

## DAFTAR PUSTAKA

- Abdolali, A., Guo, W.S., Ngo, H.H., Chen, S.S., Nguyen, N.C. & Tung, K.L. 2014. Typical Lignocellulosic Wastes and By-Products for Biosorption Process in Water and Wastewater Treatment: A critical review. *Bioresource Technology* 160, pp. 57–66. doi: 10.1016/j.biortech.2013.12.037.
- Abegunde, S.M., Idowu, K.S., Adejuwon, O.M. & Adeyemi-Adejolu, T. 2020. A review on the influence of chemical modification on the performance of adsorbents. *Resources, Environment and Sustainability I*. doi: 10.1016/j.resenv.2020.100001.
- Adel, M., Ahmed, M. A., & Mohamed, A. A. 2021. Effective Removal Of Indigo Carmine Dye From Wastewaters By Adsorption Onto Mesoporous Magnesium Ferrite Nanoparticles. *Environmental Nanotechnology, Monitoring and Management*, 16. doi: 10.1016/j.enmm.2021.100550.
- Ali, K., Javaid, M.U., Ali, Z. & Zaghum, M.J. 2021. Biomass-Derived Adsorbents for Dye and Heavy Metal Removal from Wastewater. *Adsorption Science and Technology 2021*. doi: 10.1155/2021/9357509.
- Alongamo, B. A. A., Ajifack, L. D., Ghogomu, J. N., Nsami, N. J., & Ketcha, J. M. 2021. Activated Carbon from the Peelings of Cassava Tubers (*Manihot esculenta*) for the Removal of Nickel(II) Ions from Aqueous Solution. *Journal of Chemistry*, 2021. doi: 10.1155/2021/5545110
- Anushree, C., & Philip, J. 2019. Efficient Removal Of Methylene Blue Dye Using Cellulose Capped Fe<sub>3</sub>O<sub>4</sub> Nanofluids Prepared Using Oxidation-Precipitation Method. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 567, 193–204. doi: 10.1016/j.colsurfa.2019.01.057
- Arenas, C. N., Vasco, A., Betancur, M., & Martínez, J. D. 2017. Removal Of Indigo Carmine (IC) From Aqueous Solution By Adsorption Through Abrasive Spherical Materials Made Of Rice Husk Ash (RHA). *Process Safety and Environmental Protection*, 106, 224–238. doi: 10.1016/j.psep.2017.01.013.
- Bedia, J., Peñas-Garzón, M., Gómez-Avilés, A., Rodríguez, J.J. & Belver, C. 2020. Review on Activated Carbons by Chemical Activation with FeCl<sub>3</sub>. C — *Journal of Carbon Research* 6(2), p. 21. doi: 10.3390/c6020021.
- Bhatnagar, A., Sillanpää, M. and Witek-Krowiak, A. &. Agricultural Waste Peels as Versatile Biomass for Water Purification - A review. *Chemical Engineering Journal* 270, pp. 244–271. doi: 10.1016/j.cej.2015.01.135.
- Bhowmik, S., Chakraborty, V., & Das, P. 2021. Batch Adsorption Of Indigo Carmine On Activated Carbon Prepared From Sawdust: A Comparative Study and Optimization Of Operating Conditions Using Response Surface

- Methodology. *Results in Surfaces and Interfaces*, 3, 100011. doi: 10.1016/j.rsurfi.2021.100011
- Cahyana, A. & Marzuki, A. 2014. Analisa SEM (*Scanning Electron Microscope*) Pada Kaca TZN yang Dikristalkan Sebagian. In: Mathematics and Sciences Forum., pp. 23–26. Chaowana, P. 2013. Bamboo: An Alternative Raw Material for Wood and Wood Based Composites. *Journal of Materials Science Research* 2(2). doi: 10.5539/jmsr.v2n2p90.
- De Keijzer, M., van Bommel, M. R., Hofmann-De Keijzer, R., Knaller, R., & Oberhumer, E. 2012. Indigo carmine: Understanding A Problematic Blue Dye. *Studies in Conservation*, 57(SUPPL. 1). doi: 10.1179/2047058412Y.0000000058
- Deng, F., Luo, X.B., Ding, L. & 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, pp. 149–178. doi: 10.1016/B978-0-12-814837-2.00005-6.
- El Gaini, L., Lakraimi, M., Sebbar, E., Meghea, A. & Bakasse, M. 2009. Removal of Indigo Carmine Dye from Water to Mg-Al-CO<sub>3</sub>-calcined Layered Double Hydroxides. *Journal of Hazardous Materials* 161(2–3), pp. 627–632. doi: 10.1016/j.jhazmat.2008.04.089.
- El-Kammah, M., Elkhatib, E., Gouveia, S., Cameselle, C. & Aboukila, E., 2022. Cost-effective Ecofriendly Nanoparticles for Rapid And Efficient Indigo Carmine Dye Removal from wastewater: Adsorption Equilibrium, Kinetics and Mechanism. *Environmental Technology & Innovation*, 28, p.102595.
- Eratodi, I.G.L.B.E. 2017. Struktur dan Rekayasa Bambu. Denpasar Bali: Universitas Pendidikan Nasional.
- Fardiansyah, H., 2017. Pemanfaatan Media Bambu Sebagai Adsorbent Penyerap Logam Kadmium (Cd) dengan Perbandingan Tanpa Aktivasi dan Aktivasi dengan Asam Sitrat. Fakultas Teknik Sipil dan Perencanaan. Universitas Islam Indonesia. Skripsi.
- Fatriasari, W. & Euis, H. 2008. Analisis Morfologi Serat dan Sifat Fisis-Kimia Analisis Morfologi Serat Dan Sifat Fisis-Kimia Pada Enam Jenis Bambu Sebagai Bahan Baku Pulp Dan Kertas. *Jurnal Ilmu dan Teknologi Hasil Hutan* 1(2), pp. 67–72.
- He, R., Yuan, X., Huang, Z., Wang, H., Jiang, L., Huang, J., Tan, M., & Li, H. 2019. Activated Biochar With Iron-Loading And Its Application In Removing Cr (VI) From Aqueous Solution. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 579. doi: 10.1016/j.colsurfa.2019.123642
- Heidarinejad, Z., Dehghani, M.H., Heidari, M., Javedan, G., Ali, I. & Sillanpää, M. 2020. Methods For Preparation and Activation of Activated Carbon: A

- Review. *Environmental Chemistry Letters* 18(2), pp. 393–415. doi: 10.1007/s10311-019-00955-0.
- Hidayat, E., Harada, H., Mitoma, Y., Yonemura, S., & Halem, H. I. A. 2022. Rapid Removal of Acid Red 88 by Zeolite/Chitosan Hydrogel in Aqueous Solution. *Polymers*, 14(5). doi: 10.3390/polym14050893
- Hidayat, E., Khaekhum, S., Yonemura, S., Mitoma, Y., & Harada, H. 2022. Biosorption of Eriochrome Black T Using *Exserohilum rostratum* NMS1.5 Mycelia Biomass. *J*, 5(4), 427–434. doi:10.3390/j5040029
- Hidayat, E., Yonemura, S., Mitoma, Y. & Harada, H. 2022. Methylene Blue Removal by Chitosan Cross-Linked Zeolite from Aqueous Solution and Other Ion Effects: Isotherm, Kinetic, and Desorption Studies. *Adsorption Science & Technology* 2022, pp. 1–10. doi: 10.1155/2022/1853758.
- Hidayat, E., Yoshino, T., Yonemura, S., Mitoma, Y., & Harada, H. 2022. Synthesis, Adsorption Isotherm and Kinetic Study of Alkaline- Treated Zeolite/Chitosan/Fe<sup>3+</sup> Composites for Nitrate Removal from Aqueous Solution—Anion and Dye Effects. *Gels*, 8(12). doi:10.3390/gels8120782
- Husien, S., El-taweel, R.M., Salim, A.I., Fahim, I.S., Said, L.A. & Radwan, A.G. 2022. Review Of Activated Carbon Adsorbent Material for Textile Dyes Removal: Preparation, And Modelling. *Current Research in Green and Sustainable Chemistry* 5. doi: 10.1016/j.crgsc.2022.100325.
- Isa, S.S.M., Ramli, M.M., Hambali, N.A.M.A., Abdullah, M.M.A.B. & Murad, S.A.Z. 2017. The Production of Malaysia Bamboo Charcoal (*Gigantochloa Albociliata*) as the Potential Absorbent. In: *AIP Conference Proceedings. American Institute of Physics Inc.* doi: 10.1063/1.5002452.
- Katheresan, V., Kansedo, J. & Lau, S.Y. 2018. Efficiency of Various Recent Wastewater Dye Removal Methods: A review. *Journal of Environmental Chemical Engineering* 6(4), pp. 4676–4697. doi: 10.1016/j.jece.2018.06.060.
- Keijzer, M., van Bommel, M.R., Hofmann-De Keijzer, R., Knaller, R. & Oberhumer, E. 2012. Indigo carmine: Understanding A Problematic Blue Dye. In: *Studies in Conservation*. doi: 10.1179/2047058412Y.0000000058.
- Kezerle, A., Velic, N., Hasenay, D. & Kovačević, D. 2018. Lignocellulosic Materials as Dye Adsorbents: Adsorption of Methylene Blue and Congo Red on Brewers' Spent Grain. *Croatica Chemica Acta* 91(1), pp. 53–64. doi: 10.5562/cca3289. 34 33
- Kumar, A., Dixit, U., Singh, K., Gupta, S.P. & Beg, M.S.J., 2021. Structure and Properties of Dyes and Pigments. *Dyes and Pigments-Novel Applications and Waste Treatment*, p.131. doi: 10.5772/intechopen.97104.

- König, J. 2015. Food Colour Additives of Synthetic Origin. In: *Colour Additives for Foods and Beverages*. Elsevier Ltd, pp. 36–60. doi: 10.1016/B978-1-78242-011-8.00002-7.
- Ma, J., Li, J., Guo, Q., Han, H., Zhang, S. and Han, R., 2020. Waste peanut shell modified with polyethyleneimine for enhancement of hexavalent chromium removal from solution in batch and column modes. *Bioresource Technology Reports*, 12, p.100576. <https://doi.org/10.1016/j.biteb.2020.100576>
- Maryudi, M., Amelia, S. & Salamah, S. 2019. Removal of Methylene Blue of Textile Industry Waste with Activated Carbon Using Adsorption Method. *Reaktor* 19(4), pp. 168–171. doi: 10.14710/reaktor.19.4.168-171.
- Makeswari, M. & Santhi, T., 2014. Adsorption of Cr (VI) from Aqueous Solutions by Using Activated Carbons Prepared from Ricinus Communis Leaves: Binary And Ternary Systems. *Arabian Journal of Chemistry*, 57, pp.57-69.
- Mishra, S., Cheng, L. & Maiti, A. 2021. The Utilization of Agro Biomass/Byproducts for Effective Bio-Removal of Dyes from Dyeing Wastewater: A Comprehensive Review. *Journal of Environmental Chemical Engineering* 9(1). doi: 10.1016/j.jece.2020.104901.
- Mousavi, S. A., Mahmoudi, A., Amiri, S., Darvishi, P., & Noori, E. 2022. Methylene Blue Removal Using Grape Leaves Waste: Optimization And Modeling. *Applied Water Science*, 12(5). doi: 10.1007/s13201-022-01648-w
- Nnadozie, E.C. & Ajibade, P.A. 2021. Isotherm, Kinetics, Thermodynamics Studies and Effects of Carbonization Temperature on Adsorption of Indigo Carmine (IC) Dye Using C. Odorata Biochar. *Chemical Data Collections* 33. doi: 10.1016/j.cdc.2021.100673.
- Oliveira, L.C.A., Pereira, E., Guimaraes, I.R., Vallone, A., Pereira, M., Mesquita, J.P. & Sapag, K. 2009. Preparation of Activated Carbons from Coffee Husks Utilizing FeCl<sub>3</sub> and ZnCl<sub>2</sub> as Activating Agents. *Journal of Hazardous Materials* 165(1–3), pp. 87–94. doi: 10.1016/j.jhazmat.2008.09.064.
- Ooi, J., Lee, L. Y., Hiew, B. Y. Z., Thangalazhy-Gopakumar, S., Lim, S. S., & Gan, S. 2017. Assessment Of Fish Scales Waste As A Low Cost And Eco-Friendly Adsorbent For Removal Of An Azo Dye: Equilibrium, Kinetic And Thermodynamic Studies. *Bioresource Technology*, 245, 656–664. doi: 10.1016/j.biortech.2017.08.153
- Oyekanmi, A. A., Ahmad, A., Hossain, K., & Rafatullah, M. 2019. Adsorption Of Rhodamine B Dye from Aqueous Solution Onto Acid Treated Banana Peel: Response Surface Methodology, Kinetics And Isotherm Studies. *PLoS ONE*, 14(5). doi: 10.1371/journal.pone.0216878
- Pan, J., Zhou, L., Chen, H., Liu, X., Hong, C., Chen, D. and Pan, B. 2021. Mechanistically Understanding Adsorption of Methyl Orange, Indigo

- Carmine, and Methylene Blue onto Ionic/Nonionic Polystyrene Adsorbents. *Journal of Hazardous Materials* 418. doi: 10.1016/j.jhazmat.2021.126300.
- Peica, N. & Kiefer, W. 2008. Characterization Of Indigo Carmine with Surface Enhanced Resonance Raman Spectroscopy (SERRS) Using Silver Colloids and Island Films, and Theoretical Calculations. *Journal of Raman Spectroscopy* 39(1), pp. 47–60. doi: 10.1002/jrs.1813.
- Peng, J., Guo, J. & Jiang, Y. 2019. Probing Surface Water at Submolecular Level with Scanning Probe Microscopy. *Scientia Sinica Chimica* 49(3), pp. 536–555. doi: 10.1360/N032018-00184. 34
- Peraturan Pemerintah Nomor 82 tahun 2001. Pengelolaan Kualitas Air dan Pengendalian Pencemaran Air. LN. 2001 No. 153, TLN No. 4161, LL SETNEG: 22 HLM.
- Ramadhani, P., Chaidir, Z., Zilfa, Tomi, Z. B., Rahmiarti, D., & Zein, R. 2020. Shrimp Shell (*Metapenaeus monoceros*) Waste as A Low-Cost Adsorbent For Metanil Yellow Dye Removal In Aqueous Solution. *Desalination and Water Treatment*, 197, 413–423. doi: 10.5004/dwt.2020.2596.
- Rápó, E., & Tonk, S. 2021. Factors Affecting Synthetic Dye Adsorption; Desorption Studies: A Review Of Results From The Last Five Years (2017–2021). *In Molecules (Vol. 26, Issue 17)*. MDPI. doi: 10.3390/molecules26175419
- Rashid, R., Shafiq, I., Akhter, P., Iqbal, M.J. & Hussain, M. 2021. A State-of-The Art Review on Wastewater Treatment Techniques: The Effectiveness of Adsorption Method. *Environmental Science and Pollution Research* 28, pp. 9050–9066. doi: 10.1007/s11356-021-12395-x.
- Razmjoo, A., Khalili, N., Majidi Nezhad, M., Mokhtari, N. & Davarpanah, A. 2020. The Main Role of Energy Sustainability Indicators on The Water Management. *Modeling Earth Systems and Environment* 6(3), pp. 1419–1426. doi: 10.1007/s40808-020-00758-1.
- Rufford, T.E., Hulicova-Jurcakova, D., Zhu, Z. & Lu, G.Q. 2010. A Comparative Study of Chemical Treatment by FeCl<sub>3</sub>, MgCl<sub>2</sub>, And ZnCl<sub>2</sub> on Microstructure, Surface Chemistry, And Double-Layer Capacitance of Carbons from Waste Biomass. *Journal of Materials Research* 25(8), pp. 1451–1459. doi: 10.1557/jmr.2010.0186.
- Tiotsop Kuete, I.H., Tchuifon Tchuifon, R.D., Bopda, A., Sadeu Ngakou, C., Nche, G.N.A. and Gabche Anagho, S., 2022. Adsorption of Indigo Carmine onto Chemically Activated Carbons Derived from the Cameroonian Agricultural Waste *Garcinia cola* Nut Shells and Desorption Studies. *Journal of Chemistry*, 2022.

- Sangandita, K.R.K.D. & Utami, B. 2019. Effectiveness of Rice Husk and Bagasse Fly Ash as Adsorbent of Cr Metal on Batch System. *Jurnal Kimia dan Pendidikan Kimia* 4(2), p. 85. doi: 10.20961/jkpk.v4i2.29724.
- Shah, I., Adnan, R., Ngah, W. S. W., & Mohamed, N. 2015. Iron Impregnated Activated Carbon As An Efficient Adsorbent For The Removal Of Methylene Blue: *Regeneration and Kinetics Studies*. *PLoS ONE*, 10(4). doi: 10.1371/journal.pone.0122603
- Shen C, Shen Y, Wen Y, Wang H, Liu W. 2011. Fast and Highly Efficient Removal of Dyes Under Alkaline Conditions Using Magnetic chitosan-Fe(III) Hydrogel. *Water Res.* (16):5200-10. doi: 10.1016/j.watres.2011.07.018. Epub PMID: 21839488.
- Shrestha, A., Poudel, B.R., Silwal, M. & Pokhrel, M.R. 2019. Adsorptive Removal of Phosphate onto Iron Loaded Litchi Chinensis Seed Waste. *Journal of Institute of Science and Technology* 23(1), pp. 81–87. doi: 10.3126/jist.v23i1.22200.
- Sikdar, D., Goswami, S. & Das, P. 2020. Activated Carbonaceous Materials from Tea Waste and Its Removal Capacity of Indigo Carmine Present in Solution: Synthesis, Batch and Optimization Study. *Sustainable Environment Research* 30(1). doi: 10.1186/s42834-020-00070-8.
- Solís, A., Perea, F., Solís, M., Manjarrez, N., Pérez, H.I. & Cassani, J. 2013. Discoloration of Indigo Carmine Using Aqueous Extracts from Vegetables and Vegetable Residues as Enzyme Sources. *BioMed Research International* 2013. doi: 10.1155/2013/250305.
- Sumalatha, B., Kumar, Y.P., Kumar, K.K., Babu, D.J., Narayana, A.V., Das, K.M. and Venkateswarulu, T.C., 2014. Removal of indigo carmine from aqueous solution by using activated carbon. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*, 5(2), pp.912-922.
- Suwanasing, K. & Poonprasit, M. 2014. Efficiency of Bamboo Waste Activated Carbon on Acid Dye Wastewater Treatment. *In: Advanced Materials Research. Trans Tech Publications*, pp. 640–644. doi: 10.4028/www.scientific.net/AMR.931-932.640.
- Syafrianda, I., Yenie, E. and Daud, S., 2017. Pengaruh Waktu Kontak dan Laju Pengadukan Terhadap Adsorpsi Zat Warna Pada Air Gambut Menggunakan Adsorben Limbah Biosolid Land Application Industri Minyak Kelapa Sawit (*Doctoral dissertation, Riau University*).
- Tan, K.B., Vakili, M., Horri, B.A., Poh, P.E., Abdullah, A.Z. & Salamatinia, B. 2015. Adsorption of Dyes by Nanomaterials: Recent Developments and Adsorption Mechanisms. *Separation and Purification Technology* 150, pp. 229–242. doi: 10.1016/j.seppur.2015.07.009. 35

- Tong, X., Yang, Z., Xu, P., Li, Y., & Niu, X. 2017. Nitrate Adsorption From Aqueous Solutions by Calcined Ternary Mg-Al-Fe hydrotalcite. *Water Science and Technology*, 75(9), 2194–2203. doi:10.2166/wst.2017.082
- Tursi, A. 2019. A review on biomass: Importance, Chemistry, Classification, and Conversion. *Biofuel Research Journal* 6(2), pp. 962–979. doi: 10.18331/BRJ2019.6.2.3.
- Venkata Rao, P., Pydiraju, P., Madhuri, V., Vineeth, S., Rahimuddin, S. & Vangalapati, M. 2019. Removal Of Indigo Carmine Dye from Aqueous Solution by Adsorption on Biomass of Grevillea Robusta Leaves. *In: Materials Today: Proceedings*. Elsevier Ltd, pp. 3020–3023. doi: 10.1016/j.matpr.2020.02.628.
- Wahono, J., Sumarwan, U., Arifin, B. and Purnomo, H., 2021. Renewable Energy Development of Sustainable Bamboo Forest Based On Community Empowerment. *Jurnal Aplikasi Bisnis dan Manajemen (JABM)*, 7(1), pp.188-188.
- Wang, J., & Guo, X. 2020. Adsorption isotherm models: Classification, physical meaning, application and solving method. *In Chemosphere* (Vol. 258). Elsevier Ltd. doi: 10.1016/j.chemosphere.2020.127279
- Wang, L. 2013. Removal of Disperse Red dye by Bamboo-Based Activated Carbon: Optimisation, Kinetics and Equilibrium. *Environmental Science and Pollution Research* 20(7), pp. 4635–4646. doi: 10.1007/s11356-012-1421-z.
- Xu, Z., Sun, Z., Zhou, Y., Chen, W., Zhang, T., Huang, Y. & Zhang, D. 2019. Insights Into the Pyrolysis Behavior and Adsorption Properties of Activated Carbon from Waste Cotton Textiles by FeCl<sub>3</sub>-activation. *Colloids and Surfaces A: Physicochemical and Engineering Aspects* 582. doi: 10.1016/j.colsurfa.2019.123934.
- Yagub, M.T., Sen, T.K., Afroze, S. & Ang, H.M. 2014. Dye and Its Removal from Aqueous Solution by Adsorption: A review. *Advances in Colloid and Interface Science* 209, pp. 172–184. doi: 10.1016/j.cis.2014.04.002.