



DAFTAR PUSTAKA

- Abdullahi, U.F., E. Igwenagu, A. Mu'azu, S. Aliyu, dan M.I. Umar. 2016. Intrigues of biofilm: A perspective in veterinary medicine. *Veterinary World* 9: 12-18.
- Abrahart, E.N. 1977. Dyes and Their Intermediates. Edisi Kedua. Chemical Publishing, New York.
- Anonim. 2014. Dasar-Dasar Teknologi Pengolahan Limbah Cair. <<http://www.dephut.go.id>>. Diakses 12 Agustus 2015.
- Anonim. 2016. Pengertian Gerabah dan Contohnya. <<http://www.definisimenurutparaahli.com>>. Diakses tanggal 19 September 2017.
- Awang-Hazmi, A.B.Z., M. Zuki, M. Nurdin, A. Jalila, dan Y. Norimah. 2005. Mineral composition of the cockle (*Anadara granosa*) shells of west coast peninsular Malaysia and it's potential as biomaterial for use in bone repair. *Journal of Animal and Veterinary Advances* 6: 591-594.
- Azbar, N., T. Yonar, dan K. Kestioglu. 2004. Comparison of various advanced oxidation processes and chemical treatment methods for COD and colour removal from polyester and acetate fiber dying effluent. *Chemosphere* 55: 81-86.
- Aziz, N. 2016. Bahan Dasar Pembuat Kaca. <<http://www.satujam.com>>. Diakses tanggal 6 April 2017.
- Baier, R.E., A.E. Meyer, R.R. Natiella, dan J.M. Carter. 1984. Surface properties determine bioadhesive outcomes: methods and results. *Journal of Biomedical Materials Research* 18: 327-355.
- Baldev, E., D. Mubarak-Ali, A. Ilavarasi, D. Pandiaraj, K. Ishack, dan N. Thajuddin. 2013. Degradation of synthetic dye, Rhodamin B to environmentally non-toxic products using microalgae. *Colloids and Surfaces B: Biointerfaces* 105: 207-214.
- Bidle, K., H.H. Wickman, dan M. Fletcher. 1993. Attachment of a *Pseudomonas*-like bacterium and *Bacillus coagulans* to solid surface and adsorption of their S-layers protein. *Journal of General Microbiology* 139: 1891-1897.
- Blackburn, R.S. dan S.M. Burkinshaw. 2002. A Greener to cotton dyeing with excellent wash fastness. *Green Chemistry* 4: 47-52.
- Blumel, S., M. Contzen, M. Lutz, A. Stolz, dan H-J. Knackmuss. 1998. Isolation of bacterial strain with the ability to utilize the sulfonated azo compound 4-carboxy-4'-sulfoazo-benzene as the sole source of carbon and energy. *Applied and Environmental Microbiology* 64: 2315-2317.



Bogino, P.C., M.W. Oliva, F.G. Soroche, dan W. Giordano. 2013. The role of bacterial biofilms and surface components in plant-bacterial associations. International Journal of Molecular Sciences 14: 838-859.

Borlee, B.R., A.D. Goldman, K. Murakami, R. Samudrala, D.J. Wozniak, dan M.R. Parsek. 2010. *Pseudomonas aeruginosa* uses cyclic-di-GMP-regulated adhesins to reinforce the biofilm extracellular matrix. Molecular Microbiology 75: 827-842.

Bottero, S., T. Storck, T.J. Heimovaara, M.C.M. van Loosdrecht, M.V. Enzien, dan C. Picioreanu. 2013. Biofilm development and the dynamics of preferential flow paths in porous media. Biofouling: The Journal of Bioadhesion and Biofilm Research 29: 1069-1086.

Bumpus, J.A. dan B.J. Brock. 1998. Biodegradation of crystal violet by the white rot fungus *Phanerochaete chrysosporium*. Applied and Environmental Microbiology 54: 1143-1150.

Callow, M.E. dan J.A. Callow. 2002. Marine biofouling: a sticky problem. Biologist 49: 1-4.

Chao, Y. dan T. Zhang. 2011. Probing roles of lipopolysaccharide type 1 fimbria, and colanic acid in the attachment of *Escherichia coli* strains on inert surfaces. Langmuir 27: 545-553.

Characklis, W.G. dan A.R. Escher. 1988. Microbial Fouling: Initial Event in Marine Biodeterioration. A.A. Balkema, Rotterdam.

Chatib, W. dan O. Sunaryo. 1990. Teknologi Pencelupan. Dalam: Teori Penyempurnaan Tekstil 2. Departemen Pendidikan dan Kebudayaan, Jakarta.

Chen, Z., H. Chen, X. Pan, Z. Lin, dan X. Guan. 2016. Investigation of methylene blue biosorption and biodegradation by *Bacillus thuringiensis* 016. Water, Air, and Soil Pollutions 226: 146-154.

Chung, M.O. dan R.C. Stevens. 1993. Fungal Nutrition and Physiology. John Wiley and Sons, New York.

Crini, G. 2006. Non conventional low-cost adsorbents for dye removal: a review. Bioresources Technology 97: 1061-1085.

Das, K.D., J. Bhowal, A.R. Das, dan A.K. Guha. 2006. Adsorption behavior of Rhodamine B on *Rhizopus oryzae* biomass. American Chemical Society 22: 7265-7272.

Davey, M.E. dan G.O. O'Toole. 2000. Microbial biofilms: from ecology to molecular genetics. Microbiology and Molecular Biology Reviews 64: 847-867.



Donlan, R.M. 2002. Biofilm: microbial life on surface. Emerging Infectious Diseases 8: 881-890.

Dwi, K. 2013. Mengenal Jenis-jenis Plastik. <<https://www.bisakimia.com>>. Diakses 19 Januari 2017.

Egan, S. 2001. Production and regulation of fouling inhibitory compounds by the marine bacterium. School of Microbiology and Immunology. Faculty of Life Science. The University of New South Wales. Sydney, Australia.

Fang, H., H. Wenrong, dan L. Yuezhong. 2004. Biodegradation mechanism and kinetics of azo dye 4BS by a microbial consortium. Chemosphere 57: 293-301.

Faradilla, N.D. 2015. Dekolorisasi limbah cair industri tekstil dengan menggunakan biofilm konsorsium bakteri. Fakultas Pertanian, Universitas Gadjah Mada, Yogyakarta. Skripsi.

Galli, J., F. Ardito, L. Calo, L. Mancinelli, M. Imperiali, dan C. Parrilla. 2007. Recurrent upper airway infections and bacterial biofilms. The Journal of Laryngology and Otology 121: 341-345.

Garret, T.R., M. Bhakoo, dan Z. Zhang. 2008. Bacterial adhesion and biofilms on surfaces. Progress in Natural Science 18: 1049-1056.

Gerardi, M.H. 2006. Wastewater Bacteria. John Wiley, New Jersey.

Glen, J.K. dan M.H. Gold. 1983. decolorization of several polymeric dyes by the lignin degrading basidiomycete *Phanerochaete chrysosporium*. Applied and Environmental Microbiology 45: 1742-1747.

Goulter-Thorsen, R.M., E. Taran, I.R. Gentle, K.S. Gobius, dan G.A. Dykes. 2011. CgA production by *Escherichia coli* O157:H7 alters attachment to abiotic surfaces in some growth environments. Applied and Environmental Microbiology 77: 7339-7344.

Gunardi, W.D. 2014. Peranan biofilm dalam kaitannya dengan penyakit infeksi. Jurnal Kedokteran Meditek 15. <<http://ejournal.ukrida.ac.id>>. Diakses 27 November 2017.

Hall-Stoodley, L., J.W. Costerton, dan P. Stoodley. 2004. Bacterial biofilms: from the natural environment to infectious diseases. Nature Reviews. Microbiology 2: 95-108.

Hamadouche, N. 2003. Marine bacteria interaction causing biofouling with biospecific materials. Archimer. Institutional Archive of Ifremer.

Hamdaoui, O., dan M. Chiha. 2006. Removal of methylene blue from aqueous solution by wheat bran. Acta Chimica Slovenica 54: 407-418.



Handayani, L.W., I. Riwayati, dan R.D. Ratnani. 2015. Adsorpsi pewarna metilen biru menggunakan senyawa xanthan pulpa kopi. Momentum 11: 19-23.

Haug, W., A. Schmidt, B. Nortemana, D.C. Hempel, A. Stolz, dan H.J. Knackmuss. 1991. Mineralization of the sulfonated azo dye mordant yellow 6-aminoaphthalene-2sulfonate-degrading bacterial consortium. Applied and Environmental Microbiology 57: 3144-3149.

Henrichsen, J. 1972. Bacterial surface translocation: a survey and classification. Microbiological Reviews 36: 478-503.

Hermanowicz, S. dan J. Ganczarczyk. 1983. Some fluidization characteristics of biological beds. Biotechnology and Bioengineering 25: 1321-1330.

Hill, E.H., dan L.M. Liz-Marz'an. 2017. Toward plasmonic monitoring of surface effects on bacterial quorum-sensing. Current Opinion in Colloid & Interface Science. Doi: 10.1016/j.cocis.2017.04.003.

Ho, Y.S., T.H. Chiang, dan Y.M. Hsueh. 2005. Removal of basic dye from aqueous solution using tree fern as biosorbent. Process Biochemistry 40: 119-124.

Hogan, D.A. and R. Kolter. 2002. Pseudomonas-Candida interaction: an ecological role for virulence factors. Science 296: 229-232.

Huang, F., L. Chen, H. Wang, dan Z. Yan. 2010. Analysis of the degradation mechanism of methylene blue by atmospheric pressure dielectric barrier discharge plasma. Chemical Engineering Journal 162: 250-256.

Hurst, C.J. 2001. Introduction to Environmental Microbiology. Dalam: Manual of Environmental Microbiology 2nd edition. ASM Press, Washington DC.

Jirasripongpun, K., R. Nasanit, J. Niruntasook, dan B. Chhotikasatian. 2007. Decolorization and degradation of CI Reactive Red 195 by *Enterobacter* sp. Thammasat International Journal of Science and Technology 12: 6-11.

Khusnuryani, A. 2014. Kajian bakteri pendegradasi fenol dan kemampuannya dalam membentuk biofilm. Sekolah Pasca Sarjana, Universitas Gadjah Mada, Yogyakarta. Disertasi.

Komarawidjaja, W. 2009. Karakteristik dan pertumbuhan konsorsium mikroba lokal dalam media mengandung minyak bumi. Jurnal Teknologi Lingkungan 10: 114-119.

Kone, T., F. Golfier, L. Orgogozo, C. Oltean, E. Lefevre, J. Block, dan M. Bues. 2014. Impact of biofilm – induced heterogeneities on solute transport in porous media. Water Resources Research 50: 9103-9119.



Kriklavova, L. dan T. Laderer. 2010. The use nanofiber carriers in biofilm reactor for the treatment of industrial wastewater. Ceska Republika 10: 393-399.

Kropfl, K., P. Vladar, K. Szabo, E. Acs, A.K. Bursodi, S. Szikora, S. Caroli, dan G. Zaray. 2006. Chemical and biological characterisation of biofilms formed on different substrata in Tisza river (Hungary). Environmental and Pollution 144: 626-631.

Kumar, A.N., C.N. Reddy, dan S.V. Mohan. 2015. Biomineralization of azo dye bearing wastewater in periodic discontinuous batch reactor: Effect of microaerophilic conditions on treatment efficiency. Bioresource Technology 188: 56-64.

Langer, S., D. Schropp, F. R. Bengelsdorf, M. Othman, dan M. Kazda. 2013. Dynamics of biofilm formation during anaerobic digestion of organic waste. Anaerobe 1: 1-8

Lapsidou, S., L.A. Spyrou, N. Aravas, dan B.E. Rittmann. 2014. Material modeling of biofilm mechanical properties. Mathematical Biosciences 251: 11-15.

Lars, D.R. dan D.B. Weibel. 2011. Physicochemical regulation of biofilm formation. Materials Research Society Bulletin 36: 347-355.

Lazarova, V. dan J. Manem. 1995. Biofilm characterisation and activity analysis in water and wastewater treatment. Water Research 29: 2227-2245.

Lazarova, V. dan J. Manem. 2000. Innovative biofilm treatment technologies for water and wastewater treatment. Biofilms II: Process analysis and applications. Bryers J.D. Wiley-Liss Press, New York.

Leisinger, T. dan W. Brunner. 1986. Poorly Degradable Substances. In: Biotechnology – A Comprehensive Treatise in 8 Volumes. Vol.8 Ed. Schonborn VCH, Germany.

Madigan, M.T., J.M. Martinko, D.A. Stahl, dan D.P. Clark. 2012. Biology of Microorganisms 13th Ed. Pearson Education Inc, Upper Saddle River.

Mahardhika, S.Y. 2015. Bioremediasi limbah cair industri kertas menggunakan imobilisasi enzim kasar dan sel bakteri dengan kalsium alginat. Fakultas Pertanian, Universitas Gadjah Mada, Yogyakarta. Skripsi.

Manurung, R., R. Hasibuan, dan Irvan. 2004. Perombakan zat warna azo reaktif secara anaerob-aerob. Laporan Penelitian. Universitas Sumatera Utara, Medan.

Mara, D. dan N.J. Horan. 2003. Handbook of Water and Wastewater Microbiology. Academic press, United Kingdom.

Marhaeni, B. 2012. Biofouling pada beberapa jenis substrat permukaan kasar dan halus. Sains Akuatik 14: 41-47.



Misson, M. dan F. Razali. 2007. Immobilization of phenol degrader *Pseudomonas* sp. in repeated batch culture using bioceramic and sponge as support materials. Jurnal Teknologi 46: 51-59.

Moliva, M.V., F. Cerioli, dan E.B. Reinoso. 2017. Evaluation of environmental and nutritional factors and *sua* gene on in vitro biofilm formation of *Streptococcus uberis* isolates. Microbial Pathogenesis 107: 144-148.

Montano, J.G. 2007. Combination of advanced oxidation processes and biological treatments for commercial reactive azo dyes removal. Universitat Autonoma de Barcelona, Bellaterra. Thesis.

Nopitasari, S. 2015. Zat Warna. <<http://www.dokumen.tips>>. Diakses tanggal 9 Agustus 2017.

Noraini, C.H.C., N. Morad, I. Norli, T.T. Teng, dan C.J. Ogugbue. 2012. Methylene blue degradation by *Sphingomonas paucimobilis* under aerobic conditions. Water, Air, and Soil Pollutions 223: 5131-5142.

Nugroho, A. 2006. Biodegradasi sludge minyak bumi dalam skala mikrokosmos: Simulasi sederhana sebagai kajian awal bioremediasi land treatment. Makara Teknologi 10: 82-89.

O'Toole, G., H. Kaplan, dan R. Kolter. 2000. Biofilm formation as microbial development. Annual Review Microbiology 54: 49-79.

Otsuni, E., R.G. Chapman, R.E. Holmlin, S. Takayama, dan G.M. Whitesides. 2001. A survey of structure-property relationships of surfaces that resist the adsorption of protein. Langmuir 17: 5605-5620.

Padmavathy, S.S., S.K. Swaminathan, Y.V. Subramanyam, T. Chakrabarti, dan S.N. Kaul. 2003. Aerobic decolorization of reactive azo dyes in presence of various cosubstrates. Chemical and Biochemical Engineering 17: 147-151.

Padmesh, T.V.N., K. Vijayaraghavan, G. Sekaran, dan M. Velan. 2006. Biosorption of acid blue 15 using fresh water macroalga *Azolla filiculoides*: batch and column studies. Dyes and Pigments 71: 77-82.

Pan, T., S.Z. Ren, M.Y. Zu, G.P. Sun, dan J. Guo. 2013. Extractive biodecolorization of triphenylmethane dyes in cloud point system by *Aeromonas hydrophila* DN322P. Applied Microbiology and Biotechnology 97: 6051-6055.

Pandey, A., P. Singh, dan L. Lyengar. 2007. Bacterial decolorization and degradation of azo dyes. International Biodeterioration & Biodegradation 59: 73-84.

Prakash, B., B.M. Veeregowda, dan G. Krishnappa. 2003. Biofilms : A survival strategy of bacteria. Current Science 85: 1299-1307.



- Prasad, A. dan K. Rao. 2013. Aerobic biodegradation of azo dye by *Bacillus cohnii* MTCC 3616; an obligately alkaliphilic bacterium and toxicity evaluation of metabolites by different bioassay systems. *Applied Microbiology and Biotechnology* 97: 7469-7481.
- Priadie, B. 2012. Teknik Bioremediasi Sebagai Alternatif Dalam Upaya Pengendalian Pencemaran Air. *Jurnal Ilmu Lingkungan* 10: 38-48.
- Punzi, M., F. Nilsson, A. Anbalagan, B. Svensson, K. Jonsson, B. Mattiasson, dan M. Jonstrup. 2015. Combined anaerobic-ozonation process for treatment of textile wastewater: removal of acute toxicity and mutagenicity. *Journal of Hazardous Materials* 292: 52-60.
- Purwanto, H. 2011. Isolasi, Uji Aktivitas dan Identifikasi Jamur Pendekolorisasi *Rhodamine B*. Fakultas Pertanian. Universitas Gadjah Mada, Yogyakarta. Skripsi.
- Rahmitha. 2009. Pengaruh posisi persaingan domestik terhadap kemampuan ekspor industri tekstil dan produksi tekstil (TPT) Indonesia. Fakultas Ekonomi, Universitas Indonesia, Depok. Skripsi.
- Rajee, O. dan J. Patterson. 2011. Decolorization of azo dye (Orange MR) by an autochthonous bacterium, *Micrococcus* sp. DBS 2. *Indian Journal of Microbiology* 51: 159-163.
- Reife, A. dan H. Freeman. 1996. Environmental chemistry of dyes and pigments. John Wiley and Sons Inc., New York.
- Ridha, M. dan Darminto. 2016. Analis, densitas, porositas, dan struktur mikro batu apung Lombok dengan variasi lokasi menggunakan metode Archimedes dan software Image-J. *Jurnal Fisika dan Aplikasinya* 12: 124-130.
- Rini, Y.A.P. 2013. Biodegradasi pewarna azo Orange G dengan teknik imobilisasi isolat bakteri. Sekolah Pasca Sarjana, Universitas Gadjah Mada, Yogyakarta. Tesis.
- Romeo, T. 2008. *Bacterial Biofilms*. Springer, Berlin.
- Ross, P., R. Mayer, dan M. Benziman. 1991. Cellulose biosynthesis and function in bacteria. *Microbiological Reviews* 55: 35-58.
- Rudrapa, T., M.L. Biedrzycki, dan H.P. Bais. 2008. Causes and consequences of plant associated biofilms. *Federation of European Microbiological Societies Microbiology Ecology* 64: 153-166.
- Said, N.S. dan R. Marsidi. 2004. Proses aerasi kontak menggunakan media arang kayu untuk mengurangi deterjen dalam air baku. *Jurnal Teknologi Lingkungan P3TL-BPPt* 5: 96-102.



Salle, A.J. 1984. Fundamental Principles of Bacteriology. Tata Mc Graw-Hill Publ.Co., New Delhi.

Sastrawidana, D.K., W.L Bibiana, M.F. Anas, dan A.S. Dwi. 2008. Pemanfaatan konsorsium bakteri lokal untuk bioremediasi limbah tekstil menggunakan sistem kombinasi anaerob-aerob. Berita Biologi 9: 123-132.

Sastrawidana, D.K., S. Maryam, dan I N. Sukarta. 2012. Perombakan air limbah tekstil menggunakan jamur pendekorasi kayu jenis *Polyporus sp* teramobil pada serbuk gergaji kayu. Jurnal Bumi Lestari 12: 382-389.

Sastrawidana, D.K., dan I N. Sukarta. 2013. Uji coba teknologi biofilm konsorsium bakteri pada reaktor semi anaerob-aerob untuk pengolahan air limbah di industri pencelupan tekstil skala rumah tangga. Jurnal Sains dan Teknologi 2: 193-203.

Scardino, A.J. and R. de Nys. 2011. Mini review: biometric models and bioinspired surfaces for fouling control. Biofouling 27: 73-86.

Semde, R., D. Pierre, G. Geuskens, M. Devleeschouwer, dan A.J. Moes. 1998. Study of some important factors involved in azo derivative reduction by *Clostridium perfringens*. International Journal of Pharmacology 161: 45-54.

Seneviratne, G., K. Mihaly, dan I.K. Ivan. 2006. Biofilmed biofertilizer: Novel inoculants for efficient nutrient use in plants. Aciar Australia: 126-130.

Sistenna, D. dan Susanto H. 2013. Sifat optis lapisan ZnO:Ag yang dideposisi di atas substrat kaca menggunakan metode Chemical Solution Deposition (CSD) dan aplikasinya pada degradasi zat warna metilen blue. Youngster Physics Journal 4: 71-80.

Solehah, F. 2010. Isolasi, seleksi, dan karakterisasi jamur pendekolorasi *methylene blue*. Fakultas Pertanian, Universitas Gadjah Mada, Yogyakarta. Skripsi.

Subramaniam, R. dan S.K. Ponnusamy. 2015. Novel adsorbent from agricultural waste (cashew NUT shell) for methylene blue dye removal: Optimization by response surface methodology. Water Resources and Industry 11: 64-70.

Suseno, H. 2003. Penggunaan batuan scoria dari Gunung Kelud Blitar sebagai agregat kasar pada beton ringan struktural. Jurnal Rekayasa Sipil 8: 149-156.

Szikora, S.T., J. Olah, M. Mako, G. Palko, K. Barkacs, dan G. Zaray. 2013. Comparison of different granular solids as biofilm carriers. Microchemical Journal 107: 101-107.

Thomas, W.E., L.M. Nilsson, M. Forero, E.V. Sokurenko, dan V. Vogel. 2004. Shear-dependent ‘stick-and-roll’ adhesion of type 1 fimbriated *Escherichia coli*. Molecular Microbiology 53: 1545-1557.



Tortora, G.J., B.R. Funke., dan C.L. Case. 2010. Microbiology: an introduction. Pearson Benjamin Cummings, United States.

Waters, C.M. dan B.L. Bassler. 2005. Quorum sensing: communication in Bacteria. Annual Review of Cell and Developmental Biology 21: 319-346.

Wevriandini, L. 2016. Dekolorisasi pewarna *vat violet* dalam limbah cair industri tekstil oleh konsorsium bakteri dan jamur dalam bentuk biofilm. Fakultas Pertanian, Universitas Gadjah Mada, Yogyakarta. Skripsi.

Yagub, M.T., T.K. Sen, dan H.M. Ang. 2012. Equilibrium, kinetics, and thermodynamics of methylene blue adsorption by pine tree leaves. Water Air and Soil Pollution 223: 5267-5282.

Yoshida, S., N. Ogawa, T. Fuji, dan S. Tsushima. 2009. Enhanced biofilm formation and 3-chlorobenzoate degrading activity by the bacterial consortium of *Burkholderia* sp. NK8 and *Pseudomonas aeruginosa* PAO1. Journal of Applied Microbiology 106: 790-800.

Zhang, X., P.L. Bishop, dan B.K. Kinkle. 1999. Comparison of extraction methods for quantifying extracellular polymers in biofilm. Water Science and Technology 39: 211-218.