

DAFTAR PUSTAKA

- Ahmad, R., 2009, Studies on Adsorption of Crystal Violet Dye from Aqueous Solution onto Coniferous Pinus Bark Powder (CPBP), *J. Hazard. Mater* 171(1–3), 767–773.
- Akbari, A., Remigy, J. C., dan Aptel, P., 2002, Treatment of Textile Dye Effluent Using A Polyamide-Based Nanofiltration Membrane, *Chem. Eng. Process.*, 41(7), 601–609.
- Akgül, M., dan Karabakan, A., 2011, Promoted Dye Adsorption Performance Over Desilicated Natural Zeolite, *Microporous and Mesoporous Mater*, 145(1–3), 157–164.
- Al-Degs, Y.S., El-Barghouthi, M.I., El-Sheikh, A.H., dan Walker, G.M., 2008, Effect of Solution pH, Ionic Strength, and Temperature on Adsorption Behavior of Reactive Dyes on Activated Carbon, *Dyes and Pigments*, 77(1), 16–23.
- Ali, I., dan Gupta, V.K., 2007, Advances in water treatment by adsorption technology. *Nat. Protocs*, 1(6), 2661–2667.
- Ali, K., Ahmed, B., Ansari, S.M., Saquib, Q., Al-Khedhairi, S.D., Alshaeri, M., Khan, M.S., dan Musarrat, J., 2017, Comparative in situ ROS mediated killing of bacteria with bulk analogue, Eucalyptus leaf extract (ELE)-capped and bare surface copper oxide nanoparticles, *Mater.Sci.Eng.*, 100, 747-758.
- Alorabi, A.Q., Hassan, M.S., dan Azizi, M., 2020, Fe₃O₄-CuO-Activated Carbon Composite as An Efficient Adsorbent for Bromophenol Blue Dye Removal from Aqueous Solutions, *Arabian. J. Chem.*, 13, 8080–8091.
- Asl, N.M., Mahmodi, N.M., Teymouri, P., Shahmoradi, B., Rezaee, R., dan Maleki, A., 2016, Adsorption of Organic Dyes Using Copper Oxide Nanoparticles: Isotherm and Kinetic Studies, *Desalin. Water. Treat.*, 57(52), 25278–25287.
- Ayawei, N., Ekubo, A.T., Wankasi, D., dan Dikio, E.D., 2015, Adsorption of Congo Red by Ni/Al-CO₃: Equilibrium, Thermodynamic and Kinetic Studies, *Orient. J. Chem.*, 31(3), 1307–1318.
- Baeza, A., Guillena, G., dan Ramón, D.J., 2016, Magnetite and Metal-Impregnated Magnetite Catalysts in Organic Synthesis: A Very Old Concept with New Promising Perspectives, *ChemCatChem*, 8(1), 49-67.
- Berg, J.C., 2002, Chapter V The role of surfactants. In *Textile Science and Technology*. Elsevier Masson SAS, 13.
- Bouazizi, N., Bargougui, R., Oueslati, A., dan Benslama, R., 2015, Effect of Synthesis Time on Structural, Optical and Electrical Properties of CuO Nanoparticles Synthesized by Reflux Condensation Method, *Adv. Mater. Lett.*, 6(2), 158–164.

- Chatterjee, S., Guha, N., Krishnan, S., Singh, A.K., Mathur, P., dan Rai, D.K., 2020, Selective and Recyclable Congo Red Dye Adsorption by Spherical Fe₃O₄ Nanoparticles Functionalized with 1,2,4,5-Benzenetetracarboxylic Acid, *Scientific Rep.*, 10(1), 1–11.
- Ciobanu, G., Harja, M., Diaconu, M., Cimpeanu, C., Teodorescu, R., dan Bucur, D., 2014, Crystal Violet Dye Removal from Aqueous Solution by Nanohydroxyapatite, *J. Food. Agric. Environ.*, 12(1), 499–502.
- Dang, T.M.D., Le, T.T.T., Fribourg-Blanc, E., dan Dang, M.C., 2011, Synthesis and Optical Properties of Copper Nanoparticles Prepared by a Chemical Reduction Method, *Adv. in Nat. Sci.: Nanosci. Nanotechnol.*, 2(1), 1-6.
- Dashamiri, S., Ghaedi, M., Dashtian, K., Rahimi, M.R., Goudarzi, A., dan Jannesar, R., 2016, Ultrasonic Enhancement of The Simultaneous Removal of Quaternary Toxic Organic Dyes by CuO Nanoparticles Loaded on Activated Carbon: Central Composite Design, Kinetic and Isotherm Study, *Ultrason. Sonochem.*, 31, 546–557.
- Deng, F., Luo, X.B., Ding, L., dan Luo, S.L., 2018, Application of Nanomaterials and Nanotechnology in the Reutilization of Metal Ion From Wastewater. In *Nanomaterials for the Removal of Pollutants and Resource Reutilization*. Elsevier Inc.
- Djilani, C., Zaghdoudi, R., Djazi, F., Bouchekima, B., Lallam, A., Modarressi, A., dan Rogalski, M., 2015, Adsorption of Dyes on Activated Carbon Prepared from Apricot Stones and Commercial Activated Carbon, *J. Taiwan Inst. Chem. Eng.*, 53, 112–121.
- El-Trass, A., Elshamy, H., El-Mehasseb, I., dan El-Kemary, M., 2012, CuO Nanoparticles: Synthesis, Characterization, Optical Properties and Interaction with Amino Acids, *Appl. Surf. Sci.*, 258(7), 2997–3001.
- Etefagh, R., Azhir, E., dan Shahtahmasebi, N., 2013, Synthesis of CuO Nanoparticles and Fabrication of Nanostructural Layer Biosensors for Detecting *Aspergillus niger* Fungi. *Sci. Iranica*, 20(3), 1055–1058.
- Fabryanty, R., Valencia, C., Soetaredjo, F.E., Putro, J.N., Santoso, S.P., Kurniawan, A., Ju, Y.H., dan Ismadji, S., 2017, Removal of Crystal Violet Dye by Adsorption Using Bentonite – Alginate Composite, *J. Environ. Chem. Eng.*, 5(6), 5677–5687.
- Golabiazar, R., Sabr, M.R., Ali, A.A., Qadr, N.S., Rahman, R.S., Othman, K.I., Khalid, K.M., Musa, S.J., dan Hamadammin, B.J., 2022, Investigation and Characterization of Biosynthesized Green Adsorbent CuO NPs and CuO/Fe₃O₄ NCs Using *Adiantum C.V* Leaf for Removal MO Dye and Cr(VI) Metal Ions: Thermodynamic, Kinetic, and Antibacterial Studies, *J. the Iranian Chem. Soc.*, 19(7), 3135–3153.
- Guzman, M., Arcos, M., Dille, J., Godet, S., dan Rousse, C., 2018, Effect of the

Concentration of NaBH₄ and N₂H₄ as Reductant Agent on the Synthesis of Copper Oxide Nanoparticles and Its Potential Antimicrobial Applications, *Nano. Biomed. Eng.*, 10(4), 392–405.

Gvozdenko, A.A., Siddiqui, S.A., Blinov, A.V., Golik, A.B., Nagdalian, A.A., Maglakelidze, D.G., Statsenko, E.N., Pirogov, M.A., Blinova, A.A., Sizonenko, M.N., Simonov, A.N., Zhukov, R.B., Kolesnikov, R.O., dan Ibrahim, S.A., 2022, Synthesis of CuO Nanoparticles Stabilized with Gelatin for Potential Use in Food Packaging Applications, *Sci. Rep.*, 12(1), 1–24.

Holle, R. B., Wuntu, A.D., dan Sangi, M.S., 2013, Kinetika Adsorpsi Gas Benzena pada Karbon Aktif Tempurung Kelapa, *J. MIPA.*, 2(2), 100.

Iftekhar, S., Ramasamy, D.L., Srivastava, V., Asif, M. B., dan Sillanpää, M., 2018, Understanding the Factors Affecting the Adsorption of Lanthanum Using Different Adsorbents: A Critical Review, *Chemosph.*, 204, 413–430.

Ighalo, J.O., Sagboye, P.A., Umenweke, G., Ajala, O.J., Omoarukhe, F.O., Adeyanju, C.A., Ogunniyi, S., dan Adeniyi, A.G., 2021, CuO Nanoparticles (CuO NPs) for Water Treatment: A Review of Recent Advances. *Environ. Nanotechnol. Monit. and Manag.*, 15, 1-12.

Inyinbor, A.A., Adekola, F.A., dan Olatunji, G.A., 2016, Kinetics, Isotherms and Thermodynamic Modeling of Liquid Phase Adsorption of Rhodamine B Dye onto *Raphia hookerie* fruit epicarp. *Water. Resour. Ind.*, 15, 14–27.

Ituen, E., Akaranta, O., dan James, A., 2017, Evaluation of Performance of Corrosion Inhibitors Using Adsorption Isotherm Models: An Overview. *Chem. Sci. Int. J.*, 18(1), 1–34.

Jannah, N.R., dan Onggo, D., 2019, Synthesis of Fe₃O₄ Nanoparticles for Colour Removal of Printing Ink Solution. *J. Phys.: Conf. Ser.*, 1245(1), 1-7.

Kajjumba, G.W, Emik, S., Öngen, A., Kurtulus Özcan, H., dan Aydın, S., 2019, Modelling of Adsorption Kinetic Processes—Errors, Theory and Application, *Adv. Sorpt. Process. Appl.*, 187-206

Kavand, M., Asasian, N., Soleimani, M., Kaghazchi, T., dan Bardestani, R., 2017, Film-Pore-[Concentration-Dependent] Surface Diffusion Model for Heavy Metal Ions Adsorption: Single and Multi-Component Systems, *Process. Saf. and Environ. Prot.*, 107, 486–497.

Khedkar, C.V., Khupse, N.D., Thombare, B.R., Dusane, P.R., Lole, G., Devan, R.S., Deshpande, A.S., dan Patil, S.I., 2020, Magnetically Separable Ag-Fe₃O₄ Catalyst for The Reduction of Organic Dyes, 742, 1-8.

Kumar, K.Y., Archana, S., Raj T.V., Prasana B.P., Raghu, M.S., dan Muralidhara, H.B., 2017, Superb Adsorption Capacity of Hydrothermally Synthesized Copper Oxide and Nickel Oxide Nanoflakes Towards Anionic and Cationic Dyes, *J.S. Adv.Mater.Dev.*, 2, 183-191.

- Lakherwal, D., 2019, Adsorption of Heavy Metals-A Review. *Int. J. of Environ. Res. and Dev.*, 4(1), 41–48.
- Lanje, A.S., Sharma, S.J., dan Pode, R.B., 2017, Synthesis and Characterization of Copper Oxide Nanoparticles, *Int. J. Adv. Eng. Res. Dev.*, 4(6), 4–9.
- Larini, S., Mahtal, K. El, Miyah, Y., Tanji, K., Guissi, S., Boumchita, S., dan Zerrouq, F., 2017, The Adsorption of Crystal Violet from Aqueous Solution by Using Potato Peels (*Solanum tuberosum*): Equilibrium and Kinetic Studies, *J. Mater. Environ. Scie.*, 8(9), 3252–3261.
- Logpriya, S., Bhuvaneshwari, V., Vaidehi, D., Senthil, K.R.P., Nithya, M.R.S., Pavithra, S.B., Amsaveni, R., dan Kalaiselvi, M., 2018, Preparation and Characterization of Ascorbic Acid-Mediated Chitosan–Copper Oxide Nanocomposite for Anti-Microbial, Sporicidal and Biofilm-Inhibitory Activity, *Journal of Nanostruct. Chem.*, 8(3), 301–309.
- Malwal, D., dan Gopinath, P., 2017, Efficient Adsorption and Antibacterial Properties of Electrospun CuO-ZnO Composite Nanofibers for Water Remediation, *J. Hazard. Mater.*, 321, 611–621.
- Mani, S., dan Bharagava, R.N., 2016, Exposure to Crystal Violet, Its Toxic, Genotoxic and Carcinogenic Effects on Environment and Its Degradation and Detoxification for Environmental Safety, *Rev. Environ. Contam. and Toxicol.*, 237, 71-104.
- Martinson, C.A., dan Reddy, K.J., 2009, Adsorption of Arsenic(III) and Arsenic(V) by Cupric Oxide Nanoparticles, *J. Colloid. Interface Sci.*, 336(2), 406–411.
- Mona, S., Kaushik, A., dan Kaushik, C.P., 2011, Waste Biomass of *Nostoc linckia* as Adsorbent of Crystal Violet Dye: Optimization Based on Statistical Model, *Int. Biodeterior. Biodegrad.*, 65(3), 513–521.
- Mourabet, M., El-Boujaady, H., El-Rhilassi, A., Ramdane, H., Bennani-Ziatni, M., El-Hamri, R., dan Taitai, A., 2011, Defluoridation of Water Using Brushite: Equilibrium, Kinetic and Thermodynamic Studies, *Desalin.*, 278(1–3), 1–9.
- Musah, M., Azeh, Y., Mathew, J., Umar, M., Abdulhamid, Z., dan Muhammad, A., 2022, Adsorption Kinetics and Isotherm Models: A Review, *Caliphate J. Sci. Technol.*, 4(1), 20–26.
- Naimah, S., Ardhanie, S.A., dan Jati, D., 2014, Degradasi Zat Warna Pada Limbah Cair Industri Tekstil dengan Metode Fotokatalitik Menggunakan Nanokomposit TiO₂–Zeolit, *Jurnal Kimia Kemasan*, 36, 225–236.
- Niculescu, A.G., Chircov, C., dan Grumezescu, A.M., 2022, Magnetite Nanoparticles: Synthesis Methods – A Comparative Review, *Method.*, 199, 16–27.
- Nogueira, A.E., Giroto, A.S., Neto, A.B.S., dan Ribeiro, C., 2016, CuO Synthesized by Solvothermal Method as A High Capacity Adsorbent for Hexavalent

Chromium, *Colloid. Surf. A: Physicochem. Eng. Asp.*, 498, 161-167.

Omer, S.A., El Naeem, G.A., Abd-Elhamid, A.I., Farahat, O.O.M., El-Bardan, A.A., Soliman, H.M.A., dan Nayl, A.A., 2022, Adsorption of Crystal Violet and Methylene Blue Dyes Using A Cellulose-Based Adsorbent from *Sugercane bagasse*: Characterization, Kinetic and Isotherm Studies, *J. Mater. Res. Technol.*, 19, 3241–3254.

Özacar, M., dan Şengil, I.A., 2003, Adsorption of Reactive Dyes on Calcined Alunite from Aqueous Solutions, *J. Hazard. Mater.*, 98(1–3), 211–224.

Parekh, Z.R., Chaki, S.H., Hirpara, A.B., Patel, G.H., Kannaujiya, R.M., Khimani, A.J., dan Deshpande, M.P., 2021, CuO Nanoparticles – Synthesis by Wet Precipitation Technique and Its Characterization, *Phys. B: Condens. Matter.*, 610, 1-8.

Peternele, W.S., Monge, F.V., Fascineli, M.L., Rodrigues, D.S.J., Silva, R.C., Lucci, C.M., dan Bentes, D.A.R., 2014, Experimental Investigation of the Coprecipitation Method: An Approach to Obtain Magnetite and Maghemite Nanoparticles with Improved Properties, *J. Nanomater.*, 2014(1), 1–11.

Razavi, R.S., dan Loghman-Estarki, M.R., 2012, Synthesis and Characterizations of Copper Oxide Nanoparticles Within Zeolite Y, *J. Clust. Sci.*, 23(4), 1097–1106.

Revellame, E.D., Fortela, D.L., Sharp, W., Hernandez, R., dan Zappi, M.E., 2020, Adsorption Kinetic Modeling Using Pseudo-First Order and Pseudo-Second Order Rate Laws: A Review, *Clean. Eng. Technol.*, 1, 1-13.

Sadegh, H., Ali, G.A.M., Gupta, V.K., Makhlof, A.S.H., Shahryari-ghoshekandi, R., Nadagouda, M.N., Sillanpää, M., dan Megiel, E., 2017, The Role of Nanomaterials as Effective Adsorbents and Their Applications in Wastewater Treatment, *J. Nanostruct. Chem.*, 7(1), 1–14.

Sathiyavimal, S., Vasantharaj, S., Bharathi, D., Saravanan, M., Manikandan, E., Kumar, S.S., dan Pugazhendhi, A., 2018, Biogenesis of Copper Oxide Nanoparticles (CuONPs) Using *Sida acuta* and Their Incorporation Over Cotton Fabrics to Prevent the Pathogenicity of Gram Negative and Gram Positive Bacteria, *J. Photochem. Photobiol. B: Biol.*, 188, 126–134.

Shirsat, S., Pawar, D., Jain, N., Pawar, J., Tale, V.S., dan Henry, R., 2019, Synthesis of Copper Oxide Nanoparticles By Chemical Precipitation Method for the Determination of Antibacterial Efficacy Against *Streptococcus Sp.* and *Staphylococcus Sp.*, *Asian, J. Pharm. Clin. Res.*, 12(5), 135–138.

Sood, A., Arora, V., Shah, J., Kotnala, R.K., dan Jain, T.K., 2016, Ascorbic Acid-Mediated Synthesis and Characterisation of Iron Oxide/Gold Core–Shell Nanoparticles, *J. Exp. Nanosci.*, 11(5), 370–382.

Sun, J., Chen, Z., Ge, M., Xu, L., dan Zhai, M., 2013, Selective Adsorption of

- Hg(II) by γ -radiation Synthesized Silica-Graft-Vinyl Imidazole Adsorbent, *J. Hazard. Mater.*, 244–245, 94–101.
- Sun, T., Zhao, Z., Liang, Z., Liu, J., Shi, W., dan Cui, F., 2017, Efficient As(III) Removal by Magnetic CuO-Fe₃O₄ Nanoparticles Through Photo-Oxidation and Adsorption Under Light Irradiation, *J. Colloid. Interface. Sci.*, 495, 168–177.
- Sunarto., 1996, *Kelebihan Metode Standar Adisi Dalam Menentukan Tingkat Pencemaran Lingkungan*, In *Cakrawala Pendidikan*, Yogyakarta.
- Supriyanto, R., Puteri Anggraini, S., Bahri, S., dan Rilyanti, M., 2021, Fotodegradasi Pewarna Tekstil Kristal Violet Terkatalis ZnO/Zeolit Y Secara Spektrofotometri UV-Vis, *Analit.:Anal.1 Environ Chem.*, 6(1), 33–45.
- Tajik, S., Beitollahi, H., Aflatoonian, M.R., Mohtat, B., Aflatoonian, B., Shoaie, I. S., Khalilzadeh, M.A., Ziasistani, M., Zhang, K., Jang, H.W., dan Shokouhimehr, M., 2020, Fabrication of Magnetic Iron Oxide-Supported Copper Oxide Nanoparticles (Fe₃O₄/CuO): Modified Screen-Printed Electrode for Electrochemical Studies and Detection of Desipramine, *RSC Adv.*, 10(26), 15171–15178.
- Tju, H., Taufik, A., dan Saleh, R., 2016, Adsorption of Methylene Blue Using Fe₃O₄/CuO/ZnO/ Nanographene Platelets (NGP) Composites with Various NGP Concentration, *J. Phys.: Conf. Ser.*, 776(1), 1-7.
- Touati, A., Hammedi, T., Najjar, W., Ksibi, Z., dan Sayadi, S., 2016, Photocatalytic Degradation of Textile Wastewater in Presence of Hydrogen Peroxide: Effect of Cerium Doping Titania, *J. Ind. Eng. Chem.y*, 35, 36–44.
- Veisi, H., Karmakar, B., Tamoradi, T., Hemmati, S., Hekmati, M., dan Hamelian, M., 2021, Biosynthesis of CuO Nanoparticles Using Aqueous Extract of Herbal Tea (*Stachys Lavandulifolia*) Flowers and Evaluation of Its Catalytic Activity, *Sci. Rep.*, 11(1), 1–13.
- Wang, H., Xu, J.Z., Zhu, J.J., dan Chen, H.Y., 2002, Preparation of CuO Nanoparticles by Microwave Irradiation, *J. Cryst. Growth.*, 244(1), 88–94.
- Wang, J., dan Guo, X., 2020, Adsorption Isotherm Models: Classification, Physical Meaning, Application and Solving Method, *Chemosphere.*, 258, 1-25.
- Wang, X., Liao, Y., Zhang, D., Wen, T., dan Zhong, Z., 2018, A review of Fe₃O₄ Thin Films: Synthesis, Modification and Applications, *J. Mater. Sci. Techno.*, 34(8), 1259–1272.
- Wongpisutpaisan, N., Charoonsuk, P., Vittayakorn, N., dan Pecharapa, W., 2011, Sonochemical Synthesis and Characterization of Copper Oxide Nanoparticles, *Energy. Procedia.*, 9, 404–409.
- Wu, J., Gao, H., Yao, S., Chen, L., Gao, Y., dan Zhang, H., 2015, Degradation of Crystal Violet by Catalytic Ozonation Using Fe/Activated Carbon Catalyst.

Sep. Purif. Technol., 147, 179–185.

- Yadav, B.S., dan Dasgupta, S., 2022, Effect of Time, pH, and Temperature on Kinetics for Adsorption of Methyl Orange Dye into the Modified Nitrate Intercalated Mg/Al/LDH Adsorbent, *Inorg. Chem. Commun.*, 137, 1-11.
- Yao, Y., Xu, F., Chen, M., Xu, Z., dan Zhu, Z., 2010, Adsorption Behavior of Methylene Blue on Carbon Nanotubes, *Biores. Technol.*, 101(9), 3040–3046.
- Yeganeh-Faal, A., dan Kadkhodaei, M., 2022, A New Combustion Method for the Synthesis of Copper Oxide Nano Sheet and Fe₃O₄/CuO Magnetic Nanocomposite and Its Application in Removal of Diazinon Pesticide, *Results. in Eng.*, 137, 1-11.
- Yohannan Panicker, C., Tresa Varghese, H., dan Philip, D., 2006, FT-IR, FT-Raman and SERS Spectra of Vitamin C, *Spectrochim. Acta. - Part A: Mol. and Biomol. Spectrosc.*, 65(3–4), 802–804.
- Zahra, N. L., Sugiyana, D., dan Notodarmojo, S., 2014, Adsorption of Reactive Red 141 Textile Dye Onto Natural, *Arena Tekst.*, 29(2), 63–72.