



DAFTAR PUSTAKA

- Abramovski, T. et al. 2017. Technologies for The Processing of Polymetallic Nodules from Clarion Clipperton Zone in The Pacific Ocean. *Journal of Chemical Technology and Metallurgy*, 52, 2.
- Alpaslan, O., Yaras, A. & Arslanoğlu, H. 2020. A Kinetic Model for Chelating Extraction of Metals from Spent Hydrodesulphurization Catalyst by Complexing Agent. *Transactions of the Indian Institute of Metals*, 73(7), pp. 1925–1937. doi: 10.1007/s12666-020-02007-6.
- Anert, A. & Borowski, C. 2000. Environmental Risk Assessment of An-thropogenic Activity in the Deep-Sea. *Journal of Aquatic Ecosystem Stress and Recovery* 7(4), hal. 299-315.
- Anisa, Maulidia. et al. 2023. Kinetic Study of Lithium Leaching from Sidoarjo Mud Using Sulfuric Acid. *Mining, Metallurgy & Exploration*, 40:1279-1288, <https://doi.org/10.1007/s42461-023-00812-3>
- Charewicz, W. A, Zhu, C, Tomasz, C. The Leaching Behavior of Ocean Polymetallic Nodules in Chloride Solutions, *Physicochemical Problems of Mineral Processing* 35 (2001) 55–66.
- Crundwell, F K. 2013. Hydrometallurgy The Dissolution and Leaching of Minerals Mechanisms , Myths and Misunderstandings. *Hydrometallurgy* 139: 132–48.
- Dou, S., Deyi Xu, Yongguang Zhu, Roodney, K. 2023. Critical Mineral Sustainable Supply: Challenges and Governance. *Futures* 146, <https://doi.org/10.1016/j.futures.2023.103101>.
- Euro Manganese. 2021. *Manganese*. <https://www.mn25.ca/manganese>. (Diakses pada 8 April 2023).
- GAO; Smithsonian. 2021. Science & Tech Spotlight: Deep-Sea Mining. *United States Geological Survey*, GAO-22-105507. <https://www.gao.gov/products/gao-22-105507>. (Diakses 3 April 2023)
- Gupta, C. K., dan Mukherjee, T. K. 1990. *Hydrometallurgy in Extraction Processes 1st Ed*, ISBN 9780849368042. Boca Raton: CRC Press.
- Hein, J. R., Andrea K., dan Thomas, K. 2020. Deep-ocean Polymetallic Nodules as a Resource for Critical Materials. *Nature Review*, Volume 1.
- Keenan, C. W. 1980. *Ilmu Kimia Untuk Universitas*, Jilid 1 Edisi 6. Terjemahan oleh : Aloysius H. P (1984). Erlangga, Jakarta.
- Kementerian ESDM. 2020. Booklet Tambang Nikel: Peluang Investasi Nikel Indonesia. <https://www.esdm.go.id/id/booklet/booklet-tambang-nikel-2020>.



- Kirk, O. 1998. *Encyclopedia of Chemical Technology 4 th Edition*. Vol. 7. Interscience Willey.
- Levenspiel, O. 1999. *Chemical Reaction Engineering Third Edition*. Chemical Engineering Science: 570.
- Lin, M., Liu, Y.Y., Lei, S.M., Ye,Z., Pei, Z.Y., and Li, B. 2018. High-Efficiency Extraction of Al From Coal-Series Kaolinite and Its Kinetics by Calcination and Pressure Acid Leaching. *Applied Clay Science*, 161:215-224, <https://doi.org/10.1016/j.clay.2018.04.031>.
- Luo, J., Li, G., Rao, M., Peng, Z., Zhang, Y. and Jiang, T. 2015. Atmospheric leaching characteristics of nickel and iron in limonitic laterit with sulfuric acid in the presence of sodium sulfite. *Minerals Engineering*, 78, pp.38-44.
- Margarella, A. M., Kathryn A. P., Tanza, L., Manfred, F., Bernd, W., dan John C. H. 2013. "Dissociation of Sulfuric Acid in Aqueous Solution: Determination of the Photoelectron Spectral Fingerprints of H_2SO_4 , HSO_4^- , and SO_4^{2-} in Water." *Journal of Physical Chemistry*.
- McCabe, W. L., and Smith, J. C. 1985. *Unit Operation of Chemical Engineering. 4th edition*. McGraw Hill Book Company. Singapore.
- Mehta K. D., C. Das, B.D. Pandey. 2010. *Leaching of copper, nickel and cobalt from Indian Ocean manganese nodules by Aspergillus niger*. Hydrometallurgy 105.
- Miettinen, V., Mäkinen, J., Kolehmainen, E., Kravtsov, T., and Rintala, L. 2019. Iron control in atmospheric acid laterit leaching. *Minerals*, 9(7), 1–13. <https://doi.org/10.3390/min9070404>
- Muller, Hermann. 2012. Sulfuric Acid and Sulfur Trioxide. *In Ullmann's Encyclopedia of Industrial Chemistry*. New York: John Wiley & Sons, Inc.
- Nasution, A. F. P. 2021. *Karakterisasi dan Kajian Mengenai Potensi Benefisiasi Mineral Sedimen Lantai Laut Samudera Pasifik Bagian Barat di Utara Papua Barat*. Bandung: Institut Teknologi Bandung.
- Parhi, P. K. et al. 2013. Extraction of rare earth metals from deep sea nodule using H_2SO_4 solution. *International Journal of Mineral Processing*, 119, <http://dx.doi.org/10.1016/j.minpro.2013.01.005>.
- Perry, R. H., dan Green, D. W. 1984. *Perry's Chemical Engineers Hand Book 6 th Ed*. McGraw Hill Co., International Student edition, Kogakusha, Tokyo.
- Rahul, S. 2017. *Assessment of Distribution Characteristics of Polymetallic Nodules and Their Implications on Deep Sea Mining*. Deep-Sea Mining pp. 229-256, doi: 10.1007/978-3-319-52557-08.
- Rao, S. Ramachandra. 2006. Resource Recovery and Recycling From Metallurgical Wastes. *Elsevier Science: Oxford*. Vol. 7. 1st ed.



- Royani, A., Rudi S., dan Azwar M. 2017. Studi Pelindian Mangan Secara Reduksi Dengan Menggunakan Larutan Asam Sulfat. *Jurnal Riset Teknologi Industri* 11.
- Seeking Alpha. 2020. *Cobalt Miners News For The Month Of May 2020*. <https://seekingalpha.com/article/4349766-cobalt-miners-news-for-month-of-may-2020>. (Diakses 8 April 2023)
- Senanayake, G. 2011. Acid leaching of metals from deep-sea manganese nodules – A critical review of fundamentals and applications. *Minerals Engineering*, 24, doi:10.1016/j.mineng.2011.06.003.
- Sparenberg, O. 2019. A historical perspective on deep-sea mining for manganese nodules, 1965–2019. *The Extractive Industries and Society*. <https://doi.org/10.1016/j.exis.2019.04.001>.
- Toro, N. et al. 2021. Leaching Manganese Nodules with Iron-Reducing Agents – A Critical Review. *Minerals Engineering* 163.
- Torres, D., et al. 2019. Leaching Manganese Nodules in an Acid Medium and Room Temperature Comparing the Use of Different Fe Reducing Agents. *Metals*, 0, 1316; doi:10.3390/met9121316.
- Vasily M., Stanislav, V., dan Evgeny R.. 2016. Effect of Hydrostatic Pressure on the Abrasive Wear of Hard Alloy Materials. *Engineering Physics*, Vol 1, No. 1, pp.14-20, doi: 10.11648/j.ep.20160101.13.
- Vu, H., Jandova, J., Lisa, K., dan Vranka, F. 2005. Leaching of manganese deep ocean nodules in FeSO₄-H₂SO₄-H₂O solutions. *Hydrometallurgy*. doi:10.1016/j.hydromet.2004.09.012
- Wahab, W., Deniyatno, D., Saranga, M. and Supriyatna, Y.I. 2022. Kinetics study of leaching ore nickel laterit using hydrochloric acid in atmosphere pressure. *Riset Geologi dan Pertambangan*, 32(1), pp.14-26.
- Wang, B., Guo, Q., Wei, G., Zhang, P., Qu, J., and Qi, T. 2012. Characterization and atmospheric hydrochloric acid leaching of a limonitic laterit from Indonesia. *Hydrometallurgy*, 129–130, 7–13. <https://doi.org/10.1016/j.hydromet.2012.06.017>
- Wang, Z., Dai, S., Zou, J., French, D., Graham, I.T., 2019. Rare earth elements and yttrium in coal ash from the Luzhou power plant in Sichuan, Southwest China: Concentration, characterization and optimized extraction. *Int. J. Coal Geol.* 203, pp. 1–14. <https://doi.org/10.1016/j.coal.2019.01.001>.
- Yuliusman, dkk., 2018, Selection of Organic Acid Leaching Reagent for Recovery Zinc and Manganese from Zinc-Carbon and Alkaline Spent Batteries, *IOP Conference Series: Materials Science and Engineering*, doi:10.1088/1757-899X/333/1/012041.



Zakeri, A., 2007. Dissolution Kinetics of Manganese Dioxide Ore in Sulfuric Acid in the Presence of Ferrous Ion. *Iran, J. Mater. Sci. Eng.* 4 (3), 22–27.