



BAB VI

DAFTAR PUSTAKA

- Abreu, R. D., & Morais, C. A. (2010). Purification of rare earth elements from monazite sulphuric acid leach liquor and the production of high-purity ceric oxide. *Minerals Engineering*, 23(6), 536–540. <https://doi.org/10.1016/j.mineng.2010.03.010>
- Adamas. (2019). Rare earth elements: market issues and outlook. *HenrySchein.Com.*
- Atmawinata, A., Yahya, F., Widhianto, S., Roosmariharso, Irianto, D., Adlir, A., Susilo, Y., Radjid, W., Massaruddin, Noviansyah, D., Sutjiatmo, A. I., V, S., Wuri, S., Sutjiatmo, B. P., & Ardhana. (2014). *Telaah penguatan struktur industri pemetaan potensi logam tanah jarang di indonesia*. 136.
- Balaram, V. (2019). Rare earth elements: A review of applications, occurrence, exploration, analysis, recycling, and environmental impact. *Geoscience Frontiers*, 10(4), 1285–1303. <https://doi.org/10.1016/j.gsf.2018.12.005>
- Barrera, P. (2021). *Rare Earths Outlook 2021: REE Magnet Supply to Remain Tight*.
- Berry, L., Galvin, J., Agarwal, V., & Safarzadeh, M. S. (2017). Alkali pug bake process for the decomposition of monazite concentrates. *Minerals Engineering*, 109, 32–41. <https://doi.org/10.1016/j.mineng.2017.02.007>
- Chung, Dong-Yong; Kim, Eung-Ho; Lee, Eil-Hee; Yoo, J.-H. (1998). *Solubility of RE oxalate in oxalic and nitric acid media* (pp. 277–284). <https://www.cheric.org/research/tech/periodicals/view.php?seq=12719>
- Fabiani, V. A., Pitulima, J., dan N. (2017). *Pengaruh penambahan natrium hidroksida terhadap komposisi logam tanah jarang pasir monazit pulau bangka*. 1–5.
- Ferdowsi, A., & Yoozbashizadeh, H. (2017). Process optimization and kinetics for leaching of cerium, lanthanum and neodymium elements from iron ore waste's apatite by nitric acid. *Transactions of Nonferrous Metals Society of China (English Edition)*, 27(2), 420–428. <https://doi.org/10.1016/S1003->



6326(17)60048-7

- Gambogi, J. (2021). U.S. Geology Survey, Mineral Commodity Summaries, January 2021. In *Mining Engineering* (Vol. 70, Issue 7). <https://doi.org/10.2307/j.ctt5hjpth.36>
- Goodenough, K. M., Schilling, J., Jonsson, E., Kalvig, P., Charles, N., Tuduri, J., Deady, E. A., Sadeghi, M., Schiellerup, H., Müller, A., Bertrand, G., Arvanitidis, N., Eliopoulos, D. G., Shaw, R. A., Thrane, K., & Keulen, N. (2016). Europe's rare earth element resource potential: An overview of REE metallogenetic provinces and their geodynamic setting. *Ore Geology Reviews*, 72, 838–856. <https://doi.org/10.1016/j.oregeorev.2015.09.019>
- Hlainga, T. M., Tarb, A. T., Myoc, T. Z., & Wind, B. B. M. (2017). Study on the Treatment of Liquid Waste from Rare Earth Processing by Chemical Precipitation. *American Scientific Research Journal for Engineering, Technology, and Sciences*, 27(1), 52–60.
- Issa, S. A. M., Ali, A. M., Tekin, H. O., Saddeek, Y. B., Al-Hajry, A., Algarni, H., & Susoy, G. (2020). Enhancement of nuclear radiation shielding and mechanical properties of YBiBO₃ glasses using La₂O₃. *Nuclear Engineering and Technology*, 52(6), 1297–1303. <https://doi.org/10.1016/j.net.2019.11.017>
- Jackson, W., & Christiansen, G. (1993). International Strategic Minerals Inventory Summary Report-rare-earth Oxides. *U.S. Geological Survey*, 1–68.
- Jonan, I. and Suhendar, R. (2019). POTENSI LOGAM TANAH JARANG DI INDONESIA. In *Pusat Sumber Daya Mineral, Batubara dan Panas Bumi Badan Geologi Kementerian Energi dan Sumber Daya Mineral*.
- Jowitt, S. M., Werner, T. T., Weng, Z., & Mudd, G. M. (2018). Recycling of the rare earth elements. *Current Opinion in Green and Sustainable Chemistry*, 13, 1–7. <https://doi.org/10.1016/j.cogsc.2018.02.008>
- Kim, C. J., Yoon, H. S., Chung, K. W., Lee, J. Y., Kim, S. D., Shin, S. M., Lee, S. J., Joe, A. R., Lee, S. Il, Yoo, S. J., & Kim, S. H. (2014). Leaching kinetics of lanthanum in sulfuric acid from rare earth element (REE) slag. *Hydrometallurgy*, 146, 133–137. <https://doi.org/10.1016/j.hydromet.2014.04.003>



- Kim, R., Cho, H., Jeong, J., Kim, J., Lee, S., Chung, K. W., Yoon, H., & Kim, C. (2020). Effect of Sulfuric Acid Baking and Caustic Digestion on Enhancing the Recovery of Rare Earth Elements from a Refractory Ore. *Minerals*, 10(532). <https://doi.org/10.3390/min10060532>
- Krishnamurthy, N., & Gupta, C. K. (2005). *of Rare Earths*.
- Lerdtrakulwong, O., Prucksawan, E., Suwanmanee, U., & Rattanaphra, D. (2013). *Synthesis of lanthanum oxide powder by precipitation method*. July.
- Li, K., Chen, J., Zou, D., Liu, T., & Li, D. (2019). Kinetics of nitric acid leaching of cerium from oxidation roasted Baotou mixed rare earth concentrate. *Journal of Rare Earths*, 37(2), 198–204. <https://doi.org/10.1016/j.jre.2018.05.015>
- Ma'dika, B., Pravitasari, R. D., Tasomara, R., Hapsari, A. U., Damisih, Rahayu, S., Yuliani, H., Arjasa, O. P., Herdianto, N., Deni, Y., Suyanti, Syahrial, A. Z., Somalu, M. R., & Raharjo, J. (2022). Lithium Lanthanum Titanate derived from Lanthanum Oxalate as the Anode Active Material in Lithium-ion Batteries. *International Journal of Integrated Engineering*, 14(2), 138–145. <https://doi.org/10.30880/ijie.2022.14.02.018>
- Ma, B., Yang, W., Yang, B., Wang, C., Chen, Y., & Zhang, Y. (2015). Pilot-scale plant study on the innovative nitric acid pressure leaching technology for laterite ores. *Hydrometallurgy*, 155, 88–94. <https://doi.org/10.1016/j.hydromet.2015.04.016>
- Maidel, M., Jerônimo de Santana Ponte, M. J., & de Araújo Ponte, H. (2019). Recycling lanthanum from effluents of elektrokinetic treatment of FCC spent catalyst, using a selective precipitation technique. *Separation and Purification Technology*, 210, 251–257. <https://doi.org/10.1016/j.seppur.2018.08.001>
- Mcneice, J., Kim, R., & Ghahreman, A. (2019). Oxidative precipitation of cerium in acidic chloride solutions : part I – Fundamentals and thermodynamics. *Hydrometallurgy*, 184(August 2018), 140–150. <https://doi.org/10.1016/j.hydromet.2018.12.018>
- Mcneice, J., Kim, R., & Ghahreman, A. (2020). Oxidative precipitation of cerium in acidic chloride solutions : Part II – oxidation in a mixed REE system. *Hydrometallurgy*, 194(February), 105331.



<https://doi.org/10.1016/j.hydromet.2020.105331>

National Academy of Sciences. (1998). *ACUTE TOXICITY OF NITRIC ACID - Assessment of Exposure-Response Functions for Rocket-Emission Toxicants - NCBI Bookshelf.*

Nawab, A., Yang, X., & Honaker, R. (2022). Parametric study and speciation analysis of rare earth precipitation using oxalic acid in a chloride solution system. *Minerals Engineering*, 176(June 2021), 107352. <https://doi.org/10.1016/j.mineng.2021.107352>

Nwe Nwe Soe, Lwin Thuzar Shwe, and K. T. L. (2008). Study-on-Extraction-of-Lanthanum-Oxide-from-Monazite-Concentrate. *World Academy of Science, Engineering and Technology International Journal of Materials and Metallurgical Engineering*, 2(10), 226–229.

Permana, S., Rachel, D., Budi, A., & Abdul, R. (2020). Pengkayaan U NSUR Y TTRIUM DAN CERIUM PADA. *Metalurgi*, 2, 45–52.

Principle of Instrument Analysis.pdf. (n.d.).

Production, D. (2022). *Rare earths 1.* 703, 2022–2023.

Puji, I., Mahatmanti, F. W., & Setyadji, M. (2021). *Indonesian Journal of Chemical Science Leaching Time and HNO₃ Concentration Effect on the Separation of Lanthanum and Neodymium Elements from Neodymium Concentrates.* 10(1), 15–20.

Purwani, M. V., & Suyanti. (2018). Leaching kinetic of Nd, Y, Pr and Sm in rare earth hydroxide (REOH) use nitric acid. *Journal of Physics: Conference Series*, 962(1). <https://doi.org/10.1088/1742-6596/962/1/012061>

Purwani, M. V., Trinopiawan, K., Poernomo, H., Suyanti, Pusporini, N. D., & Amiliana, R. A. (2019). Separation of Ce, La and Nd in rare earth hydroxide (REOH) by oxidation with potassium permanganate and precipitation. *Journal of Physics: Conference Series*, 1198(3). <https://doi.org/10.1088/1742-6596/1198/3/032003>

Pusporini, N. D., Suyanti, Amiliana, R. A., & Poernomo, H. (2020). Processing and Refining of Tin Tailing Mining. *Journal of Physics: Conference Series*, 1436(1), 0–10. <https://doi.org/10.1088/1742-6596/1436/1/012136>



- Qi, D. (2018a). Chemical Separation Method. In *Hydrometallurgy of Rare Earths*.
<https://doi.org/10.1016/b978-0-12-813920-2.00007-6>
- Qi, D. (2018b). *Hydrometallurgy of Rare Earth: Extraction and Separation* (S. Dennis (Ed.)). Elsavier Inc. <https://doi.org/10.1016/B978-0-12-813920-2.00001-5>
- Royen, H., & Fortkamp, U. (2016). Rare earth elements: Purification, sustainability and recycling. In *Abstracts of Papers of the American Chemical Society* (Vol. 252, Issue C).
- Sadri, F., Rashchi, F., & Amini, A. (2017). Hydrometallurgical digestion and leaching of Iranian monazite concentrate containing rare earth elements Th, Ce, La and Nd. *International Journal of Mineral Processing*, 159, 7–15.
<https://doi.org/10.1016/j.minpro.2016.12.003>
- Seredin, V. V. (2010). A New Method for Primary Evaluation of the Outlook for Rare Earth Element Ores. *Geology of Ore Deposits*, 52(5), 475–480.
<https://doi.org/10.1134/S1075701510050077>
- Setiawan, H., Petrus, H. T. B. M., & Perdana, I. (2018). A kinetics study of acetic acid on cobalt leaching of spent LIBs: Shrinking Core Model. *MATEC Web of Conferences*, 154, 0–4. <https://doi.org/10.1051/matecconf/201815401033>
- Setiawan, H., Tri, H., Murti, B., & Perdana, I. (2019). Reaction kinetics modeling for lithium and cobalt recovery from spent lithium-ion batteries using acetic acid. *International Journal of Minerals, Metallurgy and Materials*, 26(1), 98–107.
- Setyadji, M., Purwani, M., Suyanti, & Sudibyo. (2017). *Desain konsep pilot plant pengolahan REOH menjadi CeO₂, La₂O₃ dan konsentrasi Nd(OH)₃ kapasitas 25 Kg/hari*.
- Silva, R. G. (2019). Selective Precipitation of High-Quality Rare Earth Oxalates or Carbonates from a Purified Sulfuric Liquor Containing Soluble Impurities. *Mining, Metallurgy & Exploration*, 36, 967–977.
- Smith, J. M. (2005). *Introduction to Chemical Engineering Thermodynamics* (7th ed.). Mc Graw-Hill.
- Suprapto, S. J. (2009). Tinjauan Tentang Unsur Tanah Jarang. *Buletin Sumber Daya*



UNIVERSITAS
GADJAH MADA

PEMISAHAN LANTANUM DAN SERIUM DARI LTJOH MONASIT MENGGUNAKAN ASAM ENCR
DENGAN METODE PELINDIAN
DAN OKSIDASI

Suyanti, Prof. Himawan Tri Bayu Murti Petrus, S.T., M.Eng., D.Eng.
Universitas Gadjah Mada, 2023 | Diunduh dari <http://etd.repository.ugm.ac.id/>

Geologi, 4(1), 36–47. <https://doi.org/10.47599/bsdg.v4i1.173>

Tim LTJ PSTA - PTBGN. (2018). *Penyusunan Desain Konsep dan Teknoekonomi Pabrik Pengolahan Monasit menjadi Cerium Oksida, Lantanum Oksida dan Konsentrat Neodimium Hidroksida Kapasitas 1000 ton/tahun.*

Trinopiawan, K., Purwani, M. V., Anggraini, M., & Prassanti, R. (2019). Pemisahan Cerium dari Logam Tanah Jarang Hidroksida Melalui Kalsinasi dan Pelindian Menggunakan HNO₃ Encer. *Eksplorium*, 40(1), 63. <https://doi.org/10.17146/eksplorium.2019.40.1.5411>

Yan, D., Ro, S., Sunam, O., & Kim, S. (2020). On the Global Rare Earth Elements Utilization and Its Supply-Demand in the Future. *IOP Conference Series: Earth and Environmental Science*, 508(1). <https://doi.org/10.1088/1755-1315/508/1/012084>

Yunasfi, Mulyawan, A., Mashadi, Suyanti, & Ari Adi, W. (2021). Synthesis of NiCexFe(2-x)O₄ ($0 \leq x \leq 0.05$) as Microwave Absorbing Materials via Solid-State Reaction Method. *Journal of Magnetism and Magnetic Materials*, 532(January), 167985. <https://doi.org/10.1016/j.jmmm.2021.167985>

Zhan, G., Yu, J. X., Xu, Z. G., Zhou, F., & Chi, R. A. (2012). Kinetics of thermal decomposition of lanthanum oxalate hydrate. *Transactions of Nonferrous Metals Society of China (English Edition)*, 22(4), 925–934. [https://doi.org/10.1016/S1003-6326\(11\)61266-1](https://doi.org/10.1016/S1003-6326(11)61266-1)

Benediktus Ma'dika at al, 2022 “Lithium Lanthanum Titanate derived from Lanthanum Oxalate as the Anode Active Material in Lithium-ion Batteries “The International Journal of Integrated Engineering, Vol. 14 No. 2 (2022) p. 138-145 DOI: <https://doi.org/10.30880/ijie.2022.14.02.018>