

## DAFTAR PUSTAKA

- (1) Yenti, S. R.; Fadli, A.; Drastinawati, D.; Zultiniar, Z.; Nisa, A. F. Model Keseimbangan Pada Adsorpsi Ion Kadmium Menggunakan Hidroksiapatit Dari Kulit Kerang Darah. *J. Sains dan Teknol.* 2019, 17 (1), 9. <https://doi.org/10.31258/jst.v17.n1.p9-15>.
- (2) Wang, H.; Yan, K.; Xing, H.; Chen, J.; Lu, R. Effective Removal of Cu<sup>2+</sup> from Aqueous Solution by Synthetic Abalone Shell Hydroxyapatite Microspheres Adsorbent. *Environ. Technol. Innov.* 2021, 23, 101663. <https://doi.org/10.1016/j.eti.2021.101663>.
- (3) Baladi, M.; Amiri, M.; Mohammadi, P.; Salih Mahdi, K.; Golshani, Z.; Razavi, R.; Salavati-Niasari, M. Green Sol–Gel Synthesis of Hydroxyapatite Nanoparticles Using Lemon Extract as Capping Agent and Investigation of Its Anticancer Activity against Human Cancer Cell Lines (T98, and SHSY5). *Arab. J. Chem.* 2023, 16 (4), 104646. <https://doi.org/10.1016/j.arabjc.2023.104646>.
- (4) Ma, J.; Xia, M.; Zhu, S.; Wang, F. A New Alendronate Doped HAP Nanomaterial for Pb<sup>2+</sup>, Cu<sup>2+</sup> and Cd<sup>2+</sup> Effect Absorption. *J. Hazard. Mater.* 2020, 400 (February). <https://doi.org/10.1016/j.jhazmat.2020.123143>.
- (5) Arokiasamy, P.; Abdullah, M. M. A. B.; Abd Rahim, S. Z.; Victor Sandu, A.; Fedrigo, A.; Ediati, R.; Ishak, S.; Mohd Kaus, N. H. Hydroxyapatite Incorporated Metakaolin/Sludge Based Geopolymer Adsorbent for Copper Ions and Ciprofloxacin Removal: Synthesis, Characterization and Mechanisms. *Arab. J. Chem.* 2024, 17 (5), 105745. <https://doi.org/10.1016/j.arabjc.2024.105745>.
- (6) Parthiban, S. P.; Kim, I. Y.; Kikuta, K.; Ohtsuki, C. Effect of Urea on Formation of Hydroxyapatite through Double-Step Hydrothermal Processing. *Mater. Sci. Eng. C* 2011, 31 (7), 1383–1388. <https://doi.org/10.1016/j.msec.2011.05.005>.
- (7) Agustiyanti, R. D.; Azis, Y.; Helwani, Z. Sintesis Hidroksiapatit Dari Precipitated Calcium Carbonate (PCC) Cangkang Telur Ayam Ras Melalui Proses Presipitasi. *Ftenik* 2018, 5 (1), 1–6.
- (8) 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 (November 2022), 100031. <https://doi.org/10.1016/j.hybadv.2023.100031>.
- (9) Mahmood Aljamali, N.; Abdul, D.; Jasim, W.; Mujjed, A. N. Review on Urea (Uses, Advantage, Disadvantage) in Biochemical Fields. *Researchgate.Net*

- 2022, 6 (April), 48–52.
- (10) Ramadhani, R. H.; Roviq, M.; Maghfoer, M. Effect of Nitrogen Fertilizer Source and Time of Urea Application on Growth and Yield of Sweet Corn (*Zea Mays* Sturt. Var. *Saccharata*). *Produksi Tanam*. 2016, 4 (1), 8–15.
  - (11) Purwasmita, B. S.; Gultom, R. S. Sintesis Dan Karakterisasi Serbuk Hidroksiapatit Skala Sub-Mikron Menggunakan Metode Presipitasi. *J. Bionatura* 2008, 10 (2), 155–167.
  - (12) M., E. Hydroxyapatite-Based Materials: Synthesis and Characterization. *Biomed. Eng. - Front. Challenges* 2011, No. August 2011. <https://doi.org/10.5772/19123>.
  - (13) Ngapa, Y. D. Sintesis Dan Karakterisasi Hidroksiapatit ( HAp ) Dari Limbah Dengan Metode Basah Presipitasi. *J. Din. Sains* 2018, 2 (1), 67–72.
  - (14) 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.
  - (15) Jamarun, N.; Trycahyani, N. A.; Arief, S.; Septiani, U.; Sisca, V. Synthesis of Hydroxyapatite-Polyethylene Glycol with In-Situ Method Using Calcium Oxide from Blood Shells (*Anadara Granosa*). *Indones. J. Chem.* 2023, 23 (3), 618–626. <https://doi.org/10.22146/ijc.78538>.
  - (16) Muñoz-Sanchez, E. R.; Arrieta-Gonzalez, C. D.; Quinto-Hernandez, A.; Garcia-Hernandez, E.; Porcayo-Calderon, J. Synthesis of Hydroxyapatite from Eggshell and Its Electrochemical Characterization as a Coating on Titanium. *Int. J. Electrochem. Sci.* 2023, 18 (9), 100204. <https://doi.org/10.1016/J.IJOES.2023.100204>.
  - (17) 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 (5), e01588. <https://doi.org/10.1016/j.heliyon.2019.e01588>.
  - (18) Jamarun, N.; Prasejati, A.; Zulhadjri, Z.; Caniago, S.; Amirullah, T. Y.; Wulandari, W.; Sisca, V. Effect of Chitosan Concentration on Hydroxyapatite/Chitosan Composite Synthesis Using the in-Situ Method as a Dye Adsorbent. *Kuwait J. Sci.* 2024, 51 (4), 100252. <https://doi.org/10.1016/j.kjs.2024.100252>.
  - (19) Muntamah. Sintesis Dan Karakterisasi Hidroksiapatit Dari Limbah Cangkang Kerang Darah (*Anadara Granosa*, Sp). *Tesis Inst. Pertan. Bogor* 2011, 50.
  - (20) Solang, M. *Kerang Darah: Tak Kenal Maka Tak Sehat*; 2019.
  - (21) Awang Junaidi, Awang Hazmi and Abu Bakar Zakaria, Md Zuki and Mohamed

- Mustapha, Noordin and Abu, Jalila and Yusof, N. Mineral Composition of the Cockle (*Anadara Granosa*) Shells of West Coast of Peninsular Malaysia and It's Potential as Biomaterial for Use in Bone Repair. *UPM institutional Repos.* 2007, 6 (5), 591–594.
- (22) Jaishankar, M.; Tseten, T.; Anbalagan, N.; Mathew, B. B.; Beeregowda, K. N. Toxicity, Mechanism and Health Effects of Some Heavy Metals. *Interdiscip. Toxicol.* 2014, 7 (2), 60–72. <https://doi.org/10.2478/intox-2014-0009>.
- (23) Rahmadani, T. B. C.; Diniariswan, D. Pencemaran Logam Berat Jenis Kadmium (Cd) di Perairan dan Dampak Terhadap Ikan (Review). *Ganec Swara* 2023, 17 (2), 440. <https://doi.org/10.35327/gara.v17i2.440>.
- (24) Said, N. I. Metoda Penghilangan Logam Berat (As, Cd, Cr, Ag, Cu, Pb, Ni Dan Zn) di Dalam Air Limbah Industri. *J. Air Indones.* 2018, 6 (2), 136–148. <https://doi.org/10.29122/jai.v6i2.2464>.
- (25) Takarani, P.; Findia Novita, S.; Fathoni, R. Pengaruh Massa Dan Waktu Adsorben Selulosa Dari Kulit Jagung Terhadap Konsentrasi Penyerapan. *Pros. Semin. Nas. Teknol. V* 2019, 2 (1), 117–121.
- (26) Ismadji, S.; Soetaredjo, F. E.; Santoso, S. P.; Putro, J. N.; Yuliana, M.; Irawaty, W.; Hartono, S. B.; Lunardi, V. B. *Adsorpsi Pada Fase Cair: Kesetimbangan, Kinetika, Dan*; 2021.
- (27) Mahmood Aljamali, N.; Abdul Baqi Aldujaili, D.; Obaid Alfatlawi, I. Physical and Chemical Adsorption and Its Applications. *Int. J.* 2021, 7 (2), 1–8. <https://doi.org/10.37628/IJTCK>.
- (28) Chandra, T. C.; Mirna, M. M.; Sudaryanto, Y.; Ismadji, S. Adsorption of Basic Dye onto Activated Carbon Prepared from Durian Shell: Studies of Adsorption Equilibrium and Kinetics. *Chem. Eng. J.* 2007, 127 (1–3), 121–129. <https://doi.org/10.1016/j.cej.2006.09.011>.
- (29) Laysandra, L.; Ondang, I. J.; Ju, Y. H.; Ariandini, B. H.; Mariska, A.; Soetaredjo, F. E.; Putro, J. N.; Santoso, S. P.; Darsono, F. L.; Ismadji, S. Highly Adsorptive Chitosan/Saponin-Bentonite Composite Film for Removal of Methyl Orange and Cr(VI). *Environ. Sci. Pollut. Res.* 2019, 26 (5), 5020–5037. <https://doi.org/10.1007/s11356-018-4035-2>.
- (30) Astuti, W. *Adsorpsi Menggunakan Material Berbasis Lignoselulosa*; 2018.
- (31) Miri, N. S. S.; Narimo. Review : Kajian Persamaan Isoterm Langmuir Dan Freundlich Pada Adsorpsi Logam Berat Fe ( II ) Dengan Zeolit Dan Karbon Aktif Dari Biomassa. *J. Kim. dan Rekayasa* 2022, 2 (2), 58–71.

- (32) Wahidatun, K. W.; Krisdiyanto, D.; Nugraha, I. Kesetimbangan, Kinetika, Dan Termodinamika Adsorpsi Logam Cr(VI) Pada Zeolit Alam Dari Klaten Yang Teraktivasi Asam Sulfat. *Sains dan Terap. Kim.* 2015, 9 (1), 1–11.
- (33) Ho, Y. S. The Real Pseudo-Second-Order Rate Equation. *Ind. Crops Prod.* 2014, 52 (August 2013), 17. <https://doi.org/10.1016/j.indcrop.2013.09.037>.
- (34) Kurniawati, P.; Wiyantoko, B.; Kurniawan, A.; Purbaningias, T. E. Kinetic Study of Cr(VI) Adsorption on Hydrotalcite Mg/Al with Molar Ratio 2:1. *Eksakta* 2016, 13 (1–2), 11–21. <https://doi.org/10.20885/eksakta.vol13.iss1-2.art2>.
- (35) Subamia, I. D. P.; Widiasih, N. N.; Sri Wahyuni, I. G. A. N.; Pratami Kristiyanti, P. L. Optimasi Kinerja Alat Fourier Transform Infrared (FTIR) Melalui Studi Perbandingan Komposisi Dan Ketebalan Sampel-KBr. *J. Pengelolaan Lab. Pendidik.* 2023, 5 (2), 58–69. <https://doi.org/10.14710/jplp.5.2.58-69>.
- (36) Asrori, M. R.; Santoso, A.; Sumari, S. Proofing the Presence of Metal Oxide Impregnated into Zeolite A without Calcination: XRD and FTIR Studies. *Case Stud. Chem. Environ. Eng.* 2024, 9 (February), 100676. <https://doi.org/10.1016/j.cscee.2024.100676>.
- (37) Sumner, M.; Harison, J.; Elda, S. *Pearson New International Edition*; 2014.
- (38) Zulichatun, S.; Aris, W.; Apriza, M.; Yoga, A. P.; Lutfi, N.; Novita, D. R. Analisis Luas Permukaan Zeolit Alam Termodifikasi Dengan Metode BET Menggunakan Surface Area Analyzer (SAA). *Pelatih. Instrumen* 2015, 2015, 1–10.
- (39) Djunaidi, C. Studi Interferensi Pada AAS (Atomic Absorption Spectroscopy). *Univ. Diponegoro* 2018, 46.
- (40) Jaya, F.; Guntarti, A.; Kamal, Z. Penetapan Kadar Pb pada Shampoo Berbagai Merk dengan Metode Spektroskopi Serapan Atom. *Pharmaciana* 2013, 3 (2). <https://doi.org/10.12928/pharmaciana.v3i2.425>.
- (41) Utami, L.; Arief, S.; Jamarun, N. Pengaruh Kondisi Kalsinasi Pada Sintesis Senyawa Hydroxyapatite. *Phot. J. Sain dan Kesehat.* 2011, 2 (1), 13–21. <https://doi.org/10.37859/jp.v2i1.121>.
- (42) Affandi; Amri; Zultiniar. Sintesis Hidroksiapatit dari Cangkang Kerang Darah (Anadara granosa) dengan Proses Hidrotermal Variasi Rasio Mol Ca/P dan Suhu Sintesis. *Jom FTEKNIK* 2015, 2 (1), 1-8
- (43) Charlena; Bikharudin, 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>.

- (44) Skwarek, E.; Janusz, W. Adsorption of Cd(II) Ions at the Hydroxyapatite/Electrolyte Solution Interface. *Sep. Sci. Technol.* 2016, 51 (1), 11–21. <https://doi.org/10.1080/01496395.2015.1085878>.
- (45) Putri, K. N. A.; Keereerak, A.; Chinpa, W. Novel Cellulose-Based Biosorbent from Lemongrass Leaf Combined with Cellulose Acetate for Adsorption of Crystal Violet. *Int. J. Biol. Macromol.* 2020, 156, 762–772. <https://doi.org/10.1016/j.ijbiomac.2020.04.100>.
- (46) Beni, A. A.; Esmaeili, A. *Biosorption, an Efficient Method for Removing Heavy Metals from Industrial Effluents: A Review*; Elsevier B.V., 2020; Vol. 17. <https://doi.org/10.1016/j.eti.2019.100503>.

