

DAFTAR PUSTAKA

- Ajiboye, T.O., Babalola, S.O., and Onwudiwe, D.C., 2021, Photocatalytic Inactivation as A Method of Elimination of *E. coli* from Drinking Water, *Appl. Sci. (Switz.)*, 11, 1–26.
- Alnehia, A., Hadi, M., Alnahari, H., and Al-Sharabi, A., 2024, Optical, Structural and Antibacterial Properties of Phase Heterostructured Fe₂O₃–CuO–CuFe₂O₄ Nanocomposite, *Sci. Rep.*, 14, 14392.
- An, J., Zhu, L., Zhang, Y., and Tang, H., 2013, Efficient Visible Light Photo-Fenton-like Degradation of Organic Pollutants Using In Situ Surface-Modified BiFeO₃ as A Catalyst, *J. Environ. Sci.-China*, 25, 1213–1225.
- Babar, S., Gavade, N., Shinde, H., Mahajan, P., Lee, K.H., Mane, N., Deshmukh, A., Garadkar, K., and Bhuse, V., 2018, Evolution of Waste Iron Rust into Magnetically Separable g-C₃N₄-Fe₂O₃ Photocatalyst: An Efficient and Economical Waste Management Approach, *ACS Appl. Nano Mater.*, 1, 4682–4694.
- Bhaskar, S., Shree K N, R., K V, A., and M Y, S., 2024, Adsorption – Advanced Oxidation Process (AAOP) for The Heavy Metals and Organic Matter Removal From Leachate Using Combined Filtration-Fenton’s and Photo-Fenton’s Treatment, *J. Environ. Manag.*, 371, 123009.
- Chakraborty, A.R., Toma, F.T.Z., Alam, K., Yousuf, S.B., and Hossain, K.S., 2024, Influence of Annealing Temperature on Fe₂O₃ Nanoparticles: Synthesis Optimization and Structural, Optical, Morphological, and Magnetic Properties Characterization for Advanced Technological Applications, *Heliyon*, 10, e400000.
- Collivignarelli, M.C., Abbà, A., Carnevale Miino, M., and Damiani, S., 2019, Treatments for Color Removal From Wastewater: State of The Art, *J. Environ. Manag.*, 236, 727–745.
- Dewi, A.P. and Gusnita, P., 2019, Analisa Cemaran Mikroba Pada Es Batu yang Dijual di Sekitar Universitas Abdurrah dengan Metode *Most Probable Number* (MPN), *Jurnal Farmasi Higea*, 11, 154–158.
- El-Beltagi, H.S. and Mohamed, H.I., 2013, Reactive Oxygen Species, Lipid Peroxidation and Antioxidative Defense Mechanism, *Not. Bot. Horti Agrobot. Cluj-Na*, 41, 44–57.
- Fatmawati, R., Dewata, I., Nasra, E., Dwipa, R., and Away, Y., 2025, The Efficiency of The Heterogeneous Photo-Fenton Process for Methyl Orange Degradation : A Review, *Jurnal Pijar MIPA*, 20, 326–333.
- Fauzi, A. and Ratnawulan, R., 2021, The Effect of Calcination Temperature on The Structure of Iron Oxide Phase from West Sumatra, *J. Phys. Conf. Ser.*, 1876, 012028.
- Feng, Z., Xue, R., and Ge, L., 2021, A Brief Talk of the Disinfection Process for

- Reclaimed Water, *E3S Web Conf.*, 271, 04002.
- Ferreira, C.H., Nunes, S.C., Santos, V.A.Q., Pereira, E.C., and Sikora, M. de S., 2020, Plasma Electrolytic Titanium Oxide Applied for Pathogenic Bacteria Inactivation, *Environ. Technol.*, 41, 141–152.
- Folli, A., Bloh, J.Z., and Macphee, D.E., 2016, Band Structure and Charge Carrier Dynamics in (W,N)-codoped TiO₂ Resolved by Electrochemical Impedance Spectroscopy Combined with UV–Vis and EPR Spectroscopies, *J. Electroanal. Chem.*, 780, 367–372.
- Fu, N., Chen, H., Chen, R., Ding, S., and Ren, X., 2023, Effect of Calcination Temperature on The Structure, Crystallinity, and Photocatalytic Activity of Core-Shell SiO₂@TiO₂ and Mesoporous Hollow TiO₂ Composites, *Coatings*, 13, 852.
- Furlan, P.Y., Jaravata, E.J., Furlan, A.Y., and Kahl, P., 2023, Will It Rust? A Set of Simple Demonstrations Illustrating Iron Corrosion Prevention Strategies at Sea, *J. Chem. Educ.*, 100, 1081–1088.
- García-Fernández, I., Polo-López, M.I., Oller, I., and Fernández-Ibáñez, P., 2012, Bacteria and Fungi Inactivation Using Fe³⁺ Sunlight, H₂O₂ Sunlight and Near Neutral Photo-Fenton: A Comparative Study, *Appl. Catal. B: Environ.*, 121–122, 20–29.
- Ghazzaf, H., Nechchadi, B., Jouali, A., Salhi, A., El Krati, M., and Tahiri, S., 2022, Synthesis of Heterogeneous Photo-Fenton Catalyst from Iron Rust and Its Application to Degradation of Acid Red 97 in Aqueous Medium, *J. Environ.Chem. Eng.*, 10, 107570.
- Giannakis, S., 2018, Analogies and Differences Among Bacterial and Viral Disinfection by The Photo-Fenton Process at Neutral pH: A Mini Review, *Environ. Sci. Pollut. Res.*, 25, 27676–27692.
- Giannakis, S., Voumard, M., Rtimi, S., and Pulgarin, C., 2018, Bacterial Disinfection by the Photo-Fenton Process: Extracellular Oxidation or Intracellular Photo-Catalysis?, *Appl. Catal. B: Environ.*, 227, 285–295.
- Guo, S., Yang, Z., Wen, Z., Fida, H., Zhang, G., and Chen, J., 2018, Reutilization of Iron Sludge as Heterogeneous Fenton Catalyst for The Degradation of Rhodamine B: Role of Sulfur and Mesoporous Structure, *J. Colloid Interface Sci.*, 532, 441–448.
- Hakim, A., Yarmo, M.A., Marliza, T.S., Tahari, M.N.A., Samad, W.Z., Yusop, M.R., Hisham, M.W.M., and Dzakaria, N., 2016, The Influence of Calcination on Iron Oxide (α -Fe₂O₃) Towards CO₂ Adsorption Prepared by Simple Mixing Method, *Malay. J. Anal. Sci.*, 20, 1286–1298.
- Hernández-Arias, A.N., Jaramillo-Sierra, B., Rodríguez-Méndez, B.G., Peña-Eguiluz, R., López-Callejas, R., Mercado-Cabrera, A., Valencia-Alvarado, R., and Alcántara-Díaz, D., 2019, *Escherichia coli* Bacteria Inactivation Employing Ozone and Ultraviolet Radiation Using A Reactor with

- Continuously Flowing Water, *J. Appl. Res. Technol.*, 17, 195–202.
- Hutabarat, M.E.C., Jati, D.R., and Desmaiani, H., 2023, Penilaian Kondisi Sanitasi dan Cemaran *Escherichia coli* pada Limbah Cair di Pasar Tradisional Kota Pontianak, *J. Teknol. Lingkungan. Lahan Basah*, 11, 764–772.
- Hwang, S.W., Umar, A., Dar, G.N., Kim, S.H., and Badran, R.I., 2014, Synthesis and Characterization of Iron Oxide Nanoparticles for Phenyl Hydrazine Sensor Applications, *Sens. Lett.*, 12, 97–101.
- İloğlu, O. and Yurtsever, H.A., 2024, The Effects of Annealing Temperature on The Thickness, Morphology, Band Gap Energy, and Photocatalytic Performance of ZIF-8-derived ZnO/TiO₂ Thin Films, *J. Mater. Sci.: Mater. Electron.*, 35, 1211.
- Irwansyah, F.S., Amal, A.I., Diyanthi, E.W., Hadisantoso, E.P., Noviyanti, A.R., Eddy, D.R., and Risdiana, R., 2024, How to Read and Determine the Specific Surface Area of Inorganic Materials using the Brunauer-Emmett-Teller (BET) Method, *ASEAN J. Sci. Eng.*, 4, 61–70.
- Jang, J., Hur, H.G., Sadowsky, M.J., Byappanahalli, M.N., Yan, T., and Ishii, S., 2017, Environmental *Escherichia coli*: Ecology and Public Health Implications—A Review, *J. Appl. Microbiol.*, 123, 570–581.
- Ji, F., Li, C., Zhang, J., and Deng, L., 2011, Heterogeneous Photo-Fenton Decolorization of Methylene Blue Over LiFe(WO₄)₂ Catalyst, *J. Hazard. Mater.*, 186, 1979–1984.
- Jiménez, I. de la O., Giannakis, S., Grandjean, D., Breider, F., Grunauer, G., Casas López, J.L., Sánchez Pérez, J.A., and Pulgarin, C., 2020, Unfolding The Action Mode of Light and Homogeneous vs. Heterogeneous Photo-Fenton in Bacteria Disinfection and Concurrent Elimination of Micropollutants in Urban Wastewater, Mediated by Iron Oxides in Raceway Pond Reactors, *Appl. Catal. B: Environ.*, 263, 118158.
- Khanam, J., Ahmed, F., Zaman, S., Sharmin, N., and Ahmed, S., 2021, Synthesis of Nano-sized Magnetic Iron Oxide by A Simple and Facile Co-precipitation Method, *Bangladesh J. Sci. Ind. Res.*, 57, 67–76.
- Khatun, M., Mitra, P., and Mukherjee, S., 2023, Effect of Band Gap and Particle Size on Photocatalytic Degradation of NiSnO₃ Nanopowder for Some Conventional Organic Dyes, *Hybrid Adv.*, 4, 100079.
- Khoiroh, L.M., Mardiana, D., Sabarudin, A., and Ismuyanto, B., 2013, Synthesis of Hematite Pigments (α -Fe₂O₃) by Thermal Transformations of FeOOH, *J. Pure App. Chem. Res.*, 2, 27–34.
- Klenam, D.E.P., Bodunrin, M.O., Akromah, S., Gikunoo, E., Andrews, A., and McBagonluri, F., 2021, Ferrous Materials Degradation: Characterisation of Rust by Colour - An Overview, *Corros. Rev.*, 39, 297–311.
- Langa, C., Mathipa, M., Mabuba, N., and Hintsho-mbita, N.C., 2025, Effect of Calcination Temperature on The Structural and Photocatalytic Properties of

- Nickel Sulfide Nanoparticles for Dye Degradation and Antibacterial Applications, *Chem. Phys. Impact*, 11, 100913.
- Lee, D.S., Lee, S.Y., Rhee, K.Y., and Park, S.J., 2014, Effect of Hydrothermal Temperature on Photocatalytic Properties of TiO₂ Nanotubes, *Curr. Appl. Phys.*, 14, 415–420.
- Leonard, J., 2015, Distribusi Tingkat Karat dan Laju Korosi Baja St 37 dalam Lingkungan Air Laut dan Air Tanah, *Jurnal Mekanikal*, 6, 564–568.
- Li, J., You, J., Wang, Z., Zhao, Y., Xu, J., Li, X., and Zhang, H., 2022, Application of α -Fe₂O₃-based Heterogeneous Photo-Fenton Catalyst in Wastewater Treatment: A Review of Recent Advances, *J. Environ.Chem. Eng.*, 10, 108329.
- Liang, C., Liu, H., Zhou, J., Peng, X., and Zhang, H., 2015, One-step Synthesis of Spherical γ -Fe Nanopowders and The Evaluation of Their Photocatalytic Activity for Orange I Degradation, *J. Chem.*, 2015, 791829.
- Magomedova, A., Isaev, A., Orudzhev, F., Sobola, D., Murtazali, R., Rabadanova, A., Shabanov, N.S., Zhu, M., Emirov, R., Gadzhimagomedov, S., Alikhanov, N., and Kasinathan, K., 2023, Magnetically Separable Mixed-Phase α - and γ -Fe₂O₃ Catalyst for Photo-Fenton-like Oxidation of Rhodamine B, *Catalysts*, 13, 872.
- Maharani, E.A. and Asyfiradayati, R., 2024, Reducing *E. coli* and *Coliform* in Clean Water Using Chlorine Diffuser Combined with White Sand, *Malahayati Int. J. Nurs. Health Sci.*, 7, 1033–1040.
- Mohammadi, S.Z., Khorasani-Motlagh, M., Jahani, S., and Yousefi, M., 2012, Synthesis and Characterization of α -Fe₂O₃ Nanoparticles by Microwave Method, *Int. J. Nanosci. Nanotechnol.*, 8, 87–92.
- Nahim-Granados, S., Sánchez Pérez, J.A., and Polo-Lopez, M.I., 2018, Effective Solar Processes in Fresh-cut Wastewater Disinfection: Inactivation of Pathogenic *E. coli* O157:H7 and *Salmonella enteritidis*, *Catal. Today*, 313, 79–85.
- Natasya, T., Khairafah, M.E., Br Sembiring, M.S., and Hutabarat, L.N., 2022, Corrosion Factors on Nail, *Indones. J. Chem. Sci. Technol.*, 5, 47.
- Nguyen, X.D., Zhao, Y., Evans, J.D., Lin, J., Voy, B., and Purswell, J.L., 2022, Effect of Ultraviolet Radiation on Reducing Airborne *Escherichia coli* Carried by Poultry Litter Particles, *Animals*, 12, 3170.
- Nuraini, U., Pradita, R., Shofiyah, Q., Al Qori, M.D., and Dedi, 2023, Pengaruh Tingkat Kekristalan Material Grafena Oksida Tereduksi Terhadap Nilai Kuat Tekan Beton Normal, *SPECTA Journal of Technology*, 7, 624–631.
- O'Dowd, K. and Pillai, S.C., 2020, Photo-Fenton Disinfection at Near Neutral pH: Process, Parameter Optimization and Recent Advances, *J. Environ. Chem. Eng.*, 8, 104063.

- Oller, I. and Malato, S., 2021, Photo-Fenton Applied to The Removal of Pharmaceutical and Other Pollutants of Emerging Concern, *Curr. Opin. Green Sustain. Chem.*, 29, 100458.
- Özkar, S., 2009, Enhancement of Catalytic Activity by Increasing Surface Area in Heterogeneous Catalysis, *Appl. Surf. Sci.*, 256, 1272–1277.
- Pino-Sandoval, D.A., Cantú-Cárdenas, M.E., Rodríguez-González, V., Patrón-Soberano, O.A., Rosas-Castor, J.M., Murillo-Sierra, J.C., and Hernández-Ramírez, A., 2023, Solar Heterogeneous Photo-Fenton for Complete Inactivation of *Escherichia coli* and *Salmonella typhimurium* in Secondary-treated Wastewater Effluent, *Chemosphere*, 342, 140132.
- Pouran, S.R., Raman, A.A.A., and Daud, W.M.A.W., 2014, Review on The Application of Modified Iron Oxides as Heterogeneous Catalysts in Fenton Reactions, *J. Clean. Prod.*, 64, 24–35.
- Rodríguez-Chueca, J., Mosteo, R., Ormad, M.P., and Ovelleiro, J.L., 2012, Factorial Experimental Design Applied to *Escherichia coli* Disinfection by Fenton and Photo-Fenton Processes, *Sol. Energy*, 86, 3260–3267.
- Ruales-Lonfat, C., Barona, J.F., Sienkiewicz, A., Bensimon, M., Vélez-Colmenares, J., Benítez, N., and Pulgarín, C., 2015, Iron Oxides Semiconductors are Efficient for Solar Water Disinfection: A Comparison With Photo-Fenton Processes at Neutral pH, *Appl. Catal. B: Environ.*, 166–167, 497–508.
- Sabeni, A., Fahdiran, R., and Sugihartono, I., 2022, Review Metode Pseudopotensial Untuk Analisis Band Gap Semikonduktor. In, *Prosiding Seminar Nasional Fisika (E-Journal) SNF2022.*, pp. 13–20.
- Samik, S., Kusumawati, N., Sianita, M.M., Maharani, D.K., Purnamasari, A.P., Imaduddin, M., and Al Ghifari, M.I., 2023, Karakterisasi Abu Sekam Padi dengan Menggunakan XRD, *Unesa Journal of Chemistry*, 11, 153–159.
- Sarkar, J., Mollick, M.M.R., Chattopadhyay, D., and Acharya, K., 2017, An Eco-friendly Route of γ -Fe₂O₃ Nanoparticles Formation and Investigation of The Mechanical Properties of The HPMC- γ -Fe₂O₃ Nanocomposites, *Bioprocess Biosyst. Eng.*, 40, 351–359.
- Sing, K.S.W., Everett, D.H., Haul, R.A.W., Moscou, L., Pierotti, R.A., Rouquerol, J., and Siemieniewska, T., 1985, Reporting Physisorption Data for Gas/Solid Systems with Special Reference to the Determination of Surface Area and Porosity (Recommendations 1984), *Pure&Appl. Chem.*, 57, 603–619.
- Spuhler, D., Andrés Rengifo-Herrera, J., and Pulgarin, C., 2010, The Effect of Fe²⁺, Fe³⁺, H₂O₂ and The Photo-Fenton Reagent at Near Neutral pH on The Solar Disinfection (SODIS) at Low Temperatures of Water Containing *Escherichia coli* K12, *Appl. Catal. B: Environ.*, 96, 126–141.
- Sreeja, P.H. and Sosamony, K.J., 2016, A Comparative Study of Homogeneous and Heterogeneous Photo-fenton Process for Textile Wastewater Treatment, *Proc.*

Technol., 24, 217–223.

- Tahir, D., Ilyas, S., Rahmat, R., Heryanto, H., Fahri, A.N., Rahmi, M.H., Abdullah, B., Hong, C.C., and Kang, H.J., 2021, Enhanced Visible-Light Absorption of Fe₂O₃ Covered by Activated Carbon for Multifunctional Purposes: Tuning the Structural, Electronic, Optical, and Magnetic Properties, *ACS Omega*, 6, 28334–28346.
- Thomas, N., Dionysiou, D.D., and Pillai, S.C., 2021, Heterogeneous Fenton Catalysts: A Review of Recent Advances, *J. Hazard. Mater.*, 404, 124082.
- Utami, F.T. and Miranti, M., 2020, Metode *Most Probable Number* (MPN) Sebagai Dasar Uji Kualitas Air Sungai Rengganis dan Pantai Timur Pangandaran dari Cemaran *Coliform* dan *Escherichia coli*, *Jurnal Kesehatan Bakti Tunas Husada : Jurnal Ilmu Ilmu Keperawatan, Analis Kesehatan dan Farmasi*, 20, 21–30.
- Wahyuni, E.T., Annur, S., Lestari, N.D., and Mudasir, M., 2024, Conversion of Iron Rusty Waste into Fe Dopant of TiO₂ to Increase Its Photocatalytic Activity Under Visible Light for Photodegradation of Rhodamine-B, *Results Eng.*, 22, 102296.
- Wahyuni, E.T., Nurhikmatillah, A., Kurniasari, H., and Siswanta, D., 2021, Detoxification of As(III) in Aqueous Media by Using Photo-Fenton Method, *Glob. Nest. J.*, 23, 550–555.
- Wahyuni, E.T., Supraba, D., Raharjo, S., and Siswanta, D., 2019, A Study on Photo-Fenton Method for Simultaneous and Synergic Decreasing Concentration of Pb(II) and Cu(II) in the Solution, *J. Kim. Sains Apl.*, 22, 192–199.
- Wang, C., Liu, H., and Sun, Z., 2012, Heterogeneous Photo-Fenton Reaction Catalyzed by Nanosized Iron Oxides for Water Treatment, *Int. J. Photoenergy*, 2012, 801694.
- Wijayanti, M.S., Agustina, T.E., Dahlan, M.H., and Teguh, D., 2023, Pengolahan Air Limbah Laboratorium Menggunakan AOPs Secara Terintegrasi, *Jurnal Ilmu Lingkungan*, 22, 142–149.
- Yu, X., Somoza-Tornos, A., Graells, M., and Pérez-Moya, M., 2020, An Experimental Approach to The Optimization of The Dosage of Hydrogen Peroxide for Fenton and Photo-Fenton Processes, *Sci. Total Environ.*, 743, 140402.
- Yusuf, M.O., 2023, Bond Characterization in Cementitious Material Binders Using Fourier-Transform Infrared Spectroscopy, *Applied Sciences (Switzerland)*, 13, 3353.
- Zain, M., Yasin, K.A., Haq, S., Rehman, W., Din, S.U., Shujaat, S., Syed, A., Hossain, M.K., Paray, B.A., Razzokov, J., and Samad, A., 2024, Effect of Calcination Temperature Induced Structural Modifications on The Photocatalytic Efficacy of Fe₂O₃-ZrO₂ Nanostructures: Mechanochemical Synthesis, *RSC Adv.*, 14, 15085–15094.

Zhu, L.P., Wang, L.L., Bing, N.C., Huang, C., Wang, L.J., and Liao, G.H., 2013, Porous Fluorine-Doped γ -Fe₂O₃ Hollow Spheres: Synthesis, Growth Mechanism, and Their Application in Photocatalysis, *ACS Appl. Mater. Interfaces*, 5, 12478–12487.