

DAFTAR PUSTAKA

- Abubakar, A.U and Baharudin, K.S., 2012, Potensial Use of Malaysia Thermal Power Plants Coal Bottom Ash in Construction, *J. Suist. Cons. Eng. Tech.*, 3, 25-37.
- Adamson, A.W., 1990, *Physical Chemistry of Surface*, Fifth Edition, John Wiley and Sons Inc., New York.
- Adeli, M., Yamini, Y. and Faraji, M., 2017, Removal of Copper, Nickel and Zinc by Sodium Dodecyl Sulphate Coated Magnetite Nanoparticles From Water and Wastewater Sampel, *Arab. J. Chem.*, pp S514-S521.
- Agustiani, T., 2015, Adsorpsi Simultan Ion logam Cu²⁺ dan Mg²⁺ pada Abu Dasar Batubara Termobilisasi Ditizhon, *Skripsi*, Fakultas FMIPA, UGM, Yogyakarta.
- Ahmaruzzaman, M., 2011, Industrial Waste as Low-cost Potential Adsorbent for the Treatment of Wastewater Laden with Heavy Metals, *Adv. Colloid Interface Sci.* 166, 36-59.
- Ahn, C.K., Park, D., Woo, S.H., and Park, J.M., 2008, Removal of Cationic Heavy Metal from Aqueous Solution by Activated Carbon Impregnated with Anionic Surfactant, *J. Hazard. Mater.*, 164, 1130-1136.
- Aksu Z., and Açikel, 1999, A Single-Stage Bioseparation Process For Simultaneous Removal of Coper²⁺ and Chromium(VI) by Using C-Vulgaris, *Process Biochem.*, 34, 589-599.
- Alberty, R.A., and F. Daniel, 1987, *Physichal Chemistry*, 5th ed., SI Version, John Wiley & Sons, Inc., Belmont, California.
- Asokbunyarat, V., Hellebusch, E. D. V., Lens, P, N, L., and Annachhatre, A.P., 2015, Coal Bottom Ash as Sorbing Material for Fe²⁺, Cu²⁺, Mn²⁺, and Zn²⁺ Removal from Aqueous Solution, *Water, Air, Soil Pollut.*, 226: 143.
- Atkins, P.W., 1999, *Physical Chenistry*, 8th Ed., W. H. Freeman and Company, New York.
- Blais, J.F., Dufresne, B. and Mercier, G., 2000, State of The Art of Technologies for Metal Removal From Industrial Effluents, *Rev. Sci. Eau.*, 12 (4), 687-711.
- Bonczek, J.L., Harris, W.G. and Nkedi-Kizza, P., 2002, Monolayer to Bilayer Transitional Arrangement of Hexadecyltrimethylammonium Cations on Na-Monmoeilonite, *Clays Clay Miner.*, Vol 50 no.1, 11-17.

- Browser, J.R., 1993, *Inorganic Chemistry Brooks/cole*, Publishing Company A Dic. Of Wadsworth Inc., Belmont, California.
- Buana, E.S., 2013, Pengaruh Penambahan Surfaktan Anioinik Sodium Dodesil Sulfat Terhadap Karakteristik Membran Selulosa Asetat, *Skripsi*, Jurusan Kimia, FMIPA, Universitas Jember, Jember.
- Buhani, Narsito, Nuryono, dan Kunarti, E.S., 2009, Hibrida Amino-silika dan Merkupto-silika sebagai Adsorben untuk Adsorpsi Ion Cd²⁺ dalam Larutan, *Indones. J. Chem.*, 9 (2), 170-176.
- Castellan, G.W., 1982, *Physical Chemistry 3rd Ed.*, General Graphic Services, New York.
- Chen, X. and He, L., 2017, Microwave Irradiation Assisted Preparation of Chitosan Composite Microsphere for Dye Adsorption, *Int. J. Polym. Sci.* 1, 1-8.
- Connel, D.W. and Miler G. J, 1995, *Enviromental Toxicologi and Chemistry*, Oxford University Press Inc., New York.
- Cotton, F.A dan Wilkinson, G., 1989, *Kimia Anorganik Dasar*, UI-Press, Jakarta.
- Cullum, D.C., 1994, *Introduction to Surfactant Analysis*, Blackie Academic and Profesional.
- Daniels, F. and Alberty, R.A., 1983, *Physical Chemistry, 4th edition*, John Wiley and Sons, New York.
- Darmono, 1995, *Ion logam dan Sistem Biologi Makhuluk Hidup*, UI-Press, Jakarta.
- Dean, J.A., 1999, *Lange's Handbook of Chemistry 15th ed*, McGraw-Hill, New York.
- Do, D.D., 1998, *Adsorption Analysis: Equilibria and Kinetics*, Imperial College Press, London, England.
- Dogra, S.K., 1990, *Kimia Fisik dan Soal-Soal* (diterjemahkan oleh Masyur, U), 1st Ed, Universitas Indonesia (UI-Press), Jakarta.
- Esumi, K. and Ueno, M., 1999, *Structure-Performance Relationship in Surfactants, Ed 2*, Surfactant Sciece Series, Volume 112, Marcel Dekker, New York.
- Esumi, K., Hayashi, H., Koide, Y., Suhara, T., and Fukui, H., 1998, Adsorption of Metal Ion and Aromatic Compounds by Anionic Surfactant-Coated Particles of Titanium Dioxide, *Colloid Surf., A: Physicochem. Eng. Aspects*, 144, 201-206.

- Ganiswara, S.G., 1995, *Farmakologi dan Terapi, Edisi ke-4*, Fakultas Kedokteran, Universitas Indonesia, Jakarta.
- Genaro, R.A., 1990, *Rhemingtons Pharmaceutical Science*, 18 Company. Easton, Pennsylvania, USA.
- Goloub T.P., Koopal L.K., Bijsterbosch, B. H., and Sidorova, M.P., 1996, Adsorption of Cationic Surfactants on Silica. Surface Charge Effects, *Langmuir*, 12 (13), 3188–3194.
- Goodarzi, F., Huggins, F.E. and Sanel, H., 2008, Assesement of Elements, Speciation of As, Cr, Ni and Emitted Hg for Canadian Power Plant Burning Bituminous Coal, *Int. J. Coal Geol.*, 74, 1-12.
- Guo, L., Sun, C., Li, G., and Liu, C., 2009, Thermodynamics and Kinetics of Zn²⁺ Adsorption on Crosslinked Starch Phosphate, *J. Hazard Mater.*, 161, 510-515.
- Gupta, V.K., Mittal, A., Krishnan, L., and Gajbe, V., 2004, Adsorption Kinetics and Column Operations for The Removal And Recovery of Malachite Green From Wastewater Using Bottom Ash, *Sep. Purif. Technol.*, 40, 87-96.
- Hameed, B.H., Din, A.T.M. and Ahmad, A.L., 2007, Adsorption of Methylene Blue Onto Bamboo-based Activated Carbon: Kinetica and Equilibrium Studies, *J. Hazard Mater*, 141, 3, 819-825.
- Handayani, M. dan Sulistiyono, E., 2009, Uji Persamaan Langmuir dan Freundlich pada Penyerapan Limbah Chrom (VI) oleh Zeolit, *Porsiding Seminar Nasional Sains dan Teknologi Nuklir*, PTNBR-Batan, Bandung.
- Hessley, R.K., Reasoner, J.W. and Riley, J.T., 1986, *Coal Science, An Introduction to Chemistry, Technology and Utilization*, Mc Graw Hill Publishing Company Limited, London.
- Ho, Y.S., 2004, Citation Review of Lagergren Kinetic Rate Equation on Adsorption Reactions, *Scientometrics*, 59. 171-177.
- Izquierdo, M., Vazquez, E., Querol, X., Barra, M., Lopez, A., and Plana, F., 2001, Use of Bottom Ash from Municipal Solid Waste Incineration as a Road Material, *International Ash Utilization Symposium Center for Applied Energy Research*, University of Kentucky, Paper No. 37.
- Jarusiripot, C., 2014, Removal of Reactive Dye by Adsorption over Chemical Preatreatment Coal Based Bottom Ash, *Proc. Chem.*, 9, 121-130.

- Jin, X., Jiang, M., Shan, X., Pei, Z., and Chen, Z., 2008, Adsorption of Methylene Blue and Orange II onto Unmodified and Surfactant-Modified Zeolite, *J. Colloid Interface Sci.*, 328, 243-247.
- Jumaeri, Astuti, W. dan Lestari, W.T.P., 2007, Preparasi dan Karakterisasi Zeolit dari Abu Layang Batubara secara Alkali Hidrotermal, *J. Reaktor.* 11, 38-44.
- Khopkar, 1990, *Konsep Dasar Kimia Analitik*, UI Press, Jakarta.
- Kula, A. and Olgun, 2001, Effects of Colemanite Waste, Coal Bottom Ash and Fly Ash on the Properties of Cement, *J. Chem. Edu.*, 72(1), 80-84.
- Lange, K.R., 1999, *Surfactant: A Practical Handbook*, Hanser Pub Inc, German.
- Li, J., Hu, J., Sheng, G., Zhao, G., and Huang, Q., 2009, Effect of pH, Ionic Strength, Foreign Ions and Temperature on The Adsorption of Cu²⁺ from Aqueous Solution to GMZ Bentonite, *Colloids Surf. A.*, 349, 195-201.
- Li, P. and Ishiguro, M., 2016, Adsorption of Anionic Surfactant (Sodium Dodecyl Sulfate) on Silica, *J. Soil Sci. Plant Nutr.*, 62:3, 223-229.
- Liu, Z. and Zhang, F., 2009, Removal of Lead from Water Using Biochars Prepared from Hydrothermal Liquefaction of Biomass, *J. Hazard. Mater.*, 167, 933-939.
- Lu, F.C., 2010, *Toksikologi Dasar Asas, Organ Sasaran dan Penilaian Resiko*, UI, Jakarta.
- Lynam, M.M., Kliduff, J.E. and Weber, Jr W.J., 1995, Adsorption of P-nitro Phenol from Dilute Aqueous Solution, *J. Chem. Edu.*, 72, 80-84.
- Mahvi, A.H., Vosoughi, M., Mohammadi, M.J., Asadi, A., Hashemzadeh, B., Zahedi, A., and Pourfadakar, S., 2015, Sodium Dodecyl Sulfate Modified-Zeolite as a Promising Adsorbent for the Removal of Natural Organic Matter From Aqueous Environment, *J. Health Scope*, 5(1).
- Marcías-Gracia, A., Corzo, M.G., Domínguez, M.A., Franco, M.A., and Naharro, J.M., 2017, Study of The Adsorption and Electroadsorption Process of Cu²⁺ Ions Within Thermally and Chemically Modified Activated Carbon, *J. Hazard. Mater.*, 328, 56-55.
- Marcolongo, J.P. and Mirenda, M., 2011, Thermodynamics of Sodium Dodecyl Sulfate (SDS) Micellization; an Undergraduate Laboratory Experiment, *J. Chem. Educ.*, 88, 629-633.

- Mason, B. and Moore, C.B., 1982, *Principle of Geochemistry*, John Wiley and Sons Inc, New York.
- Mathebula, C.L., 2013, Surface Modification of Coal Fly Ash by Sodium Laury Sulphate, *thesis*, Magister Scientie, University of Pretoria, Africa.
- Mauyaru, R., 2011, Pengaruh Konsentrasi Surfaktan SLS (Sodium Lauril Sulfat) Terhadap Adsorpsi Ion Cr³⁺ oleh Serbuk Nata de Coco, *Skripsi*, Jurusan Kimia Fakultas Matematika dan Ilmu Pengatahuan Alam Universitas Negeri Malang, Malang.
- Meneguín, J.G., Luz, R.G., Ostroski, I.C., Barros, M.A.S.D., and Gimmenes, M.L., 2000, Removal of Heavy Metals in K-Bentonite Clay, *Master Thesis*, Chemical Engineering Departement, State University in Maringá, Brazilia.
- Mohan, S., and Gandhimathi, R., 2009, Removal of Heavy Metal Ions from Municipal Solid Waste Leachate Using Coal Fly Ash as an Adsorbent, *J. Hazard. Mater.*, 169, 351-359.
- Muhdarina, Mohammad, A.W., dan Muchtar, A., 2014, Potensi Adsorpsi Polutan Anorganik oleh Lempung Cengar: Kajian Isoterma dan Mekanisme Adsorpsi Batch Kation Ni²⁺ di Dalam Media Air, *Repository University of Riau*, 19-28.
- Nandi, B.K., Goswami, A. and Purkait, M.K., 2009, Adsorption Characteristics of Brilliant Green Dye on Kaolin, *J. Hazard Mater.*, 161, 387-395.
- Narsito, Nuryono dan Suyanta, 2004, Kinetika Adsorpsi Zn²⁺ dan Cd²⁺ pada Silika Gel Termodifikasi Hasil Pengolahan Abu Sekam Padi, *Laporan Hasil Penelitian Ilmu Dasar*, Lembaga Penelitian Universitas Gadjah Mada, Yogyakarta.
- Nurhidayati, 2015, Modifikasi Abu Dasar Batubara Menggunakan 8-Hidroksiquinolin Sebagai Adsorben Ion Cu²⁺ dan Cd²⁺, *Tesis*, Fakultas MIPA, UGM, Yogyakarta.
- Olkowska, E., Polkowska Z. and Namiesnik, J., 2012, Analytical Procedures for The Determination of Surfactants in Environmental Sampel, *Talanta*, 88,1-13.
- Opawale, F.O. and Burgess, D.J., 1998, Influence of Interfacial Properties of Lipophilic Surfactant on Water-in-Oil Emulsion Stability, *J. Colloid Interface Sci.*, 197(1), 142-50.
- Oscik, J., 1982, *Adsorption*, Ellis Harwood Limited, England.

- Padi, 2009, Pengaruh Perlakuan HCl terhadap Karakter Zeolit Alam Klaten, *Tesis*, FMIPA UGM, Yogyakarta.
- Palar, H., 1994, *Pencemaran dan Toksikologi Ion logam Berat*, Rineka Cipta, Jakarta.
- Pearson, R.G., 1963, Hard and Soft Acids Bases, *J. Am. Chem. Soc.*, 85, 22, 3533-3539.
- Powel, K.J., Brown, P.L., Byrne, R.H., Gajda, T., Hefter, G., Leuz, A.K., Sjoberg, S., and Warnner, H., 2007, Chemical Speciation of Environmentally Significant Metals with Inorganic Ligands Part 2: The Cu^{2+} , OH^- , Cl^- , CO_3^{2-} , SO_4^{2-} , and PO_4^{3-} Systems (IUPAC Technical Report), *Pure Appl. Chem.*, 79(5), 895-950.
- Rosen, M.J., 1978, *Surfactants and Interfacial Phenomena*, John Wiley & Sons, New York.
- Rubcumintara, T., 2014, Adsorptive Recovery of Au(III) from Aqueous Solution Using Modified Bagasse Biosorbent, *Chem. Eng. J.*, 6(2), 95-100.
- Saknishi, K., Akashi, E., Nakazato, T., Tao, H., Kawashima, H., and Saito, L., Takarada, T., 2003, Characterization of Eluted Metal Components from Coal during Pretreatment and Solvent Extraction, *Fuel*, 83, 739-743.
- Sammalkorpi, M., Panagiotopoulos, A.Z., and Haataja, M., 2008, *J. Phys. Chem. B.*, 112, 2915-2921.
- Schramm, L.L., 2000, *Surfactant: Fundamentals and Applications in the Petroleum Industry*, Cambridge University Press, United Kingdom.
- Scnoor, L.J., 1996, *Environmental Modeling*, John Wiley & Sons, USA.
- Septiana, A., 2013, Studi Adsorpsi Campuran Ion logam Pb^{2+} , Cu^{2+} dan Cr(III) Menggunakan Abu Dasar Batubara, *Skripsi*, Jurusan Kimia FMIPA UGM, Yogyakarta.
- Setiaka, 2011, Adsorpsi Ion logam Cu^{2+} dalam larutan pada Abu Dasar Batubara Menggunakan Metode Kolom, *Prosiding Skripsi Semester Genap 2010/2011*, Jurusan Kimia FMIPA ITS, Surabaya.
- Shahata, M.M., 2012, Adsorption of Some Heavy Metal Ions by Used Different Immobilized Substance on Silica Gel, *Arab. J., Chem.*, 9(6), 755-753.
- Shim, Y.S., Kim, Y.K., Kong, S.H., Rhee, S.W., and Lee, W.K., 2003, The Adsorption Characteristics of Heavy Metals by Various Particle Sizes of MWSI Bottom Ash, *J. Waste Manage.*, 23, 851-857.

- Sidharta, I.G.B., 2011, Pemanfaatan Abu Dasar Batubara (Bottom Ash) sebagai Adsorben Bahan Organik pada Air Payau, *Skripsi*, Jurusan Teknik Lingkungan, UPN Veteran, Surabaya.
- Somya, A., Rafiquee, M.Z.A. and Varshney, K.G., 2009, Synthesis, Characterization and Analytical Applications of Sodium Dodecyl Sulphate Cerium (IV) Phosphate: A New Pb^{2+} Selective, Surfactant-based Intercalated Fibrous Ion Exchanger, *Colloids Surf. A; Physicochem. Eng. Aspects.*, 336, 142-146.
- Speight, J.G., 2005, *Handbook of Coal Analysis*, John Wiley & Sons, Inc, Canada.
- Stum W. and Morgan, J.J., 1996, *Aquatic Chemistry*, John Wiley and Sons, New York.
- Tabaraki, R., Nateghi, A., 2014, Multimetal Biosorption Modeling Zn^{2+} , Cu^{2+} and Ni^{2+} by *Sargassum ilicifolium*, *Ecol. Eng.*, 71, 192-205.
- Tandros, T.F., 2005, *Applied Surfactant Surface: Principles and Applications*, Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim.
- Taylor, D.M and Williams, D.R., 1995, *Trace Element Medicine and Chelation Therapy*, The Royal Society of Chemistry, London.
- Vogel, 1990, *Buku Teks Analisis Anorganik Kualitatif Makro dan Semi Mikro*, Bagian 1, Cetakan kedua, PT Kalman Media Pustaka, Jakarta.
- Vögtle, F., 1991. *Supramolecular Chemistry*. Wiley, Chichester.
- Wahyuni, S. dan Widiastuti, N., 2010, Adsorpsi Ion logam Zn^{2+} pada Zeolit A yang Disintesis dari Abu Dasar Batubara PT Ipmomi Paiton dengan Metode Batch, *Prosiding Tugas Akhir*, Jurusan Kimia FMIPA ITS, Surabaya.
- Watanabe, K., Imai, S. and Mori Y.H., 2005, Surfactant Effects on Hydrate Formation in an Unstirred Gas/Liquid System: An Experimental Study Using HFC-32 and Sodium Dodecyl Sulfate, *Chem. Eng. Sci.*, 60 (17), 4846-4857.
- Wawrzkievicz, M., Winsniewska, M., Wolowicz, A., Gun'ko V. M., and Xarko V. I., 2017, Mixed Silica-alumina Oxide as Sorbent for Dyes and Metal Ions Removal from Aqueous Solutions and Wastewaters, *Micropor. Mesopor. Mater.*, 250 (2017) 128-147.

- Wongkeo, W. dan Chaipnaich, A., 2010, Compressive Strength, Microstructure and Thermal Analysis of Autoclaved and Air Cured Structural Lightweight Concrete Made with Coal Bottom Ash and Silica Fume, *Mater. Sci. Eng., A* 527, 3676-3684.
- Yanti, S., 2014, Studi Adsorpsi Ion Merkuri dan Tembaga Menggunakan Abu Dasar Batubara Termodifikasi Dithizon, *Tesis*, FMIPA, UGM, Yogyakarta.
- Yao, Y., He, B., Xu, F., and Chen, X., 2011, Equilibrium and Kinetic Studies of Methyl Orange Adsorption on Multiwalled Carbon Nanotubes, *Chem, Eng.*, 170, 82-89.
- Yavuz, O., Altunkaynak, Y., and Güzel, F., 2002, Removal of Copper, Nickel, Cobalt and Magnanese from Aqueous Solution by Kaolinite, *Water Res.*, 37, 948-952.
- Yu, Y., Shapter, J.F., Popelka-Filcoff, R., Bennett, J.W., and Ellis, A.V., 2014, Copper Removal Using Bio-Inspired Polyopamine Coated Natural Zeolites, *J. Hazard. Mater.*, 273, 174-182.
- Zhang, J. X. and Qu, L. L., 2013, Kinetic, Isotherm and Thermodynamic Studies of the Adsorption of Crystal Violet by Activated Carbon from Peanut Shells, *Water Sci. Technol*, vol. 67, 737-744.