



DAFTAR PUSTAKA

- Adeleke, R., Cloete, T.E., dan Khasa, D.P., 2012, Culturable Microorganisms Associated with Sishen Iron Ore and Their Potential Roles in Biobeneficiation, *World J. of Microbio. and Biotechnol.*, 28, 1057–1070.
- Adeleke, R., Nwangburuka, C., dan O'boirien, B., 2017, Origins, Roles and Fate of Organic Acids in Soils: A Review, *South African Journal of Botany*, 108, 393–406.
- Aizat, M., Roslan, A. M., Sulaiman, W. N. A., dan Karam, D. S., 2014, The Relationship between Soil pH and Selected Soil Properties in 48-Years Logged-Over Forest, *Int. J. Env. Sci.*, 4(6), 1129-1140.
- Alamgir, M., 2016, *The Effects of Soil Properties to the Extent of Soil Contamination with Metals*. Dalam Hasegawa, H., Rahman, I. M. M., Rahman, M. A., *Environmental Remediation Technologies for Metal Contaminated Soils*, Springer, Tokyo.
- Aoki, M., Fujii, K., Kitayama, K., 2012, Environmental Control of Root Exudation of Low Molecular-Weight Organic Acids in Tropical Rainforests, *Ecosystems*, 15, 1194–1203.
- Atkins, P., dan Paula, D. J., 2006, *Physical Chemistry*, 8th Ed., W. H. Freman, New York.
- Ayangbenro, A. S., dan Babalola, O. O., 2017, A New Strategy for Heavy Metal Polluted Environments: A Review of Microbial Biosorbents, *Int. J. Environ. Res. Public Health*, 14, 1-16.
- Barceloux, D. G., 1999, Zinc, *J. Toxicol. Clin.*, 37(2), 279-292.
- Bhardwaj, V., Kumar, P., dan Singhal, G., 2014, Toxicity of Heavy Metals Pollutants in Textile Mills Effluents, *Int. J. Sci. Eng. Res.*, 5(7), 664-666.
- Bloomfield, C., 1981, *The Translocation of Metals in Soils*. Dalam Greenland, D. J., dan Hayes, M. H. B., *The Chemistry of Soil Processes*, John Wiley & Sons, Chichester.
- Bogusz, A., Oleszczuk, P., dan Dobrowolski, R., 2019, Adsorption and Desorption of Heavy Metals by The Sewage Sludge and Biochar-Amended Soil, *Environ. Geochem. Health*, 41, 1663-1674
- Boostani, H.R., Ghiri, M.N., Amin, H., dan Mirsoleimani, A., 2019, Zinc Desorption Kinetics from Some Calcareous Soils of Orange (*Citrus sinensis* L.) Orchards, Southern Iran, *Soil Sci. and Plant Nutri.*, 65(1), 20-27.



- Boukerche, I., Djerad, S., Larba, R., Benmansour, L., dan Tifouti, L., 2018, Dissolution Behavior Of Metallic Zinc in Organic Acid, *Environ. Res. Tech.*, 1(3), 11-18.
- Chen, L., Wang, D., Long, C., dan Cui, Z. X., 2019, Effect of Biodegradable Chelators on Induced Phytoextraction of Uranium- and Cadmium- Contaminated Soil by *Zebrina pendula Schinzl*, *Sci. Rep.*, 9(19817), 1-9.
- Chen, Y., He, Y., Ye, W., Sui, W., dan Xiao, M., 2013, Effect of Shaking Time, Ionic Strength, Temperature and pH Value on Desorption of Cr(III) Adsorbed onto GMZ Bentonite, *Transactions of Nonferrous Metals Society of China*, 23(11), 3482–3489.
- Chicardi, E., dan Cordoba, J. M., 2017, Kinetics Of High-Temperature Oxidation Of (Ti, Ta)(C,N)-Based Cermets, *Corrosion Sci.*, 102, 168-177.
- Das, S., dan Ting, Y. P., 2017, Evaluation of Wet Digestion Methods for Quantification of Metal Content in Electronic Scrap Material, *Resources*, 6(64), 1-16.
- Desta, M. B., 2013, Batch Sorption Experiments: Langmuir and Freundlich Isotherm Studies for the Adsorption of Textile Metal Ions onto Teff Straw (*Eragrostis tef*) Agricultural Waste, *J. Therm.*, 1-6.
- Dhankhar, R., dan Hooda, A., 2011, Fungal Biosorption-An Alternative to Meet the Challenges of Heavy Metal Pollution in Aqueous Solutions, *Environ. Technolol.*, 32(5), 467–491.
- Diatta, J., dan Kociałkowski, W., 1998, Adsorption of Zinc in Some Selected Soils, *Pol. J. Environ. Stud*, 7(4), 195–200.
- Edet, U. A., dan Ifelebuegu, A. O., 2020, Kinetics, Isotherms, and Thermodynamic Modeling of the Adsorption of Phosphates from Model Wastewater Using Recycled Brick Waste, *Processes*, 8(665), 1-15.
- Ebrahimian, E., dan Bybordi, A., 2014, Effect of Organic Acids on Heavy-Metal Uptake and Growth of Canola Grown in Contaminated Soil, *Comm. In Soil Sci. and Plant Analys.*, 45(13), 1715-1725.
- Einaga, Y., 2014, *Electrochemical Application of Diamond Electrodes*. Dalam Sarin, V. K., *Comprehensive Hard Materials*, Elsevier.
- Eriksson, J. E., 1989, The Influence of pH, Soil Type and Time on Adsorption and Uptake by Plants of Cd Added to The Soil, *Water, Air and Soil Pollution*, 48, 317–335.



Gaffney, J. S., Marley, N.A., dan Clark, S. B., 1996, *Humic and Fulvic Acids: Isolation, Structure, and Environmental Role*, American Chemical Society, Washington DC.

Gavriloaiei, T., 2012, The Influence of Electrolyte Solutions on Soil pH Measurements, *Rev. Chim.*, 63(4), 396-400.

Gouda, R., Baishya, H., dan Qing, Z., 2017, Application of Mathematical Models in Drug Release Kinetics of Carbidopa and Levodopa ER Tablets, *J. Develop. Drugs.*, 6(2), 1-8.

He, G., Zhang, Z., Wu, X., Cui, M., Zhang, J., dan Huang, X., 2020, Adsorption of Heavy Metals on Soil Collected from Lixisol of Typical Karst Areas in the Presence of CaCO₃ and Soil Clay and Their Competition Behavior, *Sustainability*, 12(18), 7315.

Heller, A., Barkleir, A., Foerstendorf, H., Tsushima, S., Heim, K., dan Bernhard, G., 2012, Curium(II) Citrate Speciation In Biological Systems: A Europium(III) Assisted Spectroscopic and Quatum Chemical Study, *Dalton T.*, 41(45), 13969-13983.

Hong, A. H., Ling, L. P., dan Selaman, O. S., 2014, Environmental Burden of Heavy Metal Contamination Levels in Soil from Sewage Irrigation Area of Geriyo Catchment, Nigeria, *Civ. Environ. Res.*, 6(10), 118-124.

Hong, S., Gan, P., Chen, A., 2019, Environmental Controls on Soil pH in Planted Forest and Its Response to Nitrogen Deposition, *J. Env. Res.*, 172, 159-165.

Hofer, R., 2015, *Sugar and Starch Based Biorefineries*. Dalam Pandey, A., Hofer, R., Taherzadeh, M., Nampoothiri, K. M., dan Larroche, C., *Industrial Biorefineries & White Biotechnology*, Elsevier, New York.

Jaremko, D., dan Kalembasa, D., 2014, A Comparison of Methods for The Determination of Cation Exchange Capacity of Soils, *Ecol. Chem. Eng. S.*, 21(3), 487-498.

Joseph, N. T., Chinonye, O. E., Philomena, E. K., Christian, A. C., dan Elijah, O. C., 2016, Isotherm and Kinetic Modeling of Adsorption of Dyestuffs Onto Kola Kola Nut (*Cola acuminata*) Shell Activated Carbon, *J. Chem. Tech. Metallurgy*, 51(2), 188-201.

Kalapathy, U., Proctor, A., dan Shults, J., 2000, A Simple Method for Production Of Pure Silica from Rice Hull Ash, *Bioresource Tech.*, 73, 257-262.

Kankia, H. I., dan Abdulhamid, Y., 2014, Determination of Accumulated Heavy Metals in Benthic Invertebrates Found in Ajiwa Dam, Katsina State, Northern Nigeria, *Arch. Appl. Sci. Res.*, 6, 80-87.



- Krezel, A., dan Maret, W., 2016, The Biological Inorganic Chemistry of Zinc Ions, *Archiv. of Biochem. and Biophys.*, 611, 1-17.
- Larba, R., Boukerche, I., Alane, N., Habbache, N., Djerad, S., dan Tifouti, L., 2013, Citric acid as an alternative lixiviant for zinc oxide dissolution, *Hydrometallurgy*, 134-135, 117–123.
- Liyanage, D., dan Walpita, J., 2020, *Organic Pollutants from E-waste and Their Electrokinetic Remediation*. Dalam Prasad, M. N. V., Vithanage, M., dan Borthakur, A., *Handbook of Electronic Waste Management*, Butterworth-Heinemann, New York.
- Llarena, Z. M., 2016, Pharmacokinetic Derivation of Rates and Orders of Reactions in Multi-Compartment Model Using Matlab, *Int. J. Pharm. Sci. Res.*, 7(11), 4456-4460.
- Lone, M. I., He, Z., Stoffella, P. J., dan Yang, X., 2008, Phytoremediation Of Heavy Metal Polluted Soils and Water: Progresses and Perspectives, *J. Zhejiang Univ. Sci. B.*, 9(3), 210-220.
- Lv, N., Wang, X., Peng, S., Zhang, H., dan Luo, L., 2018, Study of the Kinetics and Equilibrium of the Adsorption of Oils onto Hydrophobic Jute Fiber Modified via the Sol-Gel Method, *Int. J. Environ. Res. Public Health*, 15(969), 1-14.
- Ma, Q. Y., Traina, S. J., dan Logan, T. J., 1993, In Situ Lead Immobilization by Apatite, *Environ. Sci. Technol.*, 27, 1803-1810.
- Madhav, S., Ahamed, A., Singh, P., dan Mishra, P. K., 2018, A Review of Textile Industry: Wet Processing, Environmental Impacts, and Effluent Treatment Methods, *Environmental Quality Management*, 27(3), 31–41.
- Mahmoud, M. E., Osman, M. M., dan Amer, M. E., 2000, Selective Pre-concentration and Solid Phase Extraction of Mercury(II) from Natural Water by Silica Gel-loaded Dithizone Phases, *Analytica Chimica Acta*, 415(1-2), 33-40.
- Maina, E. W., Wanyika, H. J., dan Gacanja, A. N., 2015, Instrumental Characterization of Montmorillonite Clay by FT-IR and XRD from J.K.U.A.T Farm, in the Republic Kenya, *Chem. Mat. Res.*, 7(10), 43-49.
- Maslukah, L., Zainuri, M., Wirasatriya, A., da Widiaratih, R., 2020, Kinetic Study on Adsorption and Desorption Phosphate Ion (PO_4^{2-}) in Sediment Semarang and Jepara, *J. Ilmu dan Teknologi Kelautan Tropis*, 12(2), 385-396.



- Mishra, P. K., Mishra, H., Ekielski, A., Talegaonkar, S., dan Vaidya, B., 2017, Zinc Oxide Nanoparticles: A Promising Nanomaterial for Biomedical Applications, *Drug Discov. Today*, 22(12), 1825-1834.
- Moghal, A. A. B., Al-Shamrani, M. A., dan Zahid, W. M., 2015, Heavy Metal Desorption Studies On The Artificially Contaminated Al-Qatif Soil, *Int. J. Geomat.*, 8(2), 1323-1327.
- Moresi, M., dan Parente, E., 2014, *Fermentation (Industrial): Production of Some Organic Acid*. Dalam Robinson, R., *Encyclopedia of Food Microbiology*, Academic Press, New York.
- Mustapha, A. A., Abdu, N., dan Jibrin, J. M., 2017, Adsorption of Cadmium, Copper, Lead, and Zinc on Organically Amended Soil Fractions Using the Freundlich, Langmuir, Dubinin-raduskevich Models, *Int. J. Soil Sci.*, 12(2), 43-53.
- Nacke, H., Goncalves, A. C., Campagnolo, M. A., Coelho, G. F., Schwantes, D., dos Santos, M. G., Briesch, D. L., dan Zimmermann, J., 2016, Adsorption of Cu(II) and Zn(II) from Water by *Jatropha curcas L.* as Biosorbent. *Open Chemistry*, 14(1), 103-117.
- Nagayasu, T., Yoshioka, C., Imamura, K., dan Nakanishi, K., 2004, Effects of Carboxyl Group on the Adsorption Behavior of Low-Molecular-Weight Substances on a Stainless Steel Surface, *J. Colloid. Interface Sci.*, 279(2), 296-306.
- Nandiyanto, A. B. D., Maryanti, R., Fiandini, M., Ragadhita, R., Usdiyana, D., Anggraeni, S., Arwa, W. R., dan Al-Obaidi, A.S. M., 2020, Synthesis of Carbon Microparticles from Red Dragon Fruit (*Hylocereus undatus*) Peel Waste and Their Adsorption Isotherm Characteristics, *Molekul*, 15(3), 199-209.
- Odobasic, A., Sestan, I., Catic, S., Keran, H., dan Sestan, A., 2013, Chemical Speciation of Zn in Water of the Lake Modrac and Assessment of Toxicity of Water, *Europ. J. Sci. Res.*, 113(4), 616-624.
- Pacwa-Płociniczak, M., Plaza, G. A., Piotrowska-Seget, Z., dan Cameotra, S. S., 2011, Environmental Applications of Biosurfactants: Recent Advances, *Int. J. Mol. Sci.*, 12, 633–654.
- Panina, N. S., Belyaev, A. N., dan Simanova, S. A., 2002, Carboxylic Acids and Their Anions, Acid and Ligan Properties, *Russian J. General Chem*, 72(1), 91-94.



UNIVERSITAS
GADJAH MADA

KAJIAN SIFAT FISIKA-KIMIA DAN ADSORPSI Zn(II) PADA TANAH KAWASAN INDUSTRI TEKSTIL DI BANTUL
YOGYAKARTA SERTA PENGARUH ASAM SITRAT DAN ASAM OKSALAT TERHADAP DESORPSI Zn(II)

THAHA ANNISA SYTA N, Suherman, S.Si., M.Sc., Ph.D.; Drs. Roto, M.Eng., Ph.D.

Universitas Gadjah Mada, 2021 | Diunduh dari <http://etd.repository.ugm.ac.id/>

- Piccin, J. S., Dotto, G. L., dan Pinto, L. A. A., 2011, Adsorption Isotherm and Thermocemical Data of FD&C Red n° 40 Biding by Chitosan, *Braz. J. Chem. Eng.*, 28(2), 295-304.
- Piccolo, A., 2004, *The Supramolecular Structur of Humic Substances: A Novel Undedrstanding of Humus Chemistry and Implications in Soil Science*, 75, Academic Press, Italy.
- Pohanish, R. P., 2017, Sittig's Handbook of Toxic and Hazardous Chemicals and Carcinogens, 7th Ed., William Andrew Publishing.
- Prasad, R., Kumar, D., dan Shivay, Y. S., 2016, Interactions of Zinc with Other Nutrients in Soils and Plants - A Review, *Indian J. Fertiliz.*, 12(5), 16-26.
- Reeder, R. J., Schoonen, M. A. A., dan Lanzirotti, A., 2006, Metal Speciation and Its Role in Bioaccessibility and Bioavailability, *Rev. in Mineral. and Geochem.*, 64, 1-55.
- Sarengat, N., Yuniari, A., Setyorini, I., dan Suyatini, 2015, Prosiding Seminar Nasional Kulit, Karet, dan Plastik, *Kajian Potensi Pencemaran Industri pada Lingkungan Perairan di Daerah Istimewa Yogyakarta*, 28 Oktober 2015, Yogyakarta.
- Shahidi, S., dan Wiener, J., 2012, *Antibacterial Agents in Textile Industry*. Dalam Bobbarala, V., *Antimicrobial Agents*, IntechOpen.
- Shin, M., Barrington, S. F., Marshall, W. D., dan Kim, J. W., 2006, Kinetics Of Metal Desorption from Soil with Nonionic Micelle-Solubilized Ligands, *J. Environ. Eng. Sci.*, 5, 163-173.
- Shofiyani, A., dan Gusrizal, 2006, Determination of pH Effect and Capacity of Heavy Metals Adsorption by Water Hyacinth (*Eichhornia crassipes*) Biomass, *Indo. J. Chem.*, 6(1), 56-60.
- Singh, D., McLaren, R. G., dan Cameron, K. C., 2008, Effect of pH on Zinc Sorption-Desorption by Soils, *J. Comm. Soil Sci. and Plant Analys.*, 39(19-20), 2971-2984.
- Singh, S., dan Kaushal, A., 2017, Adsorption Phenomenon and Its Application in Removal of Lead from Waste Water: A Review, *Int. J. Hydrol.*, 1(2), 1-11.
- Sneeden, R. P. A., 1982, Reactions of Carbon Dioxide. Dalam Wilkinson, G., Stone, F. G. Dalam Comprehensive Organometallic Chemistry, Pergamon.
- Smith, R. C., dan Kay, B. D., 2019, Desorption Kinetics of Carbon Dioxide from a Graphene-Covered Pt(111) Surface, *J. Phys. Chem. A*, 123, 3248-3254.



- Song, G., Novotny, E. H., Simpson, A. J., Clapp, C. E., dan Hayes, M. H. B., 2008, Sequential Exhaustive Extraction Of A Mollisol Soil, and Characterizations Of Humic Components, Including Humin, by Solid and Solution State NMR, *Eur. J. Soil Sci.*, 59(3), 505-516,
- Srivastava, N., dan Majumder, C., 2008, Novel Biofiltration Methods for the Treatment of Heavy Metals from Industrial Wastewater, *J. Hazard. Mat.*, 151, 1-8.
- Stevenson, F. J., 1994, *Humus Chemistry, Genesis, Composition, Reactions.*, 2nd ed, John Wiley & Sons, New York.
- Suherman, Rosyidah, A. K., Suratman, A., Aprilita, N. H., Mudasir, dan Morita, K., 2019, Study of Chromium Desorption from Polluted Soil Around Tannery Industry: Effect of Low Molecular Weight Organic Acid (LMWOA), *Rasayan J. Chem.*, 12(3), 1279-1286.
- Szabela, D. A., Anielak, P., dan Wolf, W. M., 2017, Influence of Digestion Procedure and Residual Carbon on Manganese, Copper, and Zinc Determination in Herbal Matrices by Atomic Absorption Spectrometry, *J. Analytic. Method. In Chem.*, 2017, 1-10.
- Taghdis, S., Mehrizi, M. H., dan Jalali, V., 2016, Effect of Oxalic and Citric Acid on Zinc Release Kinetic in Two Calcareous Soils, *Comm. In Soil Sci. Plant. Analys.*, 47(22), 2479-2489.
- Tahervand, S., dan Jalali, M., 2017, Sorption and Desorption of Potentially Toxic Metals (Cd, Cu, Ni and Zn) by Soil Amended with Bentonite, Calcite and Zeolite as a Function of pH, *J. Geochem. Exploration*, 1-36.
- Tang, N., dan Skibsted, L. H., 2017, Zinc Bioavailability from Phytate-Rich Foods and Zinc Supplements. Modeling the Effects of Food Components with Oxygen, Nitrogen, and Sulfur Donor Ligands, *J. Agric. and Food Chem.*, 65(39), 8727–8743.
- Tao, H. C., Lei, T., Shi, G, Sun, X. N., Wei, X. Y., Zhang, L. J., dan Wu, W. M., 2014, Removal of Heavy Metals from Fly Ash Leachate Using Combined Bioelectrochemical Systems and Electrolysis, *J. Hazard. Mat.*, 264, 1–7.
- Trisko, N., Hastiawan, I., dan Eddy, D.R., 2013, Prosiding Seminar Sains dan Teknologi Nuklir, *Penentuan Kadar Silika dari Pasir Limbah Pertambangan dan Pemanfaatan Pasir Limbah sebagai Bahan Pengisi Bata Beton*, 4 Juli 2013, Bandung.
- Vengadaramana, A., dan Jashothan, P. T. J., 2012, Effect of Organic Fertilizers On The Water Holding Capacity of Soil in Different Terrains of Jaffna Peninsula in Sri Lanka, *J. Nat. Prod. Plant Resour.*, 2(4), 500-503.



- Verbic, A., Gorjanc, M., dan Simoncic, B., 2019, Zinc Oxide for Functional Textile Coatings: Recent Advances, *Coatings*, 9(9), 1-26.
- Verma, A., Kore, R., Corbin, D. R., dan Shiflett, M. B., 2019, Metal Recovery Using Oxalate Chemistry-A Technical Review, *Ind. Eng. Chem. Res.*, 1-52.
- Wasay, S. A., Barrington, S., Tokunagal, S., dan Prasher, S., 2007, Kinetics of Heavy Metal Desorption from Three Soils Using Citric Acid, Tartaric Acid, and EDTA, *J. Environ. Eng. Sci.*, 6(6), 611-622.
- Yang, X., Wan, Y., Zheng, Y., He, F., Yu, Z., Huang, J., Wang, H., Ok, Y. S., Jiang, Y., dan Gao, B., 2019, Surface Functional Groups of Carbon-Based Adsorbents and Their Roles In The Removal of Heavy Metals from Aqueous Solutions : A Critical Review, *J. Chem. Eng.*, 366, 608-621.
- Yu, S.J., Gao, S.F., Qu, Y.M., Chen, Y.H., dan Wang, G., 2014, Toxicity and Its Threshold of Cadmium to Tomato Roots in Different Soils, *J. Agro. Environ. Sci.*, 33, 640–646.
- Wuana, R. A., dan Okieimen, F. E., 2011, Heavy Metal in Contaminated Soils: A Review of Sources, Chemistry, Risks and Best Available Strategies for Remediation, *ISRN Ecology*, 2011, 1-20.
- Zahro, N., 2013, *Analisis Mutu Pangan dan Hasil Pertanian*, Universitas Jember, Jawa Timur.
- Zaragoza, V. M. D., Carillo, R., dan Castorena, C. M. G., 2011, Lead Sorption-Desorption from Organic Residues, *Environ. Technol.*, 32(4), 353-361.