

DAFTAR PUSTAKA

- Ahmadi, A., Foroutan, R., Esmaeili, H., Peighambardoust, S. J., Hemmati, S., & Ramavandi, B. (2022). Montmorillonite clay/starch/CoFe₂O₄ nanocomposite as a superior functional material for uptake of cationic dye molecules from water and wastewater. *Materials Chemistry and Physics*, 284, 126088.
- Alpaslan Takan, M., & Özsin, G. (2025). A Comparative Study on the Carbonization of Chitin and Chitosan: Thermo-Kinetics, Thermodynamics and Artificial Neural Network Modeling. *Applied Sciences (Switzerland)*, 15(11). <https://doi.org/10.3390/app15116141>
- Altintig, E., Sarıcı, B., & Karataş, S. (2023). Prepared activated carbon from hazelnut shell where coated nanocomposite with Ag⁺ used for antibacterial and adsorption properties. *Environmental Science and Pollution Research*, 30(5), 13671–13687.
- Arun, J., Nirmala, N., Priyadharsini, P., Dawn, S. S., Santhosh, A., Gopinath, K. P., & Govarthan, M. (2022). A mini-review on bioderived carbon and its nanocomposites for removal of organic pollutants from wastewater. *Materials Letters*, 310, 131476.
- Bagherzadeh, M., Aslibeiki, B., & Arsalani, N. (2023). Preparation of Fe₃O₄/vine shoots derived activated carbon nanocomposite for improved removal of Cr(VI) from aqueous solutions. *Scientific Reports*, 13(1). <https://doi.org/10.1038/s41598-023-31015-x>
- Baskar, A. V., Bolan, N., Hoang, S. A., Sooriyakumar, P., Kumar, M., Singh, L., Jasemizad, T., Padhye, L. P., Singh, G., & Vinu, A. (2022). Recovery, regeneration and sustainable management of spent adsorbents from wastewater treatment streams: A review. *Science of the Total Environment*, 822, 153555.
- Behera, M., Nayak, J., Banerjee, S., Chakraborty, S., & Tripathy, S. K. (2021). A review on the treatment of textile industry waste effluents towards the development of efficient mitigation strategy: An integrated system design approach. *Journal of Environmental Chemical Engineering*, 9(4), 105277.
- Beigzadeh, B., Bahrami, M., Amiri, M. J., & Mahmoudi, M. R. (2020). A New Approach in Adsorption Modeling Using Random Forest Regression, Bayesian Multiple Linear Regression, and Multiple Linear Regression: 2,4-D Adsorption by a Green Adsorbent. *Water Science & Technology*, 82(8), 1586–1602. <https://doi.org/10.2166/wst.2020.440>
- Carmona, E. R., Sukeri, A., Nelson, R., Rojo, C., Vizcarra, A., Villacorta, A., Carevic, F., Marcos, R., Arriaza, B., Lara, N., Martinez, T., & Hernández-Saravia, L. P. (2025). Sustainable Green Synthesis of Fe₃O₄ Nanocatalysts for Efficient Oxygen Evolution Reaction. *Nanomaterials*, 15(17). <https://doi.org/10.3390/nano15171317>
- Carrales-Alvarado, D. H., Rodríguez-Ramos, I., Leyva-Ramos, R., Mendoza-Mendoza, E., & Villela-Martínez, D. E. (2020). Effect of surface area and physical–chemical properties of graphite and graphene-based materials on their adsorption capacity

towards metronidazole and trimethoprim antibiotics in aqueous solution. *Chemical Engineering Journal*, 402, 126155.

- Charii, H., Boussetta, A., Ait Benhamou, A., Mennani, M., Essifi, K., Ablouh, E. H., EL Zakhem, H., Grimi, N., Boutoia, K., & Moubarik, A. (2024). Exploring the potential of chitin and chitosan extracted from shrimp shell waste in enhancing urea-formaldehyde wood adhesives. *International Journal of Adhesion and Adhesives*, 129. <https://doi.org/10.1016/j.ijadhadh.2023.103599>
- Chen, B., Zhou, D., & Zhu, L. (2008). Transitional adsorption and partition of nonpolar and polar aromatic contaminants by biochars of pine needles with different pyrolytic temperatures. *Environmental Science & Technology*, 42(14), 5137–5143.
- Chen, X. (2024). Fabrication of Core-Shell Hydrogel Bead Based on Sodium Alginate and Chitosan for Methylene Blue Adsorption. *Journal of Renewable Materials*, 12(4), 815–826. <https://doi.org/10.32604/jrm.2024.048470>
- Chulliyil, H. M., Hamdani, I. R., Ahmad, A., Al Shoaibi, A., & Chandrasekar, S. (2024). Enhanced moisture adsorption of activated carbon through surface modification. *Results in Surfaces and Interfaces*, 14. <https://doi.org/10.1016/j.rsufi.2023.100170>
- Ebrahimzadeh, F., & Akbari, A. (2025). Investigation the adsorption mechanisms, chemical resistance and mechanical strength of the synthesized chitosan/activated carbon composite in methylene blue removal. *Scientific Reports*, 15(1). <https://doi.org/10.1038/s41598-025-21734-8>
- Eka Mayangsari, N., One Dira Pratiwi, D., Aqillafasha Ashifa, N., Azis Ramadani, T., Amelia Novitrie, N., Nindyapuspa, A., & Cahyono, L. (2025). Synthesis of Magnetic Composites of Chitosan-Fly Ash-Fe₃O₄ Nanoparticle to Improve Congo Red Dye Adsorption. *International Journal of Eco-Innovation in Science and Engineering (IJEISE)*, 06(1), 2025–2026. <https://doi.org/10.4186>
- Elamin, N. Y., Modwi, A., Abd El-Fattah, W., & Rajeh, A. (2023). Synthesis and structural of Fe₃O₄ magnetic nanoparticles and its effect on the structural optical, and magnetic properties of novel Poly(methyl methacrylate)/ Polyaniline composite for electromagnetic and optical applications. *Optical Materials*, 135. <https://doi.org/10.1016/j.optmat.2022.113323>
- Elashmawi, I. S., & Alhusaiki-Alghamdi, H. M. (2024). Fabrication, characterization, spectroscopic, and magnetic properties of polyaniline/magnetite (PANI/Fe₃O₄) nanocomposites. *Optical and Quantum Electronics*, 56(7). <https://doi.org/10.1007/s11082-024-06843-4>
- Ganapathe, L. S., Mohamed, M. A., Mohamad Yunus, R., & Berhanuddin, D. D. (2020). Magnetite (Fe₃O₄) nanoparticles in biomedical application: From synthesis to surface functionalisation. *Magnetochemistry*, 6(4), 68.
- Gao, Q., Xiang, H., Ni, L., Hou, Y., He, Y., Feng, Z., Yang, J., Hu, W., & Liu, Z. (2021). Nitrogen self-doped activated carbons with narrow pore size distribution from bamboo shoot shells. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 629, 127408.

- Gomez-Maldonado, D., Vega Erramuspe, I. B., & Peresin, M. S. (2019). Natural Polymers as Alternative Adsorbents and Treatment Agents for Water Remediation. *BioResources*, 14(4).
- Hidayat, E., Sarbani, N. M. M., Yonemura, S., Mitoma, Y., & Harada, H. (2023). Application of Box–Behnken Design to Optimize Phosphate Adsorption Conditions From Water Onto Novel Adsorbent CS-ZL/ZrO/Fe₃O₄: Characterization, Equilibrium, Isotherm, Kinetic, and Desorption Studies. *International Journal of Molecular Sciences*, 24(11), 9754. <https://doi.org/10.3390/ijms24119754>
- Hussain, M., Imran, M., Abbas, G., Shahid, M., Iqbal, M., Naeem, M. A., Murtaza, B., Amjad, M., Shah, N. S., & Ul Haq Khan, Z. (2020). A new biochar from cotton stalks for As (V) removal from aqueous solutions: its improvement with H₃PO₄ and KOH. *Environmental Geochemistry and Health*, 42, 2519–2534.
- Islam, T., Repon, M. R., Islam, T., Sarwar, Z., & Rahman, M. M. (2023). Impact of textile dyes on health and ecosystem: A review of structure, causes, and potential solutions. *Environmental Science and Pollution Research*, 30(4), 9207–9242.
- Ismail, F., Rahim, A. R. A., Aziz, M., & Johari, K. (2025). Experimental and Isotherm Modelling Process of Lead(II) Adsorption on Silica Nanocapsule Adsorbents. *Journal of Physics Conference Series*, 3003(1), 012035. <https://doi.org/10.1088/1742-6596/3003/1/012035>
- Jia, J., Cai, M., Li, X., Yu, S., Zhong, Z., Zhu, Q., Bao, L., & Huang, W. (2024). Performance and mechanism of chitosan-modified La-based MOF nanocomposites for high-efficiency adsorption of azo anion dye Congo red. *Journal of Industrial and Engineering Chemistry*. <https://doi.org/https://doi.org/10.1016/j.jiec.2024.09.020>
- Karaer, H., & Kaya, I. (2016). Synthesis, characterization of magnetic chitosan/active charcoal composite and using at the adsorption of methylene blue and reactive blue4. *Microporous and Mesoporous Materials*, 232, 26–38.
- Kaur, J., Kaur, M., Ubhi, M. K., Kaur, N., & Greneche, J.-M. (2021). Composition optimization of activated carbon-iron oxide nanocomposite for effective removal of Cr (VI) ions. *Materials Chemistry and Physics*, 258, 124002.
- Khan, I., Saeed, K., Zekker, I., Zhang, B., Hendi, A. H., Ahmad, A., Ahmad, S., Zada, N., Ahmad, H., & Shah, L. A. (2022). Review on methylene blue: Its properties, uses, toxicity and photodegradation. *Water*, 14(2), 242.
- Kouzoutzoglou-Efremidou, A. A., Tolkou, A. K., Maroulas, K. N., Kosheleva, R. I., Katsoyiannis, I. A., & Kyzas, G. Z. (2025). Interfacial Adsorption Interactions of Dyes and Chitosan/Activated Carbon@Curcumin Derivatives in Single-Component and Binary Solutions. *Langmuir*, 41(5), 3603–3622. <https://doi.org/10.1021/acs.langmuir.4c04769>
- Kumar, A., & Gangawane, K. M. (2022). Synthesis and effect on the surface morphology & magnetic properties of ferrimagnetic nanoparticles by different wet chemical synthesis methods. *Powder Technology*, 410, 117867.

- Leonel, A. G., Mansur, A. A. P., & Mansur, H. S. (2021). Advanced functional nanostructures based on magnetic iron oxide nanomaterials for water remediation: a review. *Water Research*, 190, 116693.
- Litynska, M., Dontsova, T., Yanushevska, O., & Tarabaka, V. (2021). Development of iron-containing sorption materials for water purification from arsenic compounds. *Восточно-Европейский Журнал Передовых Технологий*, 2(10–110), 35–42.
- Manzoor, J., & Sharma, M. (2020). Impact of textile dyes on human health and environment. In *Impact of textile dyes on public health and the environment* (pp. 162–169). IGI Global.
- Mikolajczyk, A. P., Fortela, D. L., Berry, J. C., Chirdon, W. M., Hernández, R., Gang, D. D., & Zappi, M. E. (2024). Evaluating the Suitability of Linear and Nonlinear Regression Approaches for the Langmuir Adsorption Model as Applied Toward Biomass-Based Adsorbents: Testing Residuals and Assessing Model Validity. *Langmuir*, 40(39), 20428–20442. <https://doi.org/10.1021/acs.langmuir.4c01786>
- Mochizuki, Y., Bud, J., Byambajav, E., & Tsubouchi, N. (2025). Pore properties and CO2 adsorption performance of activated carbon prepared from various carbonaceous materials. *Carbon Resources Conversion*, 8(1). <https://doi.org/10.1016/j.crcon.2024.100237>
- Nguyen, T. T., Tran, T. P., Nguyen, T. H. A., Cao, X. T., & Nguyen, V. C. (2022). Effective removal of reactive blue 198 from aqueous solutions by hybrid chitosan-PANI/Fe₃O₄@ C composite based on rice husk. *Desalination and Water Treatment*, 273, 270–280.
- Oladoye, P. O., Ajiboye, T. O., Omotola, E. O., & Oyewola, O. J. (2022). Methylene blue dye: Toxicity and potential elimination technology from wastewater. *Results in Engineering*, 16, 100678.
- Ören, A. H., & Kaya, A. (2006). Factors affecting adsorption characteristics of Zn²⁺ on two natural zeolites. *Journal of Hazardous Materials*, 131(1–3), 59–65.
- Pereira, A. G. B., Rodrigues, F. H. A., Paulino, A. T., Martins, A. F., & Fajardo, A. R. (2021). Recent advances on composite hydrogels designed for the remediation of dye-contaminated water and wastewater: A review. *Journal of Cleaner Production*, 284, 124703.
- Pourbaghaei, N. Z., Anbia, M., & Rahimi, F. (2021). Fabrication of Nano Zero Valent Iron/Biopolymer Composite With Antibacterial Properties for Simultaneous Removal of Nitrate and Humic Acid: Kinetics and Isotherm Studies. *Journal of Polymers and the Environment*, 30(3), 907–924. <https://doi.org/10.1007/s10924-021-02209-z>
- Qiao, Y., Zhang, C., Kong, F., Zhao, Q., Kong, A., & Shan, Y. (2021). Activated biochar derived from peanut shells as the electrode materials with excellent performance in Zinc-air battery and supercapacitance. *Waste Management*, 125, 257–267.

- Quesada, H. B., de Araújo, T. P., Vareschini, D. T., de Barros, M. A. S. D., Gomes, R. G., & Bergamasco, R. (2020). Chitosan, alginate and other macromolecules as activated carbon immobilizing agents: a review on composite adsorbents for the removal of water contaminants. *International Journal of Biological Macromolecules*, 164, 2535–2549.
- Raval, N. P., Shah, P. U., & Shah, N. K. (2016). Adsorptive amputation of hazardous azo dye Congo red from wastewater: a critical review. *Environmental Science and Pollution Research*, 23, 14810–14853.
- Rostami, M. S., & Khodaei, M. M. (2023). Chitosan-based composite films to remove cationic and anionic dyes simultaneously from aqueous solutions: Modeling and optimization using RSM. *International Journal of Biological Macromolecules*, 235, 123723.
- Rostami, M. S., & Khodaei, M. M. (2024). Recent advances in chitosan-based nanocomposites for adsorption and removal of heavy metal ions. *International Journal of Biological Macromolecules*, 270, 132386. <https://doi.org/https://doi.org/10.1016/j.ijbiomac.2024.132386>
- Russo, T., Fucile, P., Giacometti, R., & Sannino, F. (2021). Sustainable removal of contaminants by biopolymers: a novel approach for wastewater treatment. Current state and future perspectives. *Processes*, 9(4), 719.
- Shaban, M., Abukhadra, M. R., Khan, A. A. P., & Jibali, B. M. (2018). Removal of Congo red, methylene blue and Cr (VI) ions from water using natural serpentine. *Journal of the Taiwan Institute of Chemical Engineers*, 82, 102–116.
- Shabatina, T. I., Vernaya, O. I., Shabatin, V. P., & Melnikov, M. Y. (2020). Magnetic nanoparticles for biomedical purposes: Modern trends and prospects. *Magnetochemistry*, 6(3), 30.
- Shamsollahi, Z., & Partovinia, A. (2019). Recent advances on pollutants removal by rice husk as a bio-based adsorbent: A critical review. *Journal of Environmental Management*, 246, 314–323.
- Sheta, M., Yousry, B., Zattot, A., & Taha, N. A. (2021). Optimization of Chitosan Surface Response Methodology (Natural and Commercial) Used for Chromium Ion Removal From Wastewater Across Different Parameters. *Sustainability*, 13(23), 13494. <https://doi.org/10.3390/su132313494>
- Siddiqui, S. I., Allehyani, E. S., Al-Harbi, S. A., Hasan, Z., Abomuti, M. A., Rajor, H. K., & Oh, S. (2023). Investigation of Congo red toxicity towards different living organisms: a review. *Processes*, 11(3), 807.
- Singha, A. S., & Guleria, A. (2014). Use of low cost cellulosic biopolymer based adsorbent for the removal of toxic metal ions from the aqueous solution. *Separation Science and Technology*, 49(16), 2557–2567.
- Tamer, T. M., Abbas, R., Sadik, W. A., Omer, A. M., Abd-Ellatif, M. M., & Mohy-Eldin, M. S. (2024). Development of novel amino-ethyl chitosan hydrogel for the removal of

- methyl orange azo dye model. *Scientific Reports*, 14(1).
<https://doi.org/10.1038/s41598-024-51538-1>
- Tsauria, Q. D., Gareso, P. L., & Tahir, D. (2025a). Structure–Property–Application framework for multifunctional chitosan across biomedical, environmental, and technological domains: A review. *International Journal of Biological Macromolecules*, 331, 148380. <https://doi.org/10.1016/J.IJBIOMAC.2025.148380>
- Tsauria, Q. D., Gareso, P. L., & Tahir, D. (2025b). Systematic review of chitosan-based adsorbents for heavy metal and dye remediation. *Integrated Environmental Assessment and Management*, vjaf037. <https://doi.org/10.1093/inteam/vjaf037>
- Varela, C. F., Saavedra Gaona, I. M., Barrera Angarita, A. C., Morales Rivera, A. M., & Parra Vargas, C. A. (2024). Ultra-fast and highly-reversible dyes adsorption using a prepared in-situ Fe(PO₃)₂/biochar composite from corn cob. *Industrial Crops and Products*, 218, 118966. <https://doi.org/https://doi.org/10.1016/j.indcrop.2024.118966>
- Wang, A., Liu, C., Ge, X., Meng, W., Pi, Y., & Liu, C. (2021). Enhanced removal of Congo red dye from aqueous solution by surface modified activated carbon with bacteria. *Journal of Applied Microbiology*, 131(5), 2270–2279.
- Wang, H., & Shadman, F. (2013). Effect of particle size on the adsorption and desorption properties of oxide nanoparticles. *AIChE Journal*, 59(5), 1502–1510.
- Wroblewski, C., Volford, T., Martos, B., Samoluk, J., & Martos, P. (2020). High yield synthesis and application of magnetite nanoparticles (Fe₃O₄). *Magnetochemistry*, 6(2), 1–14. <https://doi.org/10.3390/magnetochemistry6020022>
- Wu, Q., Siddique, M. S., Wang, H., Cui, L., Wang, H., Pan, M., & Yan, J. (2023). Visible-light-driven iron-based heterogeneous photo-Fenton catalysts for wastewater decontamination: A review of recent advances. *Chemosphere*, 313, 137509.
- Xue, S., Xiao, Y., Wang, G., Fan, J., Wan, K., He, Q., Gao, M., & Miao, Z. (2021). Adsorption of heavy metals in water by modifying Fe₃O₄ nanoparticles with oxidized humic acid. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 616, 126333. <https://doi.org/https://doi.org/10.1016/j.colsurfa.2021.126333>
- Yang, K., Peng, J., Srinivasakannan, C., Zhang, L., Xia, H., & Duan, X. (2010). Preparation of high surface area activated carbon from coconut shells using microwave heating. *Bioresource Technology*, 101(15), 6163–6169.
- Zang, X., Jiang, R., Zhu, H.-Y., Wang, Q., Fu, Y.-Q., Zhao, D.-X., Li, J.-B., & Liu, H. (2023). A review on the progress of magnetic chitosan-based materials in water purification and solid-phase extraction of contaminants. *Separation and Purification Technology*, 125521.
- Zhou, Y., Lu, J., Zhou, Y., & Liu, Y. (2019). Recent advances for dyes removal using novel adsorbents: A review. *Environmental Pollution*, 252, 352–365. <https://doi.org/https://doi.org/10.1016/j.envpol.2019.05.072>