



## DAFTAR PUSTAKA

- Abnisa, F., Arami-Niya, A., Daud, W.W., Sahu, J.N., dan Noor,I.M. (2013). Utilization of Oilpalm Tree Residues to Produce Bio-oil and Bio-Char via Pyrolysis. *Energy Convers Management*, Vol. 76, Hal. 1073–1082.
- Ahmed, A., Bakar, M. S. A., Razzaq, A., Hidayat, S., Jamil, F., Amin, M. N., & Park, Y. K. (2021). Characterization and thermal behavior study of biomass from invasive Acacia mangium species in Brunei preceding thermochemical conversion. *Sustainability*, 13(9), 5249.
- Aini, N. A., Jamilatun, S., & Pitoyo, J. (2022). Pirolisis Biomassa. *Agroindustrial Technology Journal*, 6(1), 89-101.
- Alves, J.L.F., Da Silva, J.C.G., da Silva Filho, V.F., Alves, R.F., Ahmad, M.S., Ahmad, M.S., de Araujo Galdino, W.V. and De Sena, R.F., (2019). Bioenergy potential of red macroalgae *Gelidium floridanum* by pyrolysis: evaluation of kinetic triplet and thermodynamics parameters. *Bioresource Technology*, 291, p.121892.
- Álvarez-Chávez, B. J., Godbout, S., & Raghavan, V. (2021). Effect of fractional condensation system coupled with an auger pyrolyzer on bio-oil composition and properties. *Journal of Analytical and Applied Pyrolysis*, 158, 105270.
- Alzate-Gaviria, L., Domínguez-Maldonado, J., Chablé-Villacís, R., Olguin-Maciel, E., Leal-Bautista, R.M., Canché-Escamilla, G., Caballero-Vázquez, A., Hernández-Zepeda, C., Barredo-Pool, F.A. and Tapia-Tussell, R., (2020). Presence of Polyphenols Complex Aromatic “Lignin” in *Sargassum* spp. from Mexican Caribbean. *Journal of Marine Science and Engineering*, 9(1), p.6.
- Amrullah, A., Farobie, O., Bayu, A., Syaftika, N., Hartulistiyo, E., Moheimani, N.R., Karnjanakom, S. and Matsumura, Y.,(2022). Slow Pyrolysis of *Ulva lactuca* (Chlorophyta) for Sustainable Production of Bio-Oil and Biochar. *Sustainability*, 14(6), p.3233.
- Arcenegui-Troya, J., Sánchez-Jiménez, P. E., Perejón, A., & Pérez-Maqueda, L. A. (2021). Relevance of particle size distribution to kinetic analysis: The case of thermal dehydroxylation of kaolinite. *Processes*, 9(10), 1852.
- Arini, W. and Lovisia, E., (2020). Pengembangan Alat Pirolisis Sampah Plastik Sebagai Media Belajar Berbasis Lingkungan Pada Materi Suhu dan Kalor di SMP Kabupaten Musi Rawas. *Jurnal Perspektif Pendidikan*, 14(1), pp.22-35.
- Badshah, S.L., Shah, Z., Alves, J.L.F., da Silva, J.C.G. and Iqbal, A., (2021). Pyrolysis of the Freshwater Macroalgae *Spirogyra Crassa*: Evaluating its Bioenergy Potential Using Kinetic Triplet and Thermodynamic Parameters. *Renewable Energy*, 179, pp.1169-1178.
- Balat, M. (2011). Production of bioethanol from lignocellulosic materials via the biochemical pathway: a review. *Energy conversion and management*, 52(2), 858-875



Baroncelli, M., Mao, Q., Galle, S., Hansen, N., & Pitsch, H. (2020). Role of ring-enlargement reactions in the formation of aromatic hydrocarbons. *Physical Chemistry Chemical Physics*, 22(8), 4699-4714.

Basu, P., (2010). Biomassa Gasification and Pyrolysis Practical Design and Theory. *Elsevier*

Calmon, J. P., Calmon, M., & Gold, V. (1969). Substrate and solvent hydrogen isotope effects in the pyridine-and 2, 6-lutidine-catalysed iodination of diethyl ketone (pentan-3-one). *Journal of the Chemical Society B: Physical Organic*, 659-663.

Cen, K., Zhuang, X., Gan, Z., Zhang, H., & Chen, D. (2023). Biomass pyrolysis polygeneration with bio-oil recycling: co-pyrolysis of heavy bio-oil and pine wood leached with light bio-oil for product upgradation. *Fuel*, 335, 127057

Centre of Agriculture and Biosciences International. *Sargassum natans*. <https://www.cabi.org/isc/datasheet/119456>

Chai, M., He, Y., Sun, C., & Liu, R. (2020). Effect of fractional condensers on characteristics, compounds distribution and phenols selection of bio-oil from pine sawdust fast pyrolysis. *Journal of the Energy Institute*, 93(2), 811-821.

Chen, Hui., Zhou, D., Luo, G., Zhang, S., & Chen, J. (2015). Macroalgae for Biofuels Production: Progress and perspectives. *Renewable and Sustainable Energy Reviews*, 47, 427-437.

Chen, D., Zheng, Y., & Zhu, X. (2013). In-depth investigation on the pyrolysis kinetics of raw biomass. Part I: Kinetic analysis for the drying and devolatilization stages. *Bioresource technology*, 131, 40-46

Cheng, Z., Li, M., Li, J., Lin, F., Ma, W., Yan, B., & Chen, G. (2021). Transformation of nitrogen, sulfur and chlorine during waste tire pyrolysis. *Journal of Analytical and Applied Pyrolysis*, 153, 104987.

Demirbaş, A. (2002). Gaseous products from biomass by pyrolysis and gasification: effects of catalyst on hydrogen yield. *Energy conversion and management*, 43(7), 897-909.

Di Blasi, C., (1996). Heat, Momentum and Mass Transport Through a Shrinking Biomass Particle Exposed to Thermal Radiation. *Chemical Engineering Science*, 51(7), pp.1121-1132

Direktorat Jenderal Minyak dan Gas Bumi. (2020). Standar dan Mutu (Spesifikasi) Bahan Bakar Minyak Jenis Solar yang Dipasarkan di dalam Negeri.

Dutta, A. (2017). Fourier transform infrared spectroscopy. Spectroscopic methods for nanomaterials characterization, 73-93.

Ekinci, Z., Civan, M., & Yurdakul, S. (2021). Effects of particle size on oxidative thermal decomposition kinetics and mechanisms of selected waste wood samples. *Chemical Engineering Communications*, 208(12), 1775-1788.



- Erawati, E., Sediawan, W. B., & Mulyono, P. (2013). Modifikasi Mekanisme Koufopanos pada Kinetika Reaksi Pirolisis Ampas Tebu (Bagasse). *Jurnal Rekayasa Proses*, 7(1), 14-18.
- Faix, O. (1992). Fourier transform infrared spectroscopy. In Methods in lignin chemistry (pp. 83-109). Berlin, Heidelberg: Springer Berlin Heidelberg.
- Fakayode, O. A., Aboagarib, E. A. A., Zhou, C., & Ma, H. (2020). Co-pyrolysis of Lignocellulosic and Macroalgae Biomasses for the Production of Biochar a Review. *Bioresource technology*, 297, 122408..
- Farag, S., Kouisni, L., & Chaouki, J. (2014). Lumped Approach in Kinetic Modeling of Microwave Pyrolysis of Kraft Lignin. *Energy & Fuels*, 28(2), 1406-1417.
- Fatahala, S. S., Mohamed, M. S., Sabry, J. Y., & Mansour, Y. E. E. D. (2022). Synthesis strategies and medicinal value of pyrrole and its fused heterocyclic compounds. *Medicinal Chemistry*, 18(10), 1013-1043
- Febriyanti, F., Fadila, N., Sanjaya, A. S., Bindar, Y. dan Irawan, A. (2019): Pemanfaatan Limbah Tandan Kosong Kelapa Sawit Menjadi Bio-Char, Bio-oil dan Gas dengan Metode Pirolisis. *Jurnal Chemurgy*. 3 (2). 12-17
- Fitriyah, F., Hidayat, S., Bakar, M. S. A., & Phusunti, N. (2019). Pyrolysis Of Alang-Alang (Imperata Cilindrica) As Bioenergy Source In Banten Province Indonesia. *Jurnal Kebijakan Pembangunan Daerah*, 3(1), 60-78.
- Gani, A. (2013). Komponen Kimia Asap Cair Hasil Pirolisis Limbah Padat Kelapa Sawit. *Jurnal Rekayasa Kimia dan Lingkungan*. Vol. 9(3), Hal. 109-116.
- García, R., Pizarro, C., Lavín, A. G., & Bueno, J. L. (2013). Biomass proximate analysis using thermogravimetry. *Bioresource technology*, 139, 1-4.
- Gao, W., Chen, K., Zeng, J., Xu, J., & Wang, B. (2017). Thermal Pyrolysis Characteristics of Macroalgae Cladophora glomerata. *Bioresource Technology*, 243, 212-217.
- Gunawan Pasaribu, G., & Komarayati, S. (2014). Pemanfaatan Minyak Gaertn Sebagai Bahan Pewangi Alami. *Jurnal Penelitian Hasil Hutan*, 32(3), 235-242
- Gupta, S., Palansooriya, K. N., Dissanayake, P. D., Ok, Y. S., & Kua, H. W. (2020). Carbonaceous inserts from lignocellulosic and non-lignocellulosic sources in cement mortar: preparation conditions and its effect on hydration kinetics and physical properties. *Construction and Building Materials*, 264, 120214.
- Grace, C. E. E., Lakshmi, P. K., Meenakshi, S., Vaidyanathan, S., Srisudha, S., & Mary, M. B. (2020). Biomolecular transitions and lipid accumulation in green microalgae monitored by FTIR and Raman analysis. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*, 224, 117382.
- Han, J., Li, X., Kong, S., Xian, G., Li, H., Li, X., & Zeng, F. (2021). Characterization of column chromatography separated bio-oil obtained from hydrothermal liquefaction of Spirulina. *Fuel*, 297, 120695.



- Heelan, J. L., Gates, B. C., Ebeler, S. E., & Block, D. E. (2015). Catalytic conversion of biofuel components: Product analysis by multidetector gas chromatography. *Energy & Fuels*, 29(3), 1801-1811.
- Huang, Z., Zhang, J., Pan, M., Hao, Y., Hu, R., Xiao, W., & Lyu, T. (2022). Valorisation of microalgae residues after lipid extraction: Pyrolysis characteristics for biofuel production. *Biochemical Engineering Journal*, 179, 108330
- Hubble, A. H., Ryan, E. M., & Goldfarb, J. L. (2022). Enhancing pyrolysis gas and bio-oil formation through transition metals as in situ catalysts. *Fuel*, 308, 121900.
- Irawansyah, H., Amrullah, A., & Fitrah, J. (2022). The effect of temperature distillation on products distribution derived from wood pyrolysis bio-oil. In *IOP Conference Series: Earth and Environmental Science* (Vol. 1038, No. 1, p. 012019). IOP Publishing.
- Jahirul, M. I., Rasul, M. G., Chowdhury, A. A., & Ashwath, N. (2012). Biofuels Production Through Biomass Pyrolysis a Technological Review. *Energies*, 5(12), 4952-5001.
- Jamilatun, S., Pitoyo, J., Amelia, S., Ma'arif, A., Hakika, D. C., & Mufandi, I. (2022). Experimental study on the characterization of pyrolysis products from bagasse (*Saccharum Officinarum L.*): Bio-oil, biochar, and gas products. *Indonesian Journal of Science and Technology*, 7(3), 565-582.
- Johansen, J. M., Gadsbøll, R., Thomsen, J., Jensen, P. A., Glarborg, P., Ek, P., & Mitchell, R. E. (2016). Devolatilization kinetics of woody biomass at short residence times and high heating rates and peak temperatures. *Applied Energy*, 162, 245-256.
- Jonsson, E. (2016). Slow pyrolysis in Brista. *Master's Thesis, KTH Royal Institute of Technology*. 55.
- 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>
- Kanury, A.M., (1972). Thermal Decomposition Kinetics of Wood Pyrolysis. *Combustion and Flame*, 18(1), pp.75-83.
- Kansa, E.J., Perlee, H.E., and Chaiken, R.F., (1977). "Mathematical Model of Wood Pyrolysis Including Internal Forced Convection". *Combust and Flame*, 29, 311-324
- Kim, T. S., Kim, J. Y., Kim, K. H., Lee, S., Choi, D., Choi, I. G., & Choi, J. W. (2012). The effect of storage duration on bio-oil properties. *Journal of Analytical and Applied Pyrolysis*, 95, 118-125.
- Kneisel, S., Westphal, F., Bisel, P., Brecht, V., Broecker, S., & Auwärter, V. (2012). Identification and structural characterization of the synthetic cannabinoid 3-(1-adamantoyl)-1-pentylindole as an additive in 'herbal incense'. *Journal of Mass Spectrometry*, 47(2), 195-200.



Kung, H.C., (1972), "A Mathematical Model of Wood Pyrolysis". *Combust and Flame*, 18, 185-195.

Larkin, P. J. (2018). IR and Raman spectra–structure correlations. Infrared and Raman spectroscopy, 85-134.

Lee, X. J., Ong, H. C., Gan, Y. Y., Chen, W. H., & Mahlia, T. M. I. (2020). State of art review on Conventional and Advanced Pyrolysis of Macroalgae and Microalgae for Biochar, Bio-oil and Bio-syngas Production. *Energy Conversion and Management*, 210, 112707

Lehto, J., Oasmaa, A., Solantausta, Y., Kyto, M., dan Chiaramonti, D. (2014). Review of Fuel Oil Quality and Combustion of Fast Pyrolysis Bio-oils from Lignocellulosic Biomass. *Applied Energy*, Vol. 116, Hal.178-190

Li, P., Shi, X., Wang, X., Song, J., Fang, S., Bai, J., & Pang, S. (2021). Bio-oil from biomass fast pyrolysis: Yields, related properties and energy consumption analysis of the pyrolysis system. *Journal of Cleaner Production*, 328, 129613

Li, Y., Horsman, M., Wu, N., Lan, C. Q., & Dubois-Calero, N. (2018). Biofuels from Microalgae. *Biotechnology progress*, 24(4), 815-820.

Liaw, S. S., Justo, O. R., Perez, V. H., Zhou, S., & Garcia-Perez, M. (2016). Ozonation of pyrolytic aqueous phase: Changes in the content of phenolic compounds and color. *Chemical Engineering & Technology*, 39(10), 1828-1834.

Liu, R., Liu, G., Yousaf, B., Niu, Z., & Abbas, Q. (2022). Novel investigation of pyrolysis mechanisms and kinetics for functional groups in biomass matrix. *Renewable and Sustainable Energy Reviews*, 153, 111761

Lozano, D. C. P., Jones, H. E., Barrow, M. P., & Wills, M. (2023). Chemoselective derivatisation and ultrahigh resolution mass spectrometry for the determination of hydroxyl functional groups within complex bio-oils. *RSC advances*, 13(26), 17727-17741

Lu, Q., Li, W., Zhang, X., Liu, Z., Yuan, S. (2020). Experimental Study on Catalytic Pyrolysis of Biomass over a Ni/Ca-promoted Fe catalyst. *Fuel*, 263 (September), 116690. <https://doi.org/10.1016/j.fuel.2019.116690>

Mariyam, S., Al-Ansari, T., & McKay, G. (2023). Particle size impact on pyrolysis of multi-biomass: a solid-state reaction modeling study. *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, 45(2), 3681-3691.

Maximov, A. L., Nekhaev, A. I., & Ramazanov, D. N. (2015). Ethers and acetals, promising petrochemicals from renewable sources. *Petroleum Chemistry*, 55, 1-21.

Mujiarto, S., Ristianingsih, Y., Amrullah, A. dan Khalid, A. (2014): Studi Proses Pirolisis Tandan Kosong Kelapa Sawit Menjadi Bio Oil Sebagai Energi Alternatif. *Jurnal Sains dan Terapan Politeknik Hasnur*. 2 (2). 21-25

Naik, S., Goud, V. V., Rout, P. K., Jacobson, K., & Dalai, A. K. (2010). Characterization of Canadian biomass for alternative renewable biofuel. *Renewable energy*, 35(8),



- Najohan, M. Z., Zakaria, Z. Y., Jusoh, M., Alshaikh, A. A., Tahir, M., & Anggoro, D. D. (2023). Thermodynamic analysis of bio-oil model compounds to light hydrocarbon. *Cleaner Engineering and Technology*, 14, 100640
- Nelson, E. S., Sadare, O., Okewale, A., Iyuke, S., & Daramola, M. (2023). Effect of biomass particle size on yield and composition of bio-oil produced from Empty Palm Fruit Bunch.
- Nguyen, Y. T., Pence, T. J., & Wichman, I. S. (2019). Crack formation during solid pyrolysis: evolution, pattern formation and statistical behaviour. *Proceedings of the Royal Society A*, 475(2229), 20190211.
- Onay, O., & Kockar, O. M. (2003). Slow, Fast and Flash Pyrolysis of Rapeseed. *Renewable Energy*, 28(15), 2417–2433. [https://doi.org/10.1016/S0960-1481\(03\)00137-X](https://doi.org/10.1016/S0960-1481(03)00137-X)
- Özyağran, A., & Yaman, S. (2017). Prediction of calorific value of biomass from proximate analysis. *Energy Procedia*, 107, 130-136.
- Peby, A. (2010): Biomass to Liquid : Proses Konversi Tandan Kosong Kelapa Sawit Menjadi Bio-Oil dengan Metode Pirolisis. Teknik Kimia. Universitas Indonesia. Jakarta
- Pourkarimi, S., Hallajisani, A., Alizadehdakhel, A., & Nouralishahi, A. (2019). Biofuel Production Through Micro and Macroalgae Pyrolysis – A Review of Pyrolysis Methods and Process Parameters. *Journal of Analytical and Applied Pyrolysis*, 142 (April), 1–19. <https://doi.org/10.1016/j.jaat.2019.04.015>
- Purwanto, W.W., Supramono, D., Muthia, R., dan Annisa, G.(2012). Konversi Limbah Kelapa Sawit Menjadi Bio-oil melalui Proses Catalytic Fast Pyrolysis dan Upgradingnya. Asosiasi Pendidikan Tinggi Teknik Kimia Indonesia.
- Rezende-Lopes, F., Tannous, K., & Rezende-Lopes, T. (2023). Heat flow and specific heat capacity in the dehydration stage of biomasses pyrolysis through thermal analyses. *Revista UIS Ingenierías*, 22(1), 57-68.
- Rezaei, H., Yazdanpanah, F., Lim, J. C., Lau, A., & Sokhansanj, S. (2018). Woody feedstock pretreatments to enhance pyrolysis bio-oil quality and produce transportation fuel. In *Biomass for Bioenergy-Recent Trends and Future Challenges*. IntechOpen.
- Rüedi, G., & Hansen, H. J. (2004). Diradical-Promoted Two-Carbon Ring-Expansion Reactions by Thermal Isomerization: Synthesis of Functionalized Macrocyclic Ketones. *Helvetica chimica acta*, 87(7), 1628-1665.
- Santos, A. L. D., Lucas, A. N. L., da Mota, I. D., Schneider, J. K., Polidoro, A. S., Pinho, A. R., & Caramão, E. B. (2023). Quantitative GC-MS Analysis of Sawdust Bio-Oil. *Journal of the Brazilian Chemical Society*, 34, 1581-1591.
- Salosso, Y., (2019). Nutrient and Alginate Content of Macroalgae Sargassum sp. From Kupang Bay Waters, East Nusa Tenggara, Indonesia. *Aquaculture, Aquarium, Conservation & Legislation*, 12(6), pp.2130-2136.



- Scognamiglio, J., Jones, L., Letizia, C. S., & Api, A. M. (2012). Fragrance material review on 3-ethyl-2-hydroxy-2-cyclopenten-1-one. *Food and chemical toxicology*, 50, S646-S649.
- Shanan, Xu., Cao, B., Uzoejinwa, B. B., Odey, E. A., Wang, S., Shang, H., & Nwakaire, J. N. (2020). Synergistic Effects of Fatalytic Co-pyrolysis of Macroalgae with Waste Plastics. *Process Safety and Environmental Protection*, 137, 34-48.
- Shaw, A., & Zhang, X. (2019). Density functional study on the thermal stabilities of phenolic bio-oil compounds. *Fuel*, 255, 115732
- Shi, J., Zhao, M., Wang, Y., Fu, J., Lu, X., & Hou, Z. (2016). Upgrading of aromatic compounds in bio-oil over ultrathin graphene encapsulated Ru nanoparticles. *Journal of Materials Chemistry A*, 4(16), 5842-5848.
- Shrivastava, P., Kumar, A., Tekasakul, P., Lam, S. S., & Palamanit, A. (2021). Comparative investigation of yield and quality of bio-oil and biochar from pyrolysis of woody and non-woody biomasses. *Energies*, 14(4), 1092.
- Sładek, S., Korus, A., Klimanek, A., Karchniwy, E., Adamczyk, W. P., & Szlęk, A. (2022). Measurements of surface temperature distributions on coal dust particles. *Energy*, 243, 123025.
- Somers, K. P., Simmie, J. M., Metcalfe, W. K., & Curran, H. J. (2014). The pyrolysis of 2-methylfuran: a quantum chemical, statistical rate theory and kinetic modelling study. *Physical Chemistry Chemical Physics*, 16(11), 5349-5367.
- Sondakh, R. C., Hambali, E., & Indrasti, N. S. (2019, February). Improving characteristic of bio-oil by esterification method. In *IOP Conference Series: Earth and Environmental Science* (Vol. 230, No. 1, p. 012071). IOP Publishing
- Subagyono, R. D. J., Qi, Y., Jackson, W. R., & Chaffee, A. L. (2016). Pyrolysis-GC/MS analysis of biomass and the bio-oils produced from CO/H<sub>2</sub>O reactions. *Journal of Analytical and Applied Pyrolysis*, 120, 154-164
- Titlyanov, E. A., Titlyanova, T. V., Li, X., & Huang, H. (2017). Common Marine Algae of Hainan Island (Guidebook). In *Coral Reef Marine Plants of Hainan Island* (Issue November 2010). <https://doi.org/10.1016/b978-0-12-811963-1.00004-4>.
- Uroć Štefanko, A., & Leszczynska, D. (2020). Impact of biomass source and pyrolysis parameters on physicochemical properties of biochar manufactured for innovative applications. *Frontiers in Energy Research*, 8, 138.
- Usino, D. O., Sar, T., Ylitervo, P., & Richards, T. (2023). Effect of Acid Pretreatment on the Primary Products of Biomass Fast Pyrolysis. *Energies*, 16(5), 2377.
- Verma, R., Verma, S. K., Verma, V., Verma, S., Vaishnav, Y., Jena, V., & Rakesh, K. P. (2021). Catalytic pyrolysis of ulva lactuca macroalgae: Effects of Mono and Mimetallic Catalysts and Reaction Parameters on Bio-oil up Gradation. *Bioresource Technology*, 324, 124594.
- Wallace, C. A., Afzal, M. T., & Saha, G. C. (2019). Effect of feedstock and microwave pyrolysis temperature on physio-chemical and nano-scale mechanical properties



of biochar. *Bioresources and Bioprocessing*, 6(1).  
<https://doi.org/10.1186/s40643-019-0268-2>

Walton, D. (1998). Degradation of intracrystalline proteins and amino acids in fossil brachiopods. *Organic Geochemistry*, 28(6), 389-410.

Wang, H., Liu, Y., Zhang, L., Gunawan, R., Wang, Z., & Li, C. Z. (2021). Enrichment of aromatic compounds during the high-pressure reactive distillation of bio-oil. *Fuel Processing Technology*, 220, 106897.

Wang, D., Li, M., Cheng, D., Du, Y., Shi, Q., Zou, X., & Chen, Q. (2023). New biodegradation degree proxies based on acids and neutral nitrogen-and oxygen-containing compounds characterized by high resolution mass spectrometry. *Fuel*, 347, 128438

Wang, S., Cao, B., Abomohra, A. E. F., Hu, Y., Wang, Q., He, Z., Xu, S., Feng, Y., Bernard, U. B., & Jiang, X. (2018). Comparative Study of Combustion Properties of Two Seaweeds in a Batch Fluidized Bed. *Combustion Science and Technology*, 190(5), 755–769. <https://doi.org/10.1080/00102202.2017.1407761>

Wang, M., Hu, C., Cannizzaro, J., English, D., Han, X., Naar, D., Lapointe, B., Brewton, R. and Hernandez, F., (2018). Remote Sensing of Sargassum Biomass, Nutrients, and Pigments. *Geophysical Research Letters*, 45(22), pp.12-359.

White, J. E., Catallo, W. J., & Legendre, B. L. (2011). Biomass Pyrolysis Kinetics: A Comparative Critical Review With Relevant Agricultural Residue Case Studies. *Journal of Analytical and Applied Pyrolysis*, 91(1), 1–33. <https://doi.org/10.1016/j.jaat.2011.01.004>

Wijayanti, H., Mardina, P., Tuhuloula, A., Ananda, L. T., Rauf, Z. S. A., Lutfi, A., & Riyadi, S. F. (2023). Evaluation of stirring rate and pH on phenolic compounds recovery from palm kernel shell heavy phase bio-oil. *Communications in Science and Technology*, 8(1), 25-30.

Yang, D., Li, S. D., Fu, W. W., Zhong, J. P., & Jia, D. M. (2003). Pyrolysis GC-MS of chlorinated natural rubber. *Journal of applied polymer science*, 87(2), 199-204.

Yu, F., Steele, P., Gajjela, S. K., Hassan, E. B., dan Mitchell, B.(2009). Production of Hydrocarbons from Biomass Fast Pyrolysis and Hydrodrexxygenation, *Departement of Forest Products*, Mississippi University, US

Yuan, G., Ren, X., & Wang, Q. (2018). Selective electrochemical conversion of biomass-derived valeric acid to ethers/esters. *International Journal of Electrochemical Science*, 13(4), 3210-3223.

Zhou, N., Dai, L., Lyu, Y., Li, H., Deng, W., Guo, F., Chen, P., Lei, H., & Ruan, R. (2021). Catalytic pyrolysis of plastic wastes in a continuous microwave assisted pyrolysis system for fuel production. *Chemical Engineering Journal*, 418. <https://doi.org/10.1016/j.cej.2021.129412>