

DAFTAR PUSTAKA

- Abdulhameed, A.S., Hapiz, A., Musa, S.A., ALOthman, Z.A., Wilson, L.D., dan Jawad, A.H., 2024, Biomagnetic chitosan-ethylene glycol diglycidyl ether/organo-nanoclay nanocomposite for azo dye removal: A statistical modeling by response surface methodology, *Int. J. Biol. Macromol.*, 255, 128075.
- Al-Ghouti, M.A. dan Da'ana, D.A., 2020, Guidelines for the use and interpretation of adsorption isotherm models: A review, *J. Hazard. Mater.*, 393, 122383.
- Al-Saidi, H.M., 2016, Biosorption using chitosan thiourea polymer as an extraction and preconcentration technique for copper prior to its determination in environmental and food samples by flame atomic absorption spectrometry: Synthesis, characterization and analytical applica, *Int. J. Biol. Macromol.*, 93, 390–401.
- Ali, A., Chiang, Y.W., dan Santos, R.M., 2022, X-Ray Diffraction techniques for mineral characterization: A review for engineers of the fundamentals, applications, and research directions, *Minerals*, 12 (2), 205.
- Altıntig, E., Ates, A., Angin, D., Topal, Z., dan Aydemir, Z., 2022, Kinetic, equilibrium, adsorption mechanisms of RBBR and MG dyes on chitosan-coated montmorillonite with an ecofriendly approach, *Chem. Eng. Res. Des.*, 188, 287–300.
- Amo-Duodu, G., Kweinor Tetteh, E., Rathilal, S., dan Chollom, M.N., 2022, Synthesis and characterization of magnetic nanoparticles: Biocatalytic effects on wastewater treatment, *Mater. Today Proc.*, 62, S79–S84.
- Ardean, C., Davidescu, C.M., Neme, N.S., Negrea, A., Ciopec, M., Duteanu, N., Negrea, P., Duda-Seiman, D., dan Musta, V., 2021, Factors influencing the antibacterial activity of chitosan and chitosan modified by functionalization, *Int. J. Mol. Sci.*, 22 (14), 7449.
- Ayawei, N., Ebelegi, A.N., dan Wankasi, D., 2017, Modelling and interpretation of adsorption isotherms, *J. Chem.*, 2017, 1–11.
- Bakshi, P.S., Selvakumar, D., Kadirvelu, K., dan Kumar, N.S., 2020, Chitosan as an environment friendly biomaterial – a review on recent modifications and applications, *Int. J. Biol. Macromol.*, 150, 1072–1083.
- Banerjee, S. dan Chattopadhyaya, M.C., 2017, Adsorption characteristics for the removal of a toxic dye, tartrazine from aqueous solutions by a low cost agricultural by-product, *Arab. J. Chem.*, 10, S1629–S1638.
- Bawa, I.G.A.G., Irdhawati, dan Putri, K.T., 2023, Combined absorbent of corn husks and eggshells activated by sodium hydroxide as an adsorbent for Remazol Yellow FG dye in textile waste, *J. Appl. Nat. Sci.*, 15 (4), 1582–1586.

- Carmen, Z. dan Daniel, S., 2012, Textile Organic Dyes – Characteristics, polluting effects and separation/elimination procedures from industrial effluents – A critical overview, *Org. Pollut. Ten Years After Stock. Conv. - Environ. Anal. Updat.*, 2012, 55–85.
- Chakraborty, R., Asthana, A., Singh, A.K., Jain, B., dan Susan, A.B.H., 2022, Adsorption of heavy metal ions by various low-cost adsorbents: a review, *Int. J. Environ. Anal. Chem.*, 102 (2), 342–379.
- Chen, S., Wu, G., dan Zeng, H., 2005, Preparation of high antimicrobial activity thiourea chitosan-Ag⁺ complex, *Carbohydr. Polym.*, 60 (1), 33–38.
- Chen, S., Zhang, J., Zhang, C., Yue, Q., Li, Y., dan Li, C., 2010, Equilibrium and kinetic studies of methyl orange and methyl violet adsorption on activated carbon derived from *Phragmites australis*, *Desalination*, 252 (1–3), 149–156.
- Chen, X., Hossain, M.F., Duan, C., Lu, J., Tsang, Y.F., Islam, M.S., dan Zhou, Y., 2022, Isotherm models for adsorption of heavy metals from water - A review, *Chemosphere*, 307 (P1), 135545.
- Chinoune, K., Bentaleb, K., Bouberka, Z., Nadim, A., dan Maschke, U., 2016, Adsorption of reactive dyes from aqueous solution by dirty bentonite, *Appl. Clay Sci.*, 123, 64–75.
- Dai, C., Zhang, H., Li, R., dan Zou, H., 2019, Synthesis and characterization of thiourea, *Polish J. Chem. Technol.*, 21 (3), 35–39.
- Di, J., Ruan, Z., Zhang, S., Dong, Y., Fu, S., Li, H., dan Jiang, G., 2022, Adsorption behaviors and mechanisms of Cu²⁺, Zn²⁺ and Pb²⁺ by magnetically modified lignite, *Sci. Rep.*, 12 (1), 1–18.
- Dubey, R., Bajpai, J., dan Bajpai, A.K., 2016, Chitosan-alginate nanoparticles (CANPs) as potential nanosorbent for removal of Hg (II) ions, *Environ. Nanotechnology, Monit. Manag.*, 6, 32–44.
- Elsayed, I., Madduri, S., El-Giar, E.M., dan Hassan, E.B., 2022, Effective removal of anionic dyes from aqueous solutions by novel polyethylenimine-ozone oxidized hydrochar (PEI-OzHC) adsorbent, *Arab. J. Chem.*, 15 (5), 103757.
- Elwakeel, K.Z., Elgarahy, A.M., Al-Bogami, A.S., Hamza, M.F., dan Guibal, E., 2021, 2-Mercaptobenzimidazole-functionalized chitosan for enhanced removal of methylene blue: Batch and column studies, *J. Environ. Chem. Eng.*, 9 (4), 105609.
- Faysal Hossain, M.D., Akther, N., dan Zhou, Y., 2020, Recent advancements in graphene adsorbents for wastewater treatment: Current status and challenges, *Chinese Chem. Lett.*, 31 (10), 2525–2538.
- Ghaly, A.E., Ananthashankar R., Alhattab M., and Ramakrishnan V.V., 2013, Production, characterization and treatment of textile effluents: A Critical review, *J. Chem. Eng. Process Technol.*, 05 (01), 1–18.

- Ghiorghita, C.A., Lazar, M.M., Platon, I.V., Humelnicu, D., Doroftei, F., dan Dinu, M.V., 2023, Feather-weight cryostructured thiourea-chitosan aerogels for highly efficient removal of heavy metal ions and bacterial pathogens, *Int. J. Biol. Macromol.*, 235, 123910.
- Gorzin, F. dan Bahri, M.M., 2018, Adsorption of Cr(VI) from aqueous solution by adsorbent prepared from paper mill sludge: Kinetics and thermodynamics studies, *Adsorpt. Sci. Technol.*, 36 (1–2), 149–169.
- Haripriyan, U., Gopinath, K.P., dan Arun, J., 2022, Chitosan based nano adsorbents and its types for heavy metal removal: A mini review, *Mater. Lett.*, 312 (November 2021), 131670.
- Jawad, A.H., Abdulhameed, A.S., Kashi, E., Yaseen, Z.M., ALOthman, Z.A., dan Khan, M.R., 2022, Cross-linked chitosan-glyoxal/kaolin clay composite: Parametric optimization for color removal and COD reduction of Remazol Brilliant Blue R, *J. Polym. Environ.*, 30, 164–178.
- Jawad, A.H., Abdulhameed, A.S., Surip, S.N., dan ALOthman, Z.A., 2023, A new matrix of chitosan-salicylaldehyde schiff base/algae/montmorillonite for adsorption of anionic and cationic dyes: Statistical optimization and adsorption mechanism, *J. Polym. Environ.*, 31 (9), 3768–3782.
- Jawad, A.H., Hameed, B.H., dan Abdulhameed, A.S., 2023, Synthesis of biohybrid magnetic chitosan-polyvinyl alcohol/MgO nanocomposite blend for Remazol Brilliant Blue R dye adsorption: solo and collective parametric optimization, *Polym. Bull.*, 80 (5), 4927–4947.
- Kamari, A., Yusoff, S.N.M., Abdullah, F., dan Putra, W.P., 2014, Biosorptive removal of Cu(II), Ni(II) and Pb(II) ions from aqueous solutions using coconut dregs residue: Adsorption and characterisation studies, *J. Environ. Chem. Eng.*, 2 (4), 1912–1919.
- Kumar, S., Mukherjee, A., dan Dutta, J., 2020, Chitosan based nanocomposite films and coatings: Emerging antimicrobial food packaging alternatives, *Trends Food Sci. Technol.*, 97 (February), 196–209.
- Lombardo, S. dan Thielemans, W., 2019, Thermodynamics of adsorption on nanocellulose surfaces, *Cellulose*, 26, 49–279
- Mate, C.J. dan Mishra, S., 2020, Synthesis of borax cross-linked Jhingan gum hydrogel for remediation of Remazol Brilliant Blue R (RBBR) dye from water: Adsorption isotherm, kinetic, thermodynamic and biodegradation studies, *Int. J. Biol. Macromol.*, 151, 677–690.
- Md Salim, R., Asik, J., dan Sarjadi, M.S., 2021, Chemical functional groups of extractives, cellulose and lignin extracted from native *Leucaena leucocephala* bark, *Wood Sci. Technol.*, 55 (2), 295–313.
- Melara, F., Machado, T.S., Alessandretti, I., Manera, C., Perondi, D., Godinho, M., dan Piccin, J.S., 2021, Synergistic effect of the activated carbon addition from leather wastes in chitosan/alginate-based composites, *Environ. Sci. Pollut.*

Res., 28 (35), 48666–48680.

- 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.
- Nandana, C.N., Christeena, M., dan Bharathi, D., 2022, Synthesis and characterization of chitosan/silver nanocomposite using rutin for antibacterial, antioxidant and photocatalytic applications, *J. Clust. Sci.*, 33 (1), 269–279.
- Nandanwar, P.M., Saravanan, D., Bakshe, P., dan Jugade, R.M., 2022, Chitosan entrapped microporous activated carbon composite as a supersorbent for remazol brilliant blue R, *Mater. Adv.*, 3 (13), 5488–5496.
- Puri, C. dan Sumana, G., 2018, Highly effective adsorption of crystal violet dye from contaminated water using graphene oxide intercalated montmorillonite nanocomposite, *Appl. Clay Sci.*, 166, 102–112.
- Rahdar, S., Taghavi, M., Khaksefidi, R., dan Ahmadi, S., 2019, Adsorption of Arsenic (V) from aqueous solution using modified saxaul ash: isotherm and thermodynamic study, *Appl. Water Sci.*, 9 (4), 1–9.
- Rahmanian-Devin, P., Baradaran Rahimi, V., dan Askari, V.R., 2021, Thermosensitive chitosan- β -glycerophosphate hydrogels as targeted drug delivery systems: An overview on preparation and their applications, *Adv. Pharmacol. Pharm. Sci.*, 2021, 1–17.
- Rahmat, N.A., Ali, A.A., Salmiati, Hussain, N., Muhamad, M.S., Kristanti, R.A., dan Hadibarata, T., 2016, Removal of Remazol Brilliant Blue R from aqueous solution by adsorption using pineapple leaf powder and lime peel powder, *Water. Air. Soil Pollut.*, 227 (4), 105.
- Rainert, K.T., Nunes, H.C.A., Gonçalves, M.J., Helm, C.V., dan Tavares, L.B.B., 2021, Decolorization of the synthetic dye Remazol Brilliant Blue Reactive (RBBR) by *Ganoderma lucidum* on bio-adsorbent of the solid bleached sulfate paperboard coated with polyethylene terephthalate, *J. Environ. Chem. Eng.*, 9 (2), 104990.
- Raj, A., Yadav, A., Rawat, A.P., Singh, A.K., Kumar, S., Pandey, A.K., Sirohi, R., dan Pandey, A., 2021, Kinetic and thermodynamic investigations of sewage sludge biochar in removal of Remazol Brilliant Blue R dye from aqueous solution and evaluation of residual dyes cytotoxicity, *Environ. Technol. Innov.*, 23, 101556.
- Reghioua, A., Barkat, D., Jawad, A.H., Abdulhameed, A.S., Rangabhashiyam, S., Khan, M.R., dan ALOthman, Z.A., 2021, Magnetic Chitosan-Glutaraldehyde/Zinc Oxide/ Fe_3O_4 nanocomposite: optimization and adsorptive mechanism of Remazol Brilliant Blue R dye removal, *J. Polym. Environ.*, 29 (12), 3932–3947.
- Safri, A., Fletcher, A.J., Safri, R., dan Rasheed, H., 2022, Integrated adsorption–photodegradation of organic pollutants by carbon xerogel/titania composites,

Molecules, 27 (23), 8483.

- Sahoo, T.R. dan Prelot, B., 2020, Adsorption processes for the removal of contaminants from wastewater: The perspective role of nanomaterials and nanotechnology, *Nanomaterials for the Detection and Removal of Wastewater Pollutants*, Ch 7, 161–222
- Shaheen, T.I., Montaser, A.S., dan Li, S., 2019, Effect of cellulose nanocrystals on scaffolds comprising chitosan, alginate and hydroxyapatite for bone tissue engineering, *Int. J. Biol. Macromol.*, 121, 814–821.
- Sharma, P. dan Kaur, H., 2011, Sugarcane bagasse for the removal of erythrosin B and methylene blue from aqueous waste, *Appl. Water Sci.*, 1 (3–4), 135–145.
- Shekhawat, A., Kahu, S., Saravanan, D., dan Jugade, R., 2022, Bi-functionalized Ionic Liquid-Thiourea Chitosan for effective decontamination of Cd(II) and Hg(II) from water bodies, *Curr. Res. Green Sustain. Chem.*, 5, 100246.
- Shoueir, K.R., El-Desouky, N., Rashad, M.M., Ahmed, M.K., Janowska, I., dan El-Kemary, M., 2021, Chitosan based-nanoparticles and nanocapsules: Overview, physicochemical features, applications of a nanofibrous scaffold, and bioprinting, *Int. J. Biol. Macromol.*, 167, 1176–1197.
- Sims, R.A., Harmer, S.L., dan Quinton, J.S., 2019, The role of physisorption and chemisorption in the oscillatory adsorption of organosilanes on aluminium oxide, *Polymers (Basel)*, 11 (3), 410–420.
- Sun, Z., Qu, K., Cheng, Y., You, Y., Huang, Z., Umar, A., Ibrahim, Y.S.A., Algadi, H., Castañeda, L., Colorado, H.A., dan Guo, Z., 2021, Corncob-derived activated carbon for efficient adsorption dye in sewage, *ES Food Agrofor.*, 4, 61–74.
- Syafiuddin, A. dan Fulazzaky, M.A., 2021, Decolorization kinetics and mass transfer mechanisms of Remazol Brilliant Blue R dye mediated by different fungi, *Biotechnol. Reports*, 29, e00573.
- Wang, J. dan Guo, X., 2023, Adsorption kinetics and isotherm models of heavy metals by various adsorbents: An overview, *Crit. Rev. Environ. Sci. Technol.*, 53 (21), 1837–1865.
- Wang, J. dan Zhuang, S., 2017, Removal of various pollutants from water and wastewater by modified chitosan adsorbents, *Crit. Rev. Environ. Sci. Technol.*, 47 (23), 2331–2386.
- Wang, N., Xu, X., Li, H., Zhai, J., Yuan, L., Zhang, K., dan Yu, H., 2016, Preparation and application of a xanthate-modified thiourea chitosan sponge for the removal of Pb(II) from aqueous solutions, *Ind. Eng. Chem. Res.*, 55 (17), 4960–4968.
- Yao, Y., Xu, F., Chen, M., Xu, Z., dan Zhu, Z., 2010, Adsorption behavior of Methylene Blue on carbon nanotubes, *Bioresour. Technol.*, 101 (9), 3040–3046.

- Yaseen, D.A. dan Scholz, M., 2019, Textile dye wastewater characteristics and constituents of synthetic effluents: a critical review, *International Journal of Environmental Science and Technology*, 16, 1193–1226.
- Yusop, M.F.M., Abdullah, A.Z., dan Ahmad, M.A., 2023, Adsorption of Remazol Brilliant Blue R dye onto jackfruit peel based activated carbon: Optimization and simulation for mass transfer and surface area prediction, *Inorg. Chem. Commun.*, 158 (P2), 111721.
- Zain, Z.M., Abdulhameed, A.S., Jawad, A.H., ALOthman, Z.A., dan Yaseen, Z.M., 2023, A pH-sensitive surface of chitosan/sepiolite clay/algae biocomposite for the Removal of Malachite Green and Remazol Brilliant Blue R dyes: Optimization and adsorption mechanism study, *J. Polym. Environ.*, 31 (2), 501–518.
- Zhang, H., Xing, L., Liang, H., Ren, J., Ding, W., Wang, Q., Geng, Z., dan Xu, C., 2022, Efficient removal of Remazol Brilliant Blue R from water by a cellulose-based activated carbon, *Int. J. Biol. Macromol.*, 207, 254–262.
- Zuo, X., 2014, Preparation and evaluation of novel thiourea/chitosan composite beads for copper(II) removal in aqueous solutions, *Ind. Eng. Chem. Res.*, 53 (3), 1249–1255.