



DAFTAR PUSTAKA

- Adamson, A.W., and Gast, A.P., 1997, *Physical Chemistry of Surfaces*, 6th Ed., John Wiley and Son Inc, New York.
- Adamson, A.W., 1990, *Physical Chemistry of Surfaces*, 4th Ed., John Wiley and Son Inc, New York.
- Agus, F. dan I.G. M. Subiksa, 2008, Lahan Gambut: Potensi untuk Pertanian dan Aspek Lingkungan, Balai Penelitian Tanah dan World Agroforestry Centre (ICRAF), Bogor, Indonesia.
- Ahmaruzzaman, Md., 2008, Adsorption of phenolic on low cost adsorbents: A Review, *Adv. Colloid Interfac.*, 143, 48-67.
- Ahmaruzzaman, M. dan Gayatri, S.L., 2011, Activated Neem Leaf: A Novel Adsorbent for the Removal of Phenol, 4-Nitrophenol, and 4-Chlorophenol from Aqueous Solutions, *J. Chem. Eng. Data*, 56, 3004-3016.
- Aiken, G.R., McKnight, D.M., Wrshaw, R.L., Mac Carthy, P., 1985, *Humic Substances in Soils, Sediment and Water, I, Geochemistry, Isolation and Characterization*, Wiley, New York.
- Alam, M. Z., Ameem, E.S., Muyibi, S. A and Kabbashi, N. A., 2009, The Factors Affecting The Performance of Activated Carbon Prepared from Oil Palm Empty Fruit Bunches for Adsorption of Phenol, *J. Chem. Eng.*, 155(1-2), 191-198.
- Andelkovic, T., Perovic, J., Blagojevic, S., Purenovic, M., Nikolic, R., Bojic, A., dan Andelkovic, D., 2006, Acidity of Humic Acid Related to its Oxygen-Containing Functional Groups, *Bull. Chem. Technol. Macedonia*, 25, 131-137.
- Arsenie, I., Boren, H., dan Allard, B., 1992, Determination of the carboxyl content in humic substances by methylation, *Sci. Total. Environ.*, 116, 3, 213-220.
- Ashtari, M., Carbognani, L., and Pereira-Almao, P., 2016, Asphaltenes Aqueous Conversion to Humic and Fulvic Analogs via Oxy-Cracking, *Energy Fuels.*, 30, 5470-5482.
- Atkins, P.W., 1999, *Kimia Fisika*, (diterjemahkan oleh: Kartahadiprojo Irma I), edisi ke-2, Erlangga, Jakarta.
- Babaei AA, Alaee Z, Ahmadpour E, Ramazanpour-Esfahani A., 2014, Kinetic modeling of methylene blue adsorption onto acid-activated spent tea: A comparison between linear and non-linear regression analysis, *Journal of Advances in Environmental Health Research*; 2(4): 197-208.
- Bahdod, A., El Asri, S., Saoiabi, A., Coradin, T., Laghzizil, A., 2009, Adsorption of phenol from aqueous solutions by selected apatite adsorbent: Kinetic process and impact of the surface properties, *Water Res.*, 43, 313-318.
- Bilgili, MS., 2006, Adsorption of 4-chlorophenol from aqueous solutions by xad-4 resin: isotherm, kinetic, and thermodynamic analysis, *J Hazard Mater*; 137(1): 157-64.
- Castellan, Gilbert W., 1983, *Physical Chemistry*, Addison-Wesley, New York.



- Chang, Y.C., Chang, S.W., Chen, D.H., 2006, Magnetic chitosan nanoparticles: studies on chitosan binding and adsorption of Co (II) ion, *React. Funct. Polym.*, 66, 335-341
- Czaplicka, M., 2004, Sources and transformations of chlorophenols in the natural environment, *Sci. Total Environ.*, 322 (1), 21–39.
- Dabrowski, A., Podkoscielny, P., Hubicki, M., Barczak, M., 2005, Adsorption of phenolic compounds by activated carbons by a critical review, *Chemosphere*, 58, 1049.
- Dang, F., Kamada, K., Enomoto, N., Hojo, J., and Enpuku, K., 2007, Sonochemical Synthesis of the Magnetit Nanoparticles in Aqueous Solution, *J. Ceram. Soc. Japan*, 12, 867–872.
- Dang, Lei, et al., 2016, Fulvic acid, *Advanced in Applied Microbiology.*, 97, 1-61.
- Dominguez-Vargas JR, Navarro-Rodriguez JA, de Heredia JB, Cuerda-Correa EM., 2009, Removal of chlorophenols in aqueous solution by carbon black low-cost adsorbents. Equilibrium study and influence of operation conditions, *J Hazard Mater*; 169(1-3): 302-8.
- Einschlag, F.S.G. dan Carlos, L., 2013, *Waste Water: Treatment Technologies and Recent Analytical Developments*, InTech, Croatia, 63-77.
- El-kharrag, R., Amin, A. dan Greish, Y.E., 2011, Low Temperature Synthesis of Monolithic Mesoporous Magnetite Nanoparticles, *Ceram. Int.*, 38, 627-634.
- Francisco, T., et al., 2010, Photoassisted Degradation of 4-Chlorophenol and p-Cresol Using MgAl Hydrotalcites, *Ind. Eng. Chem. Res.*, 50, 2762–2767.
- Fukushima, M., Nakayasu, Tanaka, S., dan Nakamura, H., 1995, Chromium(III) Binding Abilities of Humic Acid, *Anal. Chem. Acta.*, 317, 195-206.
- Hajdu, A., Illes, E., Tombacz, E., Borbath, I., 2009, Surface charging, polyanionic coating and colloid stability of magnetite nanoparticles, *Colloids Surface A.*, 347, 104-108.
- Han, G.H., Zhang, Y., Huang, Y., Li, G., Jiang, T., 2010. Asorption Behaviours of Humic Substances onto Iron Ore Particle Surface. *XXV International Mineral Processing Congress*, Brisbane, 163-171.
- Hastuti, Sri., 2000, Sifat-sifat gambut Rawapening yang tidak mudah berubah, *Jurnal Ilmu Tanah dan Lingkungan* 2 (1): 17-22.
- Ho, Y.S. and Mckay, G., 1999, Pseudo-Second Order Model for Sorption Process, *Process Biochem.*, 34, 451–465.
- Ho, Y-S., 2006, Review of Second-Order Models for Adsorption Systems, *J. Hazard. Mater.*, B136, 681-689.
- Hu, F.X., Neoh, K.G., Kang, E.T., 2006, Synthesis and in-vitro anti-cancer evaluation of tamoxifen-loaded magnetite/PLLA composite nanoparticles, *Biomaterials*, 27, 5725-5733.
- Igbinosa, EO., Odjadjare, EE., Chigor, VN., Igbinosa, IH., Emoghene, AO., Ekhaise, FO., Igiehon, NO., Idemudia, OG., 2013, Toxicological profile of chlorophenols and their derivatives in the environment: the public health perspective, *Sci World J.*, 1-11.



Igwe, J.C., Abia, A.A. and Ibeh, C.A., 2008, Adsorption Kinetics and Intraparticulate Diffusivities of Hg, As and Pb Ions on Unmodified and Thiolated Coconut Fiber, *Int. J. Environ. Sci. Tech.*, 5(1), 83-92.

Jain, T.K., Richey, J., Strand, M., Leslie-Pelecky, D.L., Flask, C.A., Labhsetwar, V., 2008, Magnetic nanoparticle with dual functional properties: drug delivery and magnetic resonance imaging, *Biomaterials*, 29, 4012-4021.

Janos, P., Kormunda, M., Novak, F., Zivotsky, O., Fuitova, J., and Pilarova, E., 2013, Multifunctional humate-based magnetic sorbent: Preparation, properties and sorption of Cu(II), phosphates and selected pesticides, *React. Funct. Polym.*, 73 (1), 46–52.

Jayaganesh S. dan Senthurpandian, V.K., 2010, Extraction and Characterization of Humic and Fulvic Acids from Latosols under Tea Cultivation in South India, *J. Asian. Earth. Sci.*, 3, 130-135.

Jourvand M, Shams Khorramabadi G, Omidi Khaniabadi Y, Godini H, Nourmoradi H, 2015, Removal of methylene blue from aqueous solutions using modified clay, *Journal of Basic Research in Medical Sciences*, 2(1): 32-41.

Kakavandi, B., Jahangiri-rad, M., Rafiee e, M., Esfahani, A.R., Babaei, A.A., 2016, Development of response surface methodology for optimization of phenol and p-chlorophenol adsorption on magnetic recoverable carbon, *Micropor. Mat.*, 231, 192-206.

Koesnarpadi, S., Santosa, S.J., Siswanta, D., Rusdiarso, B., 2015, Synthesis and characterization of magnetic nanoparticle coated humic acid ($\text{Fe}_3\text{O}_4/\text{HA}$), *Procedia Environmental Sciences*, 30, 103-108.

Koesnarpadi, S., Santosa, S.J., Siswanta, D., and Rusdiarso, B., 2017, Humic Acid Coated Fe_3O_4 Nanoparticle for Phenol Sorption, *Indones. J. Chem.*, 17 (2), 274-283.

Koumanova, B., P. Peeva-Antova, Z. Yaneva., 2005, Adsorption of 4-chlorophenol from aqueous solutions on activated carbon-kinetic study, *J. Univ. Chem. Technol. Metall.*, 40, 3, 213-218.

Krisbiantoro, P.A., Santosa, S.J., Kunarti, E., 2016, Synthesis of fulvic acid-coated magnetite (Fe_3O_4 -FA) and its application for the reductive adsorption of $[\text{AuCl}_4]^-$, *Indones. J. Chem.*, 17 (3), 453-460.

Kumar, R., Inbaraj, B., Chen, B.H., 2010, Surface modification of superparamagnetic iron nanoparticles with calcium salt of poly (g-glutamic acid) as coating materials, *Mater. Res. Bull.*, 45, 1603-1607.

Lagergren, S., 1898, About the Theory of So- called Adsorption of Soluble Substance, *Kungliga Svenska Vetenskapsakademies, Handlingar.*, Band, 24(4): 1-39.

Laurent, S., D. Forge, M. Port, A. Roch, C. Robic, L. Vander Elst, R.N. Muller, 2008, Magnetic Iron Oxide Nanoparticles: Synthesis, Stabilization, Vectorization, Physic Chemical Characterizations and Biological Applications, *Chem. Rev.*, 108, 2064-2110.

Li, Jie., Zhang, S., Chen, C., 2012, Removal of Cu(II) and Fulvic Acid by



Graphene Oxide Nanosheets Decorated with Fe_3O_4 , *Appl. Mater. Interfaces*, 4, 4991-5000.

- Liu, J.F., Zhao, Z.S., Jiang, G.B., 2008, Coating of magnetic nanoparticles with humic acids for high efficient removal of heavy metals in water, *Environ. Sci. Technol.*, 2, 6949-6954.
- Lynam, M.M., Kilduff, J.E., and Weber, W.J., 1995, Adsorption of p-Nitrophenol from Dilute Aqueous Solution: An Experiment in Physical Chemistry with an Environmental Approach, *J. Chem Educ.*, 72, 80-84.
- Ma, Z and Liu, H., 2007, Synthesis and surface modification of magnetic particles for application in biotechnology and biomedicine, *Particuology*, 5, 1-10.
- Mahdavi, M., Ahmad, M. B., Haron, J., Namvar, F., Nadi, B., Zaki, M., Amin, J., 2013, Synthesis, Surface Modification and Characterisation of Biocompatible Magnetic Iron Oxide Nanoparticles for Biomedical Applications, *Molecules*, 18, 7533–7548.
- Maity, D. dan D.C. Agrawal, 2007, Synthesis of Iron Oxide Nanoparticles Under Oxidizing Environment and Their Stabilization in Aqueous and Non Aqueous Media, *J. Magn. Magn. Mater.*, 308, 46-55.
- Ncibi, M.C., Mahjoub, B. and Seffen, M., 2007, Adsorptive Removal of Textile Reactive Dye Using *Posidonia oceanica* (L.) Fibrous Biomass, *Int. J. Environ. Sci. Tech.*, 4, 433-440.
- Nguyen AT, Juang RS, 2015, Photocatalytic degradation of p-chlorophenol by hybrid H_2O_2 and TiO_2 in aqueous suspensions under UV irradiation, *J Environ Manage*, 147: 271-7.
- Niu, H., Zhang, D., Zhang, S., Zhang, X., Meng, Z., Cai, Y., 2011, Humic acid coated Fe_3O_4 magnetic nanoparticles as highly efficient Fenton-like catalyst for complete mineralization of sulfathiazole, *J. Hazard. Mater.*, 190 (1–3), 559–565.
- Nourmoradi, H., Nikaeen, M., Khiadani, H., 2012, Removal of benzene, toluene, ethylbenzene and xylene (BTEX) from aqueous solutions by montmorillonite modified with nonionic surfactant: Equilibrium, kinetic and thermodynamic study, *J. Chem. Eng.*, 191: 341-8.
- Nourmoradi, H., Avazpour, M., Ghasemian, N., Heidari, M., Moradnejadi, K., Khodarahmi, F., et al., 2015, Surfactant modified montmorillonite as a low cost adsorbent for 4-chlorophenol: Equilibrium, kinetic and thermodynamic study, *Journal of the Taiwan Institute of Chemical Engineers*.
- Olaniran, A.O., Igbinosa, E.O., 2011, Chlorophenols and other related derivatives of environmental concern: properties, distribution and microbial degradation processes, *Chemosphere*, 83 (10), 1297–1306.
- Omidi-Khaniabadi, Y., Jafari.A., Nourmoradi, H., Taheri, F., Saeedi, S., 2015, Adsorption of 4-Chlorophenol from Aqueous Solution using Activated Carbon Synthesized from Aloe Vera Green Wastes, *J. Adv. Environ. Health.Res.*, 3, 2, 120-9.
- Oscik, J., 1982, *Adsorption*, Ellis Horwood Limited, England.



- Pan, B.C., Xiong, Y., Su, Q., Li, A.M., Chen, J.L., Zhang, Q.X., 2003, Role of amination of a polymeric adsorbent on phenol adsorption from aqueous solution, *Chemosphere*, 51, 953-962.
- Pera-Titus, M., García-Molina, V., Baños, M., Gimenez, J., Esplugas, S., Degradation of chlorophenols by means of advanced oxidation processes, *A general review. Appl. Catal., B*, 47, 219.
- Petcharoen, K. dan Sirivat, A., 2012, Synthesis and Characterization of Magnetite Nanoparticles via the Chemical Co-precipitation Method, *Mater. Sci. Eng.*, 177, 421-427.
- Peternele, W.S., Fuentes, V.M., Fascineli, M.L., Rodrigues, J., Silva, R.C., Lucci, C.M., and Azevedo, R.B., 2014, Experimental Investigation of The Coprecipitation Method : An Approach to Obtain Magnetite and Maghemite Nanoparticles with Improved Properties, *J. Nanomater.*, 1–11.
- Pourbaix, 1974, *Atlas of electrochemical equilibrium in aqueous solution*, NACE International, USA.
- Prihastuti , 2012, Karakteristik Gambut Rawa Pening dan Potensinya sebagai Bahan Pembawa Mikroba, *Biosfera*, 29 (2).
- Santosa, S.J., Tanaka, S., Siswanta, D., Kunarti, 2007, Indonesian peat soil derived humic acids, it's characterization, immobilization and performance as metal adsorbent, *Proceeding of International Conference on Chemical Sciences*, Yogyakarta.
- Santosa, S.J., 2014, Sorption Kinetics of Cd(II) Species on Humic Acid-based Sorbent, *CLEAN: Soil, Air, Water.*, 42 (6), 760-766.
- Sarkar M, Acharya PK., 2006, Use of fly ash for the removal of phenol and its analogues from contaminated water, *Waste Manag*; 26(6): 559-70.
- Schnitzer M., Mastd, N., Hindle, D.A., 1983, The isolation of soil humic and fulvic acids component rich in unknown, *Can. J. Soil Sci.*, 63, 425-433.
- Shen, Y.F., Tang, J., Nie, Z.H., Wang, Y.D., Ren, Y., Luo, Z., 2009, Preparation and application of magnetic Fe_3O_4 nanoparticles for waste water purification, *Sep. Purif. Technol.*, 68, 312-319.
- Sheng-nan, S., Chao, W., and Zan-zan, Z., 2014, Magnetic Iron Oxide Nanoparticles: Synthesis and Surface Coating Techniques for Biomedical Application, *Chin. Phys. B.*, 23, 1-19.
- Soto, ML., Moure, A., Dominguez, H., Parajo, JC., 2011, Recovery, concentration and purification of phenolic compounds by adsorption, a review. *J Food Eng*, 105:1-27.
- Stevenson, F.J., 1994, *Humus Chemistry: Genesis, Composition, reactions*, John Wiley & Sons Inc, New York.
- Sulistyaningsih, T., Santosa, S.J., Siswanta, D., and Rusdiarso, B., 2017, Synthesis and Characterization of Magnetites Obtained from Mechanically and Sonochemically Assisted Co-Precipitation and Reverse Co-Precipitation Methods, *Int. J. Mater. Mech. Manuf.*, 5, 3–6.
- Tan, W.L., and Bakar, A., 2006, The Effect of Additives on The Size of Fe_3O_4 Particles, *J. Phys. Sci.*, 17, 2, 37-50.
- Tombacz, E., Horvat, M., and Illes, E., 2006, Magnetic in aqueous medium:



- coating its surface and surface coated with it, *Rom. Rep. Phys.*, 58, 281-286.
- Verma, V. K. And Mishra, A. K., 2010, Kinetic and Isoterm Modeling of Adsorption of Dyes Onto Rice Husk Carbon, *Global Nest. J.*, 12, 190- 196.
- Wang, N., Zhu, L.H., Wang, M.Q., Wang, Z.F., Lin, H.Q., Tang, 2010, Sono-assisted preparation of highly-efficient peroxidase-like Fe_3O_4 magnetic nanoparticles for catalytic removal of organic pollutants with H_2O_2 , *Ultrason. Sonochem.*, 17, 526-533.
- Wu, W., He, Q., Jiang, C., 2008, Magnetic Iron Oxide Nanoparticles: Synthesis and Surface Functionalization Strategies, *Nanoscale. Res. Lett.* 3, 397–415.
- Wu, X., Wang, L., Chen, C., Xu, A., Wang, X., 2011, Water-dispersible Magnetite-graphene-LDH Composites for Efficient Arsenate Removal, *J. Mater. Chem.*, 21, 17353-1759.
- Zawani, Z., Luqman, C. and Thomas S. Y. C., 2009, Equilibrium Kinetics and Thermodynamic Studies: Adsorption of Remazol Black 5 on the palm Kernel Shell Activated Carbon (PKS-AC), *Euro. J. Sci. Res.*, 37, 63-71.
- Zazouli M, Balarak D, Mahdavi Y., 2013, Application of Azolla for 2-Chlorophenol and 4-Chlorophenol Removal from Aqueous Solutions, *Iranian Journal of Health Sciences*; 1(2): 43-55.
- Zhihui A, Peng Y, Xiaohua L., 2005, Degradation of 4-chlorophenol by microwave irradiation enhanced advanced oxidation processes, *Chemosphere*; 60(6): 824-7.