



DAFTAR PUSTAKA

- Abdi, J., Mahmoodi, N.M., Vossoughi, M., and Alemzadeh, I., 2018, Synthesis of Magnetic Metal-Organic Framework Nanocomposite (ZIF-8@SiO₂@MnFe₂O₄) as A Novel Adsorbent for Selective Dye Removal from Multicomponent Systems, *Micropor. Mesopor. Mater.*, 273, 177-188.
- Acemioglu, B., 2004, Adsorption of Congo Red from Aqueous Solution onto Calcium-Rich Fly Ash, *J. Colloid Interface Sci.*, 274, 371-379.
- Adamson, A.W., and Gast, A.P., 1997, *Physical Chemistry of Surface*, 6th Edition, John Wiley and Sons, Inc., New York.
- Ahmad, M.A., Ahmad Puad, N.A., and Bello, O.S., 2014, Kinetic, Equilibrium and Thermodynamic Studies of Synthetic Dye Removal using Pomegranate Peel Activated Carbon Prepared by Microwave-Induced KOH Activation, *Water Resour. Ind.*, 6, 18-35.
- Ahmaruzzaman, M., 2010, A Review on the Utilization of Fly Ash, *Prog. Energy Combust. Sci.*, 36, 327-363.
- Aksu, Z., That, A.I., and Tunc, O., 2008, A Comparative Adsorption/Biosorption Study of Acid Blue 161: Effect of Temperature on Equilibrium and Kinetic Paramaters, *Chem. Eng. J.*, 142, 23-39.
- Alcantara, R.R., Muniz, R.O.R., and Fungaro, D.A., 2016, Full Factorial Experimental Design Analysis of Rhodamine B Removal from Water Using Organozeolite from Coal Bottom Ash, *Int. J. Energy Environ.*, 7, 357-374.
- Al-Zboon, K., Al-Harahsheh, M.S., and Hani, F.B., 2011, Fly Ash-Based Geopolymer for Pb Removal from Aqueous Solution, *J. Hazard. Mater.*, 188, 414-421.
- Arini, T.D., 2015, Adsorpsi Simultan Ion Logam Zn (II) dan Ca (II) pada Abu Dasar Batubara Terimobilisasi Dithizon, *Skripsi*, Departemen Kimia FMIPA UGM, Yogyakarta.
- Asfaram, A., Ghaedi, M., Ghezelbash, G.R., and Pepe, F., 2017, Application of Experimental Design and Derivative Spectrophotometry Methods in Optimization and Analysis of Biosorption of Binary Mixtures of Basic Dyes from Aqueous Solutions, *Ecotox. Environ. Safe.*, 139, 219-227.
- Baral, S.S., Das, N., Ramulu, T.S., Sahoo, S.K., Das, S.N., and Chaudhury, G.R., 2009, Removal of Cr(VI) by Thermally Activated Weed *Salvinia cucullata* in A Fix-Bed Column, *J. Hazard. Mater.*, 161, 1427-1435.



- Blissett, R.S., and Rowson, N.A., 2012, A Review of The Multi-Component Utilisation of Coal Fly Ash, *Fuel*, 97, 1-23.
- Bojinova, D. dan Teodosieva, R., 2016, Leaching of Valuable Elements from Thermal Power Plant Bottom Ash Using a Thermo-hydro Metallurgical Process, *Waste Manage. Res.*, 34, 5, 511-517.
- Bonetto, L.R., Ferrarini, F., DeMarco, C., Crespo, J.S., Guegan, R., and Giovanelia, M., 2015, Removal of Methyl Violet 2B Dye from Aqueous Solution Using A Magnetic Composite as an Adsorbent, *J. Water Proc. Eng.*, 6, 11-20.
- Bulut, E., Ozacar, M., and Sengil, I.A., 2008, Adsorption of Malachite Green onto Bentonite: Equilibrium and Kinetic Studies and Process Design, *Micropor. Mesopor. Mater.*, 115, 234-246.
- Chatterjee, A., Hu, X., and Lam, F.L., 2019, Modified Coal Fly Ash Waste as an Efficient Heterogeneous Catalyst for Dehydration of Xylose to Furfural in Biphasic Medium, *Fuel*, 239, 716-736.
- Chen, C.H., Chang, C.F., and Liu, S.M., 2010, Partial Degradation Mechanisms of Malachite Green and Methyl Violet B by Shewanella Decolorationis NTOU1 Under Anaerobic Conditions, *J. Hazard. Mater.*, 177, 281-289.
- Chen, S., Zhang, J., Zhang, C., Yue, Q., Li, Y. dan Li, C., 2010, Equilibrium and Kinetic Studies of Methyl Orange and Methyl Violet Adsorption on Activated Carbon Derived from *Phragmites australis*, *Desalination*, 252, 149-156.
- Chong, X., 2018, Air Pollution from Industrial Waste Gas Emissions is Associated with Cancer Incidences in Shanghai, China, *Environ. Sci. Pollut. Control Ser.*, 25, 13067-13078.
- Chowdhury, S., Mishra, R., Saha, P., and Kushwaha, P., 2011, Adsorption Thermodynamics, Kinetics and Isosteric Heat of Adsorption of Malachite Green onto Chemically Modified Rice Husk, *Desalination*, 265, 159-168.
- Culp, S.J., Mellick, P.W., Trotter, R.W., Greenlees, K.J., Kodel, R.L., and Beland, F.A., 2006, Carcinogenicity of Malachite Green Chloride and Leucomalachite Green in B6C3F1 mice and F344 rats, *Food Chem. Toxicol.*, 44, 1204-1212.
- Dermata, D., and Meng, X., 2003, Utilization of Fly Ash for Stabilization-Solidification of Heavy Metal Contaminated Soils, *Eng. Geol.*, 70, 377-394.



- Duan, J., Liu, R., Chen, T., Zhang, B., and Liu, J., 2012, Halloysite Nanotube-Fe 3 O 4 Composite for Removal of Methyl Violet from Aqueous Solutions, *DES*, 293, 46-52.
- Duynstee, E.F.J., and Grunwald, E., 1959, Organic Reactions Occurring in or on Micelles. I. Reaction Rate Studies of the Alkaline Fading of Triphenylmethane Dyes and Sulfonphthalein Indicators in the Presence of Detergent Salts, *J. Am. Chem. Soc.*, 81(17), 4540-4542.
- Guo, L., Sun, C., Li, G., and Liu, C., 2009, Thermodynamics and Kinetics of Zn (II) Adsorption on Crosslinked Starch Phospates, *J. Hazard. Mater.*, 161, 510-515.
- Guo, R., and Wilson, L.D., 2012, Synthetically Engineered Chitosan-Based Materials and Their Sorption Properties with Methylene Blue in Aqueous Solution, *J. Colloid Interface Sci.*, 388, 225-234.
- Gupta, V.K., and Suhas, 2009, Application of Low-Cost Adsorbents for Dye Removal – A Review, *J. Environ. Manage.*, 90, 2313-2342.
- Hamdaoui, O., and Chiha, M., 2007, Removal of Methylene Blue from Aqueous Solution by Wheat Bran, *Acta Chim. Slov.*, 54, 407-418.
- Hameed, B.H., Din, A.T.M., dan Ahmad, A.L., 2007, Adsorption of Methylene Blue Onto Bamboo-based Activated Carbon: Kinetics and Equilibrium Studies, *J. Hazard Mater.*, 141, 3, 819-825.
- Hameed, B.H., and El-Khaiary, M.I., 2008, Batch Removal of Malachite Green from Aqueous Solutions by Adsorption on Oil Palm Trunk Fibre: Equilibrium Isotherms and Kinetic Studies, *J. Hazard Mater.*, 154, 237-244.
- Heidrich, C., Feuerborn, H.C., and Weir, A., 2013, Coal Combustion Products: A Global Perspective, *World of Coal Ash (WOCA) Conference*, April 22-25, 2013, Lexington, Kentucky, USA.
- Hessley, R.K., Reasoner, J.W., and Riley, J.T., 1986, *Coal Science*, John Wiley and Sons, New York, 81-87.
- Hosseini-Asl, S.M., Ahmadi, M., Ghiasvand, M., Tardast, A., and Katal, R., 2013, Artificial Neural Network (ANN) Approach for modeling of Cr(VI) Adsorption from Aqueous Solution by Zeolite Prepared from Raw Fly Ash (ZFA), *J. Ind. Eng. Chem.*, 19, 1044-1055.
- Hosseini-Asl, S.M., Javadian, H., Khavarpour, M., Belviso, C., Taghavi, M., Maghsudi, M., 2019, Porous Adsorbent Derived from Coal Fly Ash as Cost-Effective and Environmentally-Friendly Source of Aluminosilicate



- for Sequestration of Aqueous and Gaseous Pollutants: A Review, *J. Clean. Prod.*, 208, 1131-1147.
- Javadian, H., Ghorbani, F., Tayebi, H., and Hosseini-Asl, S.M., 2015, Study of the Adsorption of Cd(II) from Aqueous Solution Using Zeolite-Based Geopolymer, Synthesized from Coal Fly Ash: Kinetic, Isotherm and Thermodynamic Studies, *Arab. J. Chem.*, 8, 837-849.
- Jumaeri, 2015, Sintesis Zeolit A dari Abu Layang Batubara dan Modifikasinya Menggunakan HDTMAB Sebagai Adsorben Multifungsi, *Disertasi*, Departemen Kimia FMIPA UGM, Yogyakarta.
- Kristianto, D., 2016, Pembuatan Manik Kompleks Polielektrolit Kitosan-Pektin sebagai Adsorben Zat Warna Tekstil Malachite Green dan Meti Violet 2B, *Tesis*, Departemen Kimia FMIPA UGM, Yogyakarta.
- Kumar, K.V., Ramamurthi, V., and Sivanesan, S., 2005, Modeling the Mechanism Involved During the Sorption of Methylene Blue Onto Fly Ash, *J. Colloid. Interface Sci.*, 284, 14-21.
- Lecomte, I., Henrist, C., Lilegeois, M., Maseri, F., Rulmont, A., and Cloots, R., 2006, Micro-Structural Comparison Between Geopolymer, Alkali-Activated Slag Cement and Portland Cement, *J. Eur. Ceram. Soc.*, 26, 3789-3797.
- Li, S., He, M., Li, Z., Li, D., and Pan, Z., 2017 Removal of Humic Acid from Aqueous Solution by Magnetic Multi-Walled Carbon Nanotubes Decorated with Calcium, *J. Mol. Liq.*, 230, 520-528.
- Ling, Y.Y., and Suah, F.B.M., 2017, Extraction of Malachite Green from Wastewater by using Polymer Inclusion Membrane, *J. Environ. Chem. Eng.*, 5, 785-794.
- Liu, M., Hou, L., Xi, B., Zhao, Y., and Xia, X., 2013, Synthesis, Characterization, and Mercury Adsorption Properties of Hybrid Mesoporous Aluminosilicate Sieve Prepared with Fly Ash, *Appl. Surf. Sci.*, 273, 706-716.
- Liu, X., and Zhang, L., 2015, Removal of Phosphate Anions using the Modified Chitosan Beads: Adsorption Kinetic, Isotherm and Mechanism Studies, *Powder Technol.*, 277, 112-119.
- Lynam, M.M., Kiduff, J.E., and Weber, Jr.W.J., 1996, Adsorption of p-nitrophenol from Dilute Aqueous Solution, *J. Chem. Educ.*, 72, 1, 80-84.
- Maharmani, F.W., dan Sumarni, W., 2003, Kajian Termodinamika Penyerapan Zat Warna Indikator Metil Oranye (MO) dalam Larutan Air oleh Adsorben Kitosan, *JSKA*, 2, 6, 1-19.



- Mall, I.D., Srivastava, V.C., and Agarwal, N.K., 2006, Removal of Oranye-G and Methyl Violet Dyes by Adsorption onto Bagasse Fly Ash-Kinetics Study and Equilibrium Isotherm Analysis, *Dyes Pigments*, 69, 210-223.
- Mansour, H.B., Houas, I., Montassar, F., Ghedira, K., Barrilier, D., Mosrati, R., and Chekir-Ghedira, L., 2012, Alteration of In Vitro and Acute In Vivo Toxicity of Textile Dyeing Wastewater After Chemical and Biological Remediation, *Environ. Sci. Pollut. Res.*, 19, 2634-2643.
- Mason, B., dan Moore, C.B., 1982, *Principle of Geochemistry*, John Wiley and Sons Inc., New York.
- Patra, G., Barnwal, R., Behera, S.K., and Meikap, B.C., 2018, Removal of Dyes from Aqueous Solution by Sorption with Fly Ash Using A Hydrocyclone, *J. Environ. Chem. Eng.*, 6(4), 5204-5211.
- Paul, M., Saferinoglu, M., Aycik, G.A., Sandstrom, A., Smith, M.L., and Paul, J., 2006, Acid Leaching of Ash and Coal: Time Dependence and Trace Element Occurrences, *Int. J. Miner. Process.*, 79, 27-41.
- Pizarro, J., Castillo, X., Jara, S., Ortiz, C., Navarro, P., Cid, H., Rioseco, H., Barros, D., and Belzile, N., 2015, Adsorption of Cu²⁺ on Coal Fly Ash Modified with Functionalized Mesoporous Silica, *Fuel*, 156, 96-102.
- Polo, M.S., and Utrilla, J.R., 2003, Effect of the Ozone-Carbon Reaction on the Catalytic Activity of Activated Carbon During the Degradation of 1,3,6-Naphthalenetrisulphonic Acid with Ozone, *Carbon*, 41, 303-307.
- Rofi'ati, S., 2015, Adsorpsi Cr(VI) pada Hibrida Amonium Kuartener Silika Berbahan Dasar Abu Sekam Padi, *Skripsi*, Departemen Kimia FMIPA UGM, Yogyakarta.
- Sakanishi, K., Akashi, E., Nakazato, T., Tao, H., Kawashima, H., Saito, I., and Takarada, T., 2003, Characterization of Eluted Metal Component from Coalduring Pretreatment and Solvent Extraction, *Fuel*, 83, 739-743.
- Sandeep, B.N., and Suresha, S., 2013, Adsorption of Malachite Green Using NPP-Modified Bentonite in Synthetic Medium and Textile Wastewater, *Asian J. Environ. Sci.*, 8(1), 28-32.
- Sartape, A.S., Mandhare, A.M., Jadhav, V.V., Raut, P.D., Anuse, M., and Kolekar, S.S., 2013, Removal of Malachite Green Dye from Aqueous Solution with Adsorption Technique using *Limonia acidissima* (Wood Apple) Shell as Low Cost Adsorbent, *Arab. J. Chem.*, 10, S3229-S3238.
- Sembodo, B.S.T., 2005, Isoterm Kesetimbangan Adsorpsi Timbal Abu Sekam Padi, *Ekuilibrium*, 4(2), 101.



- Shahryari, Z., Goharrizi, A.S., and Azadi, M., 2010, Experimental Study of Methylene Blue Adsorption from Aqueous Solutions onto Carbon Nanotubes, *Int. J. Water Resour. Environ. Eng.*, 2, 16-28.
- Shenvi, S.S., Isloor, A.M., Ismail, A.F., Shilton, S.J., and Al-Ahmed, A., 2015, Humic Acid Based Biopolymeric Membrane for Effective Removal of Methylene Blue and Rhodamine B, *Ind. Eng. Chem. Res.*, 54(18), 4965-4975.
- Tanhei, B., Ayati, A., Lahtinen, M., and Sillanpaa, M., 2015, Preparation and Characterization of a Novel Chitosan/A12O3/Magnetic Nanoparticles Composite Adsorbent for Kinetic, Thermodynamic and Isotherm Studies of Methyl Orange Adsorption, *Chem. Eng. Journal.*, 259, 1-10.
- Tuanov, Z., Shah, D., Itskos, G., and Inglezakis, V., 2017, Optimized Production of Coal Fly Ash Derived Synthetic Zeolites for Mercury Removal from Wastewater, *IOP Conf. Ser. Mater. Sci. Eng.*, 230, 012044.
- Wang, S., Boyjoo, Y., and Choueib, A., 2005, A Comparative Study of Dye Removal Using Fly Ash Treated by Different Methods, *Chemosphere*, 60, 1401-1407.
- Wang, S., and Li, H., 2005, Dye Adsorption on Unburned Carbon: Kinetics and Equilibrium, *J. Hazard. Mater.*, 126, 71-77.
- Wang, S., Ma, Q., and Zhu, Z.H., 2008, Characteristics of Coal Fly Ash and Adsorption Application, *Fuel*, 87, 3469-3473.
- Yang, S., Wang, L., and Zhang, X., 2015, Enhanced Adsorption of Congo Red Dye by Functionalized Carbon Nanotube/Mixed Metal Oxides Nanocomposites Derived from Layered Double Hydroxide Precursor, *Chem. Eng. J.*, 275, 315-321.
- Yang, X.Q., Zhao, X.X., Liu, C.Y., Zheng, Y., and Qian, S.J., 2009, Decolorization of Azo, triphenylmethane and Anthraquinone Dyes by A Newly Isolated *Trametes* sp. SQ01 and Its Laccase, *Process Biochem.*, 44, 1185-1189.
- Yao, Y., He, B., Xu, F., and Chen, X., 2011, Equilibrium and Kinetics Studies of Methyl Orange Adsorption on Multiwalled Carbon Nanotubes, *Chem. Eng.*, 170, 82-89.
- Zhang, B., Wu, D., Wang, C., He, S., Zhang, Z., and Kong, H., 2007, Simultaneous Removal of Ammonium and Phosphate by Zeolite Synthesized from Coal Fly Ash as Influenced by Acid Treatment, *J. Environ. Sci.*, 19(5), 540-545.



Zhao, S., Duan, Y., Lu, J., Gupta, R., Pudasainee, D., Liu, S., Liu, M., and Lu, J., 2018, Chemical Speciation and Leaching Characteristics of Hazardous Trace Elements in Coal and Fly Ash from Coal-Fired Power Plants, *Fuel*, 232, 463-469.

Zheng, Y., Li, N., and Zhang, W., 2012, Preparation of Nanostructured Microspheres of Zn-Mg-Al Layered Double Hydroxides with High Adsorption Property, *Colloids Surfaces A: Physicochem. Eng. Aspects.*, 415, 195-201.

Zhuannian, L., Anning, Z., Guirong, W. dan Xaioguong, Z., 2009, Adsorption Behaviour of Methyl Orange onto Modified Ultrafine Coal Powder, *Chin.J. Chem. Eng.*, 17, 6, 942-948.