

DAFTAR PUSTAKA

1. Rahman A, Hartono B. Penyaringan Air Tanah dengan Zeolit Alami untuk Menurunkan Kadar Besi dan Mangan. *Univ Stuttgart*. 2004;8(1):1-6.
2. Sapulete MR. Hubungan Antara Jarak Septic Tank Ke Sumur Gali Dan Kandungan Escherichia Coli Dalam Air Sumur Gali Di Kelurahan Tuminting Kecamatan Tuminting Kota Manado. *J Biomedik*. 2013;2(3):179-186. doi:10.35790/jbm.2.3.2010.1197
3. Peng SH, Wang R, Yang LZ, He L, He X, Liu X. Biosorption of copper, zinc, cadmium and chromium ions from aqueous solution by natural foxtail millet shell. *Ecotoxicol Environ Saf*. 2018;165(March):61-69. doi:10.1016/j.ecoenv.2018.08.084
4. Marganof, Darusman LK, Riani E, Pramudya B. Analisis Beban Pencemaran Kapasitas Asimilasi dan Tingkat Pencemaran dalam upaya pengendalian Pencemaran Perairan Danau Maninjau. *J Perikan dan Kelaut*. 2007;12(1):8-14.
5. Yuliani D, Sitorus S, Wirawan T. Analisis Kemampuan Kiambang (*Salvinia Molesta*) Untuk Menurunkan Konsentrasi Ion Logam Cu (II) Pada Media Tumbuh Air. *J Kim Mulawarman*. 2013;10(2).
6. Pemerintah Republik Indonesia. Peraturan Pemerintah Republik Indonesia Nomor 22 Tahun 2021 Tentang Penyelenggaraan Perlindungan dan Pengelolaan Lingkungan Hidup. *Sekr Negara Republik Indones*. 2021;1(078487A):483. <http://www.jdih.setjen.kemendagri.go.id/>
7. Chaidir Z, Zein R, Hasanah Q, Nurdin H, Aziz H. Absorption of Cr (III) and Cr (VI) metals in aqueous solution using Mangosteen Rind (*Pithecellobium jiringa* (jack) prain). *J Chem Pharm Res*. 2015;7(8):948-956. <http://jocpr.com/vol7-iss8-2015/JCPR-2015-7-8-948-956.pdf>
8. Afkhami A. Adsorption and electrosorption of nitrate and nitrite on high-area carbon cloth: An approach to purification of water and waste-water samples. *Carbon N Y*. 2003;41(6):1320-1322. doi:10.1016/S0008-6223(03)00068-X
9. Jendia AH, Hamzah S, Abuhabib AA, El-Ashgar NM. Removal of nitrate from groundwater by eggshell biowaste. *Water Sci Technol Water Supply*. 2020;20(7):2514-2529. doi:10.2166/ws.2020.151
10. Zein R, Wardana N, Refilda R, Aziz H. Kulit Salak Sebagai Biosorben Potensial Untuk Pengolahan Timbal(II) Dan Cadmium(II) Dalam Larutan. *Chim Nat Acta*. 2018;6(2):56. doi:10.24198/cna.v6.n2.17857
11. Zein R, Hidayat DA, Elfia M, Nazarudin N, Munaf E. Sugar palm Arenga pinnata Merr (Magnoliophyta) fruit shell as biomaterial to remove Cr(III), Cr(VI), Cd(II) and Zn(II) from aqueous solution. *J Water Supply Res Technol - AQUA*. 2014;63(7):553-559. doi:10.2166/aqua.2014.120
12. Reddy CA, N P, P HB, S JM. Banana Peel as a Biosorbent in Removal of Nitrate from Water. *Iarjset*. 2015;2(10):94-98. doi:10.17148/iarjset.2015.21020
13. Kurniawan MI, Abdullah Z, Rahmadani A, Zein R, Munaf E. Isotherm and kinetic modeling of Pb(II) and Cu(II) uptake by annona muricata L. seeds. *Asian J Chem*. 2014;26(12):3588-3594. doi:10.14233/ajchem.2014.16515

14. Zein R, Suhaili R, Earnestly F, Indrawati, Munaf E. Removal of Pb(II), Cd(II) and Co(II) from aqueous solution using *Garcinia mangostana* L. fruit shell. *J Hazard Mater.* 2010;181(1-3):52-56. doi:10.1016/j.jhazmat.2010.04.076
15. FENG N chuan, GUO X yi, LIANG S. Kinetic and thermodynamic studies on biosorption of Cu(II) by chemically modified orange peel. *Trans Nonferrous Met Soc China (English Ed.* 2009;19(5):1365-1370. doi:10.1016/S1003-6326(08)60451-3
16. Dang VBH, Doan HD, Dang-Vu T, Lohi A. Equilibrium and kinetics of biosorption of cadmium(II) and copper(II) ions by wheat straw. *Bioresour Technol.* 2009;100(1):211-219. doi:10.1016/j.biortech.2008.05.031
17. Abdelfattah I, Ismail AA, Sayed F Al, Almedolab A, Aboelghait KM. Biosorption of heavy metals ions in real industrial wastewater using peanut husk as efficient and cost effective adsorbent. *Environ Nanotechnology, Monit Manag.* 2016;6:176-183. doi:10.1016/j.enmm.2016.10.007
18. Hevira L, Zein R, Ramadhani P. Review: Metoda Adsorpsi pada Penyerapan Ion Logam dan Zat Warna dalam Limbah Cair. *J Sains dan Terap Kim.* 2019;13(1):39. doi:10.20527/jstk.v1i1.5906
19. Sumiyati S, Huboyo HS, Ramadan BS. Potential Use of Banana Plant (*Musa* spp.) as Bio-sorbent Materials for Controlling Gaseous Pollutants. *E3S Web Conf.* 2019;125(2019):1-6. doi:10.1051/e3sconf/201912503015
20. Badan Pusat Statistik. *Produksi Tanaman Buah-Buahan Dan Sayuran Tahunan.*; 2020.
21. Hidayah N, Deviyani E, Wicakso DR. Adsorpsi Logam Besi (Fe) Sungai Barito Menggunakan Adsorben dari Batang Pisang. *Konversi.* 2012;1(1):19-26.
22. Venkateshwaran N, Elayaperumal A. Banana fiber reinforced polymer composites - A review. *J Reinf Plast Compos.* 2010;29(15):2387-2396. doi:10.1177/0731684409360578
23. Yasim NSEM, Ismail ZS, Zaki SM, Azis MFA. Adsorption of Cu, As, Pb and Zn by banana trunk. *Malaysian J Anal Sci.* 2016;20(1):187-196. doi:10.17576/mjas-2016-2001-20
24. Linn AH, Sharma S, Maind SD, Bhalerao SA. Studies on Cr (VI) Biosorption Using Cost Effective Biosorbent: Peanut Hulls (*Arachis hypogaea* linn). 2015;(Vi).
25. Nasir M. *Spektrometri Serapan Atom.* (Khaldun I, ed.). Syiah Kuala University Press; 2019.
26. Suharti T. *Dasar-Dasar Spektrofotometri UV-Vis Dan Spektrometri Massa Untuk Penentuan Struktur Senyawa Organik.* CV. Anugrah Utama Raharja; 2017. https://www.researchgate.net/publication/269107473_What_is_governance/link/548173090cf22525dcb61443/download%0Ahttp://www.econ.upf.edu/~reynal/Civil_wars_12December2010.pdf%0Ahttps://think-asia.org/handle/11540/8282%0Ahttps://www.jstor.org/stable/41857625
27. Fajri S. Analisis Ketersediaan dan Kebutuhan Air Irigasi Untuk Pertanian di Kecamatan Padang Ganting Kabupaten Tanah Datar. *J Buana.* 2018;2(2):584-596.

28. Aygun M, Manfarizah, Basri H. Analisis Kualitas Air Irigasi Untuk Sawah di Daerah Irigasi Pante Lhong Kabupaten Bireuen. *J Ilm Mhs Pertan.* 2019;4(November):572-581.
29. Yusuf IA. Kajian Kriteria Mutu Air Irigasi. *J Irig.* 2014;9(1):1. doi:10.31028/ji.v9.i1.1-15
30. Hastuti. Pisang Batu Musa Balbisana Colla : Kajian Botani dan Pemanfaatannya. *J Pendidikan, Mat dan Sains.* 2021;5(2):249-262.
31. Borborah K, Borthakur SK, Tanti B. Musa balbisiana colla-taxonomy, traditional knowledge and economic potentialities of the plant in Assam, India. *Indian J Tradit Knowl.* 2016;15(1):116-120.
32. Prayogi S, Fitmawati F, Sofiyanti N. Karakteristik Morfologi dan Uji Kandungan Nutrisi Pisang Batu (Musa balbisiana Colla) di Kabupaten Kuantan Singingi. *J Biol Papua.* 2018;8(2):97-110. doi:10.31957/jbp.59
33. Ahmad T, Danish M. Prospects of banana waste utilization in wastewater treatment: A review. *J Environ Manage.* 2018;206:330-348. doi:10.1016/j.jenvman.2017.10.061
34. Devri AN, Santoso H, Muhfahroyin M. Manfaat Batang Pisang Dan Ampas Tahu Sebagai Pakan Konsentrat Ternak Sapi. *Biolova.* 2020;1(1):30-35. doi:10.24127/biolova.v1i1.33
35. Tabaraki R, Heidarizadi E. Ecotoxicology and Environmental Safety Simultaneous biosorption of Arsenic (III) and Arsenic (V): Application of multiple response optimizations. *Ecotoxicol Environ Saf.* 2018;166(September):35-41. doi:10.1016/j.ecoenv.2018.09.063
36. Torres E. Biosorption : A Review of the Latest Advances. *J Process.* 2020;8(12). doi:10.3390/pr8121584
37. Fauzia S, Aziz H, Dahlan D, Namieśnik J, Zein R. Adsorption of Cr(VI) in aqueous solution using sago bark (metroxyton sago) as a new potential biosorbent. *Desalin Water Treat.* 2019;147:191-202. doi:10.5004/dwt.2019.23577
38. Apriliani A. *Pemanfaatan Arang Ampas Tebu Sebagai Adsorben Ion Logam Cd, Cr, Cu Dan Pb Dalam Air Limbah.* Universitas Islam Negeri Syarif Hidayatullah; 2010.
39. Rangabhashiyam S, Anu N, Giri Nandagopal MS, Selvaraju N. Relevance of isotherm models in biosorption of pollutants by agricultural byproducts. *J Environ Chem Eng.* 2014;2(1):398-414. doi:10.1016/j.jece.2014.01.014
40. Vogel. *Buku Teks Analisis Anorganik Kualitatif Makro Dan Semimikro.* (A S, Pujaatmaka, eds.). PT. Kalman Media Pustaka; 1990.
41. Kartohardjono S, Lukman MA, Utami CF, Manik GP. Biosorption of Cr(VI) by Psidium guajava. *Glob J Environ Res.* 2009;3(3):149-154.
42. Nurfitriyani A, Wardhani E, Dirgawati M. Penentuan Efisiensi penyisihan Kromium Heksavalen (Cr⁶⁺) dengan Adsorpsi Menggunakan Tempurung Kelapa Secara Kontinyu. *Reka Lingkungan.* 2013;20(10):1-12. <http://lib.itenas.ac.id/kti/wp-content/uploads/2014/03/Anita-Jurnal-Online-20-11-2012.pdf>

43. Nuraini RAT, Endrawati H, Maulana IR. Analisis Kandungan Logam Berat Kromium (Cr) Pada Air, Sedimen Dan Kerang Hijau (*Perna viridis*) Di Perairan Trimulyo Semarang. *J Kelaut Trop*. 2017;20(1):48. doi:10.14710/jkt.v20i1.1104
44. Patricia P, Astono W, Hendrawan DI. Kandungan Nitrat dan Fosfat di Sungai Ciliwung. *Semin Nas Cendekiawan*. 2018;4:179-185.
45. Singh S, Anil AG, Kumar V, et al. Nitrates in the environment: A critical review of their distribution, sensing techniques, ecological effects and remediation. *Chemosphere*. 2022;287(P1):131996. doi:10.1016/j.chemosphere.2021.131996
46. Irianto EW. Mendukung Sistem Irigasi Jatiluhur Yang Berkelanjutan Ecohydrodynamic Anticipation for Eutrophication Control To Support the Sustainability of Jatiluhur Irrigation System. *J Irig*. 2015;10(2):111-124.
47. Al-Maliky EA, Gzar HA, Al-Azawy MG. Determination of Point of Zero Charge (PZC) of Concrete Particles Adsorbents. *IOP Conf Ser Mater Sci Eng*. 2021;1184(1):012004. doi:10.1088/1757-899x/1184/1/012004
48. Ramadhani P, Chaidir Z, Zilfa, Tomi ZB, Rahmiarti D, Zein R. Shrimp shell (*Metapenaeus monoceros*) waste as a low-cost adsorbent for metanil yellow dye removal in aqueous solution. *Desalin Water Treat*. 2020;197:413-423. doi:10.5004/dwt.2020.25963
49. Salas JC, Cholico-gonza D, Lara NO, Mar A. Adsorption Behavior of Pb (II), Cd (II), and Zn (II) onto Agave Bagasse , Characterization , and Mechanism. 2020;(li). doi:10.1021/acsomega.9b03385
50. Qiu H, Lv L, Pan BC, Zhang QJ, Zhang WM, Zhang QX. Critical review in adsorption kinetic models. *J Zhejiang Univ Sci A*. 2009;10(5):716-724. doi:10.1631/jzus.A0820524
51. Riyanto CA, Raharjianti BM, Aminu NR. Studi Kinetika dan Isoterm Adsorpsi Ion Fe(III) dan Mn(II) pada Karbon Aktif Batang Eceng Gondok. *J Ris Teknol Ind*. 2020;(III):44-55.
52. Anshori AJ. *Materi Ajar Spektrofotometri Serapan Atom.*; 2005.
53. Faqhuddin, Ubaydillah MI. Perbandingan Metode Destruksi Kering Dan Destruksi Basah Instrumen Spektrofotometri Serapan Atom (SSA) Untuk Analisis Logam. *Semin Nas Has Ris dan Pengabdian Ke-III (SNHRP-III 2021)*. 2021;(86):121-127.
54. Novianto F. *Penentuan Kadar Ketoprofen Dengan Metode Spektrofotometri UV-Vis*. Media Sains Indonesia; 2021.
55. Sulistyani M, Huda N. Optimasi Pengukuran Spektrum Vibrasi Sampel Protein Menggunakan Spektrofotometer Fourier Transform Infra Red (FTIR). *Indones J Chem Sci*. 2017;6(2):173-180.
56. Setiabudi ARHAM. *Karakterisasi Material: Prinsip Dan Aplikasinya Dalam Penelitian Kimia*. Vol 1.; 2012.
57. Silverstein RM, Webster FX, Kiemle DJ. *Spectrometric Identification of Organic Compounds*. 7th ed. State University of New York: John Wiley & Sons ,Inc; 2005.
58. Stuart BH. *Infrared Spectroscopy : Fundamental and Applications*. John Wiley & Sons, Inc; 2004.

59. Nandiyanto ABD, Oktiani R, Ragadhita R. How to read and interpret ftir spectroscopy of organic material. *Indones J Sci Technol.* 2019;4(1):97-118. doi:10.17509/ijost.v4i1.15806
60. Gunawan B, Azhari CD. Karakterisasi Spektrofotometri IR dan Scanning Electron Microscopy (SEM) Sensor Gas dari Bahan Polimer Polyethelyn Glycol (PEG). *Sains dan Teknol.* Published online 2010:1-17.
61. Setyaningsih NE, Muttaqin R, Mar I. Optimalisasi Waktu Coating pada Bahan Komposit Alam untuk Karakterisasi Morfologi dengan Scanning Electron Microscopy (SEM) – Energy Dispersive X-Ray Spectroscopy (EDX). *Phys Commun.* 2017;1(2):36-40.
62. EMD. *A Guide for the Preparation and Use of Buffers in Biological Systems.*; 2006.
63. (BSN) BSN. *SNI 01-3554-2006 Cara Uji Air Minum Dalam Kemasan.*; 2006.
64. SNI 6989 57 2008 Metoda Pengambilan Contoh Air Permukaan. Published online 2008.
65. Hevira L, Zilfa, Rahmayeni, Ighalo JO, Zein R. Biosorption of indigo carmine from aqueous solution by Terminalia Catappa shell. *J Environ Chem Eng.* 2020;8(5):104290. doi:10.1016/j.jece.2020.104290
66. Zein R, Chaidir Z, Fauzia S, Ramadhani P. Isotherm and Kinetic Studies on the Adsorption Behavior of Metanil Yellow Dyes onto Modified Shrimp Shell-Polyethylenimine (SS-PEI). 2022;8(May):10-22. doi:10.15408/jkv.v8i1.22566
67. Rao RAK, Ikram S, Uddin MK. Removal of Cr(VI) from aqueous solution on seeds of Artemisia absinthium (novel plant material). *Desalin Water Treat.* 2015;54(12):3358-3371. doi:10.1080/19443994.2014.908147
68. Yang L, Yang M, Xu P, Zhao X, Bai H, Li H. Characteristics of nitrate removal from aqueous solution by modified steel slag. *Water (Switzerland).* 2017;9(10). doi:10.3390/w9100757
69. Wang L, Xu Z, Fu Y, et al. Comparative analysis on adsorption properties and mechanisms of nitrate and phosphate by modified corn stalks. *RSC Adv.* 2018;8(64):36468-36476. doi:10.1039/C8RA06617E
70. Parlayici Ş, Pehlivan E. Comparative study of Cr(VI) removal by bio-waste adsorbents: equilibrium, kinetics, and thermodynamic. *J Anal Sci Technol.* 2019;10(1). doi:10.1186/s40543-019-0175-3
71. Battas A, El Gaidoumi A, Ksakas A, Kherbeche A. Adsorption study for the removal of nitrate from water using local clay. *Sci World J.* 2019;2019. doi:10.1155/2019/9529618
72. Zein R, Purnomo JS, Ramadhani P, Alif MF, Safni S. Lemongrass (Cymbopogon nardus) leaves biowaste as an effective and low-cost adsorbent for methylene blue dyes removal: isotherms, kinetics, and thermodynamics studies. *Sep Sci Technol.* 2022;00(00):1-17. doi:10.1080/01496395.2022.2058549
73. Zein R, Suciandica M, Fauzia S. Modification leaf dregs of Lemongrass with citric acid for Cd(II) Removal. 2022;7(1):63-81.
74. Sen Gupta S, Bhattacharyya KG. Kinetics of adsorption of metal ions on

- inorganic materials: A review. *Adv Colloid Interface Sci.* 2011;162(1-2):39-58. doi:10.1016/j.cis.2010.12.004
75. Mushtaq M, Bhatti HN, Iqbal M, Noreen S. Eriobotrya japonica seed biocomposite efficiency for copper adsorption: Isotherms, kinetics, thermodynamic and desorption studies. *J Environ Manage.* 2016;176:21-33. doi:10.1016/j.jenvman.2016.03.013
76. Thilagavathy P, Santhi T. Acacia nilotica as a low-cost sorbent for the removal of toxic Cr(VI) from single and multicomponent systems using batch and column method: Equilibrium isotherm, kinetics and thermodynamics studies. 2014;3(2):115-122.
77. Nigam M, Rajoriya S, Rani Singh S, Kumar P. Adsorption of Cr (VI) ion from tannery wastewater on tea waste: Kinetics, equilibrium and thermodynamics studies. *J Environ Chem Eng.* 2019;7(3):103188. doi:10.1016/j.jece.2019.103188
78. Banu HAT, Karthikeyan P, Meenakshi S. Comparative studies on revival of nitrate and phosphate ions using quaternized corn husk and jackfruit peel. *Bioresour Technol Reports.* 2019;8(August):100331. doi:10.1016/j.biteb.2019.100331
79. Hevira L, Zilfa, Rahmayeni, Ighalo JO, Aziz H, Zein R. Terminalia catappa shell as low-cost biosorbent for the removal of methylene blue from aqueous solutions. *J Ind Eng Chem.* 2021;97:188-199. doi:10.1016/j.jiec.2021.01.028
80. Gupta GK, Mondal MK. Mechanism of Cr(VI) uptake onto sagwan sawdust derived biochar and statistical optimization via response surface methodology. *Biomass Convers Biorefinery.* 2020;(Vi). doi:10.1007/s13399-020-01082-5
81. Sharma AS, Bhalerao SA. Batch Removal of Chromium (VI) By Biosorption on to Banana Peels (*Musa Paradisiaca* L.). *Int J Peer Rev J Ref J Index J UGC Approv J Impact Factor.* 2018;4(4):5-17. www.wvjmr.com
82. Harimu L, Rudi L, Haetami A, Ayu Pratiwi Santoso G. Studi variasi konsentrasi NaOH dan H₂SO₄ untuk memurnikan silika dari abu sekam padi sebagai adsorben ion logam Pb²⁺ dan Cu²⁺. *J Chem Res.* 2019;6(2):81-87. <http://www.mendeley.com/research/d1c00941-b35b-3540-a877-fda5c24d4afa/>