

**DAFTAR PUSTAKA**

- Abourizk, S. M., Halpin, D. W., & Wilson, J. R., 1994, Fitting Beta Distributions Based on Sample Data. *Journal of Construction Engineering and Management*, 120(2), 288–305.
- Acuna, C.A., Fich, J.A., 2010, Tracking velocity of multiple bubbles in a swarm, *International Journal of Mineral Processing* 94, 167-58.
- Bergman, T.L., Lavine, A.S., Incropera, F.P., Dewitt, D.P., 2011, Fundamentals of Heat and Mass Transfer (seventh edition), John Wiley & Sons Inc.
- Budhijanto, W., Deendarlianto, Kristiyani, H., Satriawan, D., 2015, Enhancement of Aerobic Wastewater Treatment by the Application of Attached Growth Microorganisms and Microbubble Generator, International Journal of Technology, vol 6, No 7.*
- Bodnar, T., Galdi, G.P., Necasova, S., 2017, Particles in Flows, Birkhauser.
- Garcia-Ochoa, F., Gomez, E., 2009, Bioreactor scale-up and oxygen transfer rate in microbial processes: an overview, *Biotechnology Advances* 27, 153-176.
- Changjun, L., Bin, L., Shengwei, T., Haiguang, Z., 2010, A Theoretical Model for The Size Prediction of Single Bubble Formed Under Liquid Cross Flow, *Chinese Journal of Chemical Engineering*, 18(5), 770-776.
- Doran, P.M., 2013, Bioprocess Engineering Principles (Second Edition), Elsevier.
- Gordiychuk, A., Svanera, M., Benini, S., Poesio, P., Size Distribution and Sauter Mean Diameter of Microbubble for a Venturi Type Bubble Generator, 2016, *Experimental Thermal and Fluid Science*, 70, 51-60.
- Hitachi Research Laboratory Japan, 2013, Water Treatment Systems for Safe and Secure Water Use, [http://www.jst.go.jp/sicp/ws2013\\_canada/pr/09\\_embutsu.pdf](http://www.jst.go.jp/sicp/ws2013_canada/pr/09_embutsu.pdf)
- Ishikawa, M., Irabu, K., Teruya, I., Nitta, M., 2009, PIV Measurement of a Concentration Flow Using Micro-Bubble Tracer, Proc. The 6th International Symposium on Measurement Techniques for Multiphase Flow.
- Johnson, N.L., Kotz, S., Balakrishnan, N., 1994. Continuous univariate distributions, vol. 1(2). Wiley, New York, NY.
- Khirani, S., Kunwapanitchakul, P., Augir, F., Guigui, C., Guiraud, P., Hebrard, G., 2012, Microbubble Generation Through Porous Membrane Under Aqueous or Organic Liquid Shear Flow, *Industrial & Engineering Chemistry Research*, 51, 1997-2009.
- Kukizaki, M., Goto, M., 2006, Size Control of Nanobubble generated From Shirasu-Porous Glass (SPG) Membranes, *Journal of Membrane Sciene*, 281, 386-396.



- Kukizaki, M., Goto, M., 2007, Spontaneous Formation behavior of Uniform sized Microbubbles From Shirasu Porous Glass (SPG) Membranes in The Absense of Water Phase Flow, *Colloids and Surface*, 296,174-181.
- Kawahara, A., Sadatomi, M., Matsuyama, F., and Matsuura, H., 2009, Prediction of Microbubble Dissolution Characteristic in Water and Sea Water, *Experimental Thermal and Fluid Science*, 33, 883-894.
- Khuntia, S., Majumdar, S.M., Ghosh, P., 2012, Microbubble Aided Water and Wastewater Purification : A Review, *Rev Chemical Engineering*, 28, 191-221.
- Lau, Y.M., Dee, N.G., Kuiper, J.A.M., 2013, Development of an Image Measurement Technique for Size Distribution in Dense Bubble Flow, *Chemical Engineering Science*, 94, 20-29.
- Lecofree, Y., Domene., Marcoz, J., 1985, Micro-bubble Injector, US Patent, US4556523
- Legendre, D., Magnaudet, J., 1998, The Lift Force on Spherical Bubble in a Viscous Linear Shear Flow, *Journal Fluid Mechanics*, 368, 81-126.
- Lemoine, R., Fillion, Behkish, A., Smith, A.E., Morsi, B.I., 2003, Prediction of the gas gas-liquid volumetric mass transfer coefficient in surface aeration and gas-inducing reactor using neural networks, *Chemical Engineering and Processing* 42, 621-643.
- Li, P., 2006, Development of Advanced Water Treatment Technology Using Microbubble,<http://iroha.scitech.lib.keio.ac.jp:8080/sigma/bitstream/handle/10721/448/document.pdf>
- Li, P., Takahashi, M., Chiba, K., 2009, Degradation of Phenol by The Collapse of Microbubble, *Chemospher*, 75, 1371-1375
- Liu, S., Ma, H., Huang, P., Li, J., and Kikuchi, T., 2010, Effect of Microbubble on Coagulation Floatation Process of Dyeing water, Separation and Purification Technology, 71, 337-346.
- Liu, C., Tanaka, H., Ma, J., Zhang, L., Zhang, J., Huang , X., 2012, Effect of Microbubble and Its Generation Process on Mixed Liquor Properties of Activated Sludge Using Shirasu Porous Glass (SPG) Membrane Sytems, *Water Research*, 46, 6051-6058.
- Liu, C., Tanaka, H., Zhang, J., Zhan, L., Yang, J., Huang, X., Kubota, N., 2013, Sucessful Application of Shirasu Porous Glass (SPG) Mebrane System For Microbubble Aeration in Biofilm Treating Syntetic Wastewater, Separation and Purification Technology. 103, 53 – 59.
- Liu, T.J., Bankoff, S.G., 1993. Structure of Air-Water Bubbly Flow in a Vertical Pipe-II. Void Fraction, Bubble Velocity and Bubble Size Distribution. *Int. J. Heat Mass Transfer* 36, 1061–1072
- Majumder, S.K., Kundu, G., Mukherjee, D., 2006. Bubble Size Distribution and Gas–Liquid Interfacial Area in a Modified Downflow Bubble Column. *Chem. Eng.J.* 122, 1–10.



- Marshall, S.H., Chudacek, M.W., Bagster, G.F., 1993, A Model for Bubble Formation from an Orifice with Liquid Cross Flow, *Chemical Engineering Science*, 48(11), 2049-2059
- Park, S.K., Yang, H.C., 2017, Experimental investigation on mixed jet and mass transfer characteristics of horizontal aeration process, *International Journal of Heat and Mass Transfer* 113, 544–555.
- Parmar, R., Majumder, S.K., 2013, Microbubble Generations and Aided Transport Process Intensification- A State –of – The Report, *Chemical Engineering and Processing*, 64, 79-97.
- Pittors, E., Guo,Hulle, S.W.H.V.,2014, Oxygen transfer model development based activated sludge and clean water in diffused aerated cylindrical tank, *Chemical Engineering Journal* 243,51-59.
- Ramakrishnan, S., Kumar, R., Kulor, N.R., 1969, Studies of Bubble Formation (I) Bubble Formation Under Constan Flow Condition, *Chemical Engineering Science*, 24, 731-747.
- Rosso, D., Larson, E.L., Stenstrom, M., K., 2008, Aeration of Large-Scale Municipal Wastewater Treatmen Plants: State of The Art, *Water Science and Technology*, doi: 10.2166/wst.2008.218.
- Sadatomi, M., Kawahara, A., Kano, K., and Ohtomo, A., 2005, Performance of New Micro-Bubble Generator With A Sperical Body in Flowing Water Tube, *Experimental Thermal and Fluid Science*, 29, 615-623.
- Sadatomi, M., Kawahara, A., Matsuura, H., Shikatani, S., 2012, Microbubble Generation Rate and Bubble Dissolution Rate Into Water by A Simple Multi Fluid Mixer With Orifice and Porous Tube , *Experimental Thermal and Fluid Science*, 41, 23- 30.
- Serizawa, S., Inui, T., Eugchi, T., 2005, Microbubble-Containing Milky Air that Rises in Vertical Cylinder-Flow Characteristic and The Phenomenon of Pseudo-Laminar Flow of Bubbles in Aqueos System, *Konsoryu*, 19, 335-343.
- Tabei, K., Haruyama, S., Yamaguchi, S., 2007, Study of Micro Bubble Generation by a Swirl Jet, *Journal of Environment and Engineering*, 2(1), 172 – 182.
- Takahashi, M., 2005, Zeta Potensial of Microbubble in Aqueous Solution : Electrical Properties of Gas-water Interface, *Journal Of Physical Chemistry, B* 109, 21858-21864.
- Tapia, H.S., Aragon, J.A.G., Hernandez, D.M., Garcia, B., 2006, Particle Tracking Velocimetry (PTV) Algorithm for Non-uniform and Nonspherical Particles, *IEEE Proceedings of the Electronics, Robotics and Automotive Mechanics Conference*.
- Terasaka, K., Nishino, T., Fujioko, S., and Kobayashi, D., 2011, Development of Microbubble Aerator for Waste Treatment Using Aerobic Activated Sludge, *Chemical Engineering science*, 66, 3172-3179.



Tchobanoglous, G., Burton, F.L., Stensel, H.D., 2003., Wastewater Engineering : Treatment and Reuse (Fourth Edition), McGraw Hill Companies Inc.

Tsuge, H., 2010, Fundamental of Microbubbleand Nanobubble, Bulletin of The Society of Sea Water Science Japan, 64, 4-10.

Welty, J.R., Rorre, G.L., Foster, D.G., 2015, Fundamentals of Momentum, Heat, and Mass Transfer (sixth dition), John Wiley & Sons, Inc.

Yoon, Roe-Hoen, Adel, G.T., Luttrell, G.H., 1991, Process and Apparatus For Separating Fine Particle by Micro-Bubble Floatation Together with a Process and Apparatus for Generation of Microbubble, US Patent, US4981582.

Zhao, M., Niranjan, K., Davidson, J.F., 1995, Mass transfer to viscous liquids in bubble column and air lift reactor: influence of baffles, Chemical Engineering Science 49(14) , 2359-2369.