

## DAFTAR PUSTAKA

- [1] J. Presisi, "Tersisa 3,77 Miliar Barel, Menteri ESDM Klaim Cadangan Minyak Indonesia Hanya Sampai 9 Tahun Kedepan", *Jurnal Presisi*, 2020. [Online]. Available: <https://jurnalpresisi.pikiran-rakyat.com> [Accessed: 21-Oct- 2020].
- [2] P. McKendry, "Energy production from biomass (part 1): overview of biomass", *Bioresource Technology*, vol. 83, no. 1, pp. 37-46, 2002. Available: 10.1016/s0960-8524(01)00118-3.
- [3] "Direktorat Jenderal EBTKE - Kementerian ESDM", *Ebtke.esdm.go.id*, 2020. [Online]. Available: <http://ebtke.esdm.go.id/post/2019/12/23/2437/narasi.tunggual.pertama.di.dunia.indonesia.terapkan.biodiesel.30.persen.b30?lang=en>. [Accessed: 21- Oct- 2020].
- [4] Yunus M. "Teknologi Pembuatan Asap Cair dari Tempurung Kelapa Sebagai Pengawet Makanan". *J Sains dan Inovasi*. 2011, 7(1): 53-61. 4.
- [5] I. Kresnawaty, S. Putra, A. Budiani and T. Darmono, "Konversi Tandan Kosong Kelapa Sawit (TKKS) Menjadi Arang Hayati dan Asap Cair", *Jurnal Penelitian Pascapanen Pertanian*, vol. 14, no. 3, p. 171, 2018.
- [6] Seri Maulina, Nurtahara and Fakhradila, "Pirolisis Pelepah Kelapa Sawit Untuk Menghasilkan Fenol Pada Asap Cair", *Jurnal Teknik Kimia USU*, vol. 7, no. 2, pp. 12-16, 2018. Available: 10.32734/jtk.v7i2.1641.
- [7] Lisa Ginayanti, vol. 4, no. 3, pp. 7-11, 2015. Available: 10.32734/jtk.v4i3.1474.
- [8] Peralatan UV-Vis Spectrophotometer, *polimer.bppt.go.id*, 2020. [Online]. Available: <https://polimer.bppt.go.id/id/alat-alat-pengujian-id/uv-vis-spectrophotometer> . [Accessed: 23- Oct- 2020].

- [9] "Kimia Portal", Kimia.lipi.go.id, 2020. [Online]. Available: [http://kimia.lipi.go.id/news/read/fasilitas#:~:text=Kromatografi%20gas%2Dspektrometri%20massa%20\(GC,yang%20berbeda%20dalam%20sampel%20uji](http://kimia.lipi.go.id/news/read/fasilitas#:~:text=Kromatografi%20gas%2Dspektrometri%20massa%20(GC,yang%20berbeda%20dalam%20sampel%20uji) [Accessed: 23- Oct- 2020].
- [10] "Mengenal Potensi Limbah Kelapa Sawit Indonesia", kumparan, 2020. [Online]. Available: <https://kumparan.com>. [Accessed: 26- Oct- 2020].
- [11] Gapki-kalbar.or.id, 2020. [Online]. Available: [http://www.gapki-kalbar.or.id/admin/files/Data%20pabrik%20pengolahan%20kelapa%20sawit%20di%20Prov.%20Kalbar%20\(2016\).pdf](http://www.gapki-kalbar.or.id/admin/files/Data%20pabrik%20pengolahan%20kelapa%20sawit%20di%20Prov.%20Kalbar%20(2016).pdf). [Accessed: 13- Nov- 2020].
- [12] Mandiri. 2012. Manual Pelatihan Teknologi Energi Terbarukan. Jakarta, DANIDA.
- [13] J. Susanto, A. Santoso and N. Suwedi, "Perhitungan Potensi Limbah Padat Kelapa Sawit untuk Sumber Energi Terbarukan dengan Metode LCA", Jurnal Teknologi Lingkungan, vol. 18, no. 2, p. 165, 2017.
- [14] Dabukke MH, Sigalingging R. 2018. Utilization of Oil Palm Fronds as A Raw Material for Making Natural Fiber Ropes. Jurnal Rekayasa Pangan dan Pertanian, 6(4).
- [15] C. Edmund, M. Christopher and D. Pascal, "Characterization of palm kernel shell for materials reinforcement and water treatment", Journal of Chemical Engineering and Materials Science, vol. 5, no. 1, pp. 1-6, 2014. Available: 10.5897/jcems2014.0172.
- [16] Erwinsyah, Sugesty, S., & Hidayat, T. (2012). Aplikasi Enzim Lipase pada Pulp Tandan Kosong Sawit untuk Kertas Cetak, Moulding dan Media Tanaman Kecambah Kelapa Sawit. *Prosiding InSINas*, (hal, MT92-MT97).
- [17] P. Shrivastava, P. Khongphakdi, A. Palamanit, A. Kumar and P. Tekasakul, "Investigation of physicochemical properties of oil palm biomass for evaluating potential of biofuels production via pyrolysis processes", Biomass Conversion and Biorefinery, 2020.
- [18] F. Abnisa, A. Arami-Niya, W. Daud and J. Sahu, "Characterization of Bio-oil and Bio-char from Pyrolysis of Palm Oil Wastes", BioEnergy Research, vol. 6, no. 2, pp. 830-840, 2013. Available: 10.1007/s12155-013-9313-8.

- [19] H. Abdul Khalil, M. Siti Alwani, R. Ridzuan, H. Kamarudin and A. Khairul, “Chemical Composition, Morphological Characteristics, and Cell Wall Structure of Malaysian Oil Palm Fibers”, *Polymer-Plastics Technology and Engineering*, ol. 47, no. 3, pp. 2773-280, 2008. Available: 10.1080/03602550701866840.
- [20] Dhyani V, Bhaskar T. 2018. A Comprehensive Review on the Pyrolysis of Lignocellulosic-Biomass. *Renewable-Energy*, 129(B):695-716,
- [21] Kabir G, Mohd Din AT, Hameed BH. 2017-a. Pyrolysis of Oil Palm Mesocarp Fiber and Palm Frond in A Slow-Heating Fixed-Bed Reactor: A Comparative Study. *Bioresource Technology*, 241:563-572.
- [22] Bertero M, Garcia JR, Falco M, Sedran U, Mahmud KN, Ariffin SJ, Idris A, Zakaria ZA. 2018. Sustainable Technologies for the Management of Agricultural Wastes: Chapter 2 Pyrolysis Products from Residues of Palm Oil Industry. Springer Nature Singapore Pte Ltd, [https://doi.org/10.1007/978-981-10-5062-6\\_2](https://doi.org/10.1007/978-981-10-5062-6_2).
- [23] Ratnawati dan S. Hartono, Pengaruh Suhu Pirolisis Cangkang Sawit terhadap Kuantitas dan Kualitas Asap Cair, *Jurnal Sains Materi Indonesia* (2010) ol. 12 (1), ISSN 141-1098
- [24] T. Pujilestari, Pangn”, *Jurnal Riset Teknologi Industri*, ol. 4, no. 8, p. 1, 2015. Available: 10.26578/jrti.v4i8.1465.
- [25] D. Esumang, D. Dodoo and J. Adjei, “Polycyclic aromatic hydrocarbon (PAH) contamination in smoke-cured fish products”, *Journal of Food Composition and Analysis*, vol. 27, no. 2, pp. 128-138, 2012. Available: 10.1016/j.jfca.2012.04.007.
- [26] E. Noor, C. Luditama dan G. Pari, Isolasi dari Pemurnian Asap Cair Berbahan Dasar Tempurung dan Sabut Kelapa secara Pirolisis dan Distilasi, *Prosiding Konferensi Nasional Kelapa VIII*, 2009.
- [27] F. Swastawati, T. W. Agustini, Y. Darmanto, dan E. N. Dewi, (2010), vol. 10, No. 3, ISSN: 1410-5217.
- [28] Yatagai, M. 2004. Utilization of Charcoal and Wood Vinegar in Japan. Seminar on “Enhancing The Development and Wood Vinegar. Bogor.

- [29] Akhtar J, Amin NS. 2012. A Reiew on Operating Parameters for Optimum Liquid Oil Yield in Biomass Pyrolysis. *Renew Sust Energ Rev.*, 16:5101-5109, <https://doi.org/10.1016/j.rser.2012.05.033>.
- [30] Kim SS, Ly HV, Kim J, Choi JH, Woo HC. 2013. Thermogravimetric Characteristics and Pyrolysis Kinetics of Alga *Sugarssum* sp. *Biomass.. Bioresource Technology*, 139:242-248, <https://doi.org/10.1016/j.biortech.2013.03.192>.
- [31] Mabrouki J, Abbasi MA, Guedri K, Omri A, Jeguirim M. 2015.
- [32] A. Ferdiyanto, F. Munfaridi and A. Hidayat, "Pengaruh Temperatur Proses Pirolisis Tandan Kososng Kelapa Sawit (TKKS) Terhadap Karakteristik Bio - Oil", *Teknik Kimia, Universitas Islam Indonesia*, vol. 8, no. 01, 2020. Available: 10.20885/3812016 [Accessed 6 October 2020].
- [33] A. O. Ningrum, "Proses Pembuatan Bio Oil dari Limbah Kelapa Sawit (Tandan, Cangkang dan Serat) Untuk Bahan Bakar Alternatif dengan Metode Fast Pyrolysis", *Teknik Kimia, Universitas Indonesia*, 2011.
- [34] R. Pamori , R. Efendi, dan F. Restuhadi Fume Characteristics Liquid Waste From The Pyrolysis Young Coconut Fiber, vol. 14, no. 2, pp. 43–50, 2015.
- [35] Wijaya, M., E. Noor., T Irawadi Tedja. dan G. Pari. 2008. Karakterisasi Komponen Kimia Asap Cair dan Pemanfatannya sebagai Biopestisida. *Bionature*. 9(1): 34-40.
- [36] A. G. Haji, "Komponen Kimia Asap Cair Hasil Pirolisis Limbah Padat Kelapa Sawit," *Jurnal Rekayasa Kimia & Lingkungan*, vol.9, no. 3, p. 110, 2013.
- [37] D. Sartika, "Uji Karakteristik Asap Cair dari Limbah Padat Pengolahan Kelapa Sawit Pada Alat Pirolisis Limbah Organik-Anorganik", *Keteknikan Pertanian, Universitas Sumatra Utara*, 2020.
- [38] Rahmalinda, Amri, Zutiniar, "Studi Komparasi Karakteristik Asap Cair Hasil Pirolisis dari Kulit Durian, Pelepah dan Tandan Kosong Sawit dengan Pemurnian Secara Distilasi", *Teknik Kimia, Universitas Riau*, 2013.
- [39] "Spektrofotometer UV-Vis Single Beam", *Laboratorium Terpadu*, 2021. [Online]. Available: <https://labterpadu.uui.ac.id/fasilitas/alat/spektrofotometer-uv-vis-single-beam>. [Accessed: 27 Juli 2021].

- [40] S. Wibowo, Karakteristik Asap Cair Tempurung Nyamplung, Jurnal Penelitian Hasil Hutan (2012) Vol. 30, No. 3, ISSN : 0216-4329.
- [41] P. R. Patwardhan, R. C. Brown, B. H. Shanks, Understanding the fast Pyrolysis of Lignin. Chemsuschem 4 (2011). doi:10.1002/cssc.201100133.