

DAFTAR PUSTAKA

- Alotto, P., Guarnieri, M., dan Moro, F. (2014). Redox flow batteries for the storage of renewable energy: A review. *Renewable and Sustainable Energy Reviews*, 29, 325–335. <https://doi.org/10.1016/j.rser.2013.08.001>
- Bambang, I., dan Harsojuwono, A. (2015). *Teknologi Polimer Industri Pertanian. Cita Intrans Selaras*.
- Beard, K. W., Reddy, T. B., dan Linden, D. (Ed.). (2019). *Linden's handbook of batteries* (5 ed.). McGraw-Hill.
- Bhat, G. A., Rashad, A. Z., Ji, X., Quiroz, M., Fang, L., dan Darensbourg, D. J. (2021). TEMPO Containing Radical Polymonothiocarbonate Polymers with Regio- and Stereo-Regularities: Synthesis, Characterization, and Electrical Conductivity Studies. *Angewandte Chemie - International Edition*, 60(38), 20734–20738. <https://doi.org/10.1002/anie.202108041>
- Braun, D., Cherdron, H., Rehahn, M., Ritter, H., dan Voit, B. (2013). Polymer synthesis: Theory and practice: Fundamentals, methods, experiments, fifth edition. Dalam *Polymer Synthesis: Theory and Practice: Fundamentals, Methods, Experiments, Fifth Edition*. Springer Berlin Heidelberg. <https://doi.org/10.1007/978-3-642-28980-4>
- Chen, T., Jin, Y., Lv, H., Yang, A., Liu, M., Chen, B., Xie, Y., dan Chen, Q. (2020). Applications of Lithium-Ion Batteries in Grid-Scale Energy Storage Systems. *Transactions of Tianjin University*, 26(3), 208–217. <https://doi.org/10.1007/s12209-020-00236-w>
- Chmielewski, A., Kupecki, J., Szablowski, L., Fijalkowski, K. J., Zawieska, J., Bogdziński, K., Kulik, O., dan Adamczewski, T. (2020). *Currently Available and Future Methods of Energy Storage*. WWF Poland.
- Daniel, C., dan Besenhard, J. O. (2012). *Handbook of battery materials*. John Wiley & Sons.
- DeMeuse, M. T. (2021). Introduction to lithium-ion battery design. *Polymer-Based Separators for Lithium-Ion Batteries*, 1–19. <https://doi.org/10.1016/B978-0-12-820120-6.00002-7>
- Elgrishi, N., Rountree, K. J., McCarthy, B. D., Rountree, E. S., Eisenhart, T. T., dan Dempsey, J. L. (2018). A Practical Beginner's Guide to Cyclic Voltammetry. *Journal of Chemical Education*, 95(2), 197–206. <https://doi.org/10.1021/acs.jchemed.7b00361>

- Fessenden, R. J., dan Fessenden, J. S. (1990). *Fundamentals of Organic Chemistry*. Harpercollins College Div.
- Flowers, P., Neth, E. J., Robinson, W. R., Theopold, K., dan Langely, R. (2019). *Chemistry: Atoms First 2e* (OpenStax, Ed.; 2nd edition). OpenStax.
- Friebe, C., dan Schubert, U. S. (2015). Development of Active Organic and Polymeric Materials for Batteries and Solar Cells: Introduction to Essential Characterization Techniques. *Advanced Energy Materials*, 5(24). <https://doi.org/10.1002/aenm.201500858>
- Galloway, K. V., dan Sammes, N. M. (2009). Fuel Cells – Solid Oxide Fuel Cells | Anode. Dalam *Encyclopedia of Electrochemical Power Sources* (hlm. 17–24). Elsevier.
- Goodenough, J. B., Abruna, H. D., Buchanan, M. V., Visco, S., Whittingham, M. S., Dunn, B., Gogotsi, Y., Gewirth, A., Nocera, D., dan Kelley, R. D. (2007). *Report of the Basic Energy Sciences Workshop for Electrical Energy Storage, April 2–4, 2007*.
- Ha, S., dan Gallagher, K. G. (2015). Estimating the system price of redox flow batteries for grid storage. *Journal of Power Sources*, 296, 122–132. <https://doi.org/10.1016/j.jpowsour.2015.07.004>
- Hargreaves, N. B., Pantea, S. M., dan Taylor, G. A. (2014). Large Scale Renewable Power Generation. *Green Energy and Technology*, i, 439–462. <https://doi.org/10.1007/978-981-4585-30-9>
- Hatakeyama-Sato, K., Matsumoto, S., Takami, H., Nagatsuka, T., dan Oyaizu, K. (2021). A PROXYL-Type Norbornene Polymer for High-Voltage Cathodes in Lithium Batteries. *Macromolecular Rapid Communications*, 42(19), 2100374.
- Hendrana, S. (2006). Perkembangan Teknologi Polimerisasi Radikal Bebas Terkontrol dan Aplikasi pada Pembuatan Biodegradabel Polimer. *Prosiding Simposium Nasional Polimer VI*, 1–7.
- Hesse, H., Schimpe, M., Kucevic, D., dan Jossen, A. (2017). Lithium-Ion Battery Storage for the Grid—A Review of Stationary Battery Storage System Design Tailored for Applications in Modern Power Grids. *Energies*, 10(12), 2107. <https://doi.org/10.3390/en10122107>
- Hore-Lacy, I. (2006, September 8). *Nuclear Energy in the 21st Century—1st Edition*. <https://www.elsevier.com/books/nuclear-energy-in-the-21st-century/hore-lacy/978-0-12-373622-2>
- Hosseiny, S. S., dan Wessling, M. (2011). Ion Exchange Membranes for Vanadium Redox Flow Batteries. Dalam *Advanced Membrane Science and Technology for Sustainable Energy and Environmental Applications*. Elsevier.

<https://doi.org/10.1533/9780857093790.4.413>

- Hu, W. (2013). Polymer physics: A molecular approach. Dalam *Polymer Physics: A Molecular Approach* (Vol. 9783709106709). Springer-Verlag Wien. <https://doi.org/10.1007/978-3-7091-0670-9>
- Iyer, V. A., Schuh, J. K., Montoto, E. C., Pavan Nemani, V., Qian, S., Nagarjuna, G., Rodríguez-López, J., Ewoldt, R. H., dan Smith, K. C. (2017). Assessing the impact of electrolyte conductivity and viscosity on the reactor cost and pressure drop of redox-active polymer flow batteries. *Journal of Power Sources*, 361, 334–344. <https://doi.org/10.1016/j.jpowsour.2017.06.052>
- Janoschka, T., Friebe, C., Hager, M. D., Martin, N., dan Schubert, U. S. (2017). An Approach Toward Replacing Vanadium: A Single Organic Molecule for the Anode and Cathode of an Aqueous Redox-Flow Battery. *ChemistryOpen*, 6(2), 216–220. <https://doi.org/10.1002/open.201600155>
- Janoschka, T., Martin, N., Martin, U., Friebe, C., Morgenstern, S., Hiller, H., Hager, M. D., dan Schubert, U. S. (2015). An aqueous, polymer-based redox-flow battery using non-corrosive, safe, and low-cost materials. *Nature*, 527(7576), 78–81. <https://doi.org/10.1038/nature15746>
- Jiang, J., dan Zhang, C. (2015). *Fundamentals and applications of lithium-ion batteries in electric drive vehicles*. John Wiley & Sons.
- Jones, R. G., Wilks, E. S., Metanomski, W. V., Kahovec, J., Hess, M., Stepto, R., dan Kitayama, T. (Ed.). (2009). *Compendium of Polymer Terminology and Nomenclature: IUPAC Recommendations 2008*. The Royal Society of Chemistry. <https://doi.org/10.1039/9781847559425>
- Karakoc, T. H., Ozerdem, M. B., Sogut, M. Z., Colpan, C. O., Altuntas, O., dan Açıkkalp, E. (2016). *Sustainable aviation: Energy and environmental issues*. Springer International Publishing.
- Keil, P., Schuster, S., Lüders, C. V., Hesse, H., Arunachala, A., dan Jossen, A. (2015). Lifetime analyses of lithium-Ion EV Batteries. *3rd Electromobility Challenging Issues conference (ECI), Singapore, 1st–4th December*.
- Korthauer, R. (Ed.). (2018). *Lithium-Ion Batteries: Basics and Applications*. Springer Berlin Heidelberg. <https://doi.org/10.1007/978-3-662-53071-9>
- Lai, Y. Y., Li, X., dan Zhu, Y. (2020). Polymeric Active Materials for Redox Flow Battery Application. *ACS Applied Polymer Materials*, 2(2), 113–128. <https://doi.org/10.1021/acsapm.9b00864>
- Li, Q., Chen, J., Fan, L., Kong, X., dan Lu, Y. (2016). Progress in electrolytes for rechargeable Li-based batteries and beyond. *Green Energy & Environment*, 1(1), 18–42. <https://doi.org/10.1016/j.gee.2016.04.006>

- Li, X., Zhang, H., Mai, Z., Zhang, H., dan Vankelecom, I. (2011). Ion exchange membranes for vanadium redox flow battery (VRB) applications. *Energy & Environmental Science*, 4(4), 1147–1160. <https://doi.org/10.1039/C0EE00770F>
- Lourenssen, K., Williams, J., Ahmadpour, F., Clemmer, R., dan Tasnim, S. (2019). Vanadium redox flow batteries: A comprehensive review. *Journal of Energy Storage*, 25, 100844. <https://doi.org/10.1016/j.est.2019.100844>
- Muench, S., Wild, A., Friebe, C., Häupler, B., Janoschka, T., dan Schubert, U. S. (2016). Polymer-Based Organic Batteries. *Chemical Reviews*, 116(16), 9438–9484. <https://doi.org/10.1021/acs.chemrev.6b00070>
- Owens, B. B., Reale, P., dan Scrosati, B. (2009). PRIMARY BATTERIES | Overview. *Encyclopedia of Electrochemical Power Sources*, 22–27. <https://doi.org/10.1016/B978-044452745-5.00096-4>
- Pehl, T. M., Adams, F., Kranzlein, M., dan Rieger, B. (2021). Expanding the Scope of Organic Radical Polymers to Polyvinylphosphonates Synthesized via Rare-Earth Metal-Mediated Group-Transfer Polymerization. *Macromolecules*, 54(9), 4089–4100.
- Permono, A. (2018). *Mengenal polimer dan polimerasisasi*. UGM PRESS.
- Posada, J. O. G., Rennie, A. J. R., Villar, S. P., Martins, V. L., Marinaccio, J., Barnes, A., Glover, C. F., Worsley, D. A., dan Hall, P. J. (2017). Aqueous batteries as grid scale energy storage solutions. *Renewable and Sustainable Energy Reviews*, 68, 1174–1182. <https://doi.org/10.1016/j.rser.2016.02.024>
- Prifti, H., Parasuraman, A., Winardi, S., Lim, T. M., dan Skyllas-Kazacos, M. (2012). Membranes for Redox Flow Battery Applications. *Membranes*, 2(2), 275–306. <https://doi.org/10.3390/membranes2020275>
- Qi, Z., dan Koenig, G. M. (2017). Review Article: Flow battery systems with solid electroactive materials. *Journal of Vacuum Science & Technology B, Nanotechnology and Microelectronics: Materials, Processing, Measurement, and Phenomena*, 35(4), 040801. <https://doi.org/10.1116/1.4983210>
- Ritchie, H., Roser, M., dan Rosado, P. (2020). Energy. *Our World in Data*. <https://ourworldindata.org/energy>
- Schwartz, P. O., Pejic, M., Wachtler, M., dan Bäuerle, P. (2018). Synthesis and characterization of electroactive PEDOT-TEMPO polymers as potential cathode materials in rechargeable batteries. *Synthetic Metals*, 243, 51–57. <https://doi.org/10.1016/j.synthmet.2018.04.005>
- Schwenzer, B., Zhang, J., Kim, S., Li, L., Liu, J., dan Yang, Z. (2011). Membrane Development for Vanadium Redox Flow Batteries. *ChemSusChem*, 4(10),

1388–1406. <https://doi.org/10.1002/cssc.201100068>

- Tan, S. T. M., Quill, T. J., Moser, M., LeCroy, G., Chen, X., Wu, Y., Takacs, C. J., Salleo, A., dan Giovannitti, A. (2021). Redox-Active Polymers Designed for the Circular Economy of Energy Storage Devices. *ACS Energy Letters*, 6(10), 3450–3457. <https://doi.org/10.1021/acsenergylett.1c01625>
- Thackeray, M. M. (2004). Batteries, Transportation Applications. *Encyclopedia of Energy*, 127–139. <https://doi.org/10.1016/B0-12-176480-X/00187-X>
- Torabi, F., dan Ahmadi, P. (2020). Fundamentals of batteries. Dalam *Simulation of Battery Systems* (hlm. 55–81). Elsevier. <https://doi.org/10.1016/B978-0-12-816212-5.00006-4>
- U.S. Geological Survey. (2022). *Mineral commodity summaries 2022*. U.S. Geological Survey. <https://doi.org/10.3133/mcs2022>
- Viswanathan, B. (2017). Batteries. Dalam *Energy Sources* (hlm. 263–313). Elsevier. <https://doi.org/10.1016/B978-0-444-56353-8.00012-5>
- Wahyuni, E. S., Mubarak, H., Nur Budiman, F., dan Wahyu Pratomo, S. (2020). Pemanfaatan Energi Terbarukan untuk Pembangkit Listrik Tenaga Surya Berbasis Komunitas: Menuju Desa Mandiri Energi. *Engagement: Jurnal Pengabdian Kepada Masyarakat*, 4(2). <https://doi.org/10.29062/engagement.v4i2.181>
- Wei, L., Fan, X. Z., Jiang, H. R., Liu, K., Wu, M. C., dan Zhao, T. S. (2020). Enhanced cycle life of vanadium redox flow battery via a capacity and energy efficiency recovery method. *Journal of Power Sources*, 478, 228725. <https://doi.org/10.1016/j.jpowsour.2020.228725>
- Winsberg, J., Hagemann, T., Janoschka, T., Hager, M. D., dan Schubert, U. S. (2017). Redox-Flow Batteries: From Metals to Organic Redox-Active Materials. *Angewandte Chemie International Edition*, 56(3), 686–711. <https://doi.org/10.1002/anie.201604925>
- Wu, Y. (2015). *Lithium-ion batteries: Fundamentals and Applications* (4 ed.). CRC press.
- Yazami, R. (2013). *Nanomaterials for Lithium-Ion Batteries: Fundamentals and Applications*. CRC Press.
- Yuwono, T., dan Safitri, A. (2016). *Biologi Molekular* (10 ed.). Erlangga.
- Zhang, K., Monteiro, M. J., dan Jia, Z. (2016). Stable organic radical polymers: Synthesis and applications. *Polymer Chemistry*, 7(36), 5589–5614. <https://doi.org/10.1039/c6py00996d>
- Zhou, X. L., Zhao, T. S., An, L., Zeng, Y. K., dan Zhu, X. B. (2016). Performance of a vanadium redox flow battery with a VANADion membrane. *Applied*



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**Kajian Literatur Redox-Flow Battery (RFB) Berbasis Polimer dengan Radikal
2,2,6,6-Tetramethylpiperidinyl-N-Oxyl (TEMPO) untuk Aplikasi Penyimpanan Energi Listrik Massal**
ABDURRAHMAN AZIZ W, Dr. Juliasih Partini, M.Si; Prof. Dr. Eng. Yusril Yusuf, S.Si., M.Eng.
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