

## DAFTAR PUSTAKA

- Abbasi, H. and Asgari, H., 2018, Removal of Methylene Blue from Aqueous Solutions using Luffa Adsorbent Modified with Sodium Dodecyl Sulfate Anionic Surfactant, *Global NEST J.*, 20(3), 582-588.
- Ahmed, M. J. and Theydan, S. K., 2014, Optimization of Microwave Preparation Conditions for Activated Carbon from *Albizia lebbeck* Seed Pods for Methylene Blue Dye Adsorption, *J. Anal. Appl. Pyrolysis*, 105, 199-208.
- Amoore, J. E. and Hautala, E., 1983, Odor as an Aid to Chemical Safety: Odor Thresholds Compared with Threshold Limit Values and Volatilities for 214 Industrial Chemicals in Air and Water Dilution, *J. Appl. Toxicol.*, 3(6), 272-290.
- Anonim, 2011, *The European Pharmacopoeia 7.0*, Council of Europe, Strasbourg.
- Ashter, S. A., 2018, *Technology and Applications of Polymers Derived from Biomass*, Elsevier Inc., Amsterdam.
- Assos, C., 2010, Organic Ligand Complexation Reactions on Aluminium-Bearing Mineral Surfaces Studied via *In-Situ* Multiple Internal Reflection Infrared Spectroscopy, Adsorption Experiments, and Surface Complexation Modelling, *Thesis*, Faculty of Engineering and Physical Sciences, University of Manchester.
- Azizah, Y. dan Marziah, A., 2018, Hidrolisis Ampas Tebu (*Baggase*) Menggunakan HCl menjadi *Cellulose Powder*, *JIRL*, 1(2), 21-25.
- Azzaz, A. A., Jellali, S., Bengharez, Z., Bousselmi, L., and Akrou, H., 2019, Investigations on a Dye Desorption from Modified Biomass by Using a Low-Cost Eluent: Hysteresis and Mechanisms Exploration, *Int. J. Environ. Sci. Technol.*, 16, 7393-7408.
- Basu, P., 2018, *Biomass Gasification, Pyrolysis and Torrefaction*, Elsevier Inc., Amsterdam.
- Brigham, C. J., 2018, *Green Chemistry*, Elsevier Inc., Amsterdam.
- Cable, C. G., 2009, *Handbook of Pharmaceutical Excipients*, 6<sup>th</sup> Ed., Pharmaceutical Press, London.
- Casey, J., 1980, *Pulp and Paper Chemistry and Chemical Technology*, Wiley Interscience Publisher, New York.
- Chan, C. H., Chia, C. H., Zakaria, S., Sajab, M. S., and Chin, S. X., 2015, Cellulose Nanofibrils: A Rapid Adsorbent for the Removal of Methylene Blue, *RSC Advances*, 5(24), 18204-18212.
- Chen, R., Zhang, Y., Shen, L., Wang, X., Chen, J., Ma, A., and Jiang, W., 2015, Lead(II) and Methylene Blue Removal using a Fully Biodegradable Hydrogel based on Starch Immobilized Humic Acid, *Chem. Eng. J.*, 268, 348-355.

- Choi, H. J. and Yu, S. W., 2019, Biosorption of Methylene Blue from Aqueous Solution by Agricultural Bioadsorbent Corncob, *Environ. Eng. Res.*, 24(1), 99-106.
- Courtie, M., and Mawere, E., 2013, Kinetic Modeling of Methylene Blue and Crystal Violet Dyes Adsorption on Alginate-Fixed Water Hyacinth in Single and Binary Systems, *Am. J. Anal. Chem.*, 4, 17-24.
- Daneshvar, E., Vazirzadeh, A., Niazi, A., Kousha, M., Naushad, M., and Bhatnagar, A., 2017, Desorption of Methylene Blue Dye from Brown Macroalga: Effects of Operating Parameters, Isotherm Study and Kinetic Modeling, *J. Clean. Prod.*, 152, 443-453.
- Donaldson, L., Nanayakkara, B., and Harrington, J., 2017, *Encyclopedia of Applied Plant Sciences*, 2<sup>nd</sup> Ed., Elsevier Inc., Amsterdam.
- El-Shahawy, T. A. E., Khater, M. A., and Sharara, F. A., 2017, Eco-genetic Study on Water Hyacinth, *Eichhornia crassipes* (Mart.) Solms, The World's Most Invasive Aquatic Plant, *Agric. Eng. Int.*, 19, 69-79.
- Elzatahry, A. A., Soliman, E. A., Eldin, M. S., and Youssef, M. E., 2010, Experimental and Simulation Study on Removal of Methylene Blue Dye by Alginate Micro-Beads, *Am. J. Sci.*, 6(10), 846-851.
- Fertah, M., Belfkira, A., Dahmane, E., Taourirte, M., and Brouillette, F., 2017, Extraction and Characterization of Sodium Alginate from Moroccan *Laminaria digitata* Brown Seaweed, *Arab. J. Chem.*, 10, 3707-3714.
- Foo, K. Y., 2012, Preparation, Characterization and Evaluation of Adsorptive Properties of Orange Peel Based Activated Carbon via Microwave Induced K<sub>2</sub>CO<sub>3</sub> Activation, *Bioresour. Technol.*, 104, 679-686.
- Foo, K. Y., and Hameed, B.H., 2010, Insights into the Modeling of Adsorption Isotherm Systems, *Chem. Eng. J.*, 156 (1), 2-10.
- Gao, X., Guo, C., Hao, J., Zhao, Z., Long, H., and Li, M., 2020, Adsorption of Heavy Metal Ions by Sodium Alginate Based Adsorbent - A Review and New Perspectives, *Int. J. Bio. Macromol.*, 164, 4423-4434.
- Ghaly A, Ananthashankar R, Alhattab M, and Ramakrishnan, V. 2014, Production, Characterization and Treatment of Textile Effluents: A Critical Review, *J. Chem. Eng. Proc. Technol.*, 5, 1-18.
- Guo, X. and Wang, J., 2019, A General Kinetic Model for Adsorption: Theoretical Analysis and Modeling, *J. Mol. Liq.*, 288, 1-8.
- Gupta, S. S., Bhattacharyya, K. G., 2011, Kinetics of Adsorption of Metal Ions on Inorganic Materials: A Review, *Adv. Colloid Interface Sci.*, 162, 39-58.
- Hasanah, A. N., Elyani, I., Sriwidodoa, Muchtaridi, Muhtadib, A., and Musfiroh, I., 2015, Epichlorohydrin as Crosslinking Agent for Synthesis of Carboxymethyl Cellulose Sodium (Na-CMC) as Pharmaceutical Excipient

- from Water Hyacinth (*Eichhornia Crassipes* L.), *Int. J. Chem. Sci.*, 13(3), 1227-1237.
- Haug, A., 1961, Dissociation of Alginic Acid, *Acta Chem. Scand.*, 15(4), 950-952.
- Ho, Y. and McKay, G., 2000, The Kinetics of Sorption of Divalent Metal Ions onto Sphagnum Moss Peat, *Water Res.*, 34(3), 735-742.
- Ho, Y. and Ofomaja, A. E., 2006, Biosorption Thermodynamics of Cadmium on Coconut Copra Meal as Biosorbent. *Biochem. Eng. J.*, 30, 117-123.
- Hossain, M. A., Ngo, H., Hao, W. S., Guo, and Nguyen, T. V., 2012, Removal of Copper from Water by Adsorption onto Banana Peel as Bioadsorbent, *Int. J. of Geomate*, 2(2), 227-234.
- Hu, H. and Xu, K., 2020, *High-Risk Pollutants in Wastewater*, Elsevier Inc., Amsterdam.
- Hussin, M. H., Pohan, N. A., Garba, Z. N., Kassim, M. J., Rahim, A. A., Brosse, N., and Haafiz, M. K. M., 2016, Physicochemical of Microcrystalline Cellulose from Oil Palm Fronds as Potential Methylene Blue Adsorbents, *Int. J. Bio. Macromol.*, 92, 11-19.
- Hussin, Z. M., Talib, N., Hussin, N. M., Hanafiah, M. A. K. M., and Khalir, W. K. A. W. M., 2015, Methylene Blue Adsorption onto NaOH Modified Durian Leaf Powder: Isotherm and Kinetic Studies, *Am. J. Environ. Eng.*, 5(3A), 38-43.
- Istirokhatun, T., Rokhati, N., Rachmawaty, R., Meriyani, M., Priyanto, S., and Susanto, H., 2015, Cellulose Isolation from Tropical Water Hyacinth for Membrane Preparation, *Procedia Environ. Sci.*, 23, 274-281.
- Juir, N., Marlina, dan Rahmi, 2017, Pengaruh Penambahan Epiklorohidrin Terhadap Sifat Mekanik dan Daya Serap Film Kitosan Sebagai Adsorben, *J. RKL.*, 12(1), 31-36.
- Julianto, H., Farid, M., dan Rasyida, A., 2017, Ekstraksi Nanoselulosa dengan Metode Ekstraksi Asam sebagai Penguat Komposit Absorpsi Suara, *J. Tek. ITS*, 6(2), 242-245.
- Karak, N., 2012, *Vegetable-Oil Based Polymers*, Woodhead Pub., Cambridge.
- Klavins, M. and Eglite, L., 2002, Immobilisation of Humic Substances, *Colloids Surf., A*, 203, 47-54.
- Kulkarni, S. J. and Kaware, J. P., 2013, A Review on Research for Cadmium Removal from Effluent, *Int. J. Eng. Sci. Innov. Technol.*, 2(4), 465-469.
- Kuo, C. K. and Ma, P. X., 2001, Ionically Crosslinked Alginate Hydrogels as Scaffolds for Tissue Engineering: Structure, Gelation Rate and Mechanical Properties, *Biomaterials*, 22(6), 511-521.
- Labiebah, G., Gunawan, Djunaidi, M. C., Haris, A., and Widodo, D. S., 2019, Removal of Methylene Blue using Used Paper Powder, *J. Kim. Sains Apl.*, 22(1), 23-28.

- Lavanya, D., Kulkarni, P.K., Dixit, M., Raavi, P. K., and Krishna, L. N. V., 2011, Sources of Cellulose and Their Applications – A Review, *Int. J. Drug. Formul. Res.*, 2(6), 19-38.
- Lee, H. V., Hamid, S. B. A., and Zain, S. K., 2014, Conversion of Lignocellulosic Biomass to Nanocellulose: Structure and Chemical Process, *Sci. World. J.*, 2014, 1-20.
- Levine, I. N., 2009, *Physical Chemistry*, 6<sup>th</sup> Ed., McGraw-Hill, New York.
- Lindman B., Medronho, B., Alves, L., Costa, C., Edlund, H., and Norgren, M., 2017, The Relevance of Structural Features of Cellulose and Its Interaction to Dissolution, Regeneration, Gelation, and Plasticization Phenomena, *Phys. Chem. Chem. Phys.*, 19, 23704-23718.
- Linh, H. X., Thu, N. T., Toan, T. Q., Huong, D. T., Giang, B. T., Ha, H. K. P., Nguyen, H. T. T., Chung, N. T. K., Nguyen, T. K., and Hai, N. T., 2019, Fast and Effective Route for Removing Methylene Blue from Aqueous Solution by Using Red Mud-Activated Graphite Composites, *J. Chem.*, 2019, 1-7.
- Low, K. S., Lee, C. K., and Tan, K. K., 1995, Biosorption of Basic Dyes by Water Hyacinth Roots. *Bioresour. Technol.*, 52(1), 79-83.
- Luzi F., Puglia D., Sarasini F., Tirillo J., Maffei G., Zuerro A., Lavecchia R., Kenny J. M., and Torre L., 2019, Valorization and Extraction of Cellulose Nanocrystals from North African Grass: *Ampelodesmos Mauritonicus* (Diss), *Carbohydr. Polym.*, 209, 328-337.
- Mandal, A. and Chakrabarty, D., 2011, Isolation of Nanocellulose from Waste Sugarcane Bagasse (SCB) and Its Characterization, *Carbohydr. Polym.*, 86, 1291-1299.
- Mhemmed, A., 2018, A General Overview on the Adsorption, *IJONS*, 9(51), 16127-16131.
- Minh, V. X., Hanh, L. T. M., Lan, P. T., Van Bien, T., and Dung, N. T., 2020, Synthesis of Fe<sub>3</sub>O<sub>4</sub>/Alginate Composite for Dye Removal from Aqueous Solution, *Vietnam J. Chem.*, 58(2), 185-190.
- Mohammed, N., Grishkewich, N., Berry, R. M., and Tam, K. C., 2015, Cellulose Nanocrystal-Alginate Hydrogel Beads as Novel Adsorbents for Organic Dyes in Aqueous Solutions, *Cellulose*, 22(6), 3725-3738.
- Navarra, M. A., Bosco, C. D., Moreno, J. S., Vitucci, F. M., Paolone, A., and Panero, S., 2015, Synthesis and Characterization of Cellulose-Based Hydrogels to be Used as Gel Electrolytes, *Membranes*, 5, 810-823.
- Nuringtyas, T. R., 2010, *Karbohidrat*, UGM Press, Yogyakarta.
- Pagliaro, M., 2017, *Glycerol*, Elsevier, Amsterdam.

- Palit, D. and Moulik, S. P., 2000, Adsorption of Methylene Blue on Cellulose from Its Own Solution and Its Mixture with Methyl Orange, *Indian J. Chem.*, 39A, 611-617.
- Pawar, S. N. and Edgar, K. J., 2012, Alginate Derivatization: A Review of Chemistry, Properties, and Applications, *Biomaterials*, 33, 3279-3305.
- Poomsawat, W., Tsalidis, G., Tsekos, C., and Jong, W., 2019. Experimental studies of Furfural Production From Water Hyacinth (*Eichhornia Crassipes*), *Energy Sci. Eng.*, 7(5), 2155-2164.
- Praselia, I. G. N. J. A., Deviana, S., Damayanti, T., Cahyadi, A., and Wirasuta, I. M. A. G., 2018, The Effect of NaOH Concentration in Delignification Process on Microcrystalline Cellulose from Green Algae (*Cladophora sp.*) as the Renewable Marine Product, *J. Pharm. Sci. Community*, 15(2), 68-71.
- Punitha, S., Sangeetha, K., and Bhuvaneswari, M., 2015, Processing of Water Hyacinth Fiber to Improve Its Absorbency, *Int. J. Curr. Adv. Res.*, 3(8), 290-294.
- Rabago, J. J. S., Ramos, R. L., Utrilla, J. R., Perez, R. O., and Cordova, F. J. C., 2019, Biosorption Mechanism of Methylene Blue from Aqueous Solution onto White Pine (*Pinus Durangensis*) Sawdust: Effect of Operating Conditions, *Sustain. Environ. Res.*, 27, 32-40.
- Rakotoarisoa, T. F., Waeber, P. O., Richter, T., and Mantilla-Contreras, J., 2015. Water Hyacinth (*Eichhornia crassipes*) Any Opportunities for the Alaotra Wetlands and Livelihoods, *Madag. Conserv. Dev.*, 10, 128-136.
- Riyanto dan Julianto, T. S., 2009, *Degradasi Senyawa Metilen Biru dengan Metode Elektrolisis Menggunakan Elektroda Platinum*, Proyek Penelitian Hibah Bersaing DIKTI, Yogyakarta.
- 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.
- Segal, L., Creely, J. J., Martin, A. E., and Conrad, C. M., 1959, An Empirical Method for Estimating the Degree of Crystallinity of Native Cellulose Using the X-Ray Diffractometer, *Text. Res. J.*, 29(10), 786-794.
- Schwanninger, M., Rodrigues, J. C., Pereira, H., and Hinterstoesser, B., 2004, Structural Analysis of Photodegraded Lime Wood by Means of FT-IR and 2D IR Correlation Spectroscopy, *Vib. Spectrosc.*, 36, 23-40.
- Shimokawa, T., Yoshida, S., Takeuchi, T., Murata, K., Ishii, T., and Kusakabe, I., 1996, Preparation of Two Series of Oligo-Guluronic Acids from Sodium Alginate by Acid Hydrolysis and Enzymatic Degradation, *Biosci. Biotechnol. Biochem.*, 60(9), 1532-1534.
- Sills, D. L. and Gossett, J. M., 2012, Using FTIR to Predict Saccharification from Enzymatic Hydrolysis of Alkali Pretreated Biomasses, *Biotechnol.*, 109, 353-362.

- Sousa, H. R., Silva, L. S., Sousa, P. A. A., Sousa, R. R. M., Fonseca, M. G., Osajima, J. A., and Silva-Filho, E. C., 2019, Evaluation of Methylene Blue Removal by Plasma Activated Palygorskites, *J. Mater. Res. Technol.*, 8(6), 5432–5442.
- Stumm, W., 1992, *Chemistry of the Solid-Water Interface*, Wiley Interscience, New York.
- Subaryono, 2010, Modifikasi Alginat dan Pemanfaatan Produknya, *Squalen*, 5(1), 1-7.
- Sun, S., Sun, S., Cao, X., and Sun, R., 2016, The Role of Pretreatment in Improving the Enzymatic Hydrolysis of Lignocellulosic Materials, *Bioresour. Technol.*, 199, 49-58.
- Suryadi, H., Sutriyo, Sari, H. R., and Rosikhoh, D., 2017, Preparation of Microcrystalline Cellulose from Water Hyacinth Powder by Enzymatic Hydrolysis Using Cellulase of Local Isolate, *J. Young Pharm.*, 9(1), 19-23.
- Szabó, L., Gerber-Lemier, S., and Wandrey, C., 2020, Strategies to Functionalize the Anionic Biopolymer Na-Alginate without Restricting Its Polyelectrolyte Properties, *Polymers*, 12(4), 919.
- Szekalska, M., Puciłowska, A., Szymańska, E., Ciosek, P., and Winnicka, K., 2016, Alginate: Current Use and Future Perspectives in Pharmaceutical and Biomedical Applications. *Int. J. Polym. Sci.*, 2016(8), 1-17.
- Tan, C. H. C., Sabar, S., and Hussin, M. H., 2018, Development of Immobilized Microcrystalline Cellulose as an Effective Adsorbent for Methylene Blue Dye Removal, *S. Afr. J. Chem.*, 18, 1-64.
- Tan, K. L. and Hameed, B. H., 2017, Insight into the Adsorption Kinetics Models for the Removal of Contaminants from Aqueous Solutions, *J. Taiwan Inst. Chem. Eng.*, 74, 25-48.
- Tareq, R., Akter, N., and Azam, M. S., 2019, *Biochar from Biomass and Waste*, Elsevier Inc., Amsterdam.
- Thirumalisamy, S. and Subbani, M., 2010, Removal Methylene Blue from Aqueous Solution by Activated Carbon Prepared from the Peel of Cucumis Sativa Fruit by Adsorption, *Bioresources*, 5(1), 419-437.
- Tong, Z., Chen, Y., Liu, Y., Tong, L., Chu, J., Xiao, K., Zhou, Z., Dong, W., and Chu, X., 2017, Preparation, Characterization and Properties of Alginate/Poly( $\gamma$ -Glutamic Acid) Composite Microparticles, *Mar. Drugs*, 15(91), 1-14.
- Tran, H. N., You, S. J., Bandegharaei, A. H., and Chao, H. P., 2017, Mistakes and Inconsistencies Regarding Adsorption of Contaminants from Aqueous Solutions: A Critical Review, *Water Res.*, 120, 88-116.



- Trilokesh, C. and Uppuluri, K. B., 2019, Isolation and Characterization of Cellulose Nanocrystals from Jackfruit Peel, *Scientific Report*, 9(1), 16709-16716.
- Tucker, D., Lu, Y., and Zhang, Q., 2017, From Mitochondrial Function to Neuroprotection-an Emerging Role for Methylene Blue, *Mol. Neurobiol.*, 55(6), 5137-5153.
- Unnikrishnan, P. and Srinivas, D., 2016, *Industrial Catalytic Processes for Fine and Specialty Chemicals*, Elsevier Inc., Amsterdam.
- Vleugels, L. F. W., Ricois, S., Voets, I. K., and Tuinier, R., 2018, Determination of the “Apparent pKa” of Selected Food Hydrocolloids Using Ortho-Toluidine Blue, *Food Hydrocolloids*, 81, 273-283.
- Wuzburg, O. B., 1986, *Modified Starches: Properties and Uses*, CRC Press Inc., Florida.
- Xia, Y., Yao, Q., Zhang, W., Zhang, Y., and Zhao, M., 2015, Comparative Adsorption of Methylene Blue by Magnetic Baker’s Yeast and EDTAD-Modified Magnetic Baker’s Yeast: Equilibrium and Kinetic Study, *Arab. J. Chem.*, 2015, 1-10.
- Xu, R. K., Xiao, S.C., Yuan, J. H., and Zhao, A.Z., 2011, Adsorption of Methyl Violet from Aqueous Solutions by the Biochars Derived from Crop Residues, *Bioresour. Technol.*, 102(22), 10293-10298.
- Zango, Z. U., and Imam, S. S., 2018, Evaluation of Microcrystalline Cellulose from Groundnut Shell for the Removal of Crystal Violet and Methylene Blue, *J. Nanosci. Nanotechnol.*, 8(1), 1-6.
- Zheng, D., Zhang, Y., Guo, Y., and Yue, J., 2019, Isolation and Characterization of Nanocellulose with a Novel Shape from Walnut (*Juglans Regia* L.) Shell Agricultural Waste, *Polymers*, 11(7), 1130-1144.
- Zhu, C., Feng, Q., Ma, H., Wu, M., Wang, D., and Wang, Z., 2018, Effect of Methylene Blue on the Properties and Microbial Community of Anaerobic Granular Sludge, *Bioresources*, 13(3), 6033-6046.