



DAFTAR PUSTAKA

- Aiken, G.R., McKnight, D.M., Wershaw, R.I., and MacCarthy, P., 1985, *Humic Substances in Soil, Sediment and Water : Geochemistry, Isolation, and Characterization.*, John Wiley & Sons, New York.
- Alimin, Narsito, Santosa, J.S., dan Noegrohati, S., 2005, Fraksinasi Asam Humat dan Pengaruhnya pada Kelarutan Ion Logam Seng (II) dan Kadmium (II), *Jurnal Ilmu dasar*, 6 (1), 1-9.
- Araújo, B.R., Luciane, Romao, P.C., Marta, Doumer, E., Antonio, and Mangrich, S., 2017, Evaluation of the Interactions Between Chitosan and Humics in Media for The Controlled Release of Nitrogen Fertilizer, *J. Environ. Manage.* 190, 122-131.
- Azem, Basit, Kushaari, and Thanh, 2014, Review Material and Method to Produce Controlled Release Coated Urea Fertilizer, *J. Control Release*, 181 (4), 11-12.
- Bedê, P.M., Da Silva, M.H.P., Da Silva Figueiredo, A.B.H., and Finotelli, P.V., 2017, Nanostructured Magnetic Alginate Composites for Biomedical Applications, *Polimeros*, 27, 267–272.
- Balasubramaniyan, P., and Palaniappan, S., 2001, *Principles and Practices of Agronomy*, Agrobios India, Jodhpur.
- Bashan, Y., Hernandez, J.P., Leyva, L.A., and Bacilio, M., 2002, Alginate Microbeads as Inoculants Carriers for Plant Growth-Promoting Bacteria, *Biology Fertility Soils*, 35, 359–368.
- Bohn, H., McNeal, B.L., and O'Connor, G.A., 2001, *Soil Chemistry*, 3rd Ed, John Wiley & Sons.Inc., New York.
- Chandra, P.K., Ghosh, K., and Varadachari, C., 2009, A New Slow-releasing Iron Fertilizer, *Chem. Eng. J.*, 15, 451-456.
- Chen, S.C., Wu, Y.C., Mi, F.L., Lin, Y.H., Yu, L.C., and Sung, H.W., 2004, A Novel pH-sensitive Hydrogel Composed of N,O-carboxymethyl Chitosan and Alginate Cross-linked by Genipin for Protein Drug Delivery., *J. Control Release*, 96(2), 285–300.
- Chen, J.H., Liu, Q.L., Hu, S.R., Ni, J.C., and He, Y.S., 2011, Adsorption Mechanism of Cu(II) Ions from Aqueous Solution by Glutaraldehyde Crosslinked Humic Acid-immobilized Sodium Alginate Porous Membrane Adsorbent, *Chem. Eng. J.*, 173, 511–519.



- Choe, S.R., Haldorai, Y., Jang, S.C., Rethinasabapathy, M., Lee, Y.C., Han, Y.K., Jun, Y.S., Roh, C., and Huh, Y.S., 2018, Fabrication of Alginate/Humic Acid/Fe-aminoclay Hydrogel Composed of A Grafted-network for The Efficient Removal of Strontium Ions from Aqueous Solution, *Environ. Technol. Innov.*, 9, 285–293.
- Colomb, B., Jim, R.K., and Philippe, D., 2000, Effect of Soil Phosphorus on Leaf Development and Senescence Dynamics of Field Grown Maizena, *J. Agron.*, 92(3), 428-435.
- De Melo, B.A.G., Motta, F.L., and Santana, M.H.A., 2016, Humic Acids: Structural Properties and Multiple Functionalities for Novel Technological Developments, *Mater. Sci. Eng. C*, 62, 967–974.
- Fatima, R., Bordado, J., and Casquilo, M., 2001, *Kinetics of Water Absorbency In AA/AMPS Copolymers, Applications of Diffusion Relaxation Model*, Instituto Technico Superior, Portugal.
- Floch, C., Capowiez, Y., and Criquet, S., 2009, Enzyme Activities in Apple Orchard Agroecosystems: How Are They Affected by Management Strategy and Soil Properties, *Soil Biol. Biochem.*, 41 (1), 61–68.
- George, M., and Abraham, T.E., 2006, Polyionic Hydrocolloids for The Intestinal Delivery of Protein Drugs: Alginate and Chitosan- a review, *J. Controlled Release*, 114, 1-14.
- Gotoh, T., Matsushima, K., and Kikuchi, K.I., 2004, Adsorption of Cu and Mn On Covalently Cross-linked Alginate Gel Beads, *Chemosphere*, 55, 57–64.
- Ho, Y. S., and McKay, G., 1999, Pseudo-second Order Model for Sorption Processes, *Pro. Biochem.*, 34, 451-465.
- Hu, J., Xiangui, L., Junhua, W., Jue, D., Ruirui, C., Jiabao, Z., and Ming, H.W., 2011, Microbial Functional Diversity, Metabolic Quotient and Invertase Activity of a Sandy Loam Soil as Affected by Long-term Application of Organic Amendment and Mineral Fertilizer, *Journal. Soils and Sediments*, 11 (2), 271–280.
- Hinsinger, P., 1998. How Do Plant Roots Acquire Mineral Nutrients, Chemical Processes Involved in The Rhizosphere. *Adv. Agron.*, 64, 225 – 265.
- Huang, P. M., and Schnitzer, M., 1986, *Interaction of Soils Minerals With Natural Organic and Microbes*, Soil Sci. Soc. Am. Inc., New York.



- Jamaran, K., Hakim, B., Asteria, K., Dawolo, dan Daniel, 2006, Pembuatan Membran Kompleks Polielektrolit Alginat Kitosan. Medan, *Jurnal Sains Kimia*, 10 (1), 10-16.
- Jamnongkan, T., and Kaewpirom, S., 2010, Controlled-Release Fertilizer Based on Chitosan Hydrogel: Phosphorus Release Kinetics, *Sci. J. UBU*, 1, 43-50.
- Kean, T., and Thanou, M., 2010, Biodegradation, Biodistribution and Toxicity of Chitosan., *Adv. Drug Delivery Rev.*, 62 (1), 3–11.
- Khaled, H., and Fawy, H.A., 2011, Effect of Different Levels of Humic Acids on The Nutrient Content, Plant Growth, and Soil Properties Under Conditions of Salinity, *Soil and Water Research*, 6 (1), 21–29.
- Korsmeyer, R.W., Gunny, R., Peppas, N.A., 1983, Mechanism of Solute Release from Hydrophilic Polymers. *Int. J. Pharm.*, 15, 25-35.
- Lestari, P., 2008, *Pengaruh Temperatur Terhadap Bahan Komposit*, FT UI, Jakarta.
- Li, Z. J., and Ma, G. R., 2004, The recent Situation for Manufacturing Urea Humic Acid and Mechanism in Increasing Crop Yield, *Chin. J. Soil Sci.*, 35, 799–801.
- Llarena, 2016, Pharmacokinetic Derivation of Rates and Orders of Reactions in Multicompartment Model Using Matlab Z, *Int. J. Pharm. Sci. Res.*, 7 (11), 4456-4460.
- López-Valdez, F., Fernández-Luqueño, F., Luna-Guido, M.L., Marsch, R., Olalde-Portugal, V., and Dendooven, L., 2010, Microorganisms in Sewage Sludge Added to an Extreme Alkaline Saline Soil Affect Carbon and Nitrogen Dynamics, *Appl. Soil. Ecol.*, 45, 225–231.
- Maria, H.A.S., Bruna, A.G.M., and Fernanda, L.M., 2016, Humic Acids: Structural Properties and Multiple Functionalities for Novel Technological, *Mater. Sci. Eng., C.*, 62, 967–974.
- Masalova, O., Kulikouskaya, V., Shutava, T., and Agabekov, V., 2013, Alginate and Chitosan Gel Nanoparticles For Efficient Protein Entrapment, *Phys. Procedia*, 40, 69–75.
- McBride, M. B., 1994, *Environmental Chemistry of Soils*, Oxford University Press, New York.
- Melkasari, S., Ginting, S., dan Irsal, 2015, Pemberian Pupuk Anorganik dan Pemangkasan Daun Terhadap Pertumbuhan dan Produksi Jagung Varietas Pioneer-23, *J. Agroekoteknologi*, 3 (3), 837-843.



- Ngah, W.S.W. and Fatinathan, S., 2008, Adsorption of Cu(II) Ions in Aqueous Solution Using Chitosan Beads, Chitosan-GLA Beads and Chitosan-alginate Beads, *Chem. Eng. J.*, 143, 62–72.
- Nguyen, T.T.T., Hosh, C., Hwang, S., Tran, L.D., and Park, J.S., 2013, Characteristics of Curcumin-loaded Poly (Lactid Acid) Nanofibers for Wound Healing, *J. Mater. Sci.*, 48, 7125-7133.
- Onsoyen, E., 1997, *Alginate: Thickening and Gelling agents for food*, Blackie Academic and Professional, London.
- Peniche, C., and Argüelles-Monal, W., 2001, Chitosan Based Polyelectrolyte Complexes, *Macromo. Symp.*, 168 (1), 103–116.
- Pena-Méndez, E.M., Havel, J., and Patocka, J., 2005, Humic Substances, Compounds of Still Unknown Structure: Applications in Agriculture, Industry, Environment, and Biomedicine, *J. Appl. Biomed.*, 3, 13-24.
- Prado, A.G.S., Pertusatti, J., and Nunes, A.R., 2011, Aspects of Protonation and Deprotonation of Humic Acid Surface on Molecular Conformation, *J. Braz. Chem. Soc.*, 22, 1478–1483.
- Rahmawati, A., dan Santosa, J.S., 2012, Studi Adsorpsi Logam Pb(ii) dan Cd(ii) Pada Asam Humat dalam Medium Air, *ALCHEMY*, 2 (1), 46-57.
- Ramakrishna, S., Mihira, V., Vyshnavi, K.R., and Ranjith, V., 2012, Design and Evaluation of Drug Release Kinetics of Meloxicam Sustained Release Matrix Tablet, *Int. J. Curr. Pharm. Res.*, 1, 90-99.
- Sachan, K.N., Pushkar, S., Jha, A., and Bhattacharya, A., 2009, Sodium alginate: the wonder polymer for controlled drug delivery, *J. Pharm. Res.*, 2 (8), 1191–1199.
- Sahai, V., 1991, *Principles and Practices of Crop Production*, Inter-India Publications, New Delhi.
- Salisu, A., Sanagi, M.M., Abu Naim, A., Wan Ibrahim, W.A., and Abd Karim, K.J., 2016, Removal of Lead Ions from Aqueous Solutions Using Sodium Alginategraft-Poly(methyl methacrylate) Beads, *Desalin. Water Treat.*, 57, 15353–15361.
- Salman, Febriyenti, dan Akmal, D., 2015, Pengaruh Penggunaan Penyalut *Bioblend* PS/PCL terhadap Pelepasan Zat Aktif Urea Granul, *J. Ris. Kim.*, 8 (2).



- Selladurai, R., and Purakayastha, T. J., 2015, Effect of Humic Acid Multinutrient Fertilizers on Yield and Nutrient Use Efficiency of Potato, *J. Plant Nutr.*, 949–956.
- Shahidi, F., and Abuzaytoun, R., 2005, Chitin, Chitosan, And Co-Products: Chemistry, Production, Applications, And Health Effects, *Adv. Food. Nutr Res.*, 49.
- Shaikh, H.K., Kshirsagar, R. V., and Patil, S. G., 2015, Mathematical Model for Drug Release Characterization: A Review, *World J. Pharm. Res.*, 4 (4), 324–338.
- Siepmann, J., and Peppas, N.A., 2011, Higuchi Equation: Derivation, Applications, Use and Misuse, *Int. J. Pharm.*, 418, 6-12
- Singh, B., 2007, Psyllium as Therapeutic and Drug Delivery Agent, *Int. J. Pharm.*, 334 (1-2), 1-14.
- Sonia, T., and Sharma, C., 2011, Chitosan and Its Derivatives for Drug Delivery Perspective, *Adv. Polym. Sci.*, 243, 23-54.
- Stevenson, F.S., 1994, *Humus Chemistry: Genesis, Composition, Reactions*, Interscience Publication, John Wiley & Sons. Inc., New York
- Sukhodub, L.B., Yanovska, G.O., Kuznetsov, V.M., Martynyuk, O.O., and Sukhodub L.F., 2016, Injectable Biopolymer-hydroxyapatite Hydrogels: Obtaining and their Characterization, *J. Nanoelectron. Phys.*, 8 (1).
- Suman, S., Spehia, R. S., and Sharma, V., 2015, Productivity of Capsicum as Influenced by Fertigation with Chemical Fertilizers and Humic Acid, *J. Plant Nutr.*, 410–416.
- Supramaniam, J., Adnan, R., Mohd Kaus, N. H., and Bushra, R., 2018, Magnetic Nanocellulose Alginate Hydrogel Beads as Potential Drug Delivery System, *Int. J. Biol. Macromol.*, 118, 640–648.
- Tang, J., Hong, J., Liu, Y., Baoming, W., Quanxian, H., Liu, L., and Ying, D., 2018, Urea Controlled-Release Fertilizer Based on Gelatin Microspheres, *J. Polym. Environ.*, 26 (5), 1930-1939.
- Trenkel, M.E., 2010, Slow-and Controlled-Release and Stabilized Fertilizers: An Option for Enhancing Nutrient Use Efficiency in Agriculture, *International Fertilizer Industry Association (IFA)*, 2010.
- Wu, L., and Liu, M., 2008, Preparation and Properties of Chitosan-coated NPK Compound Fertilizer with Controlled-release and Water-retention, *Carbohydr. Polym.*, 72 (2), 240-247.



- Xiang, Y., Ji-yun, J., Ping, H., and Ming-zao, L., 2008, Recent Advances on The Technologies to Increase Fertilizer Use Efficiency. *Agri. Sci.*, 7, 469-479.
- Xiaoli, L., Yanfeng, L., Zhang, S., and Zhengfang, Y., 2012, Preparation and Characterization of New Foam Adsorbents of Polyvinyl Alcohol/Chitosan Composites and Their Removal for Die and Heavy Metal from Aqueous Solution, *Chem. Eng. Journal.*, 183, 88-97.
- Yan, X., Jin, J. Y., He, P., and Liang, M. Z., 2008, Recent Advances in Technology of Increasing Fertilizer Use Efficiency, *Sci. Agric.*, 41, 450–459.
- Yan, Z., Chen, S., Li, J., Alva, A., and Chen, Q., 2016, Manure and Nitrogen Application Enhances Soil Phosphorus Mobility in Calcareous Soil in Greenhouses, *J. Environ. Manag*, 181, 26-35.
- Yi, H., Li-Qun, W., William, E.B., Reza, G., Gary, W.R., James, N.C., and Gregory, F.P., 2005, Biofabrication with Chitosan, *Biomacromolecules*, 6 (6), 2881-2894.
- Yang, H.C., Gong, J.L., Zeng, G.M., Zhang, P., Zhang, J., Liu, H.Y., Huan, S.Y., 2017, Polyurethane Foam Membranes Filled with Humic Acid-Chitosan Crosslinked Gels for Selective and Simultaneous Removal of Dyes, *J. Colloid Interface Sci.*, 505, 67–78.