

DAFTAR PUSTAKA

- Abka-Khajouei, R., Tounsi, L., Shahabi, N., Patel, A. K., Abdelkafi, S., & Michaud, P. (2022). Structures, properties and applications of alginates. *Marine Drugs*, 20(6), 364.
- Arora, S. (2014). Introduction to atomic absorption spectroscopy. Lab Training. Kirti Nagar Industrial Area. New Delhi.
- A. Allwar. (2013). Porous Structures of Activated Carbon Derived from Oil Palm Empty Fruit Bunch by Phosphoric Acid Activation Under Nitrogen and Carbon Dioxide. *International Journal of Research in Chemistry and Environment*. 3(2), 62-68.
- Aviantri, F., & Maharani, D. K. (2017). Pelepasan Nitrogen Pada Pupuk Slow Release Urea dengan Menggunakan Matriks Kitosan–Bentonit. *UNESA Journal of Chemistry*, 6(1), 68-72.
- Arafatullah, N. A. (2011). Pengomposan Tandan Kosong Kelapa Sawit.
- Baharuddin, A. S., Wakisaka, M., Shirai, Y., Abd-Aziz, S., Abdul, R., & Hassan, M. A. (2009). Co-composting of empty fruit bunches and partially treated palm oil mill effluents in pilot scale. *International Journal of Agricultural Research*, 4(2), 69-78.
- Bergaya, F., & Lagaly, G. (2013). *Handbook of clay science*. Newnes.
- Bijang, C. M., Tehubijuluw, H., & Kaihatu, T. G. (2018). Biosorpsi Ion Logam Kadmium (Cd²⁺) Pada Biosorben Rumput Laut Coklat (*Padina australis*) Asal Pantai Liti Pulau Kisar. *Indonesian Journal of Chemical Research*, 6(1), 51-58.
- Campbell, F. C. (2010). *Structural composite materials*. ASM international.
- Ditjen PPHP. (2006). Pedoman Pengolahan Limbah Industri Kelapa Sawit. Subdit Pengelolaan Lingkungan. Direktorat Pengolahan Hasil Pertanian.
- Djamaan, A. (2015). Pengaruh Penggunaan Penyalut Bioblend PS/PCL Terhadap Pelepasan Zat Aktif Urea Granul. *Jurnal Riset Kimia*, 8(2), 158-158.
- Demiral, I., & Samdan, C. A. (2016). Preparation And Characterisation of Activated Carbon From Pumpkin Seed Shell Using H₃PO₄. *Journal of Science and Technology A – Applied Sciences and Engineering*. 17(1), 125-138.
- Esterlita, M. O., & Herlina, N. (2015). Pengaruh penambahan aktivator ZnCl₂, KOH, dan H₃PO₄ dalam pembuatan karbon aktif dari pelepah aren (*Arenga Pinnata*). *Jurnal Teknik Kimia USU*, 4(1), 47-52.

- Farrukh, M. A. (Ed.). (2012). *Atomic absorption spectroscopy*. BoD–Books on Demand.
- Florentino, K. A., Santos, T. T. F., & Templonuevo, C. D. (2020). Comparison of Sodium Alginate-Based Slow-Release Beads with Varying Calcium Chloride Concentrations.
- Julinawati., Marlina., Nasution, R., & Sheilatina. (2015). Applying SEM-EDX Techniques to Identifying the Types of Mineral of Jades (Giok) Takengon, Aceh. *Jurnal Natural*, 15(2), 44-48.
- Gurpreet, K., & Singh, S. K. (2018). Review of nanoemulsion formulation and characterization techniques. *Indian Journal of Pharmaceutical Sciences*, 80(5), 781-789.
- Hidayah, N., & Wusko, I. U. (2020). Characterization and Analysis of Oil Palm Empty Fruit Bunch (OPEFB) Waste of PT Kharisma Alam Persada South Borneo. *Majalah Obat Tradisional*, 25(3), 154-160.
- Hidayu, A. R., Mohamad, N. F., Matali, S., & Sharifah, A. S. A. K. (2013). Characterization of activated carbon prepared from oil palm empty fruit bunch using BET and FT-IR techniques. *Procedia Engineering*, 68, 379-384.
- Hambali, E. (2010). Peran teknologi proses dalam pengembangan agroindustri industri hilir kelapa sawit. *Orasi Ilmiah Guru Besar*. Institut Pertanian Bogor, Bogor.
- Handayani, L., Djajakirana, G., & Munoz, C. P. (2016). Slow-release fertilizer formulation using acrylic and chitosan coating. *Journal of Tropical Soils*, 20(1), 37-45.
- Hendra, R. (2008). Pembuatan Karbon Aktif Berbahan Dasar Batubara Indonesia Dengan Metode Aktivasi Fisika Dan Karakteristiknya. *Departemen Teknik Mesin. UI. Jakarta*.
- He, Y., Wu, Z., Tu, L., Han, Y., Zhang, G., & Li, C. (2015). Encapsulation and characterization of slow-release microbial fertilizer from the composites of bentonite and alginate. *Applied Clay Science*, 109, 68-75.
- Karunia, F. S. A. F., Sani, & Astuty, D. H. (2021). Karakterisasi Karbon Aktif dari Batang Singkong sebagai Adsorben pada Adsorpsi Logam Tembaga. Seminar Nasional Teknik Kimia Soebardjo Brotohardjono XVII, 17, 1–9.
- Kundari, N, A., (2008). *Kinetika Kimia*. STTN-BATAN. Yogyakarta.
- Lasmayadi, E. (2008). Tankos sebagai Alternatif Pemenuhan Kebutuhan Unsur Hara Tanaman Kelapa Sawit.

- Lubis, R. A. F., Nasution, H. I., & Zubir, M. (2020). Production of activated carbon from natural sources for water purification. *Indonesian Journal of Chemical Science and Technology (IJCST)*, 3(2), 67-73.
- Lestari, S., Yuningsih, L. M., & Muharam, S. (2022). Hidrogel Superabsorben Berbasis Natrium Alginat-Bentonit sebagai Pelapis Pupuk Lepas Lambat. *Jurnal Riset Kimia*, 13(1), 58-67.
- Maslahat, M., Hutagaol, R. P., & Lestari, S. (2012). Potensi Biosorben Tandan Kosong Kelapa Sawit (TKKS) Dalam Recovery Limbah Fenol. *Jurnal Sains Natural*, 2(2), 155-168.
- Mayori, E., Faramitha, G N., & Sunardi. (2018). KARAKTERISASI BIODKOMPOSIT ALGINAT-PATI-KAOLIN SEBAGAI KANDIDAT SLOW-RELEASE PUPUK UREA. *Prosiding Seminar Nasional Lingkungan Lahan Basah*, 3(1), 191-195.
- Mazumder, M., Ahmed, R., Ali, A. W., & Lee, S. J. (2018). SEM and ESEM techniques used for analysis of asphalt binder and mixture: A state of the art review. *Construction and Building Materials*, 186, 313-329.
- Uba, S., Nwokem, C. O., Ikeh, D. C., Adeosun, O. S., Kayit, A., Ruma, M. M., & Nwagu, L. N. (2022). Quality Assessment of Wastewater Released by Funtua Textile Limited, North Western Nigeria. *Communication in Physical Sciences*, 8(1)
- Nafsiyah, N. (2020). *KOMPOSIT ZEOLIT/BENTONIT/KARBON AKTIF/ALGINAT BERBENTUK SILINDER SEBAGAI MODEL PUPUK LEPAS-LAMBAT NPK* (Doctoral dissertation, Universitas Gadjah Mada).
- Nasution, S. H., Hanum, C., & Ginting, J. (2014). Pertumbuhan bibit kelapa sawit (*Elaeis Guineensis* Jacq.) pada berbagai perbandingan media tanam solid decanter dan tandan kosong kelapa Sawit pada sistem single stage. *AGROEKOTEKNOLOGI*, 2(2).
- Nandiyanto, A. B. D., Oktiani, R., & Ragadhita, R. (2019). How to read and interpret FTIR spectroscopy of organic material. *Indonesian Journal of Science and Technology*, 4(1), 97-118.
- Noah, A. S. (2022). Oil Palm Empty Fruit Bunches (OPEFB)—Alternative Fibre Source for Papermaking. In *Elaeis guineensis*. London, United Kingdom IntechOpen.

- Noer, A. A., & Malik, U. (2014). Pembuatan Karbon Aktif dari Pelepah Kelapa Sawit Menggunakan Aktivator H₂O sebagai Adsorben. *Jurnal Online Mahasiswa (JOM) Bidang Matematika dan Ilmu Pengetahuan Alam*, 1(2), 6.
- Nugroho, A. (2019). Teknologi Agroindustri Kelapa Sawit. *Lambung Mengkurat Universitas Press (Issue November)*.
- Palar, H. (1994). Pencemaran dan toksikologi logam berat. *Jakarta: Rineka Cipta*, 148.
- Perkebunan, D. (2014). Statistik Perkebunan Komoditas Kelapa Sawit 2013-2015. *Jakarta. Dirjen Perkebunan*.
- Prastiwi, D. A., Sumawinata, B., & Pari, G. (2019). The utilization of activated carbon as micronutrients carrier in slow release fertilizer formulation. In *IOP Conference Series: Earth and Environmental Science* (Vol. 359, No. 1, p. 012009). IOP Publishing.
- Priyadi, P., & Mangiring, W. (2019). Characteristics of Corn Cobs Waste Activated Carbon for Slow Release Micro Fertilizer Carrier. *SAINS TANAH-Journal of Soil Science and Agroclimatology*, 16(2), 147-158.
- Pamungkas, R. B., & Ridho, R. A. (2022). Kinetika Pelepasan Nitrogen Dari Pupuk Urea Lepas Lambat (Urea Slow Release, Sru) Matriks Zeolit Teraktivasi. *Techno (Jurnal Fakultas Teknik, Universitas Muhammadiyah Purwokerto)*, 23(1), 55-60.
- Purnamayani, R., Hendri, J., Salvia, E., & Gusfarina, D. S. (2011). Potensi Tandan Kosong Kelapa Sawit sebagai Pupuk Organik dengan Berbagai Dekomposer.
- Rasyid, A. (2005). Beberapa catatan tentang alginat. *Oseana*, 30(1), 9-14.
- Ratnawati, E., Ermawati, R., & Naimah, S. (2010). Teknologi Biosorben Oleh Mikroorganisme, solusi alternative untuk mengurangi pencemaran logam berat. *Jurnal Kimia dan Kemasan*, 32(1), 34-40.
- Rozo, G., Bohorques, L., & Santamaría, J. (2019). Controlled release fertilizer encapsulated by a κ -carrageenan hydrogel. *Polímeros*, 29.
- Salmina, S. (2017). Studi Pemanfaatan Limbah Tandan Kosong Kelapa Sawit Oleh Masyarakat Di Jorong Koto Sawah Nagari Ujung Gading Kecamatan Lembah Melintang. *Jurnal Spasial: Penelitian, Terapan Ilmu Geografi, dan Pendidikan Geografi*, 6(2), 131642.

- Saleh, M., Zulmanwardi, Z., & Pasanda, O. S. (2018). Pembuatan Pupuk SRF (Slow Release Fertilizer) Dengan Menggunakan Polimer Amilum. In *Seminar Nasional Hasil Penelitian & Pengabdian Kepada Masyarakat (SNP2M)* (Vol. 3, No. 1).
- Savana, R. T., & Maharani, D. K. (2017). Pemanfaatan asam fulvat sebagai optimalizer dalam pupuk lepas lambat kitosan-zeolit. *Sains dan Matematika*, 5(2).
- Setiabudi, A., Hardian, R., Mudzakir, A., (2012). *Karakteristik Material*. Bandung. UPI PRESS. ISBN 9799-78435-2.
- Setiawati, M. R., Suryatmana, P., Hindersah, R., Kamaluddin, N., & Efendi, S. (2019). The effectiveness of various compositions lignolytic and cellulolytic microbes in composting empty fruit bunch palm oil and sugar cane biomass. In *IOP Conference Series: Earth and Environmental Science* (Vol. 393, No. 1, p. 012032). IOP Publishing.
- Setiawan, H. (2014). Pencemaran logam berat di perairan kota makasar dan upaya penanggulangannya. *Buletin Eboni*, 11(1), 1-13.
- Sontheimer, J. E. (1985). Aktivated Carbon For Water Treatmeant Netherlands. *Elsevair*, 51-105.
- Subramanian, K S., Janavi, G J., Marimuthu, S., Kannan, M., Raja, K., Haripriya, S., Sharmila D J S., & Moorthy, P S. (2018). *A Textbook on Fundamentals and Applications of Nanotechnology*. Amerika serikat: Daya Pub. Rumah.
- Sudibandriyo, M. (2003). A Generalized Ono-Kondo Lattice Model For High Pressure on Carbon Adsorben. *Elsevier*, 51-105.
- Suhartati, T. (2017). *Dasar-dasar spektrofotometri UV-Vis dan spektrometri massa untuk penentuan struktur senyawa organik*.
- Sukma, I. W. A., Harsojuwono, B. A., & Arnata, I. W. (2017). Pngaruh Suhu dan lama pemanasan ekstraksi terhadap rendemen dan mutu alginate dari rumput laut hijau sargassum sp. *Jurnal Rekayasa dan Manajemen Agroindustri*, 5(1), 71-80.
- Sutirman, Z. A., Sanagi, M. M., & Aini, W. I. W. (2021). Alginate-based adsorbents for removal of metal ions and radionuclides from aqueous solutions: A review. *International journal of biological macromolecules*, 174, 216-228.

- Tadda, M. A., Ahsan, A., Shitu, A., ElSergany, M., Arunkumar, T., Jose, B., ...& Nik, N. N. (2016). Journal of Advanced Civil Engineering Practice and Research. *Journal of Advanced Civil Engineering Practice and Research*, 2(1), 7-13.
- Thoe, J. M. L., Surugau, N., & Chong, H. L. H. (2019). Application of oil palm empty fruit bunch as adsorbent: A Review. *Transactions on Science and Technology*, 6(1), 9-26.
- Trilaksana, M. A. (2017). *Karakterisasi Karbon Aktif Dari Tandan Kosong Kelapa Sawit Sebagai Adsorben Dengan Variasi Suhu Karbonisasi Dan Jenis Activator Agent* (Doctoral dissertation, Universitas Brawijaya).
- Trirahayu, D. A., Putra, R. P., Hidayat, A. S., Perdana, M. I., & Safitri, E. (2022). Synthesis and Performance Evaluation of Cellulose-based Slow-release Fertilizer: A Review. *KOVALEN: Jurnal Riset Kimia*, 8(1), 1-16.
- Wahi, R., Ngaini, Z., & Jok, V. U. (2009). Removal of mercury, lead and copper from aqueous solution by activated carbon of palm oil empty fruit bunch. *World Appl Sci J*, 5(84), 84-91.
- Wahyuni, S. (2021). *KOMPOSIT KARBOKSIMETIL SELULOSA/NPK/ZEOLIT/Cu, Fe SEBAGAI PUPUK LEPAS-LAMBAT MAKRO DAN MIKRONUTRIEN* (Doctoral dissertation, Universitas Gadjah Mada).
- Wesołowska, M., Rymarczyk, J., Góra, R., Baranowski, P., Sławiński, C., Klimczyk, M., & Schimmelpfennig, L. (2021). New slow-release fertilizers-economic, legal and practical aspects: a Review. *International Agrophysics*, 35(1), 11-24.
- Widiastuti, H. (2007). Pemanfaatan tandan kosong kelapa sawit sisa jamur merang (*Volvariella volvacea*)(TKSJ) sebagai pupuk organik pada pembibitan kelapa sawit Utilization of spent mushroom (*Volvariella volvacea*) media derived from empty fruit bunches of oil palm (SMEB) as organic fertilizer on oil palm seedling. *Menara Perkebunan*, 75(2).
- Venkatesulu, M. (2021). A Review of Composite Materials: History, Types, Advantages And Applications Over Traditional Materials. *International Journal Of Research In Aeronautical And Mechanical Engineering*, 9(4), 32-38.
- Yahya, M. A., Mansor, M. H., Zolkarnaini, W. A. A. W., Rusli, N. S., Aminuddin, A., Mohamad, K.,& Ozair, L. N. (2018). A brief review on activated carbon derived

from agriculture by-product. In *AIP conference proceedings* (Vol. 1972, No. 1, p. 030023).AIP Publishing LLC.

Zainul, R. (2021). *Teknik Karakterisasi Kimia Fisika*. Padang: CV. Berkah Prima.

Zubir, M., Muchtar, Z., Syahputra, R. A., Sudarma, T. F., Nasution, H. I., Lubis, R. A. F., ... & Sandi, K. (2021, March). Characterization of Modified Fe-Cu Nanoparticle Activated Carbon Derived of Oil Palm Empty Bunches. In *Journal of Physics: Conference Series* (Vol. 1819, No. 1, p. 012020). IOP Publishing.

