

## DAFTAR PUSTAKA

- Ali, M., Chai, L. Y., Tang, C. J., Zheng, P., Min, X. B., Yang, Z. H., Xiong, L., & Song, Y. X. (2013). The increasing interest of ANAMMOX research in China: Bacteria, process development, and application. *BioMed Research International*, 2013. <https://doi.org/10.1155/2013/134914>
- Ahn, Y. H., & Choi, H. C. (2006). Autotrophic nitrogen removal from sludge digester liquids in upflow sludge bed reactor with external aeration. *Process Biochemistry*, 41(9), 1945–1950. <https://doi.org/10.1016/j.procbio.2006.04.006>
- Allita, Y., Gala, V., Citra, A. A., & Retnoningtyas, E. S. (2018). Pemanfaatan ampas tebu dan kulit pisang dalam pembuatan kertas serat campuran. *Jurnal Teknik Kimia Indonesia*, 11(2), 101. <https://doi.org/10.5614/jtki.2012.11.2.6>
- Anjali, G., & Sabumon, P. C. (2014). Unprecedented development of anammox in presence of organic carbon using seed biomass from a tannery Common Effluent Treatment Plant (CETP). *Bioresource Technology*. <https://doi.org/10.1016/j.biortech.2013.11.061>
- Barber, W. P., & Stuckey, D. C. (1999). The use of the anaerobic baffled reactor (ABR) for wastewater treatment: A review. In *Water Research*. [https://doi.org/10.1016/S0043-1354\(98\)00371-6](https://doi.org/10.1016/S0043-1354(98)00371-6)
- Bernhard, A. (2010). The Nitrogen Cycle: Processes, Players, and Human Impact. *Nature Education Knowledge*, 3(10), 25. [http://128.143.22.36/blandy/blandy\\_web/education/Bay/The Nitrogen Cycle\\_ Processes, Players, and Human Impact \\_ Learn Science at Scitable.pdf](http://128.143.22.36/blandy/blandy_web/education/Bay/The%20Nitrogen%20Cycle_%20Processes,%20Players,%20and%20Human%20Impact_%20Learn%20Science%20at%20Scitable.pdf)
- Bitton, G. (2005). Wastewater Microbiology: Third Edition. In *Wastewater Microbiology: Third Edition*. <https://doi.org/10.1002/9780470901243>
- Badan Pusat Statistik Indonesia. 2019. Indonesian Sugar Cane Statis. In *Issn. 2338-6991*. <https://www.bps.go.id/publication/2019/11/22/9d2b03409986c2dcfcd43ae4/statistik-tebu-indonesia-2018.html>
- Cao, S., Wang, S., Peng, Y., Wu, C., Du, R., Gong, L., & Ma, B. (2013).

Achieving partial denitrification with sludge fermentation liquid as carbon source: The effect of seeding sludge. *Bioresource Technology*. <https://doi.org/10.1016/j.biortech.2013.09.072>

Chamchoi, N., Nitorisavut, S., & Schmidt, J. E. (2008). Inactivation of ANAMMOX communities under concurrent operation of anaerobic ammonium oxidation (ANAMMOX) and denitrification. *Bioresource Technology*, 99(9), 3331–3336. <https://doi.org/10.1016/j.biortech.2007.08.029>

Chen, C.J., Huang, X. xiao, Lei, C. xiao, Zhu, W. jing, Chen, Y. xu, & Wu, W. xiang. (2012). Improving Anammox start-up with bamboo charcoal. *Chemosphere*, 89(10), 1224–1229. <https://doi.org/10.1016/j.chemosphere.2012.07.045>

Chen, C., Sun, F., Zhang, H., Wang, J., Shen, Y., & Liang, X. (2016). Evaluation of COD effect on anammox process and microbial communities in the anaerobic baffled reactor (ABR). *Bioresource Technology*, 216, 571–578. <https://doi.org/10.1016/j.biortech.2016.05.115>

Cho, S., Kambey, C., & Nguyen, V. K. (2020). Performance of anammox processes for wastewater treatment: A critical review on effects of operational conditions and environmental stresses. *Water (Switzerland)*, 12(1). <https://doi.org/10.3390/w12010020>

Daud, M. K., Rizvi, H., Akram, M. F., Ali, S., Rizwan, M., Nafees, M., & Jin, Z. S. (2018). Review of Upflow Anaerobic Sludge Blanket Reactor Technology: Effect of Different Parameters and Developments for Domestic Wastewater Treatment. *Journal of Chemistry*, 2018. <https://doi.org/10.1155/2018/1596319>

Direktorat Jenderal Perkebunan. 2013. Statistik Perkebunan Indonesia : Tebu. Jakarta. Kementerian Pertanian

Du, R., Peng, Y., Cao, S., Wang, S., & Wu, C. (2015). Advanced nitrogen removal from wastewater by combining anammox with partial denitrification. *Bioresource Technology*, 179, 497–504. <https://doi.org/10.1016/j.biortech.2014.12.043>

Duda, A. M. (2006). Policy, legal and institutional reforms for public-private

partnerships needed to sustain large marine ecosystems of East Asia. *Ocean and Coastal Management*, 49(9–10), 649–661. <https://doi.org/10.1016/j.ocecoaman.2006.06.003>

Egli, K., Fanger, U., Alvarez, P. J. J., Siegrist, H., Van der Meer, J. R., & Zehnder, A. J. B. (2001). Enrichment and characterization of an anammox bacterium from a rotating biological contactor treating ammonium-rich leachate. *Archives of Microbiology*, 175(3), 198–207. <https://doi.org/10.1007/s002030100255>

Ermaliza, W. (2019). *Penyisihan Nitrogen Dengan Proses Anammox Memanfaatkan Ijuk Sebagai Media Lekat Pada Reaktor Up-Flow Anaerobic Sludge Blanket Fakultas Teknik - Universitas Andalas*. 118.

Fernández, I., Dosta, J., Fajardo, C., Campos, J. L., Mosquera-Corral, A., & Méndez, R. (2012). Short- and long-term effects of ammonium and nitrite on the Anammox process. *Journal of Environmental Management*, 95(SUPPL.), S170–S174. <https://doi.org/10.1016/j.jenvman.2010.10.044>

G. Lettinga ; L.W. Hulshoff Pol ; I.W. Koster ; W.M. Wiegant ; W.J. De Zeeuw ; A. Rinzema, P. C. G. R. E. R. & S. W. H. (1984). High-Rate Anaerobic Waste-Water Treatment Using the UASB Reactor under a Wide Range of Temperature Conditions High-Rate Anaerobic Waste-Water Treatment Using the UASH Reactor under a Wide Range of Temperature Conditions. *Biotechnology and Bioengineering*, 2. <https://doi.org/10.1080/02648725.1984.10647801>

Graaf, A. A. Van De, Bruijn, P. De, Robertson, L. A., Jetten, M. S. M., & Kuenen, J. G. (1996). Autotrophic growth of anaerobic in a fluidized bed reactor. *Microbiology*, 142, 2187–2196.

Herlambang, A. (2003). *Proses Denitrifikasi dengan Sistem Biofilter untuk Pengolahan Air Limbah*. 46–55. <https://doi.org/https://doi.org/10.29122/jtl.v4i1.272>

Husain, A. A. F., Hasan, W. Z. W., Shafie, S., Hamidon, M. N., & Pandey, S. S. (2018). A review of transparent solar photovoltaic technologies. *Renewable and Sustainable Energy Reviews*, 94(June), 779–791. <https://doi.org/10.1016/j.rser.2018.06.031>

- Indriyati. (2007). Unjuk Kerja Reaktor Anaerob Lekat Diam Terendam Dengan Media Penyangga Potongan Bambu. *Jurnal Teknik Lingkungan*, 8(3), 217–222.
- Isaka, K., Sumino, T., & Tsuneda, S. (2007). High nitrogen removal performance at moderately low temperature utilizing anaerobic ammonium oxidation reactions. *Journal of Bioscience and Bioengineering*, 103(5), 486–490. <https://doi.org/10.1263/jbb.103.486>
- Jarusutthirak, C., & Amy, G. (2007). Understanding soluble microbial products (SMP) as a component of effluent organic matter (EfOM). *Water Research*. <https://doi.org/10.1016/j.watres.2007.03.005>
- Jenni, S., Vlaeminck, S. E., Morgenroth, E., & Udert, K. M. (2014). Successful application of nitrification/anammox to wastewater with elevated organic carbon to ammonia ratios. *Water Research*, 49, 316–326. <https://doi.org/10.1016/j.watres.2013.10.073>
- Jetten, M. S. M., Strous, M., Van De Pas-Schoonen, K. T., Schalk, J., van Dongen, U. G. J. M., Van De Graaf, A. A., Logemann, S., Muyzer, G., Van Loosdrecht, M. C. M., & Kuenen, J. G. G. (1999). The anaerobic oxidation of ammonium. *FEMS Microbiology Reviews*, 22(5), 421–437. [https://doi.org/10.1016/S0168-6445\(98\)00023-0](https://doi.org/10.1016/S0168-6445(98)00023-0)
- Jin, R.-C. C., Yang, G.-F. F., Yu, J.-J. J., & Zheng, P. (2012). The inhibition of the Anammox process: A review. *Chemical Engineering Journal*, 197(November 2017), 67–79. <https://doi.org/10.1016/j.cej.2012.05.014>
- Kartal, B., van Niftrik, L., Keltjens, J. T., Op den Camp, H. J. M., & Jetten, M. S. M. (2012). Anammox-Growth Physiology, Cell Biology, and Metabolism. In *Advances in Microbial Physiology*. <https://doi.org/10.1016/B978-0-12-398264-3.00003-6>
- Kimura, Y., Isaka, K., & Kazama, F. (2011). Effects of inorganic carbon limitation on anaerobic ammonium oxidation (anammox) activity. *Bioresource Technology*. <https://doi.org/10.1016/j.biortech.2010.12.101>
- Kimura, Y., Isaka, K., Kazama, F., & Sumino, T. (2010). Effects of Nitrite Inhibition on Anaerobic Ammonium Oxidation. *Applied Microbiology and Biotechnology*, 86(1), 359–365. <https://doi.org/10.1007/s00253-009-2359-z>

- Kir, M., Kumlu, M., & Eroldoğan, O. T. (2004). Effects of temperature on acute toxicity of ammonia to *Penaeus semisulcatus* juveniles. *Aquaculture*, 241(1–4), 479–489. <https://doi.org/10.1016/j.aquaculture.2004.05.003>
- Kuenen, J. G. (2008). Anammox Bacteria: From Discovery to Application. *Nature Reviews Microbiology*, 6(4), 320–326. <https://doi.org/10.1038/nrmicro1857>
- Kumar, M., Daverey, A., Gu, J. D., & Lin, J. G. (2016). Anammox Processes. In *Current Developments in Biotechnology and Bioengineering: Biological Treatment of Industrial Effluents* (Issue January). <https://doi.org/10.1016/B978-0-444-63665-2.00015-1>
- Laureni, M., Weissbrodt, D. G., Szivák, I., Robin, O., Nielsen, J. L., Morgenroth, E., & Joss, A. (2015). Activity and growth of anammox biomass on aerobically pre-treated municipal wastewater. *Water Research*, 80, 325–336. <https://doi.org/10.1016/j.watres.2015.04.026>
- Leitão, R. C., Van Haandel, A. C., Zeeman, G., & Lettinga, G. (2006). The effects of operational and environmental variations on anaerobic wastewater treatment systems: A review. In *Bioresource Technology*. <https://doi.org/10.1016/j.biortech.2004.12.007>
- Lin, X., & Wang, Y. (2017). Microstructure of anammox granules and mechanisms endowing their intensity revealed by microscopic inspection and rheometry. *Water Research*, 120, 22–31. <https://doi.org/10.1016/j.watres.2017.04.053>
- Lotti, T., Kleerebezem, R., Lubello, C., & van Loosdrecht, M. C. M. (2014). Physiological and kinetic characterization of a suspended cell anammox culture. *Water Research*, 60, 1–14. <https://doi.org/10.1016/j.watres.2014.04.017>
- Molinuevo, B., García, M. C., Karakashev, D., & Angelidaki, I. (2009). Anammox for ammonia removal from pig manure effluents: Effect of organic matter content on process performance. *Bioresource Technology*, 100(7), 2171–2175. <https://doi.org/10.1016/j.biortech.2008.10.038>
- Mosquera-Corral, A., González, F., Campos, J. L., & Méndez, R. (2005). Partial nitrification in a SHARON reactor in the presence of salts and organic carbon compounds. *Process Biochemistry*, 40(9), 3109–3118.

<https://doi.org/10.1016/j.procbio.2005.03.042>

- Mulder, A., van de Graaf, A. A., Robertson, L. A. A., & Kuenen, J. G. G. (1995). Anaerobic ammonium oxidation discovered in a denitrifying fluidized bed reactor. *FEMS Microbiology Ecology*, *16*(3), 177–183. [https://doi.org/10.1016/0168-6496\(94\)00081-7](https://doi.org/10.1016/0168-6496(94)00081-7)
- Niu, Q., He, S., Zhang, Y., Ma, H., Liu, Y., & Li, Y. Y. (2016). Process stability and the recovery control associated with inhibition factors in a UASB-anammox reactor with a long-term operation. *Bioresource Technology*, *203*, 132–141. <https://doi.org/10.1016/j.biortech.2015.12.003>
- Oshiki, M., Shimokawa, M., Fujii, N., Satoh, H., & Okabe, S. (2011). Physiological Characteristics of The Anaerobic Ammonium-Oxidizing Bacterium “Candidatus Brocadia sinica.” *Microbiology*, *157*(6), 1706–1713. <https://doi.org/10.1099/mic.0.048595-0>
- Putnam, L. A., Gambrell, R. P., & Rusch, K. A. (2010). CBOD5 treatment using the marshland upwelling system. *Ecological Engineering*, *36*(4), 548–559. <https://doi.org/10.1016/j.ecoleng.2009.12.002>
- Putra, D. J. (2019). *TA DOLLAS JENNI SAPUTRA*. Universitas Andalas.
- Puyol, D., Carvajal-Arroyo, J. M., Sierra-Alvarez, R., & Field, J. A. (2014). Nitrite (not free nitrous acid) is the main inhibitor of the anammox process at common pH conditions. *Biotechnology Letters*, *36*(3), 547–551. <https://doi.org/10.1007/s10529-013-1397-x>
- Rysgaard, S., & Glud, R. N. (2004). Anaerobic N<sub>2</sub> production in Arctic sea ice. *Limnology and Oceanography*. <https://doi.org/10.4319/lo.2004.49.1.0086>
- Schmid, M., Walsh, K., Webb, R., Rijpstra, W. I. C., Van De Pas-Schoonen, K., Verbruggen, M. J., Hill, T., Moffett, B., Fuerst, J., Schouten, S., Damsté, J. S. S., Harris, J., Shaw, P., Jetten, M., & Strous, M. (2003). Candidatus “Scalindua brodae”, sp. nov., Candidatus “Scalindua wagneri”, sp. nov., Two New Species of Anaerobic Ammonium Oxidizing Bacteria. *Systematic and Applied Microbiology*, *26*(4), 529–538. <https://doi.org/10.1078/072320203770865837>
- Sinninghe D. J. S., Rijpstra, W. I. C., Schouten, S., Fuerst, J. A., Jetten, M. S. M., & Strous, M. (2004). The occurrence of hopanoids in planctomycetes:

Implications for the sedimentary biomarker record. *Organic Geochemistry*.  
<https://doi.org/10.1016/j.orggeochem.2004.01.013>

Siqueira, T. C. A., da Silva, I. Z., Rubio, A. J., Bergamasco, R., Gasparotto, F., Paccola, E. A. de S., & Yamaguchi, N. U. (2020). Sugarcane bagasse as an efficient biosorbent for methylene blue removal: Kinetics, isotherms and thermodynamics. *International Journal of Environmental Research and Public Health*, 17(2), 1–13. <https://doi.org/10.3390/ijerph17020526>

Siswoyo, E., Juliani A., Farida I. 2008. *Penurunan Kadar Chemical Oxygen Demand (COD) pada Air Limbah Domestik Menggunakan Reaktor Aerokarbonbiofilter*. Jakarta : Univesitas Islam Indonesia

Strous, M., Kuenen, J. G., & Jetten, M. S. M. (1999). Key physiology of anaerobic ammonium oxidation. *Applied and Environmental Microbiology*, 65(7), 3248–3250. <https://doi.org/10.1128/aem.65.7.3248-3250.1999>

Supari, Taufik, & Gunawan, B. (2013). *Analisa Kandungan Kimia Pupuk Organik dari Blotong Tebu Limbah* . 10–13.

Suryono, D. D., & Moersidik, S. S. (2015). Kajian Karakteristik Muara Ciliwung dengan Budget Nitrogen (Assessment of Ciliwung Estuary Characteristic with Nitrogen Budget Model). *Jurnal Manusia dan Lingkungan*, 22(1), 32. <https://doi.org/10.22146/jml.18722>

Tang, C. J., Zheng, P., Wang, C. H., Mahmood, Q., Zhang, J. Q., Chen, X. G., Zhang, L., & Chen, J. W. (2011). Performance of high-loaded ANAMMOX UASB reactors containing granular sludge. *Water Research*, 45(1), 135–144. <https://doi.org/10.1016/j.watres.2010.08.018>

Tchobanoglous, G., Burton, F., & Stensel, D. (1991). *Wastewater Engineering Treatment and Reuse (Fourth Edition)*. In *Metcalf & Eddy, Inc.*

Tuyen, N. V., Ryu, J. H., Yae, J. B., Kim, H. G., Hong, S. W., & Ahn, D. H. (2018). Nitrogen removal performance of anammox process with PVA–SA gel bead crosslinked with sodium sulfate as a biomass carrier. *Journal of Industrial and Engineering Chemistry*, 67, 326–332. <https://doi.org/10.1016/j.jiec.2018.07.004>

Van De Graaf, A. A., De Bruijn, P., Robertson, L. A., Jetten, M. S. M. M., & Kuenen, J. G. (1996). Autotrophic growth of anaerobic ammonium-oxidizing

- micro-organisms in a fluidized bed reactor. *Microbiology*, 142(8), 2187–2196. <https://doi.org/10.1099/13500872-142-8-2187>
- van Dongen, U., Jetten, M., & van Loosdrecht, M. (2001). *The SHARON®-Anammox® Process for Treatment of Ammonium Rich Wastewater*. <https://iwaponline.com/wst/article-pdf/44/1/153/429959/153.pdf>
- Wagiman, Pertanian, F. T. (2007). Identifikasi Potensi Produksi Biogas dari Limbah Cair Tahu dengan Reaktor Up-flow Anaerobic Sludge Blanket (UASB). *Bioteknologi*, 4(2), 41–45. <https://doi.org/10.13057/biotek/c040202>
- Waki, M., Tokutomi, T., Yokoyama, H., & Tanaka, Y. (2007). Nitrogen removal from animal waste treatment water by anammox enrichment. *Bioresource Technology*, 98(14), 2775–2780. <https://doi.org/10.1016/j.biortech.2006.09.031>
- Wang, T., Zhang, H., Yang, F., Li, Y., & Zhang, G. (2013). Start-up and long-term operation of the Anammox process in a fixed bed reactor (FBR) filled with novel non-woven ring carriers. *Chemosphere*, 91(5), 669–675. <https://doi.org/10.1016/j.chemosphere.2013.01.026>
- Wett, B., Hell, M., Nyhuis, G., Puempel, T., Takacs, I., & Murthy, S. (2010). Syntrophy of aerobic and anaerobic ammonia oxidisers. *Water Science and Technology*, 61(8), 1915–1922. <https://doi.org/10.2166/wst.2010.969>
- Wijanarka, Sudarno, & Pratama, N. A. (2017). Pertumbuhan Bakteri Anaerobic Ammonia Oxidation (Anammox) Pada Salinitas 2 dan 9 Persen. *Jurnal Biologi Papua*, 9(2), 55–62.
- Wijaya, I. M. W., Soedjono, E. S., & Fitriani, N. (2017). Development of anaerobic ammonium oxidation (anammox) for biological nitrogen removal in domestic wastewater treatment (Case study: Surabaya City, Indonesia). *AIP Conference Proceedings*, 1903(2017). <https://doi.org/10.1063/1.5011532>
- Wilkinson, C., & Salvat, B. (2012). Coastal resource degradation in the tropics: Does the tragedy of the commons apply for coral reefs, mangrove forests and seagrass beds. *Marine Pollution Bulletin*, 64(6), 1096–1105. <https://doi.org/10.1016/j.marpolbul.2012.01.041>
- Xing, Y., & D., I. (2011). Anaerobic Ammonium Oxidation in Waste Water -An Isotope Hydrological Perspective. *Waste Water - Treatment and*



*Reutilization*, April 2011. <https://doi.org/10.5772/16154>

Zhang, L., Liu, M., Zhang, S., Yang, Y., & Peng, Y. (2015). Integrated fixed-biofilm activated sludge reactor as a powerful tool to enrich anammox biofilm and granular sludge. *Chemosphere*, 140, 114–118. <https://doi.org/10.1016/j.chemosphere.2015.02.001>

Zulfa, M. (2020). *Penyisihan Nitrogen dengan Proses Anammox pada Reaktor Up-Flow Anaerobic Sludge Blanket (UASB) Memanfaatkan Batu Apung sebagai Media Lekat*.

Zulkarnaini, Yujie, Q., Yamamoto-ikemoto, R., & Matsuura, N. (2018). One-stage nitritation/anammox process using a biofilm reactor with two-inflow. *Journal of Water and Environment Technology*, 16(2), 106–114. <https://doi.org/10.2965/jwet.17-050>

Zulkarnaini. (2020). *Penemuan dan Aplikasi Anammox* (First). Andalas University Press Padang.

Zulkarnaini, Komala, P. S., & Almi, A. (2021). Anammox Biofilm Process Using Sugarcane Bagasse as An Organic Carrier. *Indonesian Journal of Biotechnology*, 26(1), 25. <https://doi.org/10.22146/ijbiotech.58554>

