

DAFTAR PUSTAKA

- Ahmad, H. H., A. Nurdradjat, H. Johaness, & Hariyanto, A. D. (2022). The Ftir Investigation To Characterize Of Functional Groups In Bituminous Coal. *RASAYAN Journal of Chemistry*, 15(03), 1772–1778. <https://doi.org/10.31788/RJC.2022.1536894>
- Ali, A., Chiang, Y. W., & Santos, R. M. (2022a). X-ray Diffraction Techniques for Mineral Characterization: A Review for Engineers of the Fundamentals, Applications, and Research Directions. *Minerals*, 12(2), 205. <https://doi.org/10.3390/min12020205>
- Alifa, S., & Musfirah, ida. (2021). Review : Verifikasi Metode Analisis Obat. *Farmaka*, 19(3).
- Al-Saeedi, S. I., Areej, A., Qamar, M. T., Alhujaily, A., Iqbal, S., Alotaibi, M. T., Aslam, M., Qayyum, M. A., Bahadur, A., Awwad, N. S., Jazaa, Y., & Elkaeed, E. B. (2023). Isotherm And Kinetic Studies For The Adsorption Of Methylene Blue Onto A Novel Mn₃O₄-Bi₂O₃ Composite And Their Antifungal Performance. *Frontiers in Environmental Science*, 11. <https://doi.org/10.3389/fenvs.2023.1156475>
- Andi, M. (2023). Verifikasi Metode Analisis Larutan Quercetin Menggunakan Spektrofotometer UV-Vis (T60). *Borneo Journal of Pharmascientech*, 7(2).
- Antony, A., & Farid, M. (2022). Effect of Temperatures on Polyphenols during Extraction. *Applied Sciences*, 12(4), 2107. <https://doi.org/10.3390/app12042107>
- Anwar, M., Gumaah, N. F., Ragab, A. H., Taher, M. A., AL-Mhyawi, S. R., Gul, T., Naz, F., Salam, T., Saeed, K., & Khan, I. (2025). Enhancing the photocatalytic and biological potential of MnO nanoparticles through strontium doping. *Journal of Molecular Structure*, 1343, 142872. <https://doi.org/10.1016/j.molstruc.2025.142872>
- Arutanti, O., Ogi, T., Nandiyanto, A. B. D., Iskandar, F., & Okuyama, K. (2014). Controllable Crystallite And Particle Sizes Of WO Particles Prepared By A Spray-Pyrolysis Method And Their Photocatalytic Activity. *AIChE Journal*, 60(1), 41–49. <https://doi.org/10.1002/aic.14233>
- Ben Salem, B., Essalah, G., Ben Ameer, S., Duponchel, B., Guermazi, H., Guermazi, S., & Leroy, G. (2023). Synthesis And Comparative Study Of The Structural And Optical Properties Of Binary ZnO-Based Composites For Environmental Applications. *RSC Advances*, 13(9), 6287–6303. <https://doi.org/10.1039/D2RA07837F>
- Berede, H. T., Andoshe, D. M., Gultom, N. S., Kuo, D.-H., Chen, X., Abdullah, H., Wondimu, T. H., Wu, Y., & Zelekew, O. A. (2024). Photocatalytic Activity Of The Biogenic Mediated Green Synthesized CuO Nanoparticles

- Confined Into Mgal LDH Matrix. *Scientific Reports*, 14(1), 2314. <https://doi.org/10.1038/s41598-024-52547-w>
- Bollinger, J. C., Lima, E. C., Mouni, L., Salvestrini, S., & Tran, H. N. (2025). Molecular Properties Of Methylene Blue, A Common Probe In Sorption And Degradation Studies: A Review. Dalam *Environmental Chemistry Letters* (Vol. 23, Nomor 5, hlm. 1403–1424). Springer Nature. <https://doi.org/10.1007/s10311-025-01856-1>
- Chakravorty, A., & Roy, S. (2024). A Review Of Photocatalysis, Basic Principles, Processes, And Materials. *Sustainable Chemistry for the Environment*, 8, 100155. <https://doi.org/10.1016/j.scenv.2024.100155>
- Davoglio, R. A., Cabello, G., Marco, J. F., & Biaggio, S. R. (2018). Synthesis And Characterization Of A-MnO₂ Nanoneedles For Electrochemical Supercapacitors. *Electrochimica Acta*, 261, 428–435. <https://doi.org/10.1016/j.electacta.2017.12.118>
- Dhurhanian, C. E., & Istantini, E. (2021). Analisis Kadar Flavonoid Total Tempe Kedelai Secara Spektrofotometri Visibel. *Media Farmasi: Jurnal Ilmu Farmasi*, 17(2), 72. <https://doi.org/10.12928/mf.v17i2.19747>
- Dila, R., Tanzerina, N., & Aminasih, N. (2021). Morfologi Dan Anatomi Organ Vegetatif Pandan Wangi Besar (*Pandanus Amaryllifolius* Roxb.) DI DAERAH RAWA. 2(1).
- Ditalistya, T., Syauqi, M. I., Suyati, L., Saputra, I. S., Aspiyanto, A., Ndruru, S. T. C. L., Nugroho, R. W. N., Amalia, F., Madiabu, M. J., Apriandanu, D. O. B., & Annas, D. (2026). Synergistic Interplay Between Cerium-Based Metallic Compounds And Gold Nanoparticles For Enhanced Hydrogen Evolution Reaction: A Green Design Of Ternary Nanocomposites. *Journal of Power Sources*, 673, 239726. <https://doi.org/10.1016/j.jpowsour.2026.239726>
- Fajri, N., Prima, E. C., Riandi, R., & Sriyati, S. (2024). Validasi Metode Analisis Konsentrasi Larutan Kopi berdasarkan Spektroskopi Absorpsi Cahaya. *JIPFRI (Jurnal Inovasi Pendidikan Fisika dan Riset Ilmiah)*, 8(1), 51–59. <https://doi.org/10.30599/jipfri.v8i1.2101>
- Fatya, A. I., & Raihan, A. (2025). Studi Kinetika Dan Kinerja Fotodegradasi Metilen Biru Oleh Komposit TiO₂/Electrochemically Exfoliated Graphene. *Lantanida Journal*, 13(2), 251–266. <https://doi.org/10.22373/y4qjxd74>
- Gong, L., Jie, W., Liu, Y., Lin, X., Deng, W., Qiu, M., Hu, X., & Liu, Q. (2021). Enhanced Activity for CO Preferential Oxidation over CuO Catalysts Supported on Nanosized CeO₂ with High Surface Area and Defects. *Catalysts*, 11(8), 884. <https://doi.org/10.3390/catal11080884>
- Gong, Y., Chen, X., & Wu, W. (2024). Application Of Fourier Transform Infrared (FTIR) Spectroscopy In Sample Preparation: Material Characterization And

- Mechanism Investigation. *Advances in Sample Preparation*, 11, 100122. <https://doi.org/10.1016/j.sampre.2024.100122>
- Haleem, A., Shafiq, A., Chen, S., & Nazar, M. (2023). A Comprehensive Review on Adsorption, Photocatalytic and Chemical Degradation of Dyes and Nitro-Compounds over Different Kinds of Porous and Composite Materials. *Molecules*, 28.
- Haris Prayudha Setyawan, & Okta Suryani. (2024). Modified Titanium Oxide with Metal Doping as Photocatalyst in Photochemical Water Splitting. *Sains Natural: Journal of Biology and Chemistry*, 14(1), 01–12. <https://doi.org/10.31938/jsn.v14i1.652>
- Hosseinzadeh, E., Foroumadi, A., & Firoozpour, L. (2023). What Is The Role Of Phytochemical Compounds As Capping Agents For The Inhibition Of Aggregation In The Green Synthesis Of Metal Oxide Nanoparticles? A DFT Molecular Level Response. *Inorganic Chemistry Communications*, 147, 110243. <https://doi.org/10.1016/j.inoche.2022.110243>
- Huang, P. H., & Kacker, R. (2003). Repeatability And Reproducibility Standard Deviations In The Measurement Of Trace Moisture Generated Using Permeation Tubes. *Journal of Research of the National Institute of Standards and Technology*, 108(3), 235. <https://doi.org/10.6028/jres.108.022>
- Jumardin, Maddu, A., Santoso, K., & Isnaeni. (2022a). Karakteristik Sifat Optik Nanopartikel Karbon (Carbon Dots) Dengan Metode Uv-Vis Drs (Ultra Violet- Visible Diffuse Reflectance Spectroscopy). *Jurnal Fisika dan Terapannya*.
- Kaban, V. E., N, N., Dharmawan, H., & Satria, D. (2022). Formulasi dan Uji Efektivitas Sabun Pencuci Tangan dari Ekstrak Daun Pandan (*Pandanus amaryllifolius* Roxb.) Terhadap Bakteri *Salmonella* sp. *Herbal Medicine Journal*, 5(1), 8–12. <https://doi.org/10.58996/hmj.v5i1.38>
- Kanwal, A., Shahzadi, T., Riaz, T., Zaib, M., Khan, S., Habila, M. A., & Sillanpaa, M. (2023). Photocatalytic Degradation Studies of Organic Dyes over Novel Cu/Ni Loaded Reduced Graphene Oxide Hybrid Nanocomposite: Adsorption, Kinetics and Thermodynamic Studies. *Molecules*, 28(18), 6474. <https://doi.org/10.3390/molecules28186474>
- Khoo, H. E., Azlan, A., Tang, S. T., & Lim, S. M. (2017). Anthocyanidins And Anthocyanins: Colored Pigments As Food, Pharmaceutical Ingredients, And The Potential Health Benefits. *Food & Nutrition Research*, 61(1), 1361779. <https://doi.org/10.1080/16546628.2017.1361779>
- Korell, L., Lauterbach, S., Timm, J., Wang, L., Mellin, M., Kundmann, A., Wu, Q., Tian, C., Marschall, R., Hofmann, J. P., Osterloh, F. E., & Einert, M. (2024). On The Structural Evolution Of Nanoporous Optically Transparent Cu₂O Photocathodes Upon Calcination For Photoelectrochemical

- Applications. *Nanoscale Advances*, 6(11), 2875–2891. <https://doi.org/10.1039/D4NA00199K>
- Kurul, F., Doruk, B., & Topkaya, S. N. (2025). Principles Of Green Chemistry: Building A Sustainable Future. *Discover Chemistry*, 2(1). <https://doi.org/10.1007/s44371-025-00152-9>
- Kusumawati, N., Setiarso, P., Muslim, S., Zakiyah, N., Rahmawati, K., & Fachrirakarsie, F. F. (2024). Optimizing Dye-Sensitized Solar Cell (DSSC) Performance Through Synergistic Natural Dye Combinations ;Pandanus Amaryllifolius; *Indonesian Journal of Chemistry*, 24(6), 1675. <https://doi.org/10.22146/ijc.93830>
- Lee, S.-B., Ko, E.-H., Park, J. Y., & Oh, J.-M. (2021). Mixed Metal Oxide by Calcination of Layered Double Hydroxide: Parameters Affecting Specific Surface Area. *Nanomaterials*, 11(5), 1153. <https://doi.org/10.3390/nano11051153>
- Millavithanachchi, S. S., Gunasena, M. D. K. M., Galpaya, G. D. C. P., Priyadarshana, H. V. V., Indupama, S. V. A. A., Induranga, D. K. A., Kariyawasam, W. A. C. N., Kaluthanthri, D. V. S., & Koswattage, K. R. (2025). Green Synthesis, Optimization, and Characterization of CuO Nanoparticles Using Tithonia diversifolia Leaf Extract. *Nanomaterials*, 15(15), 1203. <https://doi.org/10.3390/nano15151203>
- Mohamadpour, F., & Amani, A. M. (2024). Photocatalytic Systems: Reactions, Mechanism, And Applications. *RSC Advances*, 14(29), 20609–20645. <https://doi.org/10.1039/D4RA03259D>
- Mondal, C. (2024). Recent Progress in Copper Based Photocatalysts: (A-Review). *Oriental Journal Of Chemistry*, 40(2), 374–391. <https://doi.org/10.13005/ojc/400208>
- Morshedy, A. S., El-Fawal, E. M., Zaki, T., El-Zahhar, A. A., Alghamdi, M. M., & El Naggar, A. M. A. (2024). A Review On Heterogeneous Photocatalytic Materials: Mechanism, Perspectives, And Environmental And Energy Sustainability Applications. *Inorganic Chemistry Communications*, 163, 112307. <https://doi.org/10.1016/j.inoche.2024.112307>
- Mugita, D. E., Dkk, S., Formulasi, |, Aktivitas, D. U., Gel, S., Antiketombe, S., Perasan, A., Pandan, D., Terhadap, W., Furfur, M., Erliani, D., Sari, M., Wahyu, S., Muarifah, N., & Suprasetya, E. (2025). Formulation and Activity Test of an Anti-Dandruff Shampoo Gel Preparation Made from Fragrant Pandan Leaf Juice(Pandanus amaryllifolius Roxb.) Against Malassezia furfur. *Jurnal Permata Indonesia*, 17(1), 2025–2061.
- Murovhi, P., Tarimo, D. J., Oyedotun, K. O., & Manyala, N. (2020). High Specific Energy Asymmetric Supercapacitor Based On Alpha-Manganese Dioxide/Activated Expanded Graphite Composite And Activated Carbon-

- Polyvinyl Alcohol. *Journal of Energy Storage*, 32, 101797. <https://doi.org/10.1016/j.est.2020.101797>
- Naidi, S. N., Harunsani, M. H., Tan, A. L., & Khan, M. M. (2021). Green-Synthesized Ceo₂ Nanoparticles For Photocatalytic, Antimicrobial, Antioxidant And Cytotoxicity Activities. *Journal of Materials Chemistry B*, 9(28), 5599–5620. <https://doi.org/10.1039/D1TB00248A>
- Nguyen, T. T. T., Nguyen, Y. N. N., Tran, X. T., Nguyen, T. T. T., & Tran, T. Van. (2023). Green Synthesis Of CuO, ZnO And CuO/ZnO Nanoparticles Using Annona Glabra Leaf Extract For Antioxidant, Antibacterial And Photocatalytic Activities. *Journal of Environmental Chemical Engineering*, 11(5). <https://doi.org/10.1016/j.jece.2023.111003>
- Nissanka, B., Kottegoda, N., & Jayasundara, D. R. (2020). Probing Structural Variations Of Graphene Oxide And Reduced Graphene Oxide Using Methylene Blue Adsorption Method. *Journal of Materials Science*, 55(5), 1996–2005. <https://doi.org/10.1007/s10853-019-04087-2>
- Paruthi, A., Brown, J. M., Panda, E., Gautam, A. R. S., Singh, S., & Misra, S. K. (2021). Transformation In Band Energetics Of CuO Nanoparticles As A Function Of Solubility And Its Impact On Cellular Response. *NanoImpact*, 22, 100324. <https://doi.org/10.1016/j.impact.2021.100324>
- Pasieczna-Patkowska, S., Cichy, M., & Flieger, J. (2025). Application of Fourier Transform Infrared (FTIR) Spectroscopy in Characterization of Green Synthesized Nanoparticles. *Molecules*, 30(3), 684. <https://doi.org/10.3390/molecules30030684>
- Peng, F., Sun, Y., Lu, Y., Yu, W., Ge, M., Shi, J., Cong, R., Hao, J., & Dai, N. (2020). Studies on Sensing Properties and Mechanism of CuO Nanoparticles to H₂S Gas. *Nanomaterials*, 10(4), 774. <https://doi.org/10.3390/nano10040774>
- Pham, H., Neves, J. C., Yan, R., Pankratova, V., Cao, W., & Zhang, D. (2025). Improving Bandgap Determination by Optical Spectroscopy: Comparative Evaluation of ISARS, UV–vis, and Diffuse Reflectance. *ACS Measurement Science Au*. <https://doi.org/10.1021/acsmeasuresciau.5c00059>
- Phang, Y.-K., Aminuzzaman, M., Akhtaruzzaman, Md., Muhammad, G., Ogawa, S., Watanabe, A., & Tey, L.-H. (2021). Green Synthesis and Characterization of CuO Nanoparticles Derived from Papaya Peel Extract for the Photocatalytic Degradation of Palm Oil Mill Effluent (POME). *Sustainability*, 13(2), 796. <https://doi.org/10.3390/su13020796>
- Rahayu, S., Herawati, N., & Wijaya, M. (2020). Sintesis Nanopartikel Mangan Oksida dengan Metode Sol Gel dan Uji Aktivitas Katalitik terhadap Degradasi Zat Warna Rhodamin B. *Chemica: Jurnal Ilmiah Kimia dan Pendidikan Kimia*, 21(2), 190. <https://doi.org/10.35580/chemica.v21i2.17989>

- Raizada, P., Sudhaik, A., Patial, S., Hasija, V., Parwaz Khan, A. A., Singh, P., Gautam, S., Kaur, M., & Nguyen, V.-H. (2020). Engineering nanostructures of CuO-based photocatalysts for water treatment: Current progress and future challenges. *Arabian Journal of Chemistry*, 13(11), 8424–8457. <https://doi.org/10.1016/j.arabjc.2020.06.031>
- Raj, A. K. (2025). Adsorption of Methylene Blue Dye from Textile Industry Effluent using Activated Carbon Synthesized from Various Plant-Based Precursors. *Oriental Journal Of Chemistry*, 41(2), 665–674. <https://doi.org/10.13005/ojc/410236>
- Ramesh, M. (2021). CuO As Efficient Photo Catalyst For Photocatalytic Decoloration Of Wastewater Containing Azo Dyes. *Water Practice And Technology*, 16(4), 1078–1090. <https://doi.org/10.2166/wpt.2021.067>
- Ratnawulan, Ramadhani, D., Fauzi, A., Jonuarti, R., Lisa, F., & Ulfa, F. (2023). Synthesis and Characterization of Photocatalyst Nanocomposite for the Degradation of Organic Pollutants in Wastewater. *Journal of Ecological Engineering*, 24(12).
- Rorissa, G. L., Tesema, E. A., Reddy, R. P., Hunde, A. R., Beyena, S. Y., Biru, M. A., Mekonnen, D. T., & Adnuallem, T. L. (2025). Removal Of Methylene Blue Dye From Textile Industry Wastewater Using Green Synthesized Teff Straw Assisted ZnO Nanoparticle. *Scientific Reports*, 15(1). <https://doi.org/10.1038/s41598-025-11746-9>
- Saleem, S., Jabbar, A. H., Jameel, M. H., Rehman, A., Kareem, Z. H., Abbas, A. H., Ghaffar, Z., Razzaq, S. A., Pashameah, R. A., Alzahrani, E., Ng, E.-P., & Sapuan, S. M. (2022). Enhancement In Structural, Morphological, And Optical Properties Of Copper Oxide For Optoelectronic Device Applications. *Nanotechnology Reviews*, 11(1), 2827–2838. <https://doi.org/10.1515/ntrev-2022-0473>
- Setyaningsih, L. W. N., Rizkiyaningrum, U. M., & Andi, R. (2017). Pengaruh Konsentrasi Katalis Dan Reusability Katalis Pada Sintesis Triasetin Dengan Katalisator Lewatit. *Teknoin*, 23(1). <https://doi.org/10.20885/teknoin.vol23.iss1.art7>
- Sheikh Wajiha Shabbir, & Shilpi Chauhan. (2024). A Review On Use Of Ultraviolet Spectroscopy. *Innovare Journal of Medical Sciences*, 5–11. <https://doi.org/10.22159/ijms.2024v12i4.51499>
- Shoba, A., Kavitha, B., Matheswaran, P., Jagadeeswari, N., Thanikaikarasan, S., & Senthil Kumar, N. (2022). Copper Nanoparticles Incorporated Manganese Dioxide Nanocomposites For Electrochemical Capacitance Application. *Journal of New Materials for Electrochemical Systems*, 25(3), 188–193. <https://doi.org/10.14447/jnmes.v25i3.a05>

- Singh B, Singh JP, Kaur A, & Singh N. (2020). Phenolic Composition, Antioxidant Potential And Health Benefits Of Citrus Pee. *FoodResearchInt*132.
- Singh, B., Singh, K., Kumar, M., & Kumar, A. (2017). *Insights Of Preferred Growth, Elemental And Morphological Properties Of BN/Sno2 Composite For Photocatalytic Applications Towards Organic Pollutants*.
- Taufik Abdul Aziz, I., Studi Analisis Kimia, P., AKA Bogor, P., Pangeran Sogiri No, J., Baru, T., & Bogor, K. (2024). Degradasi Fotokatalitik Senyawa Metilen Biru Dengan Katalis Titania Nanotube. Dalam *JULI* (Vol. 48, Nomor 1).
- Thundiyil, R., Poornesh, P., Ozga, K., Jedryka, J., Guichaoua, D., Taboukhat, S., Chattopadhyay, S., & Sahraoui, B. (2025). Tuning The Excitation-Regime-Dependent Nonlinear Optical Responses Of Cu-Doped Nio Thin Films For Harmonic Generation And Ultrafast Photonic Applications. *Journal of Materials Chemistry C*, 13(48), 23889–23910. <https://doi.org/10.1039/D5TC03464G>
- V.T, J., & M, V. (2026). Low-Temperature Chemical Precipitation Synthesis of Pure Monoclinic CuO (Copper Oxide) Nanoparticles. *NanoNEXT*, 7(1), 10–20. <https://doi.org/10.54392/nnxt2612>
- Wang, F., Zheng, Y., Chen, Q., Yan, Z., Lan, D., Lester, E., & Wu, T. (2024). A Critical Review Of Facets And Defects In Different Mno2 Crystalline Phases And Controlled Synthesis – Its Properties And Applications In The Energy Field. *Coordination Chemistry Reviews*, 500, 215537. <https://doi.org/10.1016/j.ccr.2023.215537>
- Wang, J., He, Q., Liu, G., Li, Y., Jiang, C., Shao, D., & Shi, J. (2025). Quick And Sensitive Determination Of Cross Conjugated Flavonoids By Tetramethylethylenediamine. *Sensors and Actuators B: Chemical*, 426, 137028. <https://doi.org/10.1016/j.snb.2024.137028>
- Wang, J., Huang, X., Chen, Z., Chen, N., Yang, M., Liang, C., Yu, Y., & Shi, D. (2025). Extraction And Purification Of Total Flavonoids From Zanthoxylum Planispinum Var. Dintanensis Leaves And Effect Of Altitude On Total Flavonoids Content. *Scientific Reports*, 15(1), 7080. <https://doi.org/10.1038/s41598-025-91528-5>
- Wongsa, P., Phatikulrungsun, P., & Prathumthong, S. (2022). FT-IR Characteristics, Phenolic Profiles And Inhibitory Potential Against Digestive Enzymes Of 25 Herbal Infusions. *Scientific Reports*, 12(1). <https://doi.org/10.1038/s41598-022-10669-z>
- Xie, C., Xu, Z., Zheng, Y., Wang, S., Dai, M., & Xiao, C. (2024). Research Progress on the Preparation of Manganese Dioxide Nanomaterials and Their Electrochemical Applications. *Nanomaterials*, 14(15), 1283. <https://doi.org/10.3390/nano14151283>

- Zakaria, M., Zaidan, U.H., Shamsi, S., & Gani, S.S. (2020). Chemical Composition Of Essential Oils From Leaf Extract Of Pandan, *Pandanus amaryllifolius* ROXB.
- Zhang, L., Mohamed, H. H., Dillert, R., & Bahnemann, D. (2012). Kinetics And Mechanisms Of Charge Transfer Processes In Photocatalytic Systems: A Review. *Journal Of Photochemistry And Photobiology C: Photochemistry Reviews*, 13(4), 263–276.
<https://doi.org/10.1016/j.jphotochemrev.2012.07.002>
- Zulfan, M. (2025). Nanopartikel Hijau: Solusi Berkelanjutan untuk Pengolahan Air Bersih.