

DAFTAR PUSTAKA

- (1) Furozi, N.; Fajriyati, I.; Artsanti, P.; Krisdiyanto, D. Adsorpsi Zat Warna Rhodamin B Dan Congo Red Dengan Silika Gel Dari Limbah Ampas Tebu (*Saccharum Officinarum*). *Indones. J. Mater. Chem.* 2020, 2 (2), 53–59. <https://doi.org/10.14421/ijmc.v3i2.3915>.
- (2) Saravanan, S.; Carolin C, F.; Kumar, P. S.; Chitra, B.; Rangasamy, G. Biodegradation of Textile Dye Rhodamine-B by *Brevundimonas Diminuta* and Screening of Their Breakdown Metabolites. *Chemosphere* 2022, 308, 1–7. <https://doi.org/10.1016/j.chemosphere.2022.136266>.
- (3) Amenaghawon, A. N.; Anyalewechi, C. L.; Darmokoesoemo, H.; Kusuma, H. S. Hydroxyapatite-Based Adsorbents: Applications in Sequestering Heavy Metals and Dyes. *J. Environ. Manage.* 2022, 302, 1–19. <https://doi.org/10.1016/j.jenvman.2021.113989>.
- (4) Jamarun, N.; Azharman, Z.; Arief, S.; Sari, T. P.; Asril, A.; Elfina, S. Effect of Temperature on Synthesis of Hydroxyapatite from Limestone. *Rasayan J. Chem.* 2015, 8 (1), 133–137.
- (5) Mangkuasih, S. M.; Rohmawati, L. Sintesis Hidroksiapatit Dari Tulang Ikan Sapu-Sapu (*Hypostomus Plecostomus*) Dengan Metode Presipitasi. *J. Teor. dan Apl. Fis.* 2021, 9 (2), 229–236. <https://doi.org/10.23960/jtaf.v9i2.2818>.
- (6) Henggu, K. U.; Ibrahim, B.; Suptijah, P. Hidroksiapatit Dari Cangkang Sotong Sebagai Sediaan Biomaterial Perancah Tulang. *JPHPI* 2019, 22 (1), 1–13.
- (7) Ersal, F. M.; Nurlily; Sari, Y. W. Synthesis and Characterization of Hydroxyapatite-Chitosan Composite in Situ by Microwave Irradiation Method. *J. Phys. Conf. Ser.* 2019, 1248 (1), 0–6. <https://doi.org/10.1088/1742-6596/1248/1/012080>.
- (8) Bensalah, H.; Younssi, S. A.; Ouammou, M.; Gurlo, A.; Bekheet, M. F. Azo Dye Adsorption on an Industrial Waste-Transformed Hydroxyapatite Adsorbent: Kinetics, Isotherms, Mechanism and Regeneration Studies. *J. Environ. Chem. Eng.* 2020, 8, 1–10. <https://doi.org/10.1016/j.jece.2020.103807>.
- (9) Amalia, V.; Nisa, A. R.; Hadisantoso, E. P. Tinjauan Nanokomposit Hidroksiapatit/Fe₃O₄ Sebagai Adsorben Logam Berat Pada Air. *Gunung Djati Conf. Ser.* 2022, 7, 8–24.
- (10) Istifarah; Aminatun; Widiyanti, P. Sintesis Dan Karakterisasi Komposit Hidroksiapatit Dari Tulang Sotong (*Sepia Sp.*)-Kitosan Untuk Kandidat Bone Filler. *Skripsi Fak. Mat. dan Ilmu Pengetah. Alam* 2012, 1–55.
- (11) Hisham, F.; Maziaty Akmal, M. H.; Ahmad, F. B.; Ahmad, K. Facile Extraction of Chitin and Chitosan from Shrimp Shell. *Mater. Today Proc.* 2021, 42, 2369–2373. <https://doi.org/10.1016/j.matpr.2020.12.329>.
- (12) Charlena; Maddu, A.; Hidayat, T. Synthesis and Characterization of Hydroxyapatite from Green Mussel Shell with Sol-Gel Method. *J. Kim. Val.* 2022, 8 (2), 269–279. <https://doi.org/10.15408/jkv.v8i2.27494>.
- (13) Guo, Q.; Ghadiri, R.; Weigel, T.; Aumann, A.; Gurevich, E. L.; Esen, C.; Medenbach, O.; Cheng, W.; Chichkov, B.; Ostendorf, A. Comparison of in Situ and Ex Situ Methods for Synthesis of Two-Photon Polymerization Polymer Nanocomposites. *Polymers (Basel)*. 2014, 6, 2037–2050. <https://doi.org/10.3390/polym6072037>.
- (14) Trung, T. S.; Minh, N. C.; Cuong, H. N.; Phuong, P. T. D.; Dat, P. A.; Nam, P. V.; Hoa, N. Van. Valorization of Fish and Shrimp Wastes to Nano-Hydroxyapatite/Chitosan Biocomposite for Wastewater Treatment. *J. Sci. Adv. Mater. Devices* 2022, 7, 1–9. <https://doi.org/10.1016/j.jsamd.2022.100485>.

- (15) Jamarun, N.; Amelia, D.; Rahmayeni; Septiani, U.; Sisca, V. The Effect of Temperature on the Synthesis and Characterization of Hydroxyapatite-Polyethylene Glycol Composites by in-Situ Process. *Hybrid Adv.* 2023, 2, 1–7. <https://doi.org/10.1016/j.hybadv.2023.100031>.
- (16) Mohd Pu'ad, N. A. S.; Koshy, P.; Abdullah, H. Z.; Idris, M. I.; Lee, T. C. Syntheses of Hydroxyapatite from Natural Sources. *Heliyon* 2019, 5, 1–14. <https://doi.org/10.1016/j.heliyon.2019.e01588>.
- (17) Zhu, J.; Kong, D.; Zhang, Y.; Yao, N.; Tao, Y.; Qiu, T. The Influence of Conditions on Synthesis Hydroxyapatite By Chemical Precipitation Method. *IOP Conf. Ser. Mater. Sci. Eng.* 2011, 18, 1–4. <https://doi.org/10.1088/1757-899X/18/6/062023>.
- (18) Ningsih, R. P.; Nelly, W.; Destiarti, L. Sintesis Hidroksiapatit Dari Cangkang Kerang Kepah (*Polymesoda Erosa*) Dengan Variasi Waktu Pengadukan. *J. Kim. Khatulistiwa* 2014, 3 (1), 22–26.
- (19) Rivera, E. M.; Munoz. Hydroxyapatite-Based Materials: Synthesis and Characterization. *Biomed. Eng.-Front. Challenges* 2011, 75–98. <https://doi.org/10.5772/19123>.
- (20) Nayak, A.; Bhushan, B. Hydroxyapatite as an Advanced Adsorbent for Removal of Heavy Metal Ions from Water: Focus on Its Applications and Limitations. *Mater. Today Proc.* 2021, 46, 11029–11034. <https://doi.org/10.1016/j.matpr.2021.02.149>.
- (21) Mirhosseini, M.; Biazar, E.; Saeb, K. Removal of Arsenic From Drinking Water By Hydroxyapatite Nanoparticles. *Curr. World Environ.* 2014, 9 (2), 331–338.
- (22) Putri, B.; Rahmayanti, S.; Supardi, N. Potensi Cangkang Soton Sebagai Sumber Kalsium Pada Pakan Larva Rajungan. *J. ABDI* 2020, 2 (1), 26–32.
- (23) Anitta, S.; Sekar, C. Voltammetric Determination of Paracetamol and Ciprofloxacin in the Presence of Vitamin C Using Cuttlefish Bone-Derived Hydroxyapatite Sub-Microparticles as Electrode Material. *Results Chem.* 2023, 5, 1–11. <https://doi.org/10.1016/j.rechem.2023.100816>.
- (24) Dompeipen, E. J.; Kaimudin, M.; Dewa, R. P. Isolasi Kitin Dan Kitosan Dari Limbah Kulit Udang. *Maj. Biam* 2016, 12, 32–39.
- (25) Mulyani, R.; Mulyadi, D.; Yusuf, N. Chitosan Membrane from Shrimp Shells (*Panaeus Modonon*) as an Antibacterial Food. *J. Phys. Conf. Ser.* 2020, 1477 (7), 1–6. <https://doi.org/10.1088/1742-6596/1477/7/072006>.
- (26) Nurlaili, N.; Alaa, S.; Rahayu, S. Modifikasi Teknik Isolasi Biopolimer Kitosan Dari Cangkang Kerang Mutiara (*Pinctada Maxima*) Sebagai Adsorben Zat Warna Metilen Blue. *ORBITA J. Kajian, Inov. dan Apl. Pendidik. Fis.* 2022, 8 (2), 268–273. <https://doi.org/10.31764/orbita.v8i2.11462>.
- (27) Ramadhani, P.; Chaidir, Z.; Zilfa; Tomi, Z. B.; Rahmiarti, D.; Zein, R. Shrimp Shell (*Metapenaeus Monoceros*) Waste as a Low-Cost Adsorbent for Metanil Yellow Dye Removal in Aqueous Solution. *Desalin. Water Treat.* 2020, 197, 413–423. <https://doi.org/10.5004/dwt.2020.25963>.
- (28) Pujiastuti, C.; Adi Daputro, E. Model Matematika Adsorpsi Zeolit Alam Terhadap Ion Zn Air Limbah Elektroplating. *J. Tek. Kim.* 2008, 2 (2), 147–153.
- (29) Hou, H.; Zhou, R.; Wu, P.; Wu, L. Removal of Congo Red Dye from Aqueous Solution with Hydroxyapatite/Chitosan Composite. *Chem. Eng. J.* 2012, 211–212, 336–342. <https://doi.org/10.1016/j.cej.2012.09.100>.
- (30) Zhang, C.; Zhang, W.; Yuan, W.; Peng, K. Preparation and Magnetic Properties of Core-Shell Structured Fe-Si/Fe₃O₄ Composites via in-Situ Reaction Method. *J. Magn. Magn. Mater.* 2021, 531, 1–6. <https://doi.org/10.1016/j.jmmm.2021.167955>.
- (31) Asiah, R. H.; Suseno, J. E.; Muhlisin, Z. Pembuatan Sistem Ozonizer Untuk

- Degradasi Pewarna Rhodamine B Dengan Metode Peroxone Menggunakan Mikrokontroler ATMEGA 8535. *Youngster Phys. J.* 2017, 6 (4), 323–330.
- (32) Amalina, F.; Abd Razak, A. S.; Krishnan, S.; Zularisam, A. W.; Nasrullah, M. A Review of Eco-Sustainable Techniques for the Removal of Rhodamine B Dye Utilizing Biomass Residue Adsorbents. *Phys. Chem. Earth* 2022, 128, 1–11. <https://doi.org/10.1016/j.pce.2022.103267>.
- (33) Setiabudi, A.; Hardian, R.; Muzakir, A. *Karakterisasi Material: Prinsip Dan Aplikasinya Dalam Penelitian Kimia*; 2012; Vol. 1.
- (34) Abdullah, M.; Khairurrijal, K. Review: Karakterisasi Nanomaterial. *J. Nano Saintek* 2009, 2 (1), 1–9.
- (35) Munasir; Triwikantoro; Zainuri, M.; Darminto. Uji XRD Dan XRF Pada Bahan Meneral (Batuan Dan Pasir) Sebagai Sumber Material Cerdas (CaCO_3 Dan SiO_2). *J. Penelit. Fis. dan Apl.* 2012, 2 (1), 20–29. <https://doi.org/10.26740/jpfa.v2n1.p20-29>.
- (36) Mesakh, E. P.; Napitupulu, M.; Gonggo, T. Pengaruh Alumina Terhadap Membran Blend Kitosan-Polivinil Alkohol-Litium Sebagai Membran Elektrolit Baterai. *J. Akad. Kim.* 2017, 6 (May), 72–78.
- (37) Wijayanto, S. O.; Bayuseno, A. . Analisis Kegagalan Material Pipa Furrule Nickel Alloy N06025 Pada Waste Heat Boiler Akibat Suhu Tinggi Berdasarkan Pengujian: Mikrografi Dan Kekerasan. *J. Tek. Mesin* 2013, 1 (1), 33–39.
- (38) Mulyani, R.; Mulyadi, D.; Yusuf, N. Preparation and Characterization of Chitosan Membranes from Crab Shells (*Scylla Olivacea*) for Beverage Preservative. *J. Kim. Val.* 2019, 5 (2), 242–247. <https://doi.org/10.15408/jkv.v5i2.10637>.
- (39) Isnawati, N.; Wahyuningsih, W.; Adlhani, E. Pembuatan Kitosan Dari Kulit Udang Putih (*Penaeus Merquiensis*) Dan Aplikasinya Sebagai Pengawet Alami Untuk Udang Segar. *J. Teknol. Agro-Industri* 2015, 2 (2), 1–7. <https://doi.org/10.34128/jtai.v2i2.12>.
- (40) Kurniasih, M.; Riapanitra, A.; Rohadi, A. Adsorpsi Rhodamin B Dengan Adsorben Kitosan Serbuk Dan Beads Kitosan. *Sains dan Mat.* 2014, 2 (2), 27–33.
- (41) Liu, X.; Guo, Y.; Zhang, C.; Huang, X.; Ma, K.; Zhang, Y. Preparation of Graphene Oxide/4A Molecular Sieve Composite and Evaluation of Adsorption Performance for Rhodamine B. *Sep. Purif. Technol.* 2022, 286 (January), 120400. <https://doi.org/10.1016/j.seppur.2021.120400>.
- (42) Wulandari; Wellia, D. V.; Jamarun, N. The Effect of PH on the Synthesis and Characterization Hydroxyapatite from Bamboo Shell (*Sollen Spp.*) with Emulsion Method. *J. Appl. Chem.* 2021, 10 (6), 872–879.
- (43) Mutmainnah, M.; Chadijah, S.; Rustiah, W. O. Hidroksiapatit Dari Tulang Ikan Tuna Sirip Kuning (*Tunnus Albacores*) Dengan Metode Presipitasi. *Al-Kimia* 2017, 5 (2), 119–126. <https://doi.org/10.24252/al-kimia.v5i2.3422>.
- (44) Mahatmanti, F. W.; Kusumastuti, E.; Jumaeri, J.; Sulistyani, M.; Susiyanti, A.; Haryati, U.; Dirgantari, P. S. Pembuatan Kitin Dan Kitosan Dari Limbah Cangkang Udang Sebagai Upaya Memanfaatkan Limbah Menjadi Material Maju. *Inov. Kim.* 2022, 1–38. <https://doi.org/10.15294/ik.v1i1.60>.
- (45) Agustina, S.; Swantara, I. M. D.; Suartha, I. N. Isolasi Kitin, Karakterisasi, Dan Sintesis Kitosan Dari Kulit Udang. *J. Kim.* 2015, 9 (2), 271–278.
- (46) Laksono, A. D.; Amatoso, Jr, T. A.; Sitorus, H. P. O.; Asih, W. P. K.; Sulistijono. Study on Antibacterial of Chitosan/Hydroxyapatite Doped Magnesium Composite as a Material for Bone Graft Applications. *Makara J. Technol.* 2020, 23 (3), 119–125. <https://doi.org/10.7454/mst.v23i3.3755>.
- (47) Ersal, F. M.; Nurlely; Sari, Y. W. Synthesis and Characterization of

- Hydroxyapatite-Chitosan Composite in Situ by Microwave Irradiation Method. *J. Phys. Conf. Ser.* 2019, 1248 (1), 1–6. <https://doi.org/10.1088/1742-6596/1248/1/012080>.
- (48) Ait Said, H.; Mabroum, H.; Lahcini, M.; Oudadesse, H.; Barroug, A.; Ben Youcef, H.; Noukrati, H. Manufacturing Methods, Properties, and Potential Applications in Bone Tissue Regeneration of Hydroxyapatite-Chitosan Biocomposites: A Review. *Int. J. Biol. Macromol.* 2023, 243, 1–27. <https://doi.org/10.1016/j.ijbiomac.2023.125150>.
- (49) Asnawati, A.; Kharismaningrum, R. R.; Andarini, N. Penentuan Kapasitas Adsorpsi Selulosa Terhadap Rhodamin B Dalam Sistem Dinamis. *J. Kim. Ris.* 2017, 2 (1), 23–29. <https://doi.org/10.20473/jkr.v2i1.3553>.
- (50) Wu, J.; Yang, J.; Huang, G.; Xu, C.; Lin, B. Hydrothermal Carbonization Synthesis of Cassava Slag Biochar with Excellent Adsorption Performance for Rhodamine B. *J. Clean. Prod.* 2020, 251, 1–10. <https://doi.org/10.1016/j.jclepro.2019.119717>.
- (51) Szatkowski, T.; Kołodziejczak-Radzimska, A.; Zdarta, J.; Szwarc-Rzepka, K.; Paukszta, D.; Wysokowski, M.; Ehrlich, H.; Jesionowski, T. Synthesis and Characterization of Hydroxyapatite/Chitosan Composites. *Physicochem. Probl. Miner. Process.* 2015, 51 (2), 575–585. <https://doi.org/10.5277/ppmp150217>.
- (52) Charlena; Bikharrudin, A.; Wahyudi, S. T.; Erizal. Synthesis and Characterization of Hydroxyapatite-Collagen-Chitosan (Ha/Col/Chi) Composite by Using Ex-Situ Wet Precipitation Method. *Rasayan J. Chem.* 2017, 10 (3), 766–770. <https://doi.org/10.7324/RJC.2017.1031768>.
- (53) Jinendra, U.; Bilehal, D.; Nagabhushana, B. M.; Kumar, A. P. Adsorptive Removal of Rhodamine B Dye from Aqueous Solution by Using Graphene-Based Nickel Nanocomposite. *Heliyon* 2021, 7, 1–9. <https://doi.org/10.1016/j.heliyon.2021.e06851>.
- (54) Sari, R. A.; Firdaus, M. L.; Elvia, R. Penentuan Kesetimbangan, Termodinamika Dan Kinetika Adsorpsi Arang Aktif Tempurung Kelapa Sawit Pada Zat Warna Reactive Red Dan Direct Blue. *ALOTROP* 2017, 1 (1), 10–14. <https://doi.org/10.33369/atp.v1i1.2706>.
- (55) Ajemba, R. O.; Onukwuli, O. D. Assessing Influence of Hydrochloric Acid Leaching on Structural Changes and Bleaching Performance of Nigerian Clay from Udi. *Physicochem. Probl. Miner. Process.* 2014, 50 (1), 349–358. <https://doi.org/10.5277/ppmp140129>.
- (56) Meila Anggriani, U.; Hasan, A.; Purnamasari, I. Kinetika Adsorpsi Karbon Aktif Dalam Penurunan Konsentrasi Logam Tembaga (Cu) Dan Timbal (Pb). *J. Kinet.* 2021, 12 (02), 29–37.
- (57) Hevira, L.; Zilfa; Rahmayeni; Ighalo, J. O.; Zein, R. Biosorption of Indigo Carmine from Aqueous Solution by Terminalia Catappa Shell. *J. Environ. Chem. Eng.* 2020, 8 (5), 1–11. <https://doi.org/10.1016/j.jece.2020.104290>.