

DAFTAR PUSTAKA

- Arhamsyah, A. (2010). Pemanfaatan Biomassa Kayu Sebagai Sumber Energi Terbarukan. *Jurnal Riset Industri Hasil Hutan*, 2(1), 42. <https://doi.org/10.24111/jrihh.v2i1.914>
- Basu, P. (2013). *Biomass Gasification, Pyrolysis and Torrefaction: Practical Design and Theory*. In *Biomass Gasification, Pyrolysis and Torrefaction: Practical Design and Theory*.
- Bisen, D., Pratap, A., Chouhan, S., Kumar, A., & Rajamohan, S. (2024). *Analisis termogravimetri ko- pirolisis sekam padi dan polietilena densitas rendah : parameter kinetik dan termodinamika*. 1–17.
- Bridgwater, A. V. (2012). Review of fast pyrolysis of biomass and product upgrading. *Biomass and Bioenergy*, 38, 68–94. <https://doi.org/10.1016/j.biombioe.2011.01.048>
- Chandraratne, M. R., & Asfaw G. Daful. (2021). *Recent Advances in Thermochemical Conversion of Biomass*. 35.
- Chen, W. H., Biswas, P. P., Felix, C. B., Aniza, R., Escalante, J., Zhang, C., Lam, S. S., Pétrissans, A., Ubando, A. T., Pétrissans, M., & Hoang, A. T. (2026). Mechanistic insights into thermal degradation of lignocellulosic biomass components for bioenergy and biofuel: A review. *Applications in Energy and Combustion Science*, 26(March). <https://doi.org/10.1016/j.jaecs.2026.100496>
- Chen, Y., Syed-Hassan, S. S. A., Li, Q., Deng, Z., Hu, X., Xu, J., Jiang, L., Su, S., Hu, S., Wang, Y., & Xiang, J. (2022). Effects of temperature and aspect ratio on heterogeneity of the biochar from pyrolysis of biomass pellet. *Fuel Processing Technology*, 235, 107366. <https://doi.org/https://doi.org/10.1016/j.fuproc.2022.107366>
- Daud, P. (2013). Karakteristik Termal Briket Arang Serbuk Gergaji Kayu Meranti. *Jurnal Mekanikal*, 4(2), 410–415.

- Devia, S., & Sri, H. (2024). *Konsumsi Energi Fosil Terhadap Pertumbuhan Ekonomi*. 7.
- Dey, I., Irwan, S., & Paulus Hengky Abram. (2016). Pemanfaatan Biomassa Serbuk Gergaji Sebagai Penyerap Logam Timbal. *Jurnal Akademika Kimia*, 5(4), 166–171.
- Emdadul, H., & Fazlur, R. (2021). *Co-Pyrolysis of Biomass Solid Waste and Aquatic Plants*.
- Fadhilah, N. A., Islam, M. N., & Rosli, R. (2023). Techno-economic analysis of sawdust and rice husk co-pyrolysis for bio-oil production. *Bioresource Technology Reports*, 21, 101233. <https://doi.org/10.1016/j.biteb.2022.101233>
- Fardhyanti, D. S., Triwibowo, B., Prasetiawan, H., Chafidz, A., Andriyani, S., & Cahyani, N. N. (2019). Improving the Quality of Bio-Oil Produced from Rice Husk Pyrolysis by Extraction of its Phenolic Compounds. *Jurnal Bahan Alam Terbarukan*, 8(2), 90–100.
- Handayani, I., & Sa'diyah, K. (2022). Pengaruh Waktu Pirolisis Serbuk Gergaji Kayu. *Jurnal Teknik Kimia*, 8(9), 28–35.
- Hasibuan, R., & Pardede, H. M. (2023). *Jurnal Teknik Kimia USU Pengaruh Suhu dan Waktu Pirolisis terhadap Karakteristik Arang dari Tempurung Kelapa Effect of Pyrolysis Temperature and Time on Characteristics of Coconut Shell Charcoal*. 12(1), 46–53.
- Heriansyah, I. (2005). Potensi Pengembangan Energi dari Biomassa Hutan di Indonesia. *PPI Jepang*, 1–110.
- Herlambang, S., Rina, S., Santoso, P., & Sutiono, H. T. (2017). Biomassa sebagai Sumber Energi Masa Depan. *Buku Ajar*, 1–51.
- Husein, A. (2018). Pengaruh Temperatur Pembentukan Fuel Oil pada Proses Pirolisis Plastik Low Density Polyethylene (LDPE). *Doctoral dissertation, Universitas Brawijaya*, 1–47.

- Huseini, F., Solihin, & Pramusanto. (2018). *Kajian Kualitas Batubara Berdasarkan Analisis Proksimat , Total Sulfur dan Nilai Kalor Untuk Pembakaran Bahan Baku Semen di PT Semen Padang Kelurahan Batu Gadang , Kecamatan Lubuk Kilangan , Kota Padang Provinsi Sumatera Barat Coal Quality Study Based on.* 668–677.
- Irhamni, N. (2018). *KUALITAS LIMBAH SERBUK GERGAJI UNTUK ARANG YANG DIPEROLEH DENGAN METODE PIROLISIS LAMBAT.* 7(2), 166–173.
- k, M. P., & Somasundaram, M. (2021). Co-pyrolysis of Juliflora biomass with low-density polyethylene for bio-oil synthesis. *Energy Sources, Part A: Recovery, Utilization and Environmental Effects*, 43(9), 1134–1149. <https://doi.org/10.1080/15567036.2019.1635232>
- Kan, T., Strezov, V., & Evans, T. J. (2016). Lignocellulosic biomass pyrolysis : A review of product properties and effects of pyrolysis parameters. *Renewable and Sustainable Energy Reviews*, 57, 1126–1140. <https://doi.org/10.1016/j.rser.2015.12.185>
- Lin, Y. (2017). A study on co-pyrolysis of bagasse and sewage sludge using TG-FTIR and Py-GC/MS. *Energy Conversion and Management*, 151, 190–198. <https://doi.org/10.1016/j.enconman.2017.08.062>
- Malik, S., & Kumar, P. (2024). *Compositional Analysis of the Lignocellulosic Biomass from Agricultural Waste (Rice Husk).* 24(6), 78–84.
- Mohan, D., Pittman, C., & Steele, P. (2006). Pyrolysis of Wood/Biomass for Bio-Oil: A Critical Review. *Energy*, 20, 848. <https://doi.org/10.1021/ef0502397>
- Nanda, S., Faisal, F., Sulhatun, S., & Akmal, S. (2025). *ASAP CAIR DAN MINYAK NILAM : SIFAT DAN APLIKASI.*
- Novia, Wijaya, D., & Yanti, P. (2017). Pembuatan Bioetanol Dari Sekam Padi. *Teknik Kimia*, 23(1), 19–27.

- Novita, S. A., Santosa, S., Nofialdi, N., Andasuryani, A., & Fudholi, A. (2021). Review Article: Operational Parameters of Biomass Pyrolysis. *Agroteknika*, 4(1), 53–67.
- Oyebanji, J. A., Okekunle, P. O., Oyedepo, S. O., & Fayomi, O. S. I. (2021). *Physicochemical Properties of Wood Sawdust: A Preliminary Study*. <https://doi.org/10.1088/1757-899X/1107/1/012125>
- Pahlawan, D. G. (2023). *Unjuk Kerja Retort kiln dengan Variasi Ukuran Potongan Bahan Baku Limbah Kelapa Muda*.
- Parikh, J., Channiwala, S. A., & Ghosal, G. K. (2005). A correlation for calculating HHV from proximate analysis of solid fuels. *Fuel*, 84(5), 487–494. <https://doi.org/10.1016/j.fuel.2004.10.010>
- Parvari, E., Mahajan, D., & Hewitt, E. L. (2025). *A Review of Biomass Pyrolysis for Production of Fuels: Chemistry, Processing, and Techno-Economic Analysis*.
- Purwono, A. H., Kristiono, R., & Putra, D. H. (2024). *Pemanfaatan Limbah Biomassa Sebagai Bahan Bakar Ramah Lingkungan*. 9(1), 42–46.
- Rambli, J., Azlina, W., Abd, W., Ghani, K., Amran, M., & Salleh, M. (2018). *Characterization of Sago-based Biochar as Potential Feedstock for Solid Fuel*. 02, 11–17.
- Ridhuan, K., & Irawan, D. (2020). Energi Terbarukan Pirolisis. In *CV. Laduny Alifatama*.
- Rizal, W. A., Suryani, R., Wahono, S. K., Anwar, M., Prasetyo, D. J., Amdani, R. Z., Suwanto, A., & Februanata, N. (2020). Pirolisis Limbah Biomassa Serbuk Gergaji Kayu Campuran: Parameter Proses dan Analisis Produk Asap Cair. *Jurnal Riset Teknologi Industri*, 14(2), 353. <https://doi.org/10.26578/jrti.v14i2.6606>
- Rony, Z. I., Rasul, M. G., Jahirul, M. I., & Hasan, M. M. (2025). Properties of

- pyrolysis oils derived from different organic wastes for assessing their suitability for engine fuel. *Energy Conversion and Management: X*, 25(September 2024). <https://doi.org/10.1016/j.ecmx.2025.100875>
- Setiawan, A., Ginting, Z., Setiawaty, S., Riskina, S., & Nurjannah, S. (2021). Pemanfaatan Limbah Sekam Padi Menjadi Bioarang untuk Pembenah Tanah Lahan Pertanian di Desa Pande Kecamatan Tanah Pasir Aceh Utara. *Jurnal Solusi Masyarakat Dikara*, 1(1), 27–31.
- Setiawan, A., Mufti, R., Dabet, A., Alchalil, A., Absa, M., & Iqbal, M. (2025). Retort Kiln Carbonization of Wet and Dry Young Coconut Wastes: Effects on Biochar Quality and Processing Efficiency. *Dinamis*, 13(1), 17–23. <https://doi.org/10.32734/dinamis.v13i1.19748>
- Shahzadi, T., Mehmood, S., Irshad, M., Anwar, Z., Afroz, A., Zeeshan, N., Rashid, U., & Sughra, K. (2014). Advances in lignocellulosic biotechnology: A brief review on lignocellulosic biomass and cellulases. *Advances in Bioscience and Biotechnology*, 05(03), 246–251. <https://doi.org/10.4236/abb.2014.53031>
- Sharma, R., Wahono, J., & Baral, H. (2018). *Bamboo as an Alternative Bioenergy Crop and Powerful Ally for Land Restoration in Indonesia*. 1–10. <https://doi.org/10.3390/su10124367>
- Sharma Timilsina, M., Chaudhary, Y., Bhattarai, P., Uprety, B., & Khatiwada, D. (2024). Optimizing pyrolysis and Co-Pyrolysis of plastic and biomass using Artificial Intelligence. *Energy Conversion and Management: X*, 24, 100783. <https://doi.org/10.1016/j.ecmx.2024.100783>
- Simanjutak, J. P., Silaban, R., & Noviar, O. A. (2024). *Teknologi pirolisis biomassa*.
- Suharti, P. H., Hendrawati, N., Pratamasari, A., Rahayu, O. M., Malang, P. N., & Kimia, T. (2021). Pemanfaatan Serbuk Gergaji Kayu sebagai Karbon Aktif melalui Proses Pirolisis dan Aktivasi Kimia. 4(2), 91–99. <https://doi.org/10.25273/cheesa.v4i2.8589.91-99>

portal.org/smash/get/diva2:1343255/FULLTEXT02

- Widiastuti, M. M. D., & Lantang, B. (2017). Pelatihan Pembuatan Biochar dari Limbah Sekam Padi Menggunakan Metode Retort Kiln. *Agrokreatif: Jurnal Ilmiah Pengabdian kepada Masyarakat*, 3(2), 129–135. <https://doi.org/10.29244/agrokreatif.3.2.129-135>
- Wood, R., Erastova, V., Building, J. B., Brewster, D., Kingdom, U., Crum, A., & Road, B. (2023). Biochars at the molecular level . Part 1 – Insights into the molecular structures within. *arXiv preprint arXiv:2303.09661*.
- Wu, W., Li, P., Huang, L., Wei, Y., Li, J., Zhang, L., & Jin, Y. (2023). *The Role of Lignin Structure on Cellulase Adsorption and Enzymatic Hydrolysis*. 96–107.
- Wulandari, S. (2019). *PENGELOLAAN BIOMASSA TANAMAN DALAM BIOINDUSTRI PERKEBUNAN MENDUKUNG PENGEMBANGAN BIOENERGI Plant Biomass Management in Plantations Bioindustry Supporting Bioenergy*. 18(2), 135–149.
- Yu, H., Wang, J., Yu, J., Wang, Y., & Chi, R. (2020). Adsorption performance and stability of the modified straws and their extracts of cellulose , lignin , and hemicellulose for Pb 2 + : pH effect. *Arabian Journal of Chemistry*, 13(12), 9019–9033. <https://doi.org/10.1016/j.arabjc.2020.10.024>
- Yuan, S., Hou, Y., Liu, S., & Ma, Y. (2024). A Comparative Study on Rice Husk, as Agricultural Waste, in the Production of Silica Nanoparticles via Different Methods. *Materials*, 17(6), 1–11. <https://doi.org/10.3390/ma17061271>
- Zamzuar. (2025). *FABRIKASI ALAT RETORT KILN MENGGUNAKAN DUA PIPA LORONG API BERBAHAN BAKU*.
- Zhang, S., Dong, Q., Zhang, L., Xiong, Y., Liu, X., & Zhu, S. (2015). Effects of water washing and torrefaction pretreatments on rice husk pyrolysis by microwave heating. *Bioresource Technology*, 193, 442–448. <https://doi.org/https://doi.org/10.1016/j.biortech.2015.06.142>