

DAFTAR PUSTAKA

- Adamson, A.W., dan Gast, A.P., 1997, *Physical Chemistry of Surface*, 6th Edition, John Willey and Sons. Inc., New York.
- Alzaydien, A. S., 2009, Adsorption of Methylene Blue from Aqueous Solution onto A Low-Cost Natural Jordanian Tripoli, *Am. J. Env. Sci.*, 5(3), 197-208.
- Anggraeny, B. O. D., Sabarudin, A., dan Rumhayati, B., 2014, Pembuatan Kitosan Makropori Menggunakan Garam Dapur dan Aplikasinya terhadap Adsorpsi Methyl Orange, *Kimia Student J.*, 1(1), 1-7.
- Atkins, P.W., 1997, *Kimia Fisika*, Jilid 2, Edisi Keempat, Erlangga, Jakarta.
- Azhar, S.S., Liew, A.G., Suhardy, D., Hafiz, K.F., and Hatim, M.D., 2005, Dye Removal from Aqueous Solution by Using Adsorption on Treated Sugarcane Bagasse, *Am. J. Appl. Sci.*, 2(11), 1499-1503.
- Beppu, M. M., and Santana, C. C., 2001, In Vitro Biomineralization of Chitosan, *Key. Eng. Mat.*, 31, 192–195.
- Bokau, N. S., 2013, Sintesis Membran Kitosan Termodifikasi Silika Abu Sekam Padi untuk Proses Dekolorisasi, *Skripsi*, Jurusan Kimia FMIPA UNNES, Semarang.
- Chao, A-Chong., Yu, S-Huei., and Chuang, G-Syong., 2006, Using NaCl Particles as Poren to Prepare a Highly Adsorbent Chitosan Membranes. *J. Membrane Sci.*, 280, 163-174.
- Chen, A-Hwang., and Chen, S-Ming., 2009, Biosorption of Azo Dyes from Aqueous Solution by Glutaraldehyde Crosslinked Chitosans, *J. Hazard. Mater.*, 172, 1111–1121.
- Fajarwati, F.I., 2015, Efek Taut Silang Glutaraldehyda pada Kompleks Polielektrolit Kitosan-Karboksometil Selulosa terhadap Adsorpsi Biru Metilen, *Tesis*, Jurusan Kimia FMIPA UGM, Yogyakarta.
- Ghosh, D., and Bhattacharyya, K.G., 2002, Adsorption of Methylene Blue on Kaolinite, *Appl. Clay Sci.*, 20, 295-300.
- Gupta, N., Kushwaha, A.K., and Chattopadhyaya, M.C., 2011, Kinetics and Thermodynamics of Malachite Green Adsorption on Banana Pseudo-Stem Fibers, *J. Chem. Pharm. Res.*, 3(1), 284-296.

- Gupta, S. S., and Bhattacharyya, K. G., 2005, Interaction of Metal Ions with Clays: A Case Study with Pb(II), *Appl. Clay Sci.*, 30, 199-208.
- Gupta, V., Ali. I., Saini, V.K., Gerven, T.V., Bruggen, B.V., and Vandecasteele C., 2005, Removal of Dyes form Wastewater using Bottom Ash, *Ind. Eng. Chem. Res.*, 44, 3655-3664.
- Gürses, A., Karaca, S., Dogar, C., Bayrak, R., Acikyildiz, M., and Yalcin, M., 2004, Determination of Adsorptive Properties of Clay/Water System: Methylene Blue Sorption, *J. Colloid Interf. Sci.*, 269, 310-314.
- Handayani, L. W., Riwayati, I., Ratnani, R. D., 2015, Adsorpsi Pewarna Metilen Biru Menggunakan Senyawa Xanthat Pulpa Kopi, *Momentum*, 11 (1), 19-23.
- Hamdaoui, O., and Chiha, M., 2006, Removal Of Methylene Blue From Aqueous Solution By Wheat Bran, *Acta Chim. Slov.*, 54(2), 407-418.
- Hamdaoui, O., 2006, Batch Study of Liquid-Phase Adsorption of Methylene Blue using Cedar Sawdust and Crushed Brick, *J. Hazard. Mater.*, 135, 264-273.
- Hawley, 1981, *Condensed Chemical Dictionary*, 7th Ed., Van Nortrand Reinhold, New York.
- Ho, Y. S., and McKay, G., 1998, A Comparison of Chemisorption Kinetic Models Applied to Pollutant Removal and Various Sorbent, *T. I. Chem. Eng.*, 76, 332-340.
- Ida, A.G., Diantariani, N.P., dan Nikmah, Y.F., 2011, Fotodegradasi Metilen Biru dengan Sinar UV dan Katalis Al₂O₃, *J. Kimia*, 5(11), 31-42.
- Khan, T. A., Peh, K. K., and Ch'ng, H. S., 2002, Reporting Degree of Deacetylation Values of Chitosan: The Influence of Analytical Methods, *J. Pharm. Sci.*, 5, 205-212.
- Kurita, K., 2001, Controlled Functionalization of The Polysaccharide Chitin, *J. Polym. Sci.*, 26, 1921-71.
- Liu, T., An, Q-Fu., Wanga, X-San., Zhao, Q., Zhu, B-Ku., Gao, C-Jie., 2014, Preparation and Properties of PEC Nano Composite Membranes with Carboxymethyl Cellulose and Modified Silica, *Carbohydr. Polym.*, 106, 403-409.
- Mardila, V. T., Sabarudin, A., dan Rumhayati, B., 2014, Pembuatan Kitosan Makropori Menggunakan Epichlorohydrin sebagai Cross-Linker dan

Aplikasinya terhadap Adsorpsi Methyl Orange, *Kimia Student J.*, 1(2), 182-188.

Marzuki, I., 2012, Pelepasan Terkendali Kalium Klorida dalam Mikrosfer Kitosan dengan Metode Taut Silang, *Skripsi*, Jurusan Teknik Kimia FT UI, Depok.

Mulder, M., 1991, *Basic Principles of Membrane Technology*, Kluwer Academic Publisher, Netherlands.

Ngah, 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.

Nugroho, P. S. A., 2014, Pelepasan Kurkumin dari Nanopartikel Kitosan-Karboksimetil selulosa-Glutaraldehyda, *Tesis*, Jurusan Kimia FMIPA UGM, Yogyakarta.

Nussinovitch A., 1997, *Hydrocolloid Applications*, Chapman and London, Israel.

Oktari, L.R., 2014, Pembuatan Film Komposit Kompleks Polielektrolit Kitosan/ κ -Karaginan dan Pemanfaatannya Sebagai Adsorben Metilen Biru, *Tesis*, Jurusan Kimia FMIPA UGM, Yogyakarta.

Okuyama, K., Noguchi, K., Miyazawa, T., Yui, T., and Ogawa, K., 1997, Molecular and Crystal Structure of Hydrated Chitosan, *Macromolecules*, 30, 5849–5855.

Oscik, J., 1982, *Adsorption*, 1st Ed., Ellis Howard Limited, Chicester.

Ozer, A., and Dursun, G., 2007, Removal of Methylene Blue from Aqueous Solution by Dehydrated Wheat Bran Carbon, *J. Hazard. Mater.*, 146, 262–9.

Patil, J. S., Kamalapur, M. V., Marapur, S. C., and Kadam, D. V., 2010, Ionotropic Gelation and Polyelectrolyte Complexation: The Novel Techniques to Design Hydrogel Particulate Sustained, Modulated Drug Delivery System: A Review, *J. Nanomater. Biostruct.*, 5(1), 241-248.

Prasetyo, E.A., 2015, Pembuatan Membran Makropori Kitosan Pektin Tertaut Silang Glutaraldehyda Sebagai Adsorben Biru Metilen, *Skripsi*, Jurusan Kimia FMIPA UGM, Yogyakarta.

Rahman, I. A., and Saad, B., 2003, Utilization of Guava Seeds as A Source of Activated Carbon for Removal of Methylene Blue from Aqueous Solution, *Malaysian J. Chem.*, 5, 8-14.

- Ramadhani, A., Muhdarina, Linggawati, A., 2015, Kapasitas Adsorpsi Metilen Biru oleh Lempung Teraktivasi Asam Sulfat, *JOM MIPA*, 2(1), 232-238.
- Rosca, C., Popa, M. M., Lisa, G., and Chitanu, C. G., 2005, Interaction of Chitosan with Natural or Synthetic Anionic Polyelectrolytes: 1. The ChitosanCarboxymethylcellulose Complex, *Carbohydr. Polym.*, 62, 35-41.
- Saha, T. K., Bhoumik, N. K., Karmaker, S., Ahmed, M. G., Ichikawa, H., and Fukumori, Y., 2010, Adsorption of Methyl Orange onto Chitosan from Aqueous Solution, *J. Water Res. Protect.*, 2, 898-906.
- Salgueiro, A.M., Daniel-da-silva, A.L., Girão, A.V., Pinheiro, P.C., and Trindade, T., 2013, Unusual Dye Adsorption Behavior of κ -Carrageenan Coated Superparamagnetic Nanoparticles, *Chem. Eng. J.*, 229, 276-284.
- Saraswati, D. H., 2015, Penentuan Point of Zero Charge (PZC) Kulit Buah Manggis (*Garcinia mangostana L.*) dan Aplikasinya pada Adsorpsi Au(III) dan Cu(II), *Skripsi*, Jurusan Kimia FMIPA UGM, Yogyakarta.
- Savant, V., 2001, Protein Adsorption on Chitosan-Polyanion Complexes: Application to Aqueous Food Processing Wastes, *Thesis*, Departement of Food Science and Technology, Oregon State University, United States.
- Sen, S., and Demirer, G. N., 2003, Anaerobic Treatment of Synthetic Textile Wastewater Containing a Reactiv Azo Dye, *J. Env. Eng.*, 129595-129601.
- Sharma, Y.C., Upadhyay, Uma, S.N., and Gode, F., 2009, Adsorptive Removal of Basic Dye from Water and Wastewater by Activated Carbon, *J. Appl. Sci. Env. San.*, 4(1), 21-28.
- Silitonga, F.S., 2014, Adsorpsi dan Desorpsi Metilen Biru pada Membran Polielektrolit Kompleks Kitosan-Pektin Tertaut Silang Glutaraldehida, *Tesis*, Jurusan Kimia FMIPA UGM, Yogyakarta.
- Silverstein, R.M., Bassler, G.C., and Morrill, T.C., 1991, *Spectrometric Identification of Organic Compound*, 5th Edition, John Willey and Sons. Inc., New York.
- Siswati, I., Sabarudin, A., dan Darjito, 2014, Pembuatan Kitosan Makropori Menggunakan Ethylene Glycol Diglycidyl Ether (EGDE) sebagai Cross-Linker dan Aplikasinya terhadap Adsorpsi Methyl Orange, *Kimia Student J.*, 1(2), 175-181.
- Stephenson, T., Judd, S., Jeffresin, B., and Brindle, K., 2002, *Membrane Bioreactor for Wastewater Treatment*, IWA Publishing, London.

- Sugita, P., Wukirsari, T., Sjahriza, A., dan Wahyono, D., 2009, *Kitosan: Sumber Biomaterial Masa Depan*, Penerbit IPB Press, Bogor.
- Sun, S., Wang, L., and Wang, A., 2006, Adsorption Properties of Crosslinked Carboxymethyl-Chitosan Resin with Pb(II) as Template Ions, *J. Hazard. Mater.*, 136, 930–937.
- Tammi, T., Suaniti, N. M., dan Manurung, M., 2013, Variasi Konsentrasi dan pH terhadap Kemampuan Kitosan dalam Mengadsorpsi Metilen Biru, *J. Kimia*, 7(1), 11-18.
- Tanasale, M. F. J. D. P., dan Fransina, E. G., 2007, Studi Kinetika Adsorpsi Biru Metilen pada Kitin dan Kitosan, *J. Sains. MIPA.*, 13 (2), 171-176.
- Tanasale, M. F. J. D. P., Killay, A., dan Marsela, S. L., 2012, Kitosan dari Limbah Kulit Kepiting Rajungan (*Portunus sanguinolentus L.*) sebagai Adsorben Zat Warna Biru Metilena, *J. Nat. Ind.*, 14(2), 165-171.
- Tarirai, C., 2005, Cross-Linked Chitosan Matrix Systems for Sustained Drug Release, *Thesis*, Faculty of Health Sciences, Tshwane University of Technology, Pretoria.
- Toongdeesoontorn, W., Mauer, L. J., Wongruong, S., Sriburi, P., and Rachtanapun P., 2011, Effect of Carboxymethyl Cellulose Concentration on Physical Properties of Biodegradation Cassava Starch-Based Films, *Chem. Central J.*, 5 (6).
- Tuny, M.T., 2013, Adsorpsi Desorpsi Metilen Biru pada Membran Kompleks Polielektrolit (PEC) Kitosan-Pektin, *Tesis*, Jurusan Kimia FMIPA UGM, Yogyakarta.
- Wahab, O. A., Nemr, A. E., Sikaily, A. E., and Khalded, A., 2005, Use of Rice Husk for Adsorption of Direct Dyes from Aqueous Solution: A Case Study of Direct F. Scarlet, *Egypt. J. Aquat. Res.*, 31.
- Weng, C-Huang., Sharma, Y. C., Chu, S-Hua., 2008, Adsorption of Cr(VI) from Aqueous Solutions by Spent Activated Clay, *J. Hazard. Mater.*, 155, 65–75
- Yana, H., Zhanga, W., Kana, X., Donga, L., Jianga, Z., Li, H., Yanga, H., Chenga, R., 2011, Sorption of Methylene Blue by Carboxymethyl Cellulose and Reuse Process in A Secondary Sorption, *Colloids and Surfaces*, 380, 143–151.
- Yang, W-Yi., Thirumavalavan, M., Malini, M., Annadurai, G., and Lee, J-Fwu, 2014, Development of Silica Gel-Supported Modified Macroporous Chitosan

Membranes for Enzyme Immobilization and Their Characterization Analyses, *J. Membrane Biol.*, 247, 549-559.

Yu, B., Zhang, X., Xie, J., Wu, R., Liu, X., Li, H., Chen, F., Yang, H., Ming, Z., Yang, S-Tao, 2015, Magnetic Graphene Sponge for The Removal of Methylene Blue, *J. Appl. Surf. Sci.*, 351, 765–771.

Zafira, 2010, *Studi Kemampuan Lumpur Alum untuk Menurunkan Konsentrasi Fluorida dalam Air Limbah Industri Pupuk*, Institut Teknologi Sepuluh Nopember, Surabaya.

Zhao, Z., Liu, N., Yang, L., Wang, J., Song, S., Nie, D., Yang, X., Hou, J., and Wu, A., 2015, Crosslinked Chitosan Polymers as Generic Adsorbents for Simultaneous Adsorption of Multiple Mycotoxins, *Food Control*, 57, 362-369.