

## DAFTAR PUSTAKA

- Abu Bakar, M. S., & Titiloye, J. O. (2013b). Catalytic pyrolysis of rice husk for bio-oil production. *Journal of Analytical and Applied Pyrolysis*, 103, 362–368. <https://doi.org/10.1016/j.jaat.2012.09.005>
- Ajayi, E. A., Ademiluyi, F. T., Ukpaka, C. P., & Harcourt, P. (2021). *Physiochemical Properties of Fuel Oil from Pyrolysis of Palm Kernel Shell*. 10(07), 425–434.
- Alamoudi, A., Saaduddin, S. M., Munir, A. B., Muhammad-sukki, F., Abu-bakar, S. H., Hajar, S., Yasin, M., Karim, R., Bani, N. A., & Abubakar, A. (2019). *Using Static Concentrator Technology to Achieve Global Energy Goal*. 1–22.
- Alvarez, J., Lopez, G., Amutio, M., Bilbao, J., & Olazar, M. (2014). Bio-oil production from rice husk fast pyrolysis in a conical spouted bed reactor. *Fuel*. <https://doi.org/10.1016/j.fuel.2014.02.074>
- Amri, A. A., Nuruddin, M., & Rachmanita, R. E. (2020). *Uji Performa Kompor Surya Tipe Parabola Silinder Menggunakan Reflektor Cermin dengan Variasi Bahan Absorber*. 13(1), 8–14.
- Anem, M (2014), Arang Tempurung Kelapa, Anim Agro Technology, <https://animhosnan.blogspot.com/2014/11/arang-tempurung-kelapa>.
- Ayllón, D., Almodóvar, A., Nicola, G. G., Parra, I., & Elvira, B. (2012). Modelling carrying capacity dynamics for the conservation and management of territorial salmonids. *Fisheries Research*, 134–136, 95–103. <https://doi.org/10.1016/j.fishres.2012.08.004>
- Azeta, O., Ayeni, A. O., Agboola, O., & Elehinaje, F. B. (2021). A review on the sustainable energy generation from the pyrolysis of coconut biomass ☆. *Scientific African*, 13, e00909. <https://doi.org/10.1016/j.sciaf.2021.e00909>
- Aziz, M. A. R. M. A. (2017). Solar pyrolysis of scrap tire : optimization of operating parameters. *Journal of Material Cycles and Waste Management*, 0(0), 0. <https://doi.org/10.1007/s10163-017-0686-1>
- Belotti, G., Caprariis, B. De, Filippis, P. De, Scarsella, M., Eudossiana, V., Chimica, I., Ambiente, M., & Universita, S. (2014). ScienceDirect Effect of Chlorella vulgaris growing conditions on bio-oil production via fast pyrolysis. *Biomass and Bioenergy*, 61(0), 187–195. <https://doi.org/10.1016/j.biombioe.2013.12.011>
- Bridgwater, A. V. (2003). Renewable fuels and chemicals by thermal processing of biomass. *Chemical Engineering Journal*, 91(2–3), 87–102. [https://doi.org/10.1016/S1385-8947\(02\)00142-0](https://doi.org/10.1016/S1385-8947(02)00142-0)
- 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>
- British Standar. 2006. European Committee for Standardization: Thermal Solar System

- and Components-Solar Collector – Part 2: Test Methods. london, uk. bs en 12975-2:2006
- Budi, E. (2011). *Tinjauan Proses Pembentukan dan Penggunaan Arang Tempurung Kelapa Sebagai Bahan Bakar Bahan Komponen Kandungan Sifat termal.* 14(C), 25–29.
- Canavarro, D., Chaves, J., & Collares-pereira, M. (2016). A novel Compound Elliptical-type Concentrator for parabolic primaries with tubular receiver. *Solar Energy*, 134, 383–391. <https://doi.org/10.1016/j.solener.2016.05.027>
- Chen, D., Cen, K., Cao, X., Zhang, J., Chen, F., & Zhou, J. (2020). Bioresource Technology Upgrading of bio-oil via solar pyrolysis of the biomass pretreated with aqueous phase bio-oil washing , solar drying , and solar torrefaction. *Bioresource Technology*, 305(February), 123130. <https://doi.org/10.1016/j.biortech.2020.123130>
- Cheng, W., & Zhao, Q. (2019). A modified quasi-boundary value method for a two-dimensional inverse heat conduction problem. *Computers and Mathematics with Applications*, xxxx. <https://doi.org/10.1016/j.camwa.2019.06.031>
- Daful and M. R Chandraratne, Biochar Production From Biomass Waste-Derived Material. Elsevier Ltd., 2020.
- Demirbas, A. (2004). Effects of temperature and particle size on bio-char yield from pyrolysis of agricultural residues. *Journal of Analytical and Applied Pyrolysis*, 72(2), 243–248. <https://doi.org/10.1016/j.jaat.2004.07.003>
- Ditjenbun. 2018. Statistik Perkebunan Indonesia. Direktorat Jendral Perkebunan, Departemen Pertanian. Jakarta
- Dhyani, V., & Bhaskar, T. (2018). A comprehensive review on the pyrolysis of lignocellulosic biomass. *Renewable Energy*, 129, 695–716. <https://doi.org/10.1016/j.renene.2017.04.035>
- Duffie, John A., and William A. Beckman. 2006. Solar Engineering of Thermal Processes. third ed. New Jersey: John Wiley & Sons Inc.
- Effendi, A., Gerhauser, H., & Bridgwater, A. V. (2008). Production of renewable phenolic resins by thermochemical conversion of biomass: A review. *Renewable and Sustainable Energy Reviews*, 12(8), 2092–2116. <https://doi.org/10.1016/j.rser.2007.04.008>
- Garcia-Perez, M., Shen, J., Wang, X. S., & Li, C. Z. (2010). Production and fuel properties of fast pyrolysis oil/bio-diesel blends. *Fuel Processing Technology*. <https://doi.org/10.1016/j.fuproc.2009.10.012>
- Giatman, Muhammad (2011) *Ekonomi Teknik*. In: Ekonomi Teknik. Rajawali Press, Jakarta, pp. 1-209. ISBN 979-769-045-8
- Giwa, A., Yusuf, A., Ajumobi, O., & Dzidzienyo, P. (2019). Pyrolysis of date palm waste to biochar using concentrated solar thermal energy: Economic and sustainability implications. *Waste Management*, 93, 14–22.

<https://doi.org/10.1016/j.wasman.2019.05.022>

Gronnow et al., "Torrefaction/biochar production by microwave and conventional slow pyrolysis - comparison of energy properties," GCB Bioenergy, vol. 5, no. 2, pp. 144–152, 2013.

Guedes, R. E., Luna, A. S., & Torres, A. R. (2018). Operating parameters for bio-oil production in biomass pyrolysis: A review. *Journal of Analytical and Applied Pyrolysis*, 129(November 2017), 134–149. <https://doi.org/10.1016/j.jaat.2017.11.019>

Guille, D., Ibargoitia, L. (1999). Influence of the moisture content on the composition of the liquid smoke produced in the pyrolysis process of *fagus sylvatica* L. Wood. *Journal of Agricultural and Food Chemistry*, 47:4126-4136. <https://doi.org/10.1021/jf990122e>

Harjosuwono, B. A., Arnata, I. W. & Puspawati, G. A. K. D. 2011. Rancangan Percobaan Teori, Aplikasi SPSS dan Excel. Malang: Lintas Kata Publishing

Hartanto, Singgih dan Ratnawati, 2010, Pembuatan Karbon aktif dari Tempurung Kelapa Sawit dengan Metode Aktivasi Kimia, Jurnal Sains Materi Indonesia Vol. 12, No. 1, hal : 12 – 16. ISSN : 1411-1098. Program Studi Teknik Kimia, FTI-ITI. Tangerang

Hassan. (2009). Characterization of fast pyrolysis.pdf. (n.d.)

Ho, K., Yong, I., Min, S., Choi, D., Yeo, H., Choi, I., & Weon, J. (2011). Journal of Analytical and Applied Pyrolysis Investigation of physicochemical properties of biooils produced from yellow poplar wood (*Liriodendron tulipifera*) at various temperatures and residence times. *Journal of Analytical and Applied Pyrolysis*, 92(1), 2–9. <https://doi.org/10.1016/j.jaat.2011.04.002>

Hornung A. (2014). Transformation of biomass: theory to practice. John Wiley & Sons.

Howe DT, Westover T, Carpenter DL, Santosa D, Emerson R, Deutch S, et al. (2015). Field-to-fuel performance testing of lignocellulosic feedstocks: an integrated study of the fast pyrolysis/hydrotreating pathway. *Energy Fuels*;29:3188–97

Jamilatun, S. (2022). *The Effects of Particle Mesh and Temperature on Pyrolysis Spirulina platensis Residue (SPR): Pyrolysis Yield and Bio-Oil Properties*. 22(1), 141–155. <https://doi.org/10.22146/ajche.69439>

Jiang, G., Lee, C. M. C. And Yue, H. 2005. Tunneling in China: The Surprisingly Pervasive Use of Corporate Loans to Extract Funds from Chinese Listed Companies. Johnson School Research Paper Series No. 31-06. Diakses secara online 22/03/2014 di: <http://ssrn.com/>

Joardder, M. U.H., Halder, P. K., Rahim, M. A., & Masud, M. H. (2017). Solar pyrolysis: Converting waste into asset using solar energy. In *Clean Energy for Sustainable Development: Comparisons and Contrasts of New Approaches*. Elsevier Inc. <https://doi.org/10.1016/B978-0-12-805423-9.00008-9>

Joardder, Mohammad U.H., Halder, P. K., Rahim, A., & Paul, N. (2014). Solar Assisted Fast Pyrolysis: A Novel Approach of Renewable Energy Production. *Journal of Engineering (United Kingdom)*, 2014. <https://doi.org/10.1155/2014/252848>

- Kalogirou, Soteris A. (2004): Solar Thermal Collec-tors and Applications, Progress in Energy and Combustion Science 30, 231–295, Elsevier.
- Kasim,R. 2012. Esterifikasi Asam Lemak Bebas Pada Campuran Asam Oleat Dan Minyak Sawit Murni Menggunakan Microwave. (skripsi) Jurusan Agroteknologi Universitas Negeri Gorontalo.
- Kato, Y., Enomoto, R., Akazawa, M., & Kojima, Y. (2016). Characterization of Japanese cedar bio-oil produced using a bench-scale auger pyrolyzer. *SpringerPlus*, 5(1). <https://doi.org/10.1186/s40064-016-1848-7>
- Kearney, J., & Kearney, J. (2010). *Food consumption trends and drivers Food consumption trends and drivers. August*. <https://doi.org/10.1098/rstb.2010.0149>
- Kim KH, Eom IY, Lee SM, Choi D, Yeo H, Choi I-G, Choi JW. (2011). Investigation of physicochemical properties of biooils produced from yellow poplar wood (*Liriodendron tulipifera*) at various temperatures and residence times. *J Anal Appl Pyrolysis*;92(1):2–9.
- King, D. L., Galbraith, G. M., Boyson, W. E., Gonzalez, S., Murray, A. T., Ginn, J. W., & Bower, W. I. (2006). Array performance characterization and modeling for real-time performance analysis of photovoltaic systems. *Conference Record of the 2006 IEEE 4th World Conference on Photovoltaic Energy Conversion, WCPEC-4*, 2, 2308–2311. <https://doi.org/10.1109/WCPEC.2006.279634>
- Li, Z., Wang, L., Hays, T. S., & Cai, Y. (2008a). *Dynein-mediated apical localization of Crumbs*. *Journal of Cell Biology*, 180(1), 31–38. <https://doi.org/10.1083/jcb.200707007>
- Li, Z., Wang, L., Hays, T. S., & Cai, Y. (2008b). Dynein-mediated apical localization of crumbs transcripts is required for Crumbs activity in epithelial polarity. *Journal of Cell Biology*, 180(1), 31–38. <https://doi.org/10.1083/jcb.200707007>
- Mattjik, A. A & Sumertajaya, I. M. 2000. Perancangan Percobaan dengan Aplikasi SAS dan Minitab Jilid I. Bogor: IPB Press.
- Mohamed<sup>a</sup>, A. R., Hamzah<sup>a</sup>, Z., Zulkali, M., & Daud, M. (2013). *The Effects of Holding Time and The Sweeping Nitrogen Gas Flowrates On The Pyrolysis Of EFB Using A Fixed Bed Reactor*. 53, 185–191. <https://doi.org/10.1016/j.proeng.2013.02.024>
- Mohan, D., Pittman, C. U., & Steele, P. H. (2006). Pyrolysis of wood/biomass for bio-oil: A critical review. In *Energy and Fuels*. <https://doi.org/10.1021/ef0502397>
- Mondal, S., Mondal, A. K., Chintala, V., Tauseef, S. M., Kumar, S., & Pandey, J. K. (2018). Thermochemical pyrolysis of biomass using solar energy for efficient biofuel production: a review. *Biofuels*. <https://doi.org/10.1080/17597269.2018.1461512>
- Monir, M. U., Yousuf, A., Aziz, A. A., & Atnaw, S. M. (2017). *Enhancing Co-Gasification of Coconut Shell by Reusing Char*. 10(February). <https://doi.org/10.17485/ijst/2017/v10i6/111217>
- Monnerie, N., Gan, P. G., Roeb, M., & Sattler, C. (2020). Methanol production using hydrogen from concentrated solar energy. *International Journal of Hydrogen Energy*

- Energy.* <https://doi.org/10.1016/j.ijhydene.2019.12.200>
- Morales, S., Miranda, R., Bustos, D., Cazares, T., & Tran, H. (2014). Solar biomass pyrolysis for the production of bio-fuels and chemical commodities. *Journal of Analytical and Applied Pyrolysis*, 109, 65–78. <https://doi.org/10.1016/j.jaat.2014.07.012>
- Mozammel, H. M., Masahiro, O., & Bhattacharya, S. C. (2002). Activated charcoal from coconut shell using ZnCl<sub>2</sub> activation. *Biomass and Bioenergy*, 22(5), 397–400. [https://doi.org/10.1016/S0961-9534\(02\)00015-6](https://doi.org/10.1016/S0961-9534(02)00015-6)
- Nachenius, R. W., Ronsse, F., Venderbosch, R. H., & Prins, W. (2013). Biomass Pyrolysis. In *Advances in Chemical Engineering*. <https://doi.org/10.1016/B978-0-12-386505-2.00002-X>
- Ndukwu, M. C., Horsfall, I. T., Ubouh, E. A., Orji, F. N., Ekop, I. E., & Ezejiofor, N. R. (2020). Review of solar-biomass pyrolysis systems: Focus on the configuration of thermal-solar systems and reactor orientation. *Journal of King Saud University - Engineering Sciences*, xxxx. <https://doi.org/10.1016/j.jksues.2020.05.004>
- Nisandi. 2007. Pengolahan Dan Pemanfaatan Sampah Organik Menjadi Briket Arang Dan Asap Cair. *Seminar Nasional Teknologi 2007 (SNT 2007) ISSN : 1978 – 9777. Yogyakarta, 24 November 2007*
- Novita, S. A., Effy Djinis, M., Melly, S., & Kembaryanti Putri, S. (2014). Processing Coconut Fiber and Shell to Biodiesel. *International Journal on Advanced Science, Engineering and Information Technology*, 4(5), 386. <https://doi.org/10.18517/ijaseit.4.5.440>
- Novita, S. A., Fudholi, A., Doktoral, P., Pertanian, I., Andalas, U., Studi, P., Industri, T., Andalas, U., Agribisnis, P. S., Andalas, U., Studi, P., Pertanian, T., Andalas, U., Indonesia, P., & Korespondesi, P. (2021). [www.agroteknika.id](http://www.agroteknika.id). 4(1), 53–67.
- Nustini, Y., & Allwar, A. (2019). Pemanfaatan Limbah Tempurung Kelapa Menjadi Arang Tempurung Kelapa dan Granular Karbon Aktif Guna Meningkatkan Kesejahteraan Desa Watuduwar, Bruno, Kabupaten Purworejo – Nustini – Asian Journal of Innovation and Ent. *Asian Journal of Innovation and Entrepreneurship*, 4(3), 217–226.
- Ohliger, A., Förster, M., & Kneer, R. (2013). Torrefaction of beechwood : A parametric study including heat of reaction and grindability. *Fuel*, 104, 607–613. <https://doi.org/10.1016/j.fuel.2012.06.112>
- Perkins, G., Bhaskar, T., & Konarova, M. (2018). Process development status of fast pyrolysis technologies for the manufacture of renewable transport fuels from biomass. *Renewable and Sustainable Energy Reviews*, 90(March), 292–315. <https://doi.org/10.1016/j.rser.2018.03.048>
- Piatkowski, N., Wieckert, C., Weimer, A. W., & Steinfeld, A. (2011). Solar-driven gasification of carbonaceous feedstock - A review. *Energy and Environmental Science*, 4(1), 73–82. <https://doi.org/10.1039/c0ee00312c>

- Pramudya,B. 2001. Ekonomi Teknik. Institut Pertanian Bogor. Bogor.
- Purnama, I., Kubo, Y., & Mulyana, J. Y. (2018). A robust ruthenium complex with nonyl-substituted bpy ligand for dye- sensitized photoelectrochemical cell application. *Inorganica Chimica Acta*, 471. <https://doi.org/10.1016/j.ica.2017.11.052>
- Qu, T., Guo, W., Shen, L., Xiao, J., & Zhao, K. (2011). Experimental study of biomass pyrolysis based on three major components: Hemicellulose, cellulose, and lignin. *Industrial and Engineering Chemistry Research*. <https://doi.org/10.1021/ie1025453>
- Qureshi, K. M., Abnisa, F., & Wan Daud, W. M. A. (2019). Novel helical screw-fluidized bed reactor for bio-oil production in slow-pyrolysis mode: A preliminary study. *Journal of Analytical and Applied Pyrolysis*, 142. <https://doi.org/10.1016/j.jaap.2019.04.021>
- Reddy, KS dan G.V Satyanarayana. 2008. Numerical Study of Porous Finned Receiver for solar Parabolic Trough Concentrator. *Engineering Applications of Computational Fluid Mechanics*. Volume 2 No 2. Pp 172-184.
- Reif, J. H. (n.d.). *Design and Analysis of a High-Efficiency, Cost-Effective Solar Concentrator John H. Reif*. 1–45.
- Risyanto, M.H.E.2007. Analisis Biaya Pengeringan Dengan Menggunakan TigaBahan Bakar Pada Alat Pengering Gabah Tipe Bak Segitiga. (Skripsi).Fakultas Pertanian. Bandar Lampung: Universitas Lampung
- Rout, T. K. (2013). Pyrolysis of coconut shell. *M. Tech Thesis*, 211, 58. [ethesis.nitrkl.ac.in/5346/1/211CH1036.pdf](https://ethesis.nitrkl.ac.in/5346/1/211CH1036.pdf)
- Rout, T., Pradhan, D., Singh, R. K., & Kumari, N. (2016). Journal of Environmental Chemical Engineering Exhaustive study of products obtained from coconut shell pyrolysis. *Biochemical Pharmacology*, 2015. <https://doi.org/10.1016/j.jece.2016.02.024>
- Roy, P., & Dias, G. (2017). Prospects for pyrolysis technologies in the bioenergy sector: A review. *Renewable and Sustainable Energy Reviews*, 77(March), 59–69. <https://doi.org/10.1016/j.rser.2017.03.136>
- Santosa. 2010. Buku: Evaluasi Finansial untuk Manager, dengan Software Komputer. IPB Press.
- Santosa. 2018. Metode Gauss-Jordan Dan Aturan Cramer Untuk Desain Model Matematika. CV. Rumahkayu Pustaka Utama. ISBN: 978-602-6506-80.
- Santosa dan Omil, C. 2014. Teori dan Penyelesaian Soal Pindah Panas. Andalas University Press. Cetakan 1. Padang. ISBN: 978-602-8821-65-0
- Sastrosupadi, Adji. 2000. Rancangan Percobaan Praktis Bidang Pertanian. Kanisius: Yogyakarta
- Sarkar, J. K., & Wang, Q. (2020). Different pyrolysis process conditions of South Asian waste coconut shell and characterization of gas, bio-char, and bio-oil. *Energies*,

- 13(8). <https://doi.org/10.3390/en13081970>
- Sa'diyah, K., Rohman, F., Harsanti, W., Nugraha, I., & Febrianto, N. A. (2018). Pyrolysis of Coconut Coir and Shell as Alternative Energy Source. *Jurnal Bahan Alam Terbarukan*, 7(2), 115–120. <https://doi.org/10.15294/jbat.v7i2.11393>
- Sellami, N. 2013. Design and Characterisation of a Novel Translucent Solar Concentrator. Ph.D. Thesis, Heriot-Watt University, Edinburgh, UK.
- Sharifzadeh, M., Sadeqzadeh, M., Guo, M., Borhani, T. N., Murthy Konda, N. V. S. N., Garcia, M. C., Wang, L., Hallett, J., & Shah, N. (2019). The multi-scale challenges of biomass fast pyrolysis and bio-oil upgrading: Review of the state of art and future research directions. *Progress in Energy and Combustion Science*, 71, 1–80. <https://doi.org/10.1016/j.pecs.2018.10.006>
- Shen, J., Wang, X. S., Garcia-Perez, M., Mourant, D., Rhodes, M. J., & Li, C. Z. (2009). Effects of particle size on the fast pyrolysis of oil mallee woody biomass. *Fuel*. <https://doi.org/10.1016/j.fuel.2009.05.001>
- Siengchum, T., Isenberg, M., & Chuang, S. S. C. (2013). Fast pyrolysis of coconut biomass – An FTIR study. *Fuel*, 105, 559–565. <https://doi.org/10.1016/j.fuel.2012.09.039>
- Singh, B. (2018). Rice husk ash. In *Waste and Supplementary Cementitious Materials in Concrete: Characterisation, Properties and Applications*. Elsevier Ltd. <https://doi.org/10.1016/B978-0-08-102156-9.00013-4>
- Soeharto, I. 2002. Manajemen Proyek. Erlangga, Jakarta
- Soria, J., Zeng, K., Asensio, D., Gauthier, D., Flamant, G., & Mazza, G. (2017). Comprehensive CFD modelling of solar fast pyrolysis of beech wood pellets. *Fuel Processing Technology*. <https://doi.org/10.1016/j.fuproc.2017.01.006>
- Soekartawi. 2005. Agroindustri: Dalam Perspektif Sosial Ekonomi. Jakarta: PT Raja Grafindo Persada. 140 hal.
- Staš, M., Auersvald, M., Kejla, L., Vrtiška, D., Kroufek, J., & Kubička, D. (2020). Quantitative analysis of pyrolysis bio-oils: A review. *TrAC - Trends in Analytical Chemistry*, 126, 115857. <https://doi.org/10.1016/j.trac.2020.115857>
- Stine, W.B. & Geyer, M. (2001) : Power from the Sun. <http://www.powerfromthesun.net/book.html>
- Suhardiyono, L., 1988, Tanaman Kelapa, Budidaya dan Pemanfaatannya, Penerbit Kanisius, Yogyakarta, 153-156
- Tamado, D., Budi, E., Wirawan, R., Dwi, H., Tyaswuri, A., Sulistiani, E., Asma, E. 2013. Sifat Termal Karbon Aktif Berbahan Arang Tempurung Kelapa. Jurnal Seminar Nasional Fisika, Universitas Negeri Jakarta. halaman 73-81.
- Tripathi, M., Sahu, J. N., & Ganesan, P. (2016). Effect of process parameters on production of biochar from biomass waste through pyrolysis: A review. *Renewable and Sustainable Energy Reviews*, 55, 467–481.

<https://doi.org/10.1016/j.rser.2015.10.122>

- Tsai, W. T., Lee, M. K., & Chang, Y. M. (2007). *Fast pyrolysis of rice husk: Product yields and compositions*. 98, 22–28. <https://doi.org/10.1016/j.biortech.2005.12.005>
- Uzun BB, Putun AE, Putun E. (2006). Fast pyrolysis of soybean cake: product yields and compositions. *Bioresour Technol* 2006;97:569–76.
- Vassilev, S. V., Baxter, D., Andersen, L. K., & Vassileva, C. G. (2010). An overview of the chemical composition of biomass. *Fuel*, 89(5), 913–933. <https://doi.org/10.1016/j.fuel.2009.10.022>
- Wang, S., Dai, G., Yang, H., & Luo, Z. (2017). Lignocellulosic biomass pyrolysis mechanism: A state-of-the-art review. *Progress in Energy and Combustion Science*, 62, 33–86. <https://doi.org/10.1016/j.pecs.2017.05.004>
- Weldekidan, H., Strezov, V., Li, R., Kan, T., Town, G., Kumar, R., He, J., & Flamant, G. (2019). Distribution of solar pyrolysis products and product gas composition produced from agricultural residues and animal wastes at different operating parameters. *Renewable Energy*. <https://doi.org/10.1016/j.renene.2019.11.107>
- Widjaya. 1982. Pengertian Pirolisis. Google. Com. Diakses 25 Agustus 2018
- Xin, X., Dell, K., Udugama, I. A., Young, B. R., & Baroutian, S. (2020). Transforming biomass pyrolysis technologies to produce liquid smoke food flavouring. *Journal of Cleaner Production*, xxxx, 125368. <https://doi.org/10.1016/j.jclepro.2020.125368>
- Zeaiter, J., Azizi, F., Lameh, M., Milani, D., Ismail, H. Y., & Abbas, A. (2018). Waste tire pyrolysis using thermal solar energy: An integrated approach. *Renewable Energy*. <https://doi.org/10.1016/j.renene.2018.02.030>
- Zeng, K., Gauthier, D., Minh, D. P., Weiss-Hortala, E., Nzihou, A., & Flamant, G. (2017). Characterization of solar fuels obtained from beech wood solar pyrolysis. *Fuel*, 188, 285–293. <https://doi.org/10.1016/j.fuel.2016.10.036>
- Zeng, K., Gauthier, D., Soria, J., Mazza, G., & Flamant, G. (2017). Solar pyrolysis of carbonaceous feedstocks: A review. *Solar Energy*. <https://doi.org/10.1016/j.solener.2017.05.033>
- Zhang, L., Li, S., Ding, H., & Zhu, X. (2019). Two-step pyrolysis of corncob for value-added chemicals and high-quality bio-oil: Effects of alkali and alkaline earth metals. *Waste Management*, 87, 709–718. <https://doi.org/10.1016/j.wasman.2019.03.002>
- Zhou, C., & Yang, W. (2015). Effect of heat transfer model on the prediction of refuse-derived fuel pyrolysis process. *Fuel*, 142(November), 46–57. <https://doi.org/10.1016/j.fuel.2014.10.079>
- Zhou,R, H. Lei, and J.L. Julson. 2013. Effects of reaction temperature, time and particle size on switchgrass microwave pyrolysis and reaction kinetics”, Int. J. Agric & Biol Eng. vol.6