

DAFTAR PUSTAKA

- Ahmad, S., Ashraf, I., Mansoor, M. A., Rizwan, S., & Iqbal, M. (2021). An overview of recent advances in the synthesis and applications of the transition metal carbide nanomaterials. *Nanomaterials*, *11*(3), 1–36. <https://doi.org/10.3390/nano11030776>
- Amanda, D. (2019). Uji Persamaan Langmuir dan Freundlich Pada Penyerapan Ion Logam Kobalt (II) oleh Kitosan dari Kulit Udang Windu (*Penaeus Monodon*). *Skripsi, Ii*, 16.
- Anugrah, R., Mardawati, E., Putri, S. H., & Yuliani, T. (2020). Karakterisasi Bioetanol Tandan Kosong Kelapa Sawit Dengan Metode Pemurnian Adsorpsi (Adsorpsi Menggunakan Adsorben Berupa Zeolit). *Jurnal Industri Pertanian*, *2*(2), 113–123.
- Apriyani, N. (2018). *Industri Batik: Kandungan Limbah Cair dan Metode Penolahannya*. *3*(1), 21–29.
- Ariyani, S. B. (2017). Kemampuan Limbah Tandan Kosong Kelapa Sawit Sebagai Bioadsorben Logam Perak Pada Limbah Cair Sisa Pengukuran COD. *Majalah BIAM 13, I*, 17–21.
- Astuti, W. (2018). Adsorpsi Menggunakan Material Berbasis Lignoselulosa. In *Unnes Press*.
- Atkins, P., Paula, J. de, & Keeler, J. (2018). *Physical Chemistry* (11th ed.). Oxford University Press.
- Baird, R. B., & Bridgewater, L. L. (2017). *Standard Methods for the Examination of Water and Wastewater*. 23rd ed.
- Baunsele, A. B., & Missa, H. (2020). Kajian Kinetika Adsorpsi Metilen Biru Menggunakan Adsorben Sabut Kelapa. *Akta Kimia Indonesia*, *5*(2), 76. <https://doi.org/10.12962/j25493736.v5i2.7791>
- Bhernama, B. G., Nurhayati, Surya Adi Saputra, & Jihan Amalia. (2023). Karakterisasi Selulosa dan Selulosa Asetat dari Limbah Cangkang Biji Pala (*Myristica Fragrans*) Aceh Selatan. *Jurnal Riset Kimia*, *14*(1), 81–93. <https://doi.org/10.25077/jrk.v14i1.579>
- Bisswanger, H. (2008). Enzyme Kinetics: Principles and Methods: Second Edition. In *Enzyme Kinetics: Principles and Methods: Second Edition*. <https://doi.org/10.1002/9783527622023>
- Budiwanto, S. (2017). Metode Statistika: Untuk Mengolah Data Keolahragaan. *Fakultas Ilmu Keolahragaan Universitas Negeri Malang 2017*, 1–233.
- Bustami, Abdullah, D., & Fadlisyah. (2014). *Statistika; Terapannya pada Bidang Informatika*.
- Cai, C., Wang, R., Liu, S., Yan, X., Zhang, L., Wang, M., Tong, Q., & Jiao, T. (2020). Synthesis of self-assembled phytyc acid-MXene nanocomposites via a

- facile hydrothermal approach with elevated dye adsorption capacities. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 589(January). <https://doi.org/10.1016/j.colsurfa.2020.124468>
- Carey, M., & Barsoum, M. W. (2021). MXene polymer nanocomposites: a review. *Materials Today Advances*, 9. <https://doi.org/10.1016/j.mtadv.2020.100120>
- Dampney, L., Jaato, B. N., Ribeiro, C. S., Varagnolo, S., Power, N. P., Selvaraj, V., Dodoo-Arhin, D., Kumar, R. V., Sreenilayam, S. P., Brabazon, D., Kumar Thakur, V., & Krishnamurthy, S. (2022). Surface Functionalized MXenes for Wastewater Treatment—A Comprehensive Review. *Global Challenges*, 6(6), 2100120. <https://doi.org/10.1002/gch2.202100120>
- Dong, Y., Sang, D., He, C., Sheng, X., & Lei, L. (2019). MXene/alginate composites for lead and copper ion removal from aqueous solutions. *RSC Advances*, 9(50), 29015–29022. <https://doi.org/10.1039/c9ra05251h>
- Dwiasi, D. W., Setyaningtyas, T., & Riyani, K. (2018). Penurunan Kadar Metilen Biru Dalam Limbah Batik Sokaraja Menggunakan Sistem Fe₂O₃-H₂O₂-UV. *Jurnal Rekayasa Kimia & Lingkungan*, 13(1), 78–86. <https://doi.org/10.23955/rkl.v13i1.10572>
- Eckenfelder, W. W. (2000). *Industrial Water Pollution Control* (Third). McGraw Hill .
- Fahma, F., Iwamoto, S., Hori, N., Iwata, T., & Takemura, A. (2010). Isolation, preparation, and characterization of *nanofibers* from oil palm empty-fruit-bunch (OPEFB). *Cellulose*, 17(5), 977–985. <https://doi.org/10.1007/s10570-010-9436-4>
- Fahira, U. (2023). *Variasi Dosis dan Rasio Adsorben Terhadap Penyisihan Metilen Biru dari Larutan Artifisial Menggunakan Nnaokomposit MXene/Eceng Gondok* (Skripsi, Universitas Andalas). Repositori Universitas Andalas.
- Fard, A. K., Mckay, G., Chamoun, R., Rhadfi, T., Preud'Homme, H., & Atieh, M. A. (2017). Barium removal from synthetic natural and produced water using MXene as two dimensional (2-D) nanosheet adsorbent. *Chemical Engineering Journal*, 317, 331–342. <https://doi.org/10.1016/j.cej.2017.02.090>
- Farikhin, F. (2016). Analisa Scanning Electron Microscope Komposit Polyester Dengan Filler Karbon Aktif. *Publikasi Ilmiah.*, 1–16.
- Fitriyah. (2016). Interkalasi Xilenol Orange Pada Zeolit Alam Lampung sebagai Elektroda Zeolit Termodifikasi. *Jurnal Kimia Dan Pendidikan*, 1(2), 162–175.
- Fogler, H. S. (2018). *Essentials of Chemical Reaction Engineering Second Edition* (Second). Prentice Hall.
- Fuadi, A. M., & Pranoto, H. (2016). *Pemanfaatan Limbah Tandan Kosong Kelapa Sawit Sebagai Bahan Baku Pembuatan Glukosa*. 3(1), 1–5.
- Gan, D., Huang, Q., Dou, J., Huang, H., Chen, J., Liu, M., Wen, Y., Yang, Z., Zhang, X., & Wei, Y. (2019). Bioinspired functionalization of MXenes (Ti₃C₂TX)

- with amino acids for efficient removal of heavy metal ions. *Applied Surface Science*, 504(October), 144603. <https://doi.org/10.1016/j.apsusc.2019.144603>
- Hadayani, L. W., Riwayati, I., Ratnani, R. D., Tengah, J. M., & Semarang, S. (2015). Adsorpsi Pewarna Metilen Biru Menggunakan Senyawa Xanthat Pulpa Kopi. *Momentum*, 11(1), 19–23.
- Hanum, F., Gultom, R. J., & Simanjuntak, M. (2017). Adsorpsi Zat Warna Metilen Biru Dengan Karbon Aktif Dari Kulit Durian Menggunakan Koh Dan Naoh Sebagai Aktivator Methylene Blue Adsorption By Durian Shell Activated Carbon Using Koh And Naoh As An Activator. In *Jurnal Teknik Kimia USU* (Vol. 6, Issue 1).
- Hao, C., Li, G., Wang, G., Chen, W., & Wang, S. (2022). Preparation of acrylic acid modified alkalized MXene adsorbent and study on its dye adsorption performance. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 632(August 2021). <https://doi.org/10.1016/j.colsurfa.2021.127730>
- Hardiyati, R., Sylvia, N., & Muhammad. (2022). *Adsorpsi Metilen Biru Menggunakan Karbon Aktif dari Ampas Tebu*. 879–888.
- Harinaldi. (2005). *Prinsip - Prinsip Statistik Untuk Teknik dan Sains*. Erlangga.
- Herlina, A. (2022). *Uji Kemampuan Adsorben Nanokomposit MXene/ Eceng Gondok Dalam Penyisihan Logam Berat Cu Dari Air Limbah Electroplating Dengan Variasi Ph Dan Rasio Nanokomposit* (Skripsi, Universitas Andalas). Repositori Universitas Andalas.
- Huda, T., & Yulitaningtyas, T. K. (2018). Kajian Adsorpsi Methylene Blue Menggunakan Selulosa dari Alang-Alang. *IJCA (Indonesian Journal of Chemical Analysis)*, 1(01), 9–19. <https://doi.org/10.20885/ijca.vol1.iss1.art2>
- Ibnu Hajar, E. W., Reny Suryani Sitorus, Novi Mullaningtias, & Fransiska Jawa Welan. (2016). *Efektivitas Adsorpsi Logam Pb 2+ Dan Cd 2+ Menggunakan Media Adsorben Cangkang Telur Ayam* (Vol. 5, Issue 1).
- Indah, D. R. (2022). Adsorpsi Metilen Biru Menggunakan Karbon Baggase Tanpa Aktivasi. *Jurnal Ilmiah IKIP Mataram*, 9(1), 50–58.
- Indriyani, S. M. (2016). *Aplikasi Nanofiber Selulosa Tandan Kosong Kelapa Sawit (Tkks) Sebagai Reinforcement Agent Pada Komposit Thermoplastic Starch-Polivinil Alkohol (Tps-Pva)*.
- Irawan, C., Purwanti, A., & Norhasanah, N. (2019). Adsorpsi Logam Timbal Secara Batch dan Kontinu Menggunakan Karbon Aktif dari Cangkang Kelapa Sawit. *JTERA (Jurnal Teknologi Rekayasa)*, 4(2), 267. <https://doi.org/10.31544/jtera.v4.i2.2019.267-276>
- Julinawati, Marlina, Nasution, & Sheilatina. (2015). Applying Sem-edx Techniques to Identifying the Types of Mineral of Jades (Giok) Takengon, Aceh. *Jurnal Natural Unsyiah*, 15(2), 44–48.
- Jun, B. M., Her, N., Park, C. M., & Yoon, Y. (2019). Effective removal of Pb(ii) from synthetic wastewater using Ti3C2T: X MXene. *Environmental Science:*

Water Research and Technology, 6(1), 173–180.
<https://doi.org/10.1039/c9ew00625g>

- Jun, B. M., Kim, S., Rho, H., Park, C. M., & Yoon, Y. (2020). Ultrasound-assisted Ti₃C₂T_x MXene adsorption of dyes: Removal performance and mechanism analyses via dynamic light scattering. *Chemosphere*, 254. <https://doi.org/10.1016/j.chemosphere.2020.126827>
- Jun, B. moon, Heo, J., Taheri-qazvini, N., Min, C., & Yoon, Y. (2019). *Adsorption of selected dyes on Ti₃C₂T_x MXene and Al-based metal-organic framework*. 1–28.
- Kadhom, M., Kalash, K., & Al-Furaiji, M. (2022). Performance of 2D MXene as an adsorbent for malachite green removal. *Chemosphere*, 290(December 2021). <https://doi.org/10.1016/j.chemosphere.2021.133256>
- Kementerian Lingkungan Hidup Republik Indonesia. (2014). Peraturan Menteri Lingkungan Hidup Republik Indonesia. *Angewandte Chemie International Edition*, 6(11), 951–952., 13(April), 15–38.
- Khan, I., Saeed, K., Zekker, I., Zhang, B., Hendi, A. H., Ahmad, A., Ahmad, S., Zada, N., Ahmad, H., Shah, L. A., Shah, T., & Khan, I. (2022). Review on Methylene Blue: Its Properties, Uses, Toxicity and Photodegradation. *Water (Switzerland)*, 14(2). <https://doi.org/10.3390/w14020242>
- Kirk, R. E., Othmer, D. F., Grayson, M., & Eckroth, D. (2004). *Kirk-Othmer Encyclopedia of Chemical Technology* (4th ed., Vol. 5).
- Kwon, S., Fan, M., DaCosta, H. F. M., Russell, A. G., Berchtold, K. A., & Dubey, M. K. (2011). CO₂ Sorption. In *Coal Gasification and Its Applications*. Elsevier Inc. <https://doi.org/10.1016/b978-0-8155-2049-8.10010-5>
- Langmuir, I. (1918). The Adsorption of Gases on Plane Surfaces of Mica. *Journal of the American Chemical Society*, 40(9), 1361–1403.
- Lestari, Y. D., Wardhani, S., & Khunur, M. M. (2015). Degradasi Methylene Blue Menggunakan Fotokatalis TiO₂- N/Zeolit Dengan Sinar Matahari. *American Journal of Therapeutics*, 10(4), 289–291.
- Lei, Y., Cui, Y., Huang, Q., Dou, J., Gan, D., Deng, F., Liu, M., Li, X., Zhang, X., & Wei, Y. (2019). Facile preparation of sulfonic groups functionalized Mxenes for efficient removal of methylene blue. *Ceramics International*, 45(14), 17653–17661. <https://doi.org/10.1016/j.ceramint.2019.05.331>
- Li, Y., Pan, C., Kamdem, P., & Jin, X. J. (2020). Binder-free two-dimensional MXene/acid activated carbon for high-performance supercapacitors and methylene blue adsorption. *Energy & Fuels*, 34(8), 10120-10130.
- Lin, Q., Zeng, G., Yan, G., Luo, J., Cheng, X., Zhao, Z., & Li, H. (2022). Self-cleaning photocatalytic MXene composite membrane for synergistically enhanced water treatment: Oil/water separation and dyes removal. *Chemical Engineering Journal*, 427(July 2021), 131668. <https://doi.org/10.1016/j.cej.2021.131668>

- Linshan, Z., Huang, D., Zhao, P., Yue, G., Yang, L., & Dan, W. (2022). Highly efficient methylene blue removal by TMAOH delaminated Ti₃C₂T_x MXene suspension and the mechanistic aspect. *Separation and Purification Technology*, 288(January), 120718. <https://doi.org/10.1016/j.seppur.2022.120718>
- Liu, D., Li, T., Sun, W., Zhou, W., & Zhang, G. (2022). Magnetic Ti₃C₂MXene Nanomaterials for Doxorubicin Adsorption from Aqueous Solutions: Kinetic, Isotherms, and Thermodynamic Studies. *ACS Omega*, 7(36), 31945–31953. <https://doi.org/10.1021/acsomega.2c02772>
- Luo, S., Wang, R., Yin, J., Jiao, T., Chen, K., Zou, G., Zhang, L., Zhou, J., Zhang, L., & Peng, Q. (2019). Preparation and dye degradation performances of self-assembled MXene-Co₃O₄ nanocomposites synthesized via solvothermal approach. *ACS Omega*, 4(2), 3946–3953. <https://doi.org/10.1021/acsomega.9b00231>
- Lyubchik, S., Lyubchik, A., Lygina, O., Lyubchik, S., & Fonseca, I. (2011). Comparison of the Thermodynamic Parameters Estimation for the Adsorption Process of the Metals from Liquid Phase on Activated Carbons. In *Thermodynamics - Interaction Studies - Solids, Liquids and Gases*. InTech. <https://doi.org/10.5772/19514>
- Mahreni, M. (2016). *Batik Warna Alami*. Universitas Pembangunan Nasional Veteran Yogyakarta.
- Maryudi, M., Aktawan, A., & Amelia, S. (2021). Pengolahan Limbah Pewarna Metilen Biru Menggunakan Arang Aktif dan Zeolit Aktif dengan Katalis Fe dan Oksidator Hidrogen Peroksida. *Jurnal Riset Kimia*, 12(2). <https://doi.org/10.25077/jrk.v12i2.414>
- Mashtalir, O., Cook, K. M., Mochalin, V. N., Crowe, M., Barsoum, M. W., & Gogotsi, Y. (2014). Dye adsorption and decomposition on two-dimensional titanium carbide in aqueous media. *Journal of Materials Chemistry A*, 2(35), 14334–14338. <https://doi.org/10.1039/c4ta02638a>
- Masnesia, A. (2017). *Pengolahan Limbah Cair Batik Menggunakan Metode Presipitasi dan Fitoremediasi*.
- Meng, L., Pingxiu, Z., Qianfang, W., Yu, N., Zhang, X., & Su, S. (2023). *Electrospinning Novel Sodium Alginate / MXene Nanofiber Membranes for Effective Adsorption of Methylene Blue*.
- Muñoz, A. R., Pérez, S., Saldaña, J. M., Flórez, E., & Acelas, N. (2021). Eco-friendly materials obtained through a simple thermal transformation of water hyacinth (*Eichhornia Crassipes*) for the removal and immobilization of Cd²⁺ and Cu²⁺ from aqueous solutions. *Environmental Nanotechnology, Monitoring and Management*, 16(September). <https://doi.org/10.1016/j.enmm.2021.100574>
- Nafisah, A. R., Rahmawati, D., Tarmidzi, F. M., Studi, P., Pangan, T., Sains, J., Kemaritiman, D., & Kalimantan, T. (2022). Synthesis of Cellulose *Nanofiber* from Palm Oil Empty Fruit Bunches Using Acid Hydrolysis Method. In

Indonesian Journal of Chemical Science (Vol. 11, Issue 3).
<http://journal.unnes.ac.id/sju/index.php/ijcs>

- Nandiyanto, A. B. D., Oktiani, R., & Ragadhita, R. (2019). How to read and interpret ftir spectroscopy of organic material. *Indonesian Journal of Science and Technology*, 4(1), 97–118. <https://doi.org/10.17509/ijost.v4i1.15806>
- Nandiyanto, A. B. D., Ragadhita, R., & Fiandini, M. (2023). Interpretation of Fourier Transform Infrared Spectra (FTIR): A Practical Approach in the Polymer/Plastic Thermal Decomposition. *Indonesian Journal of Science and Technology*, 8(1), 113–126. <https://doi.org/10.17509/ijost.v8i1.53297>
- Nasrum, A. (2018). *Uji Normalitas Data untuk Penelitian*. Jayapangus Press.
- Nismaladewi. (2021). *Potensi Penggunaan FTIR (Fourier Transform Infrared) Dalam Pendugaan Sifat Fisik Dan Kimia Cuko Pempek Berbasis Belimbing Wuluh (Averrhoa Bilimbi) The Potential Of Use Of Ftir (Fourier Transform Infrared) In Expecting The Physical And Chemical Pro*. Universitas Sriwijaya.
- Oladoye, P. O., Ajiboye, T. O., Omotola, E. O., & Oyewola, O. J. (2022). Methylene blue dye: Toxicity and potential technologies for elimination from (waste)water. *Results in Engineering*, 16(September), 100678. <https://doi.org/10.1016/j.rineng.2022.100678>
- Or, K. H., Putra, A., & Selamat, M. Z. (2017). Oil palm empty fruit bunch fibres as sustainable acoustic absorber. *Applied Acoustics*, 119, 9–16. <https://doi.org/10.1016/j.apacoust.2016.12.002>
- Patel, H. (2019). Fixed-bed column adsorption study: a comprehensive review. *Applied Water Science*, 9(3). <https://doi.org/10.1007/s13201-019-0927-7>
- Peng, Q., Guo, J., Zhang, Q., Xiang, J., Liu, B., Zhou, A., Liu, R., & Tian, Y. (2014). Unique lead adsorption behavior of activated hydroxyl group in two-dimensional titanium carbide. *Journal of the American Chemical Society*, 136(11), 4113–4116. <https://doi.org/10.1021/ja500506k>
- Pratiwi, L. (2023). *Pengaruh Variasi pH dan Raio Adsorben Nanokomposit MXene/Eceng Gondok terhadap Penyisihan Metilen Biru dari Larutan Artifisial* (Skripsi, Universitas Andalas). Repositori Universitas Andalas.
- Presiden, R. I. (2021). *Peraturan Pemerintah Republik Indonesia No. 22: Penyelenggaraan Perlindungan dan Pengelolaan Lingkungan Hidup*. 085459.
- Prihatini, N. S., Abdi, C., Pratama, Y. A., & Noor, I. (2020). Efisiensi Sistem Lahan Basah Buatan Aliran Permukaan Dengan Variasi Debit Dalam Menyisihkan Mangan Pada Air Asam Tambang. *Jukung (Jurnal Teknik Lingkungan)*, 6(1), 77–85. <https://doi.org/10.20527/jukung.v6i1.8248>
- Rahmasita, M. E., Farid, M., & Ardhyanta, H. (2017). Analisa Morfologi Serat Tandan Kosong Kelapa Sawit Sebagai Bahan Penguat Komposit Absorpsi Suara. *Jurnal Teknik ITS*, 6(2).
- Razi, M. A. M., Hishammudin, M. N. A. M., & Hamdan, R. (2017). Factor Affecting Textile Dye Removal Using Adsorbent from Activated Carbon: A

- Review. *MATEC Web of Conferences*, 103, 1–17.
<https://doi.org/10.1051/mateconf/201710306015>
- Reynolds, T. D., & Richards, P. A. (1996). Unit operations and processes in environmental engineering 2nd ed. In *PWS series in engineering*. (p. 25,350,749).
- Ristianingsih, Y., Istiani, A., & Irfandy, F. (2020). Kesetimbangan Adsorpsi Zat Warna Metilen Blue dengan Adsorben Karbon Aktif Tongkol Jagung Terimpregnasi Fe₂O₃. *Teknologi Agro-Industri*, 7(1), 47–55.
- Riwayati, I., Fikriyyah dan Suwardiyono Jurusan Teknik Kimia, matul, Teknik, F., & Wahid Hasyim Semarang Jl Menoreh Tengah, U. X. (2019). *Adsorpsi Zat Warna Methylene Blue menggunakan Abu... (Riwayati, dkk) 6 Adsorpsi Zat Warna Methylene Blue Menggunakan Abu Alang-Alang (Imperata cylindrica) Teraktivasi Asam Sulfat*.
- Riwayati, I., Fikriyyah, N., & Suwardiyono. (2019). *Adsorpsi Zat Warna Methylene Blue Menggunakan Abu Alang-Alang (Imperata cylindrica) Teraktivasi Asam Sulfat*. 4(Oktober), 6–11.
- Sagita, F., Radiman, C. L., Ledyastuti, M., Khalil, M., & Kadja, G. T. M. (2022). Salt-modified MXene membrane for ultrafast and efficient cationic and anionic dyes removal. *Journal of Water Process Engineering*, 49(10), 103133.
<https://doi.org/10.1016/j.jwpe.2022.103133>
- Salleh, N. F. M., Ghafar, N. A., Shukri, N. M., Md Hanafiah, S. F., & Hapani, M. (2022). Oil Palm Empty Fruit Bunch (OPEFB) Pellets as a Biosorbent for Ni (II) and Cr (VI) removal in an aqueous solution. *IOP Conference Series: Earth and Environmental Science*, 1102(1). <https://doi.org/10.1088/1755-1315/1102/1/012010>
- Santos, K. J. L., Santos, G. E. de S., de Sá, Í. M. G. L., Ide, A. H., Duarte, J. L. da S., de Carvalho, S. H. V., Soletti, J. I., & Meili, L. (2019). Wodyetia bifurcata biochar for methylene blue removal from aqueous matrix. *Bioresource Technology*, 293(June), 122093.
<https://doi.org/10.1016/j.biortech.2019.122093>
- Septiano, A. F., Susilo, S., & Setyaningsih, N. E. (2021). Analisis Citra Hasil Scanning Electron Microscopy Energy Dispersive X-Ray (SEM EDX) Komposit Resin Timbal dengan Metode Contrast to Noise Ratio (CNR). *Indonesian Journal of Mathematics and Natural Sciences*, 44(2), 81–85.
<https://doi.org/10.15294/ijmns.v44i2.33143>
- Shahzad, A., Rasool, K., Miran, W., Nawaz, M., Jang, J., Mahmoud, K. A., & Lee, D. S. (2017). Two-Dimensional Ti₃C₂T_x MXene Nanosheets for Efficient Copper Removal from Water. *ACS Sustainable Chemistry and Engineering*, 5(12), 11481–11488. <https://doi.org/10.1021/acssuschemeng.7b02695>
- Shuck, C. E., Sarycheva, A., Anayee, M., Levitt, A., Zhu, Y., Uzun, S., Balitskiy, V., Zahorodna, V., Gogotsi, O., & Gogotsi, Y. (2020). Scalable Synthesis of Ti₃C₂T_x MXene. *Advanced Engineering Materials*, 22(3).
<https://doi.org/10.1002/adem.201901241>

- Silbey, R. J., Alberty, R. A., & Bawendi, M. G. (2005). *Physical Chemistry* (Fourth).
- Sirajuddin, Syahrir, M., & Syahrir, I. (2017). Optimasi Kecepatan Pengadukan Pada Proses Adsorpsi Limbah Cair Laundry Untuk Menurunkan Kadar Surfaktan Menggunakan Batu Bara. *Seminar Nasional Sains Dan Teknologi 2017*, November, 1–8.
- Somsiripan, T., & Sangwichien, C. (2023). Enhancement of adsorption capacity of Methylene blue, Malachite green, and Rhodamine B onto KOH activated carbon derived from oil palm empty fruit bunches. *Arabian Journal of Chemistry*, 16(12). <https://doi.org/10.1016/j.arabjc.2023.105270>
- Suyasa, I. W. B., Suastuti, N. G. A. M. D. A., & Raharja, I. G. M. A. P. (2018). Inokulasi Suspensi Aktif pada Biosistem Vertikal dengan Tumbuhan Rumput Gajah (*Pennisetum purpureum*) dalam Penurunan Kadar Metilen Biru, Cd dan Cr Total. *Jurnal Kimia*, 107. <https://doi.org/10.24843/jchem.2018.v12.i02.p03>
- Suzuki, M. (1990). Adsorption engineering. In *Reactive Polymers* (Vol. 25). [https://doi.org/10.1016/0923-1137\(91\)90043-n](https://doi.org/10.1016/0923-1137(91)90043-n)
- Syukri, Santoni, A., Zein, R., Arief, S., Efdi, M., Salim, E., & Mulya, S. (2015). Jurnal Kimia Universitas Andalas. *Jurnal Kimia Universitas Andalas*, 4(4), 2303–3401.
- Syukur, A., Indah, S., & Komala, P. S. (2023). Studi Kinetika dan Isoterm Adsorpsi Abu Tandan Kosong Kelapa Sawit dalam Penyisihan Warna Air Limbah Pabrik Minyak Kelapa Sawit. *CIVED*, 10(1), 218. <https://doi.org/10.24036/cived.v10i1.122629>
- Tang, Y., Yang, C., & Que, W. (2018). A novel two-dimensional accordion-like titanium carbide (MXene) for adsorption of Cr(VI) from aqueous solution. *Journal of Advanced Dielectrics*, 8(5). <https://doi.org/10.1142/S2010135X18500352>
- Tasanif, R., Isa, I., & Kunusa, W. R. (2020). Potensi Ampas Tebu Sebagai Adsorben Logam Berat Cd, Cu dan Cr. *Jambura Journal of Chemistry*, 2(1), 35–45. <https://doi.org/10.34312/jambchem.v2i1.2608>
- Tchobanoglous, G., Burton, F. L., & Stensel, H. D. (2003). *Wastewater Engineering Treatment and Reuse* (Fourth). Metcalf & Eddy Inc.
- Tran, N. M., Thanh Hoai Ta, Q., Sreedhar, A., & Noh, J. S. (2021). Ti₃C₂T_x MXene playing as a strong methylene blue adsorbent in wastewater. *Applied Surface Science*, 537(September 2020), 148006. <https://doi.org/10.1016/j.apsusc.2020.148006>
- Triana, G. Y. (2015). Pengaruh Aktivasi dan Dosis Adsorben Sekam Padi untuk Mengurangi Konsentrasi Methylene Blue pada Limbah Cair Industri Tekstil. *Skripsi*, 1–114.
- Tunesi, M. M., Soomro, R. A., Han, X., Zhu, Q., Wei, Y., & Xu, B. (2021). Application of MXenes in environmental remediation technologies. *Nano Convergence*, 8(1). <https://doi.org/10.1186/s40580-021-00255-w>

- Utami, Elystia, S., & Aziz, Y. (2017). Adsorpsi Zat Warna Rhodamin B Menggunakan Karbon Aktif Dari Tandan Kosong Kelapa Sawit (Elaeis Guneensis Jacq). *Jom FTeknik*, 4(1), 1–7.
- Wei, Z., Peigen, Z., Wubian, T., Xia, Q., Yamei, Z., & ZhengMing, S. (2018). Alkali treated Ti₃C₂T_x MXenes and their dye adsorption performance. *Materials Chemistry and Physics*, 206, 270–276. <https://doi.org/10.1016/j.matchemphys.2017.12.034>
- Worch, E. (2012). Adsorption Technology in Water Treatment. In *Adsorption Technology in Water Treatment*. <https://doi.org/10.1515/9783110240238>
- Yang, S., Liu, Q., Wan, X., Jiang, J., & Ai, L. (2021). Edge-rich MoS₂ nanosheets anchored on layered Ti₃C₂ MXene for highly efficient and rapid catalytic reduction of 4-nitrophenol and methylene blue. *Journal of Alloys and Compounds*, 891, 161900. <https://doi.org/10.1016/j.jallcom.2021.161900>
- Ying, Y., Liu, Y., Wang, X., Mao, Y., Cao, W., Hu, P., & Peng, X. (2015). Two-dimensional titanium carbide for efficiently reductive removal of highly toxic chromium(VI) from water. *ACS Applied Materials and Interfaces*, 7(3), 1795–1803. <https://doi.org/10.1021/am5074722>
- Yudo, S. (2018). Kondisi Pencemaran Logam Berat Di Perairan Sungai Dki Jakarta. *Jurnal Air Indonesia*, 2(1), 1–15. <https://doi.org/10.29122/jai.v2i1.2275>
- Yuliara, I. M. (2016). Modul Regresi Linier Berganda. *Universitas Udayana*, 2(2), 18.
- Yuni Hendrawati, T., Umar, E., Ilmar Ramadhan, A., Meta Sari, A., Salsabila, M., Suryani, R., & Budhi Rahardja, I. (2023). Sintesis Dan Karakterisasi Nanoselulosa Serbuk Dari Tandan Kosong Kelapa Sawit Menggunakan Ultrasonifikasi. *Jurnal Teknologi*, 15(1), 160–166.
- Zannah, M. (2020). *Isoterm Adsorpsi Metilen Biru oleh Biochar dari Kulit Singkong (Manihot Esculenta Crantz) yang Dimodifikasi Menggunakan Magnetit (Fe₃O₄)*.
- Zhang, P., Xiang, M., Liu, H., Yang, C., & Deng, S. (2019). Novel Two-Dimensional Magnetic Titanium Carbide for Methylene Blue Removal over a Wide pH Range: Insight into Removal Performance and Mechanism. *ACS Applied Materials and Interfaces*, 11(27), 24027–24036. <https://doi.org/10.1021/acsami.9b04222>
- Zhang, T., Weiwei, Z., Huan, X., Qingqing, L., Mingxia, S., Guobing, Y., & Jianfeng, Z. (2021). Polydopamine functionalized cellulose-MXene composite aerogel with superior adsorption of methylene blue. *Cellulose*, 28(7), 4281–4293. <https://doi.org/10.1007/s10570-021-03737-6>
- Zhang, S., Liao, S., Qi, F., Liu, R., Xiao, T., Hu, J., Li, K., Wang, R., & Min, Y. (2019). Direct deposition of two-dimensional MXene nanosheets on commercially available filter for fast and efficient dye removal. *Journal of Hazardous Materials*, 384. <https://doi.org/10.1016/j.jhazmat.2019.121367>

- Zhang, Y., Wang, L., Zhang, N., & Zhou, Z. (2018). Adsorptive environmental applications of MXene nanomaterials: A review. In *RSC Advances* (Vol. 8, Issue 36, pp. 19895–19905). Royal Society of Chemistry. <https://doi.org/10.1039/c8ra03077d>
- Zhao, W., Chi, H., Zhang, S., Zhang, X., & Li, T. (2022). One-Pot Synthesis of Cellulose/MXene/PVA Foam for Efficient Methylene Blue Removal. *Molecules*, 27(13). <https://doi.org/10.3390/molecules27134243>
- Zhihao, Z., Xu, J. Y., & Yang, X. L. (2020). MXene/sodium alginate gel beads for adsorption of methylene blue. *Materials Chemistry and Physics*, 260(December 2020), 124123. <https://doi.org/10.1016/j.matchemphys.2020.124123>

