

DAFTAR PUSTAKA

- Adiwibowo, M.T., Jumiarti, T., Mulyani, H., Kustiningsih, I., Kanani, N., Pitaloka, A.B., Pujiastuti, H., Saputri, D.R., Wibowo, C.S.O., and Rahmat, V., 2025, Synthesis of Biodiesel from Candlenut Oil using Zeolite-K₂O-TiO₂: Effects of Catalyst Reusability on Yield and Fuel Properties, *World Chemical Engineering Journal*, 9, 55–59.
- Albuquerque, M.C.G., Jiménez-Urbistondo, I., Santamaría-González, J., Mérida-Robles, J.M., Moreno-Tost, R., Rodríguez-Castellón, E., Jiménez-López, A., Azevedo, D.C.S., Cavalcante, C.L., and Maireles-Torres, P., 2008, CaO Supported on Mesoporous Silicas as Basic Catalysts for Transesterification Reactions, *Appl. Catal. A Gen.*, 334, 35–43.
- Almeida, E.L., Andrade, C.M.G., and Andreo dos Santos, O., 2018, Production of Biodiesel via Catalytic Processes: A Brief Review, *Int. J. Chem. React. Eng.*, 16.
- Amenaghawon, A.N., Amune, U.O., Ayere, J.E., Otuya, I.C., Eshiemogie, S.A., Ehiawaguan, E.I., Diemesor, G., Abuga, E.C., Oiwoh, O., Tijani, O., Oyefolu, P.K., Okoro, O.V., Shavandi, A., Anyalewechi, C.L., Elimian, E.A., Okedi, M.O., Okoduwa, I.G., Eshiemogie, S.O., Osazuwa, O., 2025, A Comprehensive Insight into the Role of Synthesis Methods on the Properties and Performance of Bio-Derived Heterogeneous Catalysts for Biodiesel Production, *Mol. Catal.*, 579.
- Anuar, M.R. and Abdullah, A.Z., 2016, Ultrasound-Assisted Biodiesel Production from Waste Cooking Oil Using Hydrotalcite Prepared by Combustion Method as Catalyst, *Appl. Catal. A Gen.*, 514, 214–223.
- Ashine, F., Kiflie, Z., Prabhu, S.V., Tizazu, B.Z., Varadharajan, V., Rajasimman, M., Joo, S.W., Vasseghian, Y., and Jayakumar, M., 2023, Biodiesel Production from *Argemone mexicana* Oil Using Chicken Eggshell-Derived CaO Catalyst, *Fuel*, 332, 126166.
- Asikin-Mijan, N., Lee, H. V., Marliza, T.S., and Taufiq-Yap, Y.H., 2018, Pyrolytic Deoxygenation of Triglycerides Model Compound and Non-Edible Oil to Hydrocarbons Over SiO₂-Al₂O₃ supported NiO-CaO catalysts, *J. Anal. Appl. Pyrolysis*, 129, 221–230.
- Azzahro, U.L. and Broto, W., 2022, Utilization of Waste Shells as CaO Catalyst in Biodiesel Production from Used Cooking Oil, *Acta Chim. Asiana.*, 5, 147–152.
- Boehm, H.P., 1994, Some Aspects of the Surface Chemistry of Carbon Blacks and Other Carbons, *Carbon N. Y.*, 32, 759–769.
- Boey, P.-L., Ganesan, S., Maniam, G.P., and Khairuddean, M., 2012, Catalysts Derived from Waste Sources in the Production of Biodiesel Using Waste Cooking Oil, *Catal. Today*, 190, 117–121.
- Bokov, D., Turki Jalil, A., Chupradit, S., Suksatan, W., Javed Ansari, M., Shewael, I.H., Valiev, G.H., and Kianfar, E., 2021, Nanomaterial by Sol-Gel Method: Synthesis and Application, *Adv. Mater. Sci. Eng.*, 2021.
- Borah, M.J., Das, A., Das, V., Bhuyan, N., and Deka, D., 2019, Transesterification of Waste Cooking Oil for Biodiesel Production Catalyzed by Zn Substituted Waste Egg Shell Derived CaO Nanocatalyst, *Fuel*, 242, 345–354.

- Chavan, S.B., Kumbhar, R.R., Madhu, D., Singh, B., and Sharma, Y.C., 2015, Synthesis of Biodiesel from *Jatropha Curcas* Oil Using Waste Eggshell and Study of Its Fuel Properties, *RSC Adv.*, 5, 63596–63604.
- Chen, G., Shan, R., Li, S., and Shi, J., 2015, A Biomimetic Silicification Approach to Synthesize CaO–SiO₂ Catalyst for the Transesterification of Palm Oil into Biodiesel, *Fuel*, 153, 48–55.
- Crippa, M., Pagani, F., Guizzardi, D., Banja, M., Muntean, M., Schaaf, E., Quadrelli, R., Riquez Martin, A., Taghavi-Moharamli, P., Koykka, J., Grassi, G., Rossi, S., Melo, J., Oom, D., Branco, A., Suarez-Moreno, M., Sedano, F., San-Miguel, J., Manca, G., 2025, Ghg Emissions of All World Countries Jrc Science for Policy Report, Publications Office of the European Union, Luxembourg.
- Das, V., Tripathi, A.M., Borah, M.J., Dunford, N.T., and Deka, D., 2020, Cobalt-Doped CaO Catalyst Synthesized and Applied for Algal Biodiesel Production, *Renew. Energy*, 161, 1110–1119.
- Fitria, A., Trisunaryanti, W., Triyono, and Santoso, I., 2024, Synthesis, Characterization and Performance of Ni/Mesoporous Silica–NH₂/Mesoporous Silica and Ni–NH₂/Mesoporous Silica as Bifunctional Catalyst in One Step Conversion of Waste Palm Oil to Biodiesel, *Commun. Sci. Technol.*, 9, 430–441.
- Foo, W.H., Chia, W.Y., Tang, D.Y.Y., Koay, S.S.N., Lim, S.S., and Chew, K.W., 2021, The Conundrum of Waste Cooking Oil: Transforming Hazard into Energy, *J. Hazard. Mater.*, 417.
- Foroutan, R., Peighambardoust, S.J., Mohammadi, R., Peighambardoust, S.H., and Ramavandi, B., 2024, The Potential of Biochar Derived from Banana Peel/Fe₃O₄/ZIF-67@K₂CO₃ as Magnetic Nanocatalyst for Biodiesel Production from Waste Cooking Oils, *Results. Eng.*, 22, 102005.
- Günay, M.E., Türker, L., and Tapan, N.A., 2019, Significant Parameters and Technological Advancements in Biodiesel Production Systems, *Fuel*, 250, 27–41.
- Hamid, A., Jakfar, A., Romaniyah, S.B., Febriana, I.D., Abdullah, M., Rahmawati, Z., and Prasetyoko, D., 2023, Transesterification of Waste Cooking Oil Using CaO Catalyst Derived from Madura Limestone for Biodiesel Production and Its Application in Diesel Engine, *Automot. Exp.*, 6, 80–93.
- Hariyanto, Y.A., Mujiyanti, T., and Nasikhah, H., 2021, Ekstraksi dan Karakterisasi CaO Berbasis Cangkang Bekicot dari Ponggok Blitar sebagai Raw Material Biokeramik, *Transmisi*, 17, 126–131.
- Haryono, H., Ishmayana, S., and Fauziyah, I., 2023, Synthesis and Characterization of Calcium Oxide Impregnated on Silica from Duck Egg Shells and Rice Husks as Heterogeneous Catalysts for Biodiesel Synthesis, *Baghdad Sci. J.*, 20(5).
- Huang, H., Zhao, J., Guo, X., Deng, B., Chen, Y., and Huang, X., 2022, Study on Reducing Carbon Dioxide and Harmful Emissions of Diesel-Ignited Natural Gas Engine, *Chemosphere*, 306, 135586.
- Husain, H., Adi, W.A., Taryana, Y., Daud, P., Sulaeman, Y., Sujiono, E.H., Subaer, S., Hidayat, N., Hariyanto, B., Praludi, T., Sukoco, B.E., and Dewi, N., 2025,

- Structural Examination and Magnetic-Microwave Absorption Properties of Fe₃O₄NPs/rGo Composites Derived from Natural Ironsand and Coconut Shell, *J. Mater. Sci. Mater. Electron.*, 37(1).
- Ibrahim, N.A., Rashid, U., Hazmi, B., Moser, B.R., Alharthi, F.A., Rokhum, S.L., and Ngamcharussrivichai, C., 2022, Biodiesel Production from Waste Cooking Oil Using Magnetic Bifunctional Calcium and Iron Oxide Nanocatalysts Derived from Empty Fruit Bunch, *Fuel*, 317, 123525.
- Imoisili, P.E., Ukoba, K.O., and Jen, T.C., 2020, Green Technology Extraction and Characterisation of Silica Nanoparticles from Palm Kernel Shell Ash via Sol–Gel, *J. Mater. Res. Technol.*, 9, 307–313.
- Ishak, S. and Kamari, A., 2019, A Review of Optimum Conditions of Transesterification Process for Biodiesel Production from Various Feedstocks, *Int. J. Environ. Sci. Technol.*, 16, 2481–2502.
- Jamil, F., Al-Haj, L., Al-Muhtaseb, A.H., Al-Hinai, M.A., Baawain, M., Rashid, U., and Ahmad, M.N.M., 2018, Current Scenario of Catalysts for Biodiesel Production: A Critical Review, *Rev. Chem. Eng.*, 34, 267–297.
- Jayakumar, M., Karmegam, N., Gundupalli, M.P., Bizuneh Gebeyehu, K., Tessema Asfaw, B., Chang, S.W., Ravindran, B., and Kumar Awasthi, M., 2021, Heterogeneous Base Catalysts: Synthesis and Application for Biodiesel Production – A Review, *Bioresour. Technol.*, 331, 125054.
- Jayanna, B.V., M. Kulkarni, V., K.N., K., G.C., M.P., H.S., N.P., Samuel, O.D., and Linul, E., 2025, Sustainable Biodiesel Production from *Oenothera Lamarckiana* Oil Using Hybrid CaO@Fe₃O₄.SiO₂ Magnetic Nanocatalyst: RSM-Driven Optimization, *Results Eng.*, 25, 104359.
- Jayaprabakar, J., Karthikeyan, A., Vijai Anand, K., Arunkumar, T., Anbazhaghan, N., and Rangasamy, G., 2023, Synthesis and Characterization of Calcium Oxide Nano Particles Obtained from Biowaste and Its Combustion Characteristics in A Biodiesel Operated Compression Ignition Engine, *Fuel*, 350, 128839.
- Ji, S., Hu, H., Zhang, Y., Li, X., and Wang, F., 2026, Self-Catalyzed in Situ Transesterification of Mucor Circinelloides Lipids from Waste Cooking Oil for Sustainable Biodiesel Production, *Renew. Energy*, 259, 125088.
- John, J.B., Chandrasekar, K., Kings, A.J., And Rajesh, R., 2025, Optimization of Biodiesel Extraction from Mixing of *Jatropha Curcas*, *Ricinus Communis*, *Mimusops Elengi*, *Prosopis Juliflora* And *Delonix Regia* Oil – A Systematic Economic Approach with Novel Metal Complex Catalyst, *Therm. Sci. Eng. Prog.*, 67, 104106.
- Khaleghi, H., Esmaeili, H., Jaafarzadeh, N., And Ramavandi, B., 2022, Date Seed Activated Carbon Decorated with CaO and Fe₃O₄ Nanoparticles as A Reusable Sorbent for Removal of Formaldehyde, *Korean. J. Chem. Eng.*, 39(1), 146–160.
- Kiprono, J., Rutto, H., And Seodigeng, T., 2022, Production of Biodiesel Using Phosphate Rock as A Heterogeneous Catalyst. An Optimized Process Using Surface Response Methodology, *Environ. Climate. Technol.*, 26, 822–835.
- Knothe, Gerhard., Krah, Jurgen., and Van Gerpen, J.Harlan., 2010, *The Biodiesel Handbook*, AOCS Press.

- Lani, N.S., Ngadi, N., and Taib, M.R., 2017, Parametric Study on The Transesterification Reaction by Using CaO/Silica Catalyst, *Chem. Eng. Trans.*, 56, 601–606.
- Lani, N.S., Ngadi, N., Yahya, N.Y., and Rahman, R.A., 2017, Synthesis, Characterization and Performance of Silica Impregnated Calcium Oxide as Heterogeneous Catalyst in Biodiesel Production, *J. Clean. Prod.*, 146, 116–124.
- Macheli, L., Malefane, M.E., And Jewell, L.L., 2025, Waste-Derived Calcium Oxide Catalysts in Biodiesel Production: Exploring Various Waste Sources, Deactivation Challenges, and Improvement Strategies, *Bioresour. Technol. Rep.*, 29, 102021.
- Manurung, R., Parinduri, S. Z.D.M., Hasibuan, R., Tarigan, B.H., And Siregar, A.G.A., 2023, Synthesis of Nano-CaO Catalyst with SiO₂ Matrix Based on Palm Shell Ash as Catalyst Support for One Cycle Developed in the Palm Biodiesel Process, *Case Stud. Chem. Environ. Eng.*, 7, 100345.
- Marciniak, P., Sztorch, B., Martyła, A., Czapik, A., Stodolny, M., and Przekop, R.E., 2021, Metallic Calcium as a Precursor for Sol-Gel Synthesis of CaCO₃-SiO₂ and CaO-SiO₂ Systems, *Ceramics*, 4, 278–290.
- Melero, J.A., Bautista, L.F., Iglesias, J., Morales, G., and Sánchez-Vázquez, R., 2012, Zr-SBA-15 acid catalyst: Optimization of the Synthesis and Reaction Conditions for Biodiesel Production from Low-Grade Oils and Fats, *Catal. Today*, 195, 44–53.
- Mel'gunov, M.S., 2023, Application of The Simple Bayesian Classifier for the N₂ (77 K) Adsorption/Desorption Hysteresis Loop Recognition, *Adsorption*, 29, 199–208.
- Mulyatun, M., Prameswari, J., Istadi, I., and Widayat, W., 2024, Synthesis Method Effect on the Catalytic Performance of Acid–Base Bifunctional Catalysts for Converting Low-Quality Waste Cooking Oil to Biodiesel, *Catal. Letters*, 154, 4837–4855.
- Naseef, H.H. And Tulaimat, R.H., 2025, Transesterification and Esterification for Biodiesel Production: A Comprehensive Review of Catalysts and Palm Oil Feedstocks, *Energy Conversion And Management*, 26, 100931.
- Nath, B., Kalita, P., Das, B., And Basumatary, S., 2020, Highly Efficient Renewable Heterogeneous Base Catalyst Derived from Waste Sesamum Indicum Plant for Synthesis of Biodiesel, *Renew. Energy*, 151, 295–310.
- Naveenkumar, R. And Baskar, G., 2019, Biodiesel Production from Calophyllum Inophyllum Oil Using Zinc Doped Calcium Oxide (Plaster of Paris) Nanocatalyst, *Bioresour. Technol.*, 280, 493–496.
- Nengsih, S., 2019, Karakteristik Nanopartikel Magnetite Besi Oksida Lampanah Aceh Besar Melalui Metode Kopresipitasi, *Elkawanie*, 5, 76.
- Nurdina, R.A., Kamiya, Y., Hatmanto, A.D., Pambudi, F.I., Suyanta, S., And Nuryono, N., 2025, Ultrasonic-Assisted Transesterification of Tripalmitin Using Limestone-Derived CaO Catalyst, *Bulletin Of Chemical Reaction Engineering & Catalysis*, 20, 672–682.

- Nurhayati, Anita, S., Amri, T.A., And Linggawati, A., 2017, Esterification Of Crude Palm Oil Using H₂SO₄ and Transesterification Using CaO Catalyst Derived from *Anadara Granosa*, *Indo. J. Chem.*, 17, 309–315.
- Nurhayati, N., Awaluddin, A., And Mulyani, Y., 2025, Response Surface Optimization of Biodiesel Synthesis from Crude Palm Oil (CPO) Using CaO/Silica Gel Heterogeneous Catalyst Based on Blood Cockle Shell and Coconut Fiber, *International Journal Of Renewable Energy Development*, 14, 276–289.
- Oyekunle, D.T., Gendy, E.A., Barasa, M., Oyekunle, D.O., Oni, B., And Tiong, S.K., 2024, Review on Utilization of Rubber Seed Oil for Biodiesel Production: Oil Extraction, Biodiesel Conversion, Merits, and Challenges, *Clean. Eng. Technol.*, 21, 100773.
- Pajchel, L. And Kolodziejski, W., 2018, Synthesis And Characterization of Mcm-48/Hydroxyapatite Composites for Drug Delivery: Ibuprofen Incorporation, Location and Release Studies, *Materials Science And Engineering: C*, 91, 734–742.
- Pandit, P.R. And Fulekar, M.H., 2017, Egg Shell Waste as Heterogeneous Nanocatalyst for Biodiesel Production: Optimized by Response Surface Methodology, *J. Environ. Manage.*, 198, 319–329.
- Patil, S.S., Hulwan, D.B., Kumbhar, V.S., Pandey, A., Chandrakant, S., Goyal, R., Singh, S., Varshney, D., And Chan, C.K., 2025, Influence of Waste Cooking Oil Characteristics on the Quality of Produced Biodiesel, *International Journal Of Thermofluids*, 30, 101469.
- Peddamangari, C., Kilari, N., And Shanmugasundaram, A., 2025, Synthesis, Performance, Emissions, and Tribological Investigation of Waste Coconut Cooking Oil–Based Biodiesel, *Environmental Science And Pollution Research*, 32, 12248–12266.
- Prasetyo, D.A., Saputro, M.R.A., And Ulma, Z., 2023, Arang Kulit Biji Kakao (*Theobroma Cacao L*) Sebagai Adsorben untuk Menurunkan Kadar Asam Lemak Bebas Pada Pembuatan Biodiesel dari Minyak Jelantah, *Jurnal Teknik Terapan*, 2.
- Putkham, A., Ladhan, S., And Putkham, A.I., 2020, Changing of Particle Size and Pore Structures of Calcium Oxide During Calcinations of Industrial Eggshell Waste, *Materials Science Forum*, 998, 90–95.
- Rachman, S.A., Komariah, L.N., Andwikaputra, A.I., And Umbara, N., 2018, High Conversion and Yield of Biodiesel Using Electrolysis Method, *J. Phys. Conf. Ser.*, 1095, 012040.
- Saidi, M. And Amirnia, R., 2026, Perovskite Nanostructures as Effective Bifunctional Acid-Base Heterogenous Catalysts for Biodiesel Production: A Comprehensive Review, *Renewable And Sustainable Energy Reviews*, 226, 116432.
- Samart, C., Karnjanakom, S., Chaiya, C., Reubroycharoen, P., Sawangkeaw, R., And Charoenpanich, M., 2023, Synthesis of Nano-CaO Catalyst With SiO₂ Matrix Based on Palm Shell Ash as Catalyst Support for One Cycle Developed in the Palm Biodiesel Process, *Case Studies In Chemical And Environmental Engineering*, 7, 100345.

- Santos, H.C.L. Dos, Gonçalves, M.A., Da Silva Lima, V., Da Cas Viegas, A., Filho, G.N. Da R., And Conceição, L.R.V. Da, 2024, NaAlO₂/CuFe₂O₄ as a Novel Basic Magnetic Heterogeneous Catalyst for Effective Biodiesel Production: Synthesis, Characterization, and Optimization via RSM-FCCD Modeling Approach, *Process Safety And Environmental Protection*, 189, 228–245.
- Santoso, A., Kusumah, T.N., Sumari, S., Wijaya, A.R., Retnosari, R., Rachman, I.B., Marfuah, S., And Asrori, M.R., 2022, Synthesis of Biodiesel from Waste Cooking Oil Using Heterogeneous Catalyst Of Na₂O/Γ-Al₂O₃ Assisted by Ultrasonic Wave, *AIMS Energy*, 10, 1059–1073.
- Sari, N., Andi Fadlly, T., Hotmaida, R., Purba, H., Ratna Nila, I., And Ari Fahril, M., 2024, Identifikasi Mineral dan Karakterisasi Sifat Magnetik Pasir Besi di Pesisir Pantai Leuge Aceh Timur, *Gravitasi*, 7.
- Sembiring, T., Lubis, H., Susilawati, Kurniawan, B., Manik, M.P.B., And Naftali, T.P., 2024, Characterization of Morphological Structures of Fe₃O₄/SiO₂/ZnO Composite,. In, *Journal Of Physics: Conference Series*. Institute Of Physics.
- Silva Filho, S.C. Da, Miranda, A.C., Silva, T.A.F., Calarge, F.A., Souza, R.R. De, Santana, J.C.C., And Tambourgi, E.B., 2018, Environmental and Techno-Economic Considerations on Biodiesel Production from Waste Frying Oil in São Paulo City, *J. Clean. Prod.*, 183, 1034–1042.
- Singh, N., Saluja, R.K., Rao, H.J., Kaushal, R., Gahlot, N.K., Suyambulingam, I., Sanjay, M.R., Divakaran, D., And Siengchin, S., 2024, A Bifunctional Catalyst from Waste Eggshells and Its Application in Biodiesel Synthesis from Waste Cooking Oil, *Results. Eng.*, 23, 102613.
- Škrbić, B., Predojević, Z., And Đurišić-Mladenović, N., 2015, Esterification of Sludge Palm Oil as a Pretreatment Step for Biodiesel Production, *Waste Manag. Res.*, 33, 723–729.
- Tang, Y., Jiang, Y., Hu, Y., And Cheng, Y., 2026, Carbon Emission Reduction Potential Analysis of Biodiesel Production from Microalgae and Waste Cooking Oil Under Different Sps Scenarios in China-Based on GRA-CNN-Bilstm Modeling, *Renew. Energy*, 258, 125006.
- Teo, S.H., Islam, A., Chan, E.S., Thomas Choong, S.Y., Alharthi, N.H., Taufiq-Yap, Y.H., And Awual, M.R., 2019, Efficient Biodiesel Production from *Jatropha Curcus* Using CaSO₄/Fe₂O₃-SiO₂ Core-Shell Magnetic Nanoparticles, *J. Clean. Prod.*, 208, 816–826.
- Tigro, A.A., Hailegiorgis, S.M., And Reshad, A.S., 2025, Heterogeneous Alkaline Calcium Oxide Nano-Catalyst Supported on Porous Materials for the Transesterification Reaction: A Review, *Results.Eng.*, 27.
- Untari, B., Miksusanti, And Ainna, A., 2020, Penentuan Kadar Asam Lemak Bebas dan Kandungan Jenis Asam Lemak dalam Minyak yang Dipanaskan dengan Metode titrasi Asam Basa dan Kromatografi Gas, *Jurnal Ilmiah Bakti Farmasi*, 1, 1–10.
- Vono, L.L.R., Damasceno, C.C., Matos, J.R., Jardim, R.F., Landers, R., Masunaga, S.H., And Rossi, L.M., 2018, Separation Technology Meets Green Chemistry: Development of Magnetically Recoverable Catalyst Supports Containing Silica, Ceria, and Titania,. In, *Pure And Applied Chemistry*. Walter De Gruyter GmbH, 133–141.

- Wang, D. And Astruc, D., 2014, Fast-Growing Field of Magnetically Recyclable Nanocatalysts, *Chem. Rev.*, 114, 6949–6985.
- Widayat, W., Darmawan, T., Hadiyanto, H., And Rosyid, R.A., 2017, Preparation of Heterogeneous CaO Catalysts for Biodiesel Production, *J. Phys. Conf. Ser.*, 877, 012018.
- Wijaya, K., Pratika, R.A., Trisunaryanti, W., And Tikoalu, A.D., 2024, Modification Of TiO₂ as SO₄/TiO₂ Acid and CaO/TiO₂ Base Catalysts and Their Applications in Conversion of Waste Frying Oil (WFO) into Biodiesel, *Adv. Mater. Res. Technol. Springer.*, 9, 377–414.
- Yaghi, M., Chidiac, S., Awad, S., El Rayess, Y., and Zgheib, N., 2025, An Overview of Biodiesel Production via Heterogeneous Catalysts: Synthesis, Current Advances, and Challenges, *Clean. Technol.*, 7.
- Yang, J., Cong, W. Jie, Zhu, Z., Miao, Z. Diao, Wang, Y.T., Nelles, M., And Fang, Z., 2023, Microwave-Assisted One-Step Production of Biodiesel from Waste Cooking Oil by Magnetic Bifunctional SrO–ZnO/MOF Catalyst, *J. Clean. Prod.*, 395, 136182.
- Yoosuk, B., Udomsap, P., Puttasawat, B., And Krasae, P., 2010, Modification of Calcite By Hydration–Dehydration Method for Heterogeneous Biodiesel Production Process: The Effects of Water on Properties and Activity, *Chem. Eng. J.I.*, 162, 135–141.
- Zarabadipour, M., Soleimani, M., And Ghahraman Afshar, M., 2025, Application Of Functionalized Fe₃O₄@SiO₂ Nanoparticles as an Adsorbent for Heavy Metal Removal, *Results Chem.*, 17, 102514.
- Zeng, Q., Song, Z., Qin, H., Cheng, H., Chen, L., Pan, M., Heng, Y., And Qi, Z., 2020, Ionic Liquid [Bmim][HSO₄] as Dual Catalyst-Solvent for the Esterification ff Hexanoic Acid with N-Butanol, *Catal. Today*, 339, 113–119.
- Zhang, X., Wei, S., Zhao, X., Chen, Z., Wu, H., Rong, P., Sun, Y., Li, Y., Yu, H., And Wang, D., 2020, Preparation of Mesoporous CaO–ZrO₂ Catalysts Without Template for the Continuous Synthesis ff Glycerol Carbonate in a Fixed-Bed Reactor, *Appl. Catal. A Gen.*, 590, 117313.
- Zhu, Y., Stubbs, L.P., Ho, F., Liu, R., Ship, C.P., Maguire, J.A., And Hosmane, N.S., 2010, Magnetic Nanocomposites: A New Perspective in Catalysis, *Chemcatchem*, 2, 365–374.