

DAFTAR PUSTAKA

- Ali, M., Oshiki, M., & Okabe, S. (2014). Simple, Rapid and Effective Preservation and Reactivation of Anaerobic Ammonium Oxidizing Bacterium "Candidatus Brocadia sinica." *Water Research*, 57(0), 215–222. <https://doi.org/10.1016/j.watres.2014.03.036>
- Ali, M., Oshiki, M., Rathnayake, L., Ishii, S., Satoh, H., & Okabe, S. (2015). Rapid and successful start-up of anammox process by immobilizing the minimal quantity of biomass in PVA-SA gel beads. *Water Research*, 79(0), 147–157. <https://doi.org/10.1016/j.watres.2015.04.024>
- Almi, A. (2019). *Penyisihan Nitrogen dengan Proses Anammox Memanfaatkan Aampas Tebu sebagai Media Lekat pada Reaktor Up-Flow Anaerobic Sludge Blanket*. 115.
- Bagchi, S., Lamendella, R., Strutt, S., Van Loosdrecht, M. C. M., & Saikaly, P. E. (2016). Metatranscriptomics reveals the molecular mechanism of large granule formation in granular anammox reactor. *Scientific Reports*, 6(1), 28327. <https://doi.org/10.1038/srep28327>
- Boningari, T., & Smirniotis, P. G. (2016). Impact of nitrogen oxides on the environment and human health: Mn-based materials for the NOx abatement. *Current Opinion in Chemical Engineering*, 13(x), 133–141. <https://doi.org/10.1016/j.coche.2016.09.004>
- Broda, E. (1977). Two kinds of lithotrophs missing in nature. *Zeitschrift Für Allgemeine Mikrobiologie*, 17(6), 491–493. <https://doi.org/10.1002/jobm.19770170611>
- Chen, C. jun, Huang, X. xiao, Lei, C. xiao, Zhu, W. jing, Chen, Y. xu, & Wu, W. xiang. (2012). Improving Anammox Start-up with Bamboo Charcoal. *Chemosphere*. <https://doi.org/10.1016/j.chemosphere.2012.07.045>
- Chen, H., Hu, H.-Y. Y., Chen, Q.-Q. Q., Shi, M.-L. L., & Jin, R.-C. C. (2016). Successful Start-up of The Anammox Process: Influence of The Seeding Strategy on Performance and Granule Properties. *Bioresource Technology*, 211, 594–602. <https://doi.org/10.1016/j.biortech.2016.03.139>
- 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>
- Chong, S., Sen, T. K., Kayaalp, A., & Ang, H. M. (2012). The performance enhancements of upflow anaerobic sludge blanket (UASB) reactors for domestic sludge treatment - A State-of-the-art review. *Water Research*, 46(11), 3434–3470. <https://doi.org/10.1016/j.watres.2012.03.066>
- Dewi, S., Joko, T., & Dewanti, N. (2016). Analisis Risiko Kesehatan Lingkungan Pencemaran Nitrat pada Air Sumur Gali di Kawasan Pertanian Desa Tumpukan Kecamatan Karangdowo Kabupaten Klaten. *Jurnal Kesehatan Masyarakat (e-Journal)*, 4(5), 204–212.
- Dwiyanti, D. S., & Moersidik, S. S. (2013). Dinamika Nitrogen di Perairan Muara Sungai Ciliwung. *Prosiding Forum Inovasi Teknologi Akuakultur 2013, April 2005*, 1151–1157.
- 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.
- Erwin, R., & Putu, W. (2012). Pemanfaatan Lindi Sampah Sebagai Pupuk Cair. *Envirotek : Jurnal Ilmiah Teknik Lingkungan*, 4(1), 10–18.
- 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>
- Firmansyah, Y. R., & Razif, M. (2016). Perbandingan Desain IPAL Anaerobic Biofilter Dengan Rotating Biological Contactor Untuk Limbah Cair Tekstil Di Surabaya. *Jurnal Teknik ITS*, 5(2), 166–171. <https://doi.org/10.12962/j23373539.v5i2.17862>
- Gamoń, F., Tomaszewski, M., & Ziemińska-Buczyńska, A. (2019). Ecotoxicological study of landfill leachate treated in the ANAMMOX process. *Water Quality Research Journal*, 54(3), 230–241. <https://doi.org/10.2166/wqrj.2019.042>
- Gonzalez-Martinez, A., Osorio, F., Rodriguez-Sanchez, A., Martinez-Toledo, M. V., Gonzalez-Lopez, J., Lotti, T., & van Loosdrecht, M. C. M. (2015). Bacterial community structure of a lab-scale anammox membrane bioreactor. *Biotechnology Progress*, 31(1), 186–193. <https://doi.org/https://doi.org/10.1002/btpr.1995>
- Graaf, A. A. Van De, Bruijn, P. De, Robertson, L. A., Jetten, M. M., & Kuenen, J. G. (1996). *Autotrophic growth of anaerobic ammonium oxidizing microorganisms in a fluidized bed reactor*. 1996.
- Hartaja, N. I. S. dan D. R. K. (2015). Pengolahan Air Lindi Dengan Proses Biofilter Anaerob-Aerob Dan Denitrifikasi. *Pusat Teknologi Lingkungan, BPPT*, 8(1).
- Hasibuan, M. A. A. (2019). *Pengendalian Air Lindi Pada Proses Penutupan TPA Gampong Jawa, Kota Banda Aceh Terhadap Kualitas Air Sumur*.
- Hsu, S. C., Lai, Y. C., Hsieh, P. H., Cheng, P. J., Wong, S. S., & Hung, C. H. (2014). Successful enrichment of rarely found *Candidatus Anammoxoglobus propionicus* from leachate sludge. *Journal of Microbiology and Biotechnology*, 24(7), 879–887. <https://doi.org/10.4014/jmb.1401.01016>
- Imania, A. W., & Herumurti, W. (2018). Pengolahan Lindi Menggunakan Moving Bed Biofilm Reactor (MBBR) dengan Pre-treatment Kimiawi untuk Menurunkan Konsentrasi Organik dan Nitrogen. *Jurnal Teknik ITS*, 7(1). <https://doi.org/10.12962/j23373539.v7i1.29051>
- 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>
- ISO. (2011). Water Quality Sampling, Part 13: Guidance on sampling of sludges. *ISO 5567-13*.
- Jaroszynski, L. W., Cicek, N., Sparling, R., & Oleszkiewicz, J. A. (2012). Impact of Free Ammonia on Anammox Rates (Anoxic Ammonium Oxidation) in A Moving Bed Biofilm Reactor. *Chemosphere*, 88(2), 188–195. <https://doi.org/10.1016/j.chemosphere.2012.02.085>
- Jetten, M., Schmid, M., Van De Pas-Schoonen, K., Damsté, J. S., & Strous, M. (2005). Anammox organisms: Enrichment, cultivation, and environmental analysis. *Methods in Enzymology*, 397, 34–57. <https://doi.org/10.1016/S0076->

6879(05)97003-1

- Jin, R.-C., Yang, G.-F., Ma, C., Yu, J.-J., Zhang, Q.-Q., & Xing, B.-S. (2012). Influence of effluent recirculation on the performance of Anammox process. *Chemical Engineering Journal*, 200–202, 176–185. <https://doi.org/10.1016/j.cej.2012.06.046>
- Jin, R. C. 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., Rattray, J., van Niftrik, L. A., van de Vossenberg, J., Schmid, M. C., Webb, R. I., Schouten, S., Fuerst, J. A., Damsté, J. S., Jetten, M. S. M., & Strous, M. (2007). Candidatus “Anammoxoglobus propionicus” a new propionate oxidizing species of anaerobic ammonium oxidizing bacteria. *Systematic and Applied Microbiology*, 30(1), 39–49. <https://doi.org/10.1016/j.syapm.2006.03.004>
- Kartal, B., Van Niftrik, L., Rattray, J., Van De Vossenberg, J. L. C. M., Schmid, M. C., Sinninghe Damsté, J., Jetten, M. S. M., & Strous, M. (2008). Candidatus “Brocadia fulgida”: An Autofluorescent Anaerobic Ammonium Oxidizing Bacterium. *FEMS Microbiology Ecology*, 63(1), 46–55. <https://doi.org/10.1111/j.1574-6941.2007.00408.x>
- Karthikeyan, O. P., & Joseph, K. (2007). Anaerobic Ammonium Oxidation (Anammox) Process for Nitrogen Removal – a Review. *Biological Methods of Waste Treatment and Management in South India, November 2016*, 102–111.
- Khramenkov, S. V., Kozlov, M. N., Kevbrina, M. V., Dorofeev, A. G., Kazakova, E. A., Grachev, V. A., Kuznetsov, B. B., Polyakov, D. Y., & Nikolaev, Y. A. (2013). A novel bacterium carrying out anaerobic ammonium oxidation in a reactor for biological treatment of the filtrate of wastewater fermented sludge. *Microbiology (Russian Federation)*. <https://doi.org/10.1134/S002626171305007X>
- Kuenen, J. G. (2008). Anammox Bacteria: From Discovery to Application. *Nature Reviews Microbiology*, 6(4), 320–326. <https://doi.org/10.1038/nrmicro1857>
- Lackner, S., Gilbert, E. M., Vlaeminck, S. E., Joss, A., Horn, H., & van Loosdrecht, M. C. M. M. (2014). Full-scale partial nitrification/anammox experiences - An application survey. *Water Research*, 55(0), 292–303. <https://doi.org/10.1016/j.watres.2014.02.032>
- Li, X., Lu, M. yu, Huang, Y., Yuan, Y., & Yuan, Y. (2021). Influence of seasonal temperature change on autotrophic nitrogen removal for mature landfill leachate treatment with high-ammonia by partial nitrification-Anammox process. *Journal of Environmental Sciences (China)*, 102, 291–300. <https://doi.org/10.1016/j.jes.2020.09.031>
- Lotti, T., Kleerebezem, R., Lubello, C., & van Loosdrecht, M. C. M. 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>
- Lulrahman, F., Silvia, S., & Zulkarnaini, Z. (2022). Nitrogen Removal by Anammox Process Using Sludge from Muara Penjalinan of Padang City as Inoculum. *Jurnal Teknologi Lingkungan*, 23(2), 143–150.
- Ma, B., Peng, Y., Zhang, S., Wang, J., Gan, Y., Chang, J., Wang, S. S. S., Wang, S. S. S., & Zhu, G. (2013). Performance of anammox UASB reactor treating

- low strength wastewater under moderate and low temperatures. *Bioresource Technology*, 129, 606–611. <https://doi.org/10.1016/j.biortech.2012.11.025>
- Ma, B., Wang, S., Cao, S., Miao, Y., Jia, F., Du, R., & Peng, Y. (2016). Biological nitrogen removal from sewage via anammox: Recent advances. *Bioresource Technology*, 200, 981–990. <https://doi.org/10.1016/j.biortech.2015.10.074>
- Meng, J., Sung, S., Alleman, J., & Wen, Z. (2012). Nitrous oxide emission in Anammox reactor. *Civil Engineering, Master of*(12698), 43.
- Menteri Pekerjaan Umum Republik Indonesia. (2013). Peraturan Menteri Pekerjaan Umum Republik Indonesia Nomor/3/PRT/M/2013. *Tentang Penyelenggaraan Prasarana Dan Sarana Persampahan Dalam Penanganan Sampah Rumah Tangga Dan Sampah Sejenis Sampah Rumah Tangga*, 1–374.
- Miao, L., Wang, S., Cao, T., & Peng, Y. (2015). Optimization of three-stage Anammox system removing nitrogen from landfill leachate. *Bioresource Technology*, 185, 450–455. <https://doi.org/10.1016/j.biortech.2015.03.032>
- Miao, L., Yang, G., Tao, T., & Peng, Y. (2019). Recent advances in nitrogen removal from landfill leachate using biological treatments – A review. *Journal of Environmental Management*, 235(November 2018), 178–185. <https://doi.org/10.1016/j.jenvman.2019.01.057>
- Miao, L., Zhang, Q., Wang, S., Li, B., Wang, Z., Zhang, S., Zhang, M., & Peng, Y. (2018). Characterization of EPS compositions and microbial community in an Anammox SBBR system treating landfill leachate. *Bioresource Technology*, 249(August 2017), 108–116. <https://doi.org/10.1016/j.biortech.2017.09.151>
- Mirghorayshi, M., Zinatizadeh, A. A., & Van Loosdrecht, M. (2018). Evaluating the process performance and potential of a high-rate single airlift bioreactor for simultaneous carbon and nitrogen removal through coupling different pathways from a nitrogen-rich wastewater. *Bioresource Technology*, 260(December 2017), 44–52. <https://doi.org/10.1016/j.biortech.2018.03.048>
- Mulder, A., van de Graaf, A. A. A., Robertson, L. A. A. A., & Kuenen, J. G. 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)
- Narita, Y., Zhang, L., Kimura, Z. ichiro, Ali, M., Fujii, T., & Okabe, S. (2017). Enrichment and physiological characterization of an anaerobic ammonium-oxidizing bacterium ‘Candidatus Brocadia sapporoensis.’ *Systematic and Applied Microbiology*, 40(7), 448–457. <https://doi.org/10.1016/j.syapm.2017.07.004>
- Panelin, Y. (2017). Studi Potensi Penyisihan Nitrogen pada Efluen IPAL Domestik dengan Penggunaan Constructed Wetland. *Journal of Environmental Engineering and Waste Management*, 2(1), 33–42. <https://media.neliti.com/media/publications/259278-studi-potensi-penyisihan-nitrogen-pada-e-f599878e.pdf>
- Phan, T. N., Van Truong, T. T., Ha, N. B., Nguyen, P. D., Bui, X. T., Dang, B. T., Doan, V. T., Park, J., Guo, W., & Ngo, H. H. (2017). High rate nitrogen removal by ANAMMOX internal circulation reactor (IC) for old landfill leachate treatment. *Bioresource Technology*, 234, 281–288. <https://doi.org/10.1016/j.biortech.2017.02.117>
- Putra, I. H. (2019). *Aplikasi Proses Anammox Dalam Penyisihan Nitrogen Menggunakan Up-flow Anaerobic Sludge Blanket (UASB) Reaktor.*

Universitas Andalas.

- Putra, R. P., Zulkarnaini, Z., & Komala, P. S. (2020). Start – Up Proses Anammox Menggunakan Lumpur Telaga Kotobaru sebagai Inokulum. *Jurnal Teknologi Lingkungan*, 21(2), 138–146. <https://doi.org/10.29122/jtl.v21i2.4155>
- Putri, R. N. (2019). Pengaruh Airlindi Terdapat Airtanah di Sekitar Tempat Pembuangan Akhir Sampah Air Dingin Kota Padang Rahmi. *Jurnal Azimut*, 2(1), 72–80.
- Puyol, D., Carvajal-Arroyo, J. M., Li, G. B., Dougless, A., Fuentes-Velasco, M., Sierra-Alvarez, R., & Field, J. A. (2014). High pH (and not free ammonia) is responsible for Anammox inhibition in mildly alkaline solutions with excess of ammonium. *Biotechnology Letters*, 36(10), 1981–1986. <https://doi.org/10.1007/s10529-014-1564-8>
- Qian, G., Wang, J., Kan, J., Zhang, X. X., Xia, Z., Zhang, X. X., Miao, Y., & Sun, J. (2018). Diversity and distribution of anammox bacteria in water column and sediments of the Eastern Indian Ocean. *International Biodeterioration and Biodegradation*, 133(June), 52–62. <https://doi.org/10.1016/j.ibiod.2018.05.015>
- Quan, Z. X., Rhee, S. K., Zuo, J. E., Yang, Y., Bae, J. W., Park, J. R., Lee, S. T., & Park, Y. H. (2008). Diversity of ammonium-oxidizing bacteria in a granular sludge anaerobic ammonium-oxidizing (anammox) reactor. *Environmental Microbiology*, 10(11), 3130–3139. <https://doi.org/10.1111/j.1462-2920.2008.01642.x>
- Rahmawati, A. I. (2019). *Detail Engineering Design Rehabilitasi Tempat Pemrosesan Akhir Sampah Air Dingin Kota Padang*.
- Said, Nusa Idaman; Hartaja, D. R. K. (2015). *Pengolahan Air Lindi dengan Proses Biofilter Anaerob-Aerob dan Denitrifikasi*. 8(1).
- Salman, N., Ningsih, N. C., & Aryanti, D. (2022). Pra-Rancangan Instalasi Pengolahan Lindi Di Tempat Pemrosesan Akhir (Tpa) Nangkaleah Kecamatan Wangunreja, Kabupaten Tasikmalaya. *Jurnal Komposit*, 4(2), 75. <https://doi.org/10.32832/komposit.v4i2.3805>
- Sánchez Guillén, J. A., Cuéllar Guardado, P. R., Lopez Vazquez, C. M., de Oliveira Cruz, L. M., Brdjanovic, D., & van Lier, J. B. (2015). Anammox cultivation in a closed sponge-bed trickling filter. *Bioresour Technol*, 186, 252–260. <https://doi.org/10.1016/j.biortech.2015.03.073>
- Schmid, M., Twachtman, U., Klein, M., Strous, M., Juretschko, S., Jetten, M., Metzger, J. W., Schleifer, K. H., & Wagner, M. (2000). Molecular evidence for genus level diversity of bacteria capable of catalyzing anaerobic ammonium oxidation. *Systematic and Applied Microbiology*, 23(1), 93–106. [https://doi.org/10.1016/S0723-2020\(00\)80050-8](https://doi.org/10.1016/S0723-2020(00)80050-8)
- Strous, M., Heijnen, J. J., Kuenen, J. G., & Jetten, M. S. M. (1998). The sequencing batch reactor as a powerful tool for the study of slowly growing anaerobic ammonium-oxidizing microorganisms. *Applied Microbiology and Biotechnology*, 50(5), 589–596. <https://doi.org/10.1007/s002530051340>
- Strous, Marc, Gijs Kuenen, J., Jetten, M. S. M. M., Kuenen, J. G., Jetten, M. S. M. M., Gijs Kuenen, J., Jetten, M. S. M. M., Kuenen, J. G., Jetten, M. S. M. M., Gijs Kuenen, J., Jetten, M. S. M. M., Kuenen, J. G., Jetten, M. S. M. M., Gijs Kuenen, J., Jetten, M. S. M. M., Kuenen, J. G., Jetten, M. S. M. M., Strous, Marc. Kuenen, J. Gijs. Jetten, M. S. M., Strous, M., ... Jetten, M. S. M. 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>
- Sun, H. W., Bai, Y., Peng, Y. Z., Xie, H. G., & Shi, X. N. (2013). Achieving nitrogen removal via nitrite pathway from urban landfill leachate using the synergetic inhibition of free ammonia and free nitrous acid on nitrifying bacteria activity. *Water Science and Technology*, 68(9), 2035–2041. <https://doi.org/10.2166/wst.2013.432>
- Tang, C. J., Zheng, P., Chai, L. Y., & Min, X. B. (2013). Thermodynamic and kinetic investigation of anaerobic bioprocesses on ANAMMOX under high organic conditions. *Chemical Engineering Journal*, 230, 149–157. <https://doi.org/10.1016/j.cej.2013.06.047>
- Thomas, R. A., & Santoso, D. H. (2019). *POTENSI PENCEMARAN AIR LINDI TERHADAP AIRTANAH DAN TEKNIK PENGOLAHAN AIR LINDI DI TPA BANYUROTO KABUPATEN KULON PROGO*. 8(5), 55.
- Tomaszewski, M., Cema, G., & Ziemińska-Buczyńska, A. (2017). Influence of Temperature and pH on The Anammox Process: A Review and Meta-analysis. *Chemosphere*, 182, 203–214. <https://doi.org/10.1016/j.chemosphere.2017.05.003>
- Trigo, C., Campos, J. L., Garrido, J. M., & Méndez, R. (2006). Start-up of the Anammox process in a membrane bioreactor. *Journal of Biotechnology*, 126(4), 475–487. <https://doi.org/10.1016/j.jbiotec.2006.05.008>
- Tsushima, I., Ogasawara, Y., Kindaichi, T., Satoh, H., & Okabe, S. (2007). Development of high-rate anaerobic ammonium-oxidizing (anammox) biofilm reactors. *Water Research*, 41(8), 1623–1634. <https://doi.org/10.1016/j.watres.2007.01.050>
- 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>
- US Environmental Protection Agency. (1999). Nitrogen oxides (NO_x), why and how they are controlled. *EPA-456/F-99-006R*, November, 48.
- Van de Graaf, A. A. A., Mulder, A., De Bruijn, P., Jetten, M. S. S. M., Robertson, L. A. A., & Kuenen, J. G. G. (1995). Anaerobic Oxidation of Ammonium is a Biologically Mediated Process. *Applied and Environmental Microbiology*, 61(4), 1246–1251. <https://doi.org/10.1016/j.ssi.2012.05.025>
- van de Vossenberg, J., Rattray, J. E., Geerts, W., Kartal, B., Van Niftrik, L., van Donselaar, E. G., Sinninghe Damsté, J. S., Strous, M., & Jetten, M. S. M. M. (2008). Enrichment and characterization of marine anammox bacteria associated with global nitrogen gas production. *Environmental Microbiology*, 10(11), 3120–3129. <https://doi.org/10.1111/j.1462-2920.2008.01643.x>
- Viancelli, A., Kunz, A., Esteves, P. A., Bauermann, F. V., Furukawa, K., Fujii, T., Antônio, R. V., & Vanotti, M. (2011). Bacterial biodiversity from an anaerobic up flow bioreactor with ANAMMOX activity inoculated with swine sludge. *Brazilian Archives of Biology and Technology*, 54(5), 1035–1041. <https://doi.org/10.1590/S1516-89132011000500022>
- Wang, B., Gong, X., & Peng, Y. (2021). Simultaneous anammox-denitrification

- process and its emerging extensions. *Chemical Engineering Journal*, 415(September 2020), 128380. <https://doi.org/10.1016/j.cej.2020.128380>
- Wang, T., Wang, X., Yuan, L., Luo, Z., & Kwame Indira, H. (2019). Start-up and operational performance of Anammox process in an anaerobic baffled biofilm reactor (ABBR) at a moderate temperature. *Bioresource Technology*, 279(January), 1–9. <https://doi.org/10.1016/j.biortech.2019.01.114>
- Wang, T., Zhang, H., Gao, D., Yang, F., & Zhang, G. (2012). Comparison between MBR and SBR on Anammox start-up process from the conventional activated sludge. *Bioresource Technology*, 122, 78–82. <https://doi.org/10.1016/j.biortech.2012.02.069>
- Wang, T., Zhang, H., & Yang, F. (2016). Performance of Anammox process and low-oxygen adaptability of Anammox biofilms in a FBR with small ring non-woven carriers. *Ecological Engineering*, 86, 126–134. <https://doi.org/10.1016/j.ecoleng.2015.11.025>
- 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>
- Wang, Z., Peng, Y., Miao, L., Cao, T., Zhang, F., Wang, S., & Han, J. (2016). Continuous-flow combined process of nitrification and ANAMMOX for treatment of landfill leachate. *Bioresource Technology*, 214, 514–519. <https://doi.org/10.1016/j.biortech.2016.04.118>
- 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.
- Yao, Q., Peng, D., Wang, B., Chen, Y., Li, J., Zhao, Q., & Wang, B. (2017). Effect of free ammonium and free nitrous acid on the activity, aggregate morphology and extracellular polymeric substance distribution of ammonium oxidizing bacteria in partial nitrification. *Journal of Bioscience and Bioengineering*. <https://doi.org/10.1016/j.jbiosc.2017.03.015>
- Yao, Z., Lu, P., Zhang, D., Wan, X., Li, Y., & Peng, S. (2015). Stoichiometry and kinetics of the anaerobic ammonium oxidation (Anammox) with trace hydrazine addition. *Bioresource Technology*, 198, 70–76. <https://doi.org/10.1016/j.biortech.2015.08.098>
- 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>
- Zhu, G.-L., Yan, J., & Hu, Y.-Y. (2014). Anaerobic ammonium oxidation in polyvinyl alcohol and sodium alginate immobilized biomass system: a potential tool to maintain anammox biomass in application. *Water Science and Technology*, 69(4), 718–726. <https://doi.org/10.2166/wst.2013.762>
- Zulfa, M. (2020). *PENYISIHAN NITROGEN DENGAN PROSES ANAMMOX PADA REAKTOR UP-FLOW ANAEROBIC SLUDGE BLANKET (UASB) MEMANFAATKAN BATU APUNG SEBAGAI MEDIA LEKAT FAKULTAS TEKNIK - UNIVERSITAS ANDALAS.*
- Zulkarnaini. (2021). *Teknik Kultivasi dan identifikasi bakteri anammox.* LPPM-Universitas Andalas.

- 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, Z. (2020). Penemuan dan aplikasi anammox. In Zulkarnaini, Zulkarnaini. 2020. *Penemuan Dan Aplikasi Anammox*. Padang: Andalas University Press.: Vol. Zulkarnain.

