

DAFTAR PUSTAKA

- Blázquez, G., Martín-Lara, M.A., Tenorio, G., and Calero, M., 2011, Batch Biosorption of Lead(II) from Aqueous Solutions by Olive Tree Pruning Waste: Equilibrium, Kinetics and Thermodynamic Study, *Chem. Eng. J.* 168, 170–177.
- Cahyaningrum, S.E., Narsito, Santoso, S.J., dan Agustini, R., 2011, Adsorpsi Logam Zn(II) dan Cu(II) pada Kitosan Nano Bead dari Cangkang Udang Windu (*Penaeus monodon*), *Jurnal Manusia dan Lingkungan*, 18, 201–205.
- Campo, V.L., Kawano, D.F., Braz, D., and Carvalho, I., 2009, Carrageenans : Biological Properties, Chemical Modifications and Structural Analysis – a Review, *Carbohydr. Polym.*, 77, 167–180.
- Chang, M.Y. and Juang, R.S., 2004, Adsorption of Tannic Acid, Humic Acid, and Dyes from Water Using the Composite of Chitosan and Activated Clay, *J. Colloid. Interface. Sci.*, 278, 18–25.
- Chen, P.H., Kuo, T.Y., Kuo, J.Y., Tseng, Y.P., Wang, D.M., Lai, J.Y., and Hsieh, H.J., 2010, Novel Chitosan-Pectin Composite Membranes with Enhanced Strength, Hydrophilicity and Controllable Disintegration, *Carbohydr. Polym.*, 82, 1236–1242.
- Crini, G., and Badot, P. M., 2008, Application of Chitosan, a Natural Aminopolysaccharide for Dye Removal from Aqueous Solutions by Adsorption Processes Using Batch Studies: A Review of Recent Literature, *Prog. Polym. Sci.*, 33(4), 399–447.
- Daifullah, A.A.M., Girgis, B.S., and Gad, H.M.H., 2004, A Study of the Factors Affecting The Removal of Humic Acid by Activated Carbon Prepared from Biomass Material, *Colloids. Surf. A. Physicochem. Eng.*, 235, 1–10.
- Distantina, S., Rochmadi, Fachrurrozi, M., and Wiratni, 2012, Hydrogel Based on Gluteraldehyd-Crosslinked Kappa Carrageenan: Effect of Gluteraldehyde Cocentration, *eProceeding, 19th Regional Symposium on Chemical Engineering*, ISBN: 97–602–9494–30–3.
- Dong, C., Chen, W., and Liu, C., 2014, Preparation of Novel Magnetic Chitosan Nanoparticle and its Application for Removal of Humic Acid from Aqueous Solution, *Appl. Surf. Sci.*, 292, 1067–1076.
- Doulia, D., Leodopoulos, C., Gimouhopoulos, K., and Rigas, F., 2009, Adsorption of Humic Acid on Acid-Activated Greek Bentonite. *J. Colloid. Interface. Sci.*, 340, 131–141.
- Elnashar, M.M., 2010, *Biopolymers*, Sciyo, Croatia.
- Escamiilla-Garcia, M., Calderon-Dominguez, G., Chanona-Perez, J.J., Farrera-Rebollo, R. R., Andraca-Adame, J. A., Arzate-Vasquez, I., Mendez-Mendez, J.V., and Moreno-Ruiz, L. A., 2013, Physical and Structure and

- Characterization of Zein and Chitoan Edible Film Using Nanotechnology Tools, *Int. J. Biol. Macromol.*, 61, 196–203.
- Gasser, M.S., Mohsenb, H.T., Alya, H.F., 2008, Humic Acid Adsorption onto Mg/Fe Layered Double Hydroxide, *Colloids. Surf. A. Physicochem. Eng. Asp.*, 331, 195–201.
- Gerente, C., Lee, V.K.C., Cloirec, P.L., and Mckay, G., 2007, Application of Chitosan for the Removal of Metals From Wastewaters by Adsorption Mechanisms and Models, *Crit. Rev. Environ. Sci. Technol.*, 37, 41-127.
- Grenha, A., Gomes, M.E., Rodrigues, M., Santo, V.E., Mano, J.F., Neves, N.M., and Reil, R.L., 2009, Development of New Chitosan/Carrageenan Nanoparticles for Drug Delivery Application, *J. Biomed. Mater. Res.*, 92A, 1265–1272.
- Gutha, Y., Zhang, Y., Zhang, W., and Jiao, X., 2017, Magnetic-Epichlorohydrin Crosslinked Chitosan Schiff's Base (M-ECCSB) as A Novel Adsorbent for The Removal Of Cu(II) Ions from Aqueous Environment. *Int. J. Biol. Macromol.*, 97, 85–98.
- Hamdaoui, O., and Chiha, M., 2007, Removal of Methylene Blue from Aqueous Solutions by Wheat Bran, *Acta. Chem. Slov.*, 54, 407–418.
- Hameed, B.H., Mahmoud, D. K., & Ahmad, A. L., 2008, Equilibrium Modeling and Kinetic Studies on the Adsorption of Basic Dye by a Low Cost Adsorbent: Coconut (Cocosnucifera) Bunch Waste, *J. Hazard. Mater.*, 158(1), 65–72.
- Ho, Y.S., and Mckay, G., 2002, Application of Kinetic Models to the Sorption of Copper(II) on to Peat, *CWB.*, 797–815.
- Imyim, A., and Prapalimrungsi, E., 2010, Humic Acids Removal from Water By Aminopropyl Functionalized Rice Husk Ash, *J. Hazard. Mater.*, 184, 775–781.
- Jarvis, K.L., and Majewski, P., 2012, Plasma Polymerized Allylamine Coated Quartz Particles for Humic Acid Removal, *J. Colloid. Interface. Sci.*, 380, 150–158.
- Jiang, H., Chen, P., and Luo, S., 2013. Synthesis of Novel Nanocomposite Fe₃O₄/ZrO₂/Chitosan and its Application for Removal of Nitrate and Phosphate, *Appl. Surf. Sci.*, 284, 942–949.
- Kara, S., Tamerler, C. & Bermek, H., 2003, Cation Effects On Sol Á Gel and Gel Á Sol Phase Transitions of κ-Carrageenan Á Water System, *Int. J. Biol. Macromol.*, 31, 177–185.
- Kochany, J. and Smith, W., "Application of Humic Substances in Environmental Engineering", *Proceedings of Humic Substances Seminar IV*, 22-24 March 2001, Boston.

- Kramarenko, E.Y., Khokhlov, A.R., Reineker, P., 2006, Stoichiometric Polyelectrolyte Complexes of Ionic Block Copolymers and Oppositely Charged Polyions. *J. Chem. Phys.*, 125, 1–8.
- Kyzas, G. Z. and Bikiaris, D. N., 2015, Recent Modifications of Chitosan for Adsorption Applications, *Mar. Drugs*, 13, 312–337
- Li, C., Hein, S., and Wang, K., 2013, Chitosan-Carrageenan Polyelectrolyte Complex for the Delivery of Protein Drug, *ISRN Biomaterials*, 1–6.
- Li, C.J., Dong, Y.D., Wu, Y., Peng, L.C., and Kong, H.N., 2011, Surfactant Modified Zeolite as Adsorbent for Removal of Humic Acid From Water, *Appl. Clay Sci.*, 52, 353– 357.
- Lin, J., and Zhan, Y., 2012, Adsorption of Humic Acid from Aqueous Solution onto Unmodified and Surfactant-Modified Chitosan/Zeolite Composites. *Chem. Eng. J.*, 200–202, 202–213.
- Melo, B.A.G. de, Motta, F.L., and Santana, M.H.A., 2015, Humic acids: Structural Properties and Multiple Functionalities for Novel Technological Developments, *Mater. Sci. Eng. C.*, 62, 967–974.
- Milani, J. dan Maleki, G., 2012, *Hydrocolloids in Food Industry, Food Industrial Processes Methods and Equipment*, InTech Publisher, Croatia.
- Morris, G. A., Castile, J., Smith, A., Adams G.G., and Harding S.E., 2009, Macromolecular Conformation of Chitosan in Dilute Solution: A New Global Hydrodynamic Approach, *Carbohydr. Polym.*, 76, 616-621.
- Nanaki, S. G., Kyzas, G. Z., Tzereme, A., Papageorgiou, Kostoglou, M., Bikiaris, D.N., Lambropoulou, D.A., 2015, Synthesis and characterization of Modified Carrageenan Microparticles for the Removal of Pharmaceuticals from Aqueous Solutions, *Colloids. Surf. B.*, 79, 1157- 1167.
- Ngah, W.S.W., Fatinathan, S., and Yosop, N.A., 2011, Isotherm and Kinetic Studies on the Adsorption of Humic Acid onto Chitosan-H₂SO₄ Beads. *Desalination* 272, 293–300.
- Ngah, W.W.S., Hanafiah, M.A.K.M., and Yong, S.S., 2008, Adsorption of Humic Acid fFrom Aqueous Solutions on Crosslinked Chitosan-Epichlorohydrin Beads: Kinetics aAnd Isotherm Studies,. *Colloids. Surfaces. B. Biointerfaces*, 65, 18–24.
- Oktari, L. R., 2014, Pembuatan Komposit Film Kompleks Polielektrolit Kitosan-k-Karaginan dan Pemanfaatannya sebagai Adsorben Metilen Biru, *Tesis*, Jurusan Kimia, FMIPA, Universitas Gadjah Mada, Yogyakarta.
- Panda, S.R., Mukherjee, M., and De, S., 2015, Preparation, characterization and humic acid removal capacity of chitosan coated iron-oxide-polyacrylonitrile mixed matrix membrane, *J. Water. Process Eng.*, 6, 93–104.

- Park, S. Y., Lee, B. I., Jung, S. T. & Park, H. J., 2001, Biopolymer Composite Films Based on Carrageenan and Chitosan, *Mater. Res. Bull.*, 36, 511–519.
- Rinaudo, M., Chitin and Chitosan: Properties And Applications, 2006, *Prog. Polym. Sci.*, 31, 603–632.
- Salgueiro, A.M., Daniel-da-silva, A.L., Girão, A. V, Pinheiro, P.C., and Trindade, T., 2013, Unusual Dye Adsorption Behavior of j-Carrageenan Coated Superparamagnetic Nanoparticles, *Chem. Eng. J.*, 229, 276–284.
- Sankalia, M. G., Mashru, R. C., Sankalia, J. M. & Sutariya, V. B., 2007, Reversed Chitosan–Alginate Polyelectrolyte Complex for Stability Improvement of Alpha-Amylase: Optimization and Physicochemical Characterization, *J. Membr. Sci.*, 28, 215–232.
- Silva, L., Pereira, J.C., Pais, A.A.C.C., and Sousa, J.S., 2008, Films Based on Chitosan Polyelectrolyte Complexes for Skin Drug Delivery : Development and Characterization, *J. Membr. Sci. Tech.*, 320, 268–279.
- Singh, V., Kumar, P., and Sanghi, 2012, Use of Microwave Irradiation in the Grafting Modification of the Polysaccharides a Review, *Prog. Pplym. Sci.*, 37(2), 340–364.
- Sudiono, S., Naarsito, S.J., 2001, Studi Interaksi Asam Humat dengan Cu(II) dan Ni(II), *Prosiding Seminar Nasional Kimia IX*, 21 Mei 2001, Yogyakarta.
- Sonea, D., Pode, R., Manea, F., Ratiu, C., Lazau, C., Grozescu, I., dan Burtica, G., 2010, The Comparative Assessment of Photolysis, Sorption and Photocatalysis Processes to Humic Acids Removal from Water, *Chem. Bull "Politehnica" Univ (Timisoara)*, 55(69), 148–151.
- Sudiono, S., dan Narsito, S.J., 2001, Studi Interaksi Asam Humat dengan Cu(II) dan Ni(II), *Prosiding Seminar Nasional Kimia IX*, 21 Mei 2001, Yogyakarta.
- Susanti, A.D., Sediawan, W.B., Wirawan, S.K., Budhijanto., 2015, Model Isoterm Kesetimbangan Adsorpsi Oryzanol dalam Minyak Bekatul pada Adsorben Silika Gel dengan Fase Gerak N-Heksana:Aseton, *FTUMJ.*, 1-5.
- Tang, Y. Lianga, S., Yua, S., Gaoa, N., Zhanga, J., Guoa, H., and Wang, Y., 2012, Colloids and Surfaces A: Physicochemical and Engineering Aspects Enhanced Adsorption of Humic Acid on Amine Functionalized Magnetic Mesoporous Composite Microspheres., *Colloids. Surfaces. A. Physicochem. Eng. Asp.*, 406, 61–67.
- Tao, Q., Xu, Z.Y., Wang, J.H., Liu, F.L., Wan, H.Q., and Zheng, S.R., 2010, Adsorption of Humic Acid tTo Aminopropyl Functionalized SBA-15, *Micropor. Mesopor. Mater.*, 131, 177–185.
- Toor, M., Jin, B., 2012. Adsorption Characteristics, Isotherm, Kinetics, and Diffusion of Modified Natural Bentonite for Removing Diazo Dye, *Chem. Eng. J.*, 187, 79–88.

- Vinh, H., Dai, L., and Ngoc, T., 2010, Preparation of Chitosan/Magnetite Composite Beads and Their Application for Removal of Pb(II) and Ni(II) from Aqueous Solution, *Mater. Sci. Eng. C.*, 30, 304–310.
- Wang, M., Liao, L., Zhang, X., and Li, Z., 2012, Adsorption of Low Concentration Humic Acid from Water by Palygorskite, *Appl. Clay. Sci.*, 67–68, 164–168.
- Yu, W.Z., Gregory, J., Li, G.B., and Qu, J.H., 2013, Effect of Humic Acid on Coagulation Performance During Aggregation at Low Temperature., *Chem. Eng. J.*, 223, 412–417.
- Zadow R., 2009, *The Real Dirt on Humic Substances*, Maximum Yield, Canada, 40–44.
- Zou, X., Zhao, X., Ye, L., Wang Q., and Li, H., 2015, Preparation and Drug Release Behavior of pH-Responsive Bovine Serum Albumin-Loaded Chitosan Microspheres, *J. Ind. Eng. Chem.*, 21, 1389–1397.
- Zouboulis, A.I., Chai, X.L., and Katsoyiannis, I.A., 2004, The Application of Bioflocculant for the Removal of Humic Acids from Stabilized Landfill Leachates, *J. Environ. Manage.*, 70, 35–41.
- Zulfikar, M.A., Afritaa, S., Wahyuningrum, D., and Ledyastutic, M., 2016, Preparation of Fe₃O₄-Chitosan Hybrid Nano-Particles Used for Humic Acid Adsorption, *Environ, Nanotechnology, Monit. Manag*, 6, 64–75.