

DAFTAR PUSTAKA

1. Ryan Arya Wisnu Wardana G, Gede Aris Gunadi I, Sukajaya N. Prediction of Energy Crisis in Indonesia Through Simulation Models System Dynamic. *Jurnal Ilmu Komputer Indonesia (JIK)*. 2022;7(2).
2. Rahayu R, Nengsih ZW, Arief S, Rilda Y, Alif MF, Syukri S. Separation of Kaolinite from Clay Minerals and Its Catalytic Activity in Transesterification Reactions. *Hydrogen: Jurnal Kependidikan Kimia*. 2024 Feb 29;12(1):16. doi:10.33394/hjkk.v12i1.10600
3. Neupane D. Biofuels from Renewable Sources, a Potential Option for Biodiesel Production. *Bioengineering*. MDPI; 2023. doi:10.3390/bioengineering10010029
4. Wang Y, Muhammad Y, Yu S, Fu T, Liu K, Tong Z, et al. Preparation of Ca-and Na-Modified Activated Clay as a Promising Heterogeneous Catalyst for Biodiesel Production via Transesterification. *Applied Sciences (Switzerland)*. 2022 May 1;12(9). doi:10.3390/app12094667
5. Budiman AA, Samik S. Review Artikel: Produksi Biodiesel dari Minyak Goreng Bekas dengan Metode Transesterifikasi menggunakan Katalis. *UNESA Journal of Chemistry*. 2023.
6. Moreno-Maroto JM, Alonso-Azcárate J. What is clay? A new definition of “clay” based on plasticity and its impact on the most widespread soil classification systems. *Appl Clay Sci*. 2018 Sep 1;161:57–63. doi:10.1016/j.clay.2018.04.011
7. Kagonbé BP, Tsozué D, Nzeukou AN, Ngos III S. Mineralogical, Geochemical and Physico-Chemical Characterization of Clay Raw Materials from Three Clay Deposits in Northern Cameroon. *Journal of Geoscience and Environment Protection*. 2021;09(06):86–99. doi:10.4236/gep.2021.96005
8. Asri LM, Zakaria Z, Mulyo A. Mineral Tanah Lempung Formasi Batuasih Berdasarkan Data SEM (Scanning Electron Microscope) dan XRD (X-Ray Diffractometer) Pada Lereng Citatah KM-23, Padalarang, Jawa Barat. *Jurnal Geosains dan Teknologi*. 2023 Mar;6(1).
9. Motshekga SC. The significant role of acid activation in clay modification: a comparative study of activators for bentonite. *R Soc Open Sci*. 2026 May 6;13(5). doi:10.1098/rsos.252106
10. Meng D, Yankwa Djobo JN, Segura IP, Kaze RC, Kuenzel C, Ranjbar N. Clay activation: A review. *Materials Today*. 2025 Nov 24. doi:10.1016/j.mattod.2025.11.024
11. Kumari N, Mohan C. Basics of Clay Minerals and Their Characteristic Properties. In: *Clay and Clay Minerals* [Internet]. IntechOpen; 2021. Available from: <https://www.intechopen.com/chapters/76780> doi:10.5772/intechopen.97672
12. Wypych F, Freitas RA de. Clay minerals: Classification, structure, and properties. In: Vol. 10. 2022. p. 3–35. doi:10.1016/B978-0-323-91858-9.00004-5
13. Reddy CR, Bhat YS, Nagendrappa G, Jai Prakash BS. Brønsted and Lewis acidity of modified montmorillonite clay catalysts determined by FT-IR spectroscopy. *Catal Today*. 2009 Mar 15;141(1–2):157–60. doi:10.1016/j.cattod.2008.04.004
14. Berhe MT, Berhe GG, Cheru MS, Weldehans MG. Characterization of Acid Activation of Bentonite Clay of Hadar, Afar, Ethiopia. *Advances in Materials Science and Engineering*. 2024;2024. doi:10.1155/2024/6413786
15. Chokri M, Azougagh O, El Bojaddayni I, Jalafi I, Ouadi Y EL, Jilal I, et al. Progress in bentonite clay modification and enhancing properties to industrial applications: A review. *Materials Chemistry and Physics*. Elsevier Ltd; 2025. doi:10.1016/j.matchemphys.2025.130486
16. Kovalchuk I, Farbut I, Vyshnevskiy O. Acid activation of bentonite: structural transformation and sorption performance for uranium, cesium, and strontium. *Environ Earth Sci*. 2026 Mar 1;85(5). doi:10.1007/s12665-026-12844-1
17. Ochirkhuyag A, Temuujin J. The Catalytic Potential of Modified Clays: A Review. *Minerals*. Multidisciplinary Digital Publishing Institute (MDPI); 2024. doi:10.3390/min14060629
18. Fogler HScott. *Elements of chemical reaction engineering*. Prentice Hall; 2016. 957 p.
19. Yaghi M, Chidiac S, Awad S, El Rayess Y, Zgheib N. An Overview of Biodiesel Production via Heterogeneous Catalysts: Synthesis, Current Advances, and Challenges. *Clean Technologies*. Multidisciplinary Digital Publishing Institute (MDPI); 2025. doi:10.3390/cleantechnol7030062
20. Wang B, Wang B, Shukla SK, Wang R. Enabling Catalysts for Biodiesel Production via Transesterification. *Catalysts*. MDPI; 2023. doi:10.3390/catal13040740
21. Widjonarko DM, Naufal WM, Fadhilah AM, Hidayat Y, Wahyuningsih S. Adsorption kinetics and surface interaction of fly ash-modified bentonite for free fatty acid removal from waste cooking oil. *Next Materials*. 2026 Jul 1;12. doi:10.1016/j.nxmte.2026.102140

22. Mahmudah R, Shofiah N. From waste to wealth: A novel approach for empowering society through recycling used cooking oil into soap. *Journal of Community Service and Empowerment*. 2023 Jul 2;4(2):343–50. doi:10.22219/jcse.v4i2.25816
23. Farouk SM, Tayeb AM, Abdel-Hamid SMS, Osman RM. Recent advances in transesterification for sustainable biodiesel production, challenges, and prospects: a comprehensive review. *Environmental Science and Pollution Research*. Springer; 2024. p. 12722–47. doi:10.1007/s11356-024-32027-4 PubMed PMID: 38253825.
24. Maniam GP, Lim HS, Mat Hussin N. Effect of Free Fatty Acid on Transesterification of Waste Cooking Oil. *Current Science and Technology*. 2023 May 15;3(1):57–63. doi:10.15282/cst.v3i1.10290
25. Maniam GP, Lim HS, Mat Hussin N. Effect of Free Fatty Acid on Transesterification of Waste Cooking Oil. *Current Science and Technology*. 2023 May 15;3(1):57–63. doi:10.15282/cst.v3i1.10290
26. Ibadurrohman IA, Hamidi N, Yuliati L. The role of the unsaturation degree on the droplet combustion characteristics of fatty acid methyl ester. *Alexandria Engineering Journal*. 2022 Mar 1;61(3):2046–60. doi:10.1016/j.aej.2021.07.038
27. Permata Lestari L, Sylvia N. Pengaruh Suhu dan Waktu Reaksi Transesterifikasi Minyak Jarak Kepyar (Castor Oil) Terhadap Metil Ester dengan Menggunakan Katalis Abu Tandan Kosong Kelapa Sawit. *Chemical Engineering Journal Storage*. 2021.
28. Supriadi E, Hadi Prajitno D, Mahfud M, Ngatijo N, Basuki R. Pengaruh Doping Ca dan K pada γ -Al₂O₃ terhadap Sifat Fisik Katalis pada Transesterifikasi Minyak Kelapa. *REACTOR: Journal of Research on Chemistry and Engineering*. 2021 Jun 29;2(1):9. doi:10.52759/reactor.v2i1.20
29. Syukri S, Septioga K, Arief S, Putri YE, Efdi M, Septiani U. Natural clay of pasaman barat enriched by cao of chicken eggshells as catalyst for biodiesel production. *Bulletin of Chemical Reaction Engineering and Catalysis*. 2020 Dec 1;15(3):662–73. doi:10.9767/BCREC.15.3.8097.662-673
30. Probo Ningtyas D, Ari Budhiyanti S, Latif Sahubawa Jurusan Perikanan Fakultas Pertanian UGM dan. Pengaruh Katalis Basa (NaOH) Pada Tahap Reaksi Transesterifikasi Terhadap Kualitas Biofuel dari Minyak Tepung Ikan Sardin. *Jurnal Teknosains*. 2013 Jun 22;2(2):22–2013.
31. Bohlouli A, Mahdavian L. Catalysts used in biodiesel production: a review. *Biofuels*. 2021;12(8):885–98. doi:10.1080/17597269.2018.1558836
32. Yusuf BO, Oladepo SA, Ganiyu SA. Efficient and Sustainable Biodiesel Production via Transesterification: Catalysts and Operating Conditions. *Catalysts*. Multidisciplinary Digital Publishing Institute (MDPI); 2024. doi:10.3390/catal14090581
33. Muttaqin R, Sakti W, Prayitno W, Nurbaiti U, Semarang K, 50229 K; et al. Pengembangan Buku Panduan Teknik Karakterisasi Material : X-ray Diffractometer (XRD) Panalytical Xpert3 Powder. *JOURNAL OF LABORATORY ISSN*. 2023 Sep 16;6(1):4887.
34. Safira VRN, Perkasa MB, Fitrilawati, Syakir N. Perbandingan Pendekatan Fungsi Gauss dan Fungsi Lorentz pada Dekomposisi Pola XRD Oksida Grafena dan Oksida Grafena Tereduksi. *Jurnal Material dan Energi Indonesia*. 2022;34–43.
35. Sulistiyono E, Suharyanto A. Pengukuran Kristal Nano Magnesium Karbonat Dengan Metode X-Ray Diffraction (XRD). 2025.
36. Dewantara RB, Irfa'i MA. Pengaruh Suhu Sintering Terhadap Kemurnian Hidroksiapatit Berdasar Tulang Sotong Dengan Metode Sol-gel. *Jurnal Teknik Mesin*. 2025;14:73–80.
37. Pasieczna-Patkowska S, Cichy M, Flieger J. Application of Fourier Transform Infrared (FTIR) Spectroscopy in Characterization of Green Synthesized Nanoparticles. *Molecules*. Multidisciplinary Digital Publishing Institute (MDPI); 2025. doi:10.3390/molecules30030684 PubMed PMID: 39942788.
38. Kombongkila O, Taunaumang H. Analisis Struktur Film Tipis Disperse Orange-3 Hasil FTIR. *Jurnal FisTa : Fisika dan Terapannya*. 2024 Apr;5(1):45–50.
39. Barry TA, Mbaye A, Badiane I, Badiane AM, Freslon S, Aranda B, et al. Characterization of Clay Raw Materials from Three Kankan Clay Deposits with a View to Their Use as Building Materials. *Journal of Materials Science and Chemical Engineering*. 2025;13(02):31–52. doi:10.4236/msce.2025.132003
40. Margareta MAH, Wonorahardjo S. Optimasi Metode Penetapan Senyawa Eugenol dalam Minyak Cengkeh Menggunakan Gas Chromatography – Mass Spectrum dengan Variasi Suhu Injeksi. *Jurnal Sains dan Edukasi Sains*. 2023 Aug 24;6(2):95–103. doi:10.24246/juses.v6i2p95-103

41. Whetstine CR, Advisor A. GC-MS Analysis of Synthesized Biodiesel [Internet]. [Buffalo, New York, USA]: State University of New York College at Buffalo; 2020. Available from: https://digitalcommons.buffalostate.edu/forensic_science_projects/1
42. Admi A, Mustika M, Syukri S. Natural Clay yang Dimodifikasi Nikel dan Aplikasi Katalitik Untuk Produksi FAME: Efek Support dan Prekursor Nikel. *Jurnal Fisika Unand*. 2025 May 9;14(3):235–41. doi:10.25077/jfu.14.3.235-241.2025
43. Wang Y, Muhammad Y, Yu S, Fu T, Liu K, Tong Z, et al. Preparation of Ca-and Na-Modified Activated Clay as a Promising Heterogeneous Catalyst for Biodiesel Production via Transesterification. *Applied Sciences (Switzerland)*. 2022 May 1;12(9). doi:10.3390/app12094667
44. Wulandari F, Harismah K. Pemurnian Minyak Daun Cengkeh dengan Metode Adsorpsi Menggunakan Adsorben Lempung Bentonit dengan Aktivasi Asam Sitrat dari Lemon. 2023.
45. Arslan V. A study on the dissolution kinetics of iron oxide leaching from clays by oxalic acid. *Physicochemical Problems of Mineral Processing*. 2021;57(3):97–111. doi:10.37190/ppmp/135749
46. Hayatullah, Shathi AS, Mostafa MG, Rahman MA, Biswas PK, Alam MS, et al. Iron removal from Red Clay using Oxalic Acid Leaching for Enhanced Ceramic Industry Applications. *Heliyon*. 2024 Oct 15;10(19). doi:10.1016/j.heliyon.2024.e38863
47. Bastida J, Pardo-Ibañez P. Applications of X-ray Powder Diffraction Microstructural Analysis in Applied Clay Mineralogy. *Minerals*. Multidisciplinary Digital Publishing Institute (MDPI); 2024. doi:10.3390/min14060584
48. Al-Ameri OB, Alzuhairi M, Bailón-García E, Carrasco-Marín F, Amaro-Gahete J. Transforming Petrochemical Processes: Cutting-Edge Advances in Kaolin Catalyst Fabrication. *Applied Sciences (Switzerland)*. Multidisciplinary Digital Publishing Institute (MDPI); 2024. doi:10.3390/app14199080
49. Zhou Y, Cheng H, Wei C, Zhang Y. Effect of Acid Activation on Structural Evolution and Surface Charge of Different Derived Kaolinites. *Appl Clay Sci*. 2021 Mar 15;203. doi:10.1016/j.clay.2021.105997
50. Alvarez-Coscojuela A, Mañosa J, Formosa J, Chimenos JM. Structural Characterisation and Reactivity Measurement of Chemically Activated Kaolinite. *Journal of Building Engineering*. 2024 Jun 15;87. doi:10.1016/j.jobbe.2024.109051
51. Saikia BJ, Parthasarathy G. Fourier Transform Infrared Spectroscopic Characterization of Kaolinite from Assam and Meghalaya, Northeastern India. *Journal of Modern Physics*. 2010;01(04):206–10. doi:10.4236/jmp.2010.14031
52. Zahid I, Ayoub M, Abdullah B Bin, Nazir MH, Zulqarnain, Kaimkhani MA, et al. Activation of nano kaolin clay for bio-glycerol conversion to a valuable fuel additive. *Sustainability (Switzerland)*. 2021 Mar 1;13(5):1–17. doi:10.3390/su13052631
53. Hossain MA, Rayhan U, Talukder A, Zahra FT, Hossain M, Das SC. Development and Characterization of Biodiesel: Analyzing Properties Through GC-MS and Fuel Analyzer. 2025 Jan.
54. Komadel P, Madejová J. Acid activation of clay minerals. In: *Developments in Clay Science*. Elsevier B.V.; 2013. p. 385–409. doi:10.1016/B978-0-08-098258-8.00013-4
55. Komadel P. Acid activated clays: Materials in continuous demand. *Appl Clay Sci*. 2016 Oct;131:84–99. doi:10.1016/j.clay.2016.05.001