Pembuatan Biodiesel Dari Minyak Jelantah Dengan Katalisator Kalsium Oksida (Cao) Dengan Proses Metanolisis (Variabel Suhu Reaksi). *Inov. Proses* 2019, 4 (2).
15. Ketaren, S. *Minyak dan Lemak Pangan*; UI Press: Jakarta, 2005.
16. Solikhah, M. D.; Barus, B. R.; Karuana, F. *Pedoman Penanganan dan Penyimpanan Biodiesel dan Campuran Biodiesel (B30)*; Direktorat Bioenergi Direktorat Jenderal Energi Baru, Terbarukan Dan Konversi Energi Kementerian Energi Dan Sumber Daya Mineral: Jakarta, 2020.
17. Arita, S.; Ramayanti, C.; Andalia, W. Edukasi Pengembangan Minyak Jelantah menjadi Biodiesel sebagai Bahan Bakar Alternatif Bagi Masyarakat Kelurahan Suka Mulya. *Ikra-Ith Abdimas* 2022, 5 (3), 168–174.
18. Turnip, J. R.; Tarigan, T. F. L.; Sinaga, M. S. Pengaruh Massa Katalis dan Waktu Reaksi pada Pembuatan Biodiesel dari Limbah Minyak Jelantah Menggunakan Katalis Heterogen  $K_2O$  dari Limbah Kulit Kakao. *Tek.Kim. USU* 2017, 6(2), 24-29.

19. Ridhanisa, F. Penjernihan Minyak Jelantah Dengan Menggunakan Adsorben Sekam Padi Dan Serabut Kelapa. In *Prosiding Seminar Nasional Kimia dan Pendidikan Kimia Jurusan Kimia FMIPA Unimed*; 2020.
20. Erchamo, Y. S. dkk. Improved Biodiesel Production From Waste Cooking Oil With Mixed Methanol–Ethanol Using Enhanced Eggshell Derived Cao Nano Catalyst. *Sci. Reports* 2021.
21. Tan, Y. H.; Abdullah, M. O.; Nolasco-Hipolito, C.; Ahmad Zauzi, N. S. Application Of RSM And Taguchi Methods For Optimizing The Transesterification Of Waste Cooking Oil Catalyzed By Solid Ostrich And Chicken-Eggshell Derived Cao. *Renew. Energy* 2017, 114 (PB), 437–447.
22. Peng, Y. P.; Amesho, K. T. T.; Chen, C. E.; Jhang, S. R.; Chou, F. C.; Lin, Y. C. Optimization Of Biodiesel Production From Waste Cooking Oil Using Waste Eggshell As A Base Catalyst Under A Microwave Heating System. *Catalysts* 2018, 8 (2), 1–16.
23. Suleman, N.; Abas; Papatungan, M. Esterifikasi dan Transesterifikasi Stearin Sawit untuk Pembuatan Biodiesel. *J. Tek.* 2019, 17 (1), 66–77.
24. Marinković, D. M.; Stanković, M. V.; Veličković, A. V.; Avramović, J. M.; Miladinović, M. R.; Stamenković, O. O.; Veljković, V. B.; Jovanović, D. M. Calcium Oxide As A Promising Heterogeneous Catalyst For Biodiesel Production: Current State And Perspectives. *Renew. Sustain. Energy Rev.* 2016, 56, 1387–1408.
25. Badan Standarisasi Nasional. Standar Nasional Indonesia 7182:2015 Biodiesel. *Badan Standarisasi Nas.* 2015, No. 1, 1–88.
26. Shan, R.; Lu, L.; Shi, Y.; Yuan, H.; Shi, J. Catalysts From Renewable Resources For Biodiesel Production. *Energy Convers. Manag.* 2018, 277–289.
27. Pauline, M. N.; Sivaramakrishnan, R.; Pugazhendhi, A.; Anbarasan, T.; Achary, A. Transesterification Kinetics Of Waste Cooking Oil And Its Diesel Engine Performance. *Fuel* 2021, 285.
28. Shan, R.; Zhao, C.; Lv, P.; Yuan, H.; Yao, J. Catalytic Applications Of Calcium Rich Waste Materials For Biodiesel: Current State And Perspectives. *Energy Convers. Manag.* 2016, 127, 273–283.
29. Wahyuni, S.; Darvina, Y.; Ramli. Optimalisasi Temperatur Kalsinasi Untuk Mendapatkan Kalsit-CaCO<sub>3</sub> Dalam Cangkang Pensi (*Corbicula Moltkiana*) yang Terdapat di Danau Maninjau. Mahasiswa Jurusan Fisika FMIPA UNP Staff Pengajar Jurusan Fisika FMIPA UNP. *Pillar Phys.* 2015, 6, 81–88.
30. Fattah, R.; Ong, H. C.; Mahlia, T. M. I.; Mofijur, M.; Silitonga, A. S.; Ashrafur Rahman, S. M.; Ahmad, A. State of the Art of Catalysts for Biodiesel Production. *Front. Energy Res.* 2020, 8 (June), 1–17.
31. Khatibi, M.; Khorasheh, F.; Larimi, A. Biodiesel Production Via Transesterification Of Canola Oil In The Presence Of Na–K Doped Cao Derived From Calcined Eggshell. *Renew. Energy* 2021, 163, 1626–1636.
32. Monica; Banga, S.; Pathak, V. V. Biodiesel Production From Waste Cooking Oil : A Comprehensive Review On The Application Of Heterogenous Catalysts. *Energy Nexus* 2023, 10 (March), 100209.
33. Changmai, B.; Vanlalveni, C.; Ingle, A. P.; Bhagat, R.; Rokhum, L. Widely Used Catalysts In Biodiesel Production: A Review. *RSC Adv.* 2020, 10 (68), 41625–41679.
34. Gupta, A. R.; Rathod, V. K. Waste Cooking Oil And Waste Chicken Eggshells Derived Solid Base Catalyst For The Biodiesel Production: Optimization And Kinetics. *Waste Manag.* 2018, 79, 169–178.
35. Lin, Y. C.; Amesho, K. T. T.; Chen, C. E.; Cheng, P. C.; Chou, F. C. A Cleaner Process For Green Biodiesel Synthesis From Waste Cooking Oil Using Recycled



- Waste Oyster Shells As A Sustainable Base Heterogeneous Catalyst Under The Microwave Heating System. *Sustain. Chem. Pharm.* 2020, 17 (August), 100310.
36. Sutapa, I. W.; Rosmawaty; Ropa, H. Non-edible Oil of *Cerbera manghas* L. Seed from Seram Island-Maluku as Oil Source of Biodiesel Production. *J. Phys. Conf. Ser.* 2019, 1341 (3).
  37. Astuti, W. *Adsorpsi Menggunakan Material Berbasis Lignoselulosa*; 2018.
  38. Demirbas, A. Biodiesel Production From Vegetable Oils Via Catalytic And Non-Catalytic Supercritical Methanol Transesterification Methods. *Prog. Energy Combust. Sci.* 2005, 31 (5–6), 466–487.
  39. Demirbaş, A. Biodiesel From Vegetable Oils Via Transesterification In Supercritical Methanol. *Energy Convers. Manag.* 2002, 43 (17), 2349–2356.
  40. Kafuku, G.; Lee, K. T.; Mbarawa, M. Non-Catalytic And Catalytic Transesterification: A Reaction Kinetics Comparison Study. *Int. J. Green Energy* 2015, 12 (5), 551–558.
  41. Musa, I. A. The Effects Of Alcohol To Oil Molar Ratios And The Type Of Alcohol On Biodiesel Production Using Transesterification Process. *Egypt. J. Pet.* 2016, 25 (1), 21–31.
  42. Nopianingsih, N. N. S.; Sudiarta, I. W.; Sulihingtyas, W. D. Sintesis Silika Gel Terimobilisasi Difenilkarbazon dari Abu Sekam Padi Melalui Teknik Sol Gel. *J. Kim.* 2015, 9 (2), 226–234.
  43. Suryadi. Sintesis dan Karakterisasi Biomaterial Hidroksiapatit dengan Proses Pengendapan Kimia Basah, Universitas Indonesia, 2011.
  44. Wu, S.; Tsou, H.; Hsu, H.; Hsu, S.; Liou, S.; Ho, W. A Hydrothermal Synthesis of Eggshell and Fruit Waste Extract to Produce Nanosized Hydroxyapatite. *Ceram. Int* 2013, 39, 8183–8188.
  45. Oyedotun, T. D. T. X-Ray Fluorescence (XRF) In The Investigation Of The Composition Of Earth Materials: A Review And An Overview. *Geol. Ecol. Landscapes* 2018, 2 (2), 148–154.
  46. Jamaluddin; Darwis, A.; Massinai, M. A. X-Ray Fluorescence (XRF) To Identify Chemical Analysis Of Minerals In Buton Island, SE Sulawesi, Indonesia. *IOP Conf. Ser. Earth Environ. Sci.* 2018, 118 (1).
  47. Muflihunna, A.; Mu'Nisa, A.; Hala, Y.; Hasri. Gas Chromatography-Mass Spectrometry (GC-MS) Analysis and Antioxidant Activity of Sea-Cucumber (*Holothurian atra* and *Holothurian edulis*) from Selayar Island. *J. Phys. Conf. Ser.* 2021, 1752 (1).
  48. Al-Rubaye, A. F.; Hameed, I. H.; Kadhim, M. J. A Review: Uses of Gas Chromatography-Mass Spectrometry (GC-MS) Technique for Analysis of Bioactive Natural Compounds of Some Plants. *Int. J. Toxicol. Pharmacol. Res.* 2017, 9 (01).
  49. Haryanto, A.; Silviana, U.; Triyono, S.; Prabawa, S. Produksi Biodiesel Dari Transesterifikasi Minyak Jelantah Dengan Bantuan Gelombang Mikro: Pengaruh Intensitas Daya Dan Waktu Reaksi Terhadap Rendemen Dan Karakteristik Biodiesel. *J. Agritech* 2015, 35 (02), 234.
  50. Fatimura, M.; Daryanti, D.; Santi, S. Pembuatan Biodiesel Dari Minyak Jelantah Bekas Rumah Makan dengan Variasi Penambahan Katalis KOH Pada Proses Transesterifikasi. *J. Redoks* 2018, 1 (2), 35.
  51. Adhani, L.; Aziz, I.; Nurbayti, S.; Ulum, B. Pembuatan Produk Biodiesel Dari Minyak Goreng Bekas dengan Cara Esterifikasi dan Transesterifikasi. *J. Kim. Val.* 2016, 2 (3), 71–80.
  52. Octavia, R. Z. Pembuatan Dan Uji Kualitas Bahan Bakar Dari Minyak Kelapa (*Cocos Nucifera*) Fakultas Sains Dan Teknologi Universitas Islam Negeri (UIN) Alauddin Makassar, 2011.

53. Atabani, A. E.; Silitonga, A. S.; Badruddin, I. A.; Mahlia, T. M. I.; Masjuki, H. H.; Mekhilef, S. A comprehensive review on biodiesel as an alternative energy resource and its characteristics. *Renew. Sustain. Energy Rev.* 2012, 16 (4), 2070–2093.
54. Degfie, T. A.; Mamo, T. T.; Mekonnen, Y. S. Optimized Biodiesel Production from Waste Cooking Oil (WCO) using Calcium Oxide (CaO) Nano-catalyst. *Sci. Rep.* 2019, 9 (1), 1–8.
55. Sharma, P.; Bhavani, A. G. Green, Cost Effective Barium Loaded Montmorillonite Catalyst For Biodiesel Synthesis From Waste Cooking Oil. *Mater. Today Proc.* 2021, 45 (xxxx), 4544–4549.
56. Syahputra, M. I. Sintesis Fatty Acid Methyl Esters dari Minyak Biji Labu Kuning (*Cucurbita moschata D.*), Pare (*Momordicha charantia L.*), dan Gambas (*Luffa acutangula*), Universitas Andalas, 2020.
57. Budaya, A. W. Pengaruh Variasi Rasio Minyak Jelantah dan Metanol Terhadap Konversi Biodiesel dengan Katalis CaO, Universitas Islam Negeri Raden Fatah Palembang, 2020.
58. Oko, S.; Syahrir, I. Sintesis Biodiesel dari Minyak Sawit Menggunakan Katalis CaO Superbasa dari Pemanfaatan Limbah Cangkang Telur Ayam. *J. Teknol.* 2018, 10 (2i), 113–121.
59. Ardiansah; Utami, H. H.; Lutfi, S.; Firdharini, C. Journal of Chemical Process Menggunakan Microwave. 2022, No. 2655.
60. Zuhra, Z.; Husin, H.; Hasfita, F.; Rinaldi, W. Preparasi Katalis Abu Kulit Kerang Untuk Transesterifikasi Minyak Nyamplung Menjadi Biodiesel (Preparation of Cockle Shell Powder Catalyst for Transesterification of *Calophyllum inophyllum L.* Oil to Biodiesel). *J. Agritech* 2015, 35 (01), 69.
61. Gonzaga, V. E.; Romero, R.; Gómez-Espinosa, R. M.; Romero, A.; Martínez, S. L.; Natividad, R. Biodiesel Production From Waste Cooking Oil Catalyzed By A Bifunctional Catalyst. *ACS Omega* 2021, 6 (37), 24092–24105.
62. Conley, S. P. Biodiesel Quality: is All Biodiesel Created equal? *BioEnergy* 2012, ID-338, 1–4.
63. Syukri; Febiola, F.; Rahmayeni; Efdi, M.; Putri, Y.; Septiani, U. Effect Of Thermal Treatment And Nickel-Salt Modification On The Catalytic Performance Of the Illite-Kaolinite Clay From Bukittinggi Of West Sumatera In Palm Oil Transesterification. *Ser Nat Sci* 2022.
64. Fabiani, V. A.; Asriza, R. O.; Fabian, A. R.; Kafillah, M. Biodiesel Production from Waste Cooking Oil Using Catalyst CaO Derived from *Strombus canarium* shells. *IOP Conf. Ser. Earth Environ. Sci.* 2019, 353 (1).
65. Lani, N. S.; Norzita, N.; Dkk. Synthesis, Characterization And Performance Of Silica Impregnated Calcium Oxide As Heterogeneous Catalyst In Biodiesel Production. *J. Clean. Prod.* 2016, 1–9.
66. Sarungu, S.; Lukman; Lanrianna Putri Paelongan, S. Analisa Karakteristik Biodiesel Hasil Transesterifikasi Minyak Jelantah Menggunakan Katalis Koh. *Petrogas* 2021, 3 (2), 76–93.
67. Rahman, F. Produksi Biodiesel dari Minyak Jelantah dengan Variasi Jumlah Katalis CaO dari Cangkang Keong Mas (*Pomacea canaliculata Lamarck*), Universitas Islam Negeri Raden Fatah Palembang, 2019.
68. Suroso, A. S. Kualitas Minyak Goreng Habis Pakai Ditinjau dari Bilangan Peroksida, Bilangan Asam dan Kadar Air. *Jurnal Kefarmasian Indonesia*, Vol 3(2), 77–88. Ditinjau dari Bilangan Peroksida, Bilangan Asam dan. *J. Kefarmasian Indones.* 2018, Vol 3 (2), 77–88.
69. Efri Mardawati; Mahdi Singgih Hidayat; Devi Maulida Rahmah; SRosalinda. Produksi Biodiesel Dari Minyak Kelapa Sawit Kasar Off Grade Dengan Variasi

- Pengaruh Asam Sulfat Pada Proses Esterifikasi Terhadap Mutu Biodiesel Yang Dihasilkan. *J. Ind. Pertan.* – 2019, 01, 46–60.
70. Dimawarnita, F.; Mafaaz, Z.; Emha, F.; Koto, A. Karakteristik Sifat Fisika Kimia Biodiesel Berbasis Minyak Nabati. 2023, 28 (1), 15–26.
71. Setiawati, E.; Edwar, F. Teknologi Pengolahan Biodiesel Dari Minyak Goreng Bekas dengan Teknik Mikrofiltrasi dan Transesterifikasi sebagai Alternatif Bahan Bakar Mesin Diesel. *Ris. Ind.* 2012, VI (2), 117–127.
72. Furqon, F.; Nugroho, A. K.; Anshorulloh, M. K. Kajian Penggunaan Katalis KOH pada Pembuatan Biodiesel Menggunakan Reverse Flow Biodiesel Reactor secara Batch. *Rona Tek. Pertan.* 2019, 12 (1), 22–31.
73. Kaewdaeng, S.; Sintuya, P.; Nirunsin, R. Biodiesel production using calcium oxide from river snail shell ash as catalyst. *Energy Procedia* 2017, 138, 937–942.
74. Manik, D. J.; Hamzah, F.; Fajar, R. Biodiesel From Waste Cooking Oil Using Heterogeneous. 2017, 4 (1), 1–15.

