

DAFTAR PUSTAKA

- [1] S. Hasan, A. R. M. Iasir, T. K. Ghosh, B. Sen Gupta, and M. A. Prelas, "Characterization and Adsorption Behavior of Strontium from Aqueous Solutions onto Chitosan-Fuller's Earth Beads," *Healthcare*, vol. 7, no. 1, p. 52, Mar. 2019, doi: 10.3390/healthcare7010052.
- [2] G. Kim, D. S. Lee, H. Eccles, S. M. Kim, H. U. Cho, and J. M. Park, "Selective Strontium Adsorption Using Synthesized Sodium Titanate in Aqueous Solution," *RSC Adv.*, vol. 12, no. 29, pp. 18936–18944, Jun. 2022, doi: 10.1039/D2RA02494B.
- [3] I. F. Myroniuk and H. V. Vasylyeva, "Sorption Removal of Sr²⁺ and Y³⁺ Ions from Aqueous Solutions by A TiO₂ -Based Sorbent," in *RAD Conference Proceedings*, RAD Association, 2019. doi: 10.21175/RadProc.2018.04.
- [4] G. Nurliati, "Kajian Pengolahan Limbah Radioaktif Cair Menggunakan Beberapa Adsorben," *Pusat Teknologi Limbah Radioaktif-BATAN*, vol. 14, 2017.
- [5] S. Ammari Allahyari, R. Saberi, S. Sadjadi, and O. Mehraban, "Intensive adsorption of strontium ions by using the synthesized [Zn(bim)₂(bdc)]_n: Metal–organic framework in batch and fixed-bed column experiments," *Applied Organometallic Chemistry*, vol. 36, no. 2, p. e6528, 2022, doi: 10.1002/aoc.6528.
- [6] N. Abdelmageed *et al.*, "Facile synthesis of silica-polymer monoliths using nonionic triblock copolymer surfactant for efficient removal of radioactive pollutants from contaminated seawater," *Journal of Applied Polymer Science*, vol. 138, no. 43, p. 51263, 2021, doi: 10.1002/app.51263.
- [7] M. I. A. Abdel Maksoud, G. A. Murad, and H. S. Hassan, "Utilization of carbon-coated ZrO₂/Mn-Mg-Zn ferrites nanostructures for the adsorption of Cs (I) and Sr (II) from the binary system: kinetic and equilibrium studies," *BMC Chemistry*, vol. 17, no. 1, p. 149, Nov. 2023, doi: 10.1186/s13065-023-01069-z.
- [8] Department of Theoretical Physics, Uzhgorod National University, Uzhgorod, Ukraine *et al.*, "The titanium silicate influence on the Zn(II) and Sr(II) migration in the aquatic environment," *Nucl. Phys. At. Energy*, vol. 21, no. 3, pp. 249–255, Sep. 2020, doi: 10.15407/jnpae2020.03.249.
- [9] N. Al-Janabi *et al.*, "Mapping the Cu-BTC metal–organic framework (HKUST-1) stability envelope in the presence of water vapour for CO₂ adsorption from flue gases," *Chemical Engineering Journal*, vol. 281, pp. 669–677, Dec. 2015, doi: 10.1016/j.cej.2015.07.020.
- [10] J. L. C. Rowsell and O. M. Yaghi, "Effects of Functionalization, Catenation, and Variation of the Metal Oxide and Organic Linking Units on the Low-Pressure Hydrogen Adsorption Properties of Metal–Organic Frameworks," *J. Am. Chem. Soc.*, vol. 128, no. 4, pp. 1304–1315, Feb. 2006, doi: 10.1021/ja056639q.
- [11] R. . Ediati, S. K. Dewi, M. R. Hasan, M. . Kahardina, I. K. Murwani, and M. . Nadjib, "Mesoporous HKUST-1 Synthesized Using Solvothermal



- Method,” *RJC*, vol. 12, no. 03, pp. 1653–1659, 2019, doi: 10.31788/RJC.2019.1231968.
- [12] R. Ediati, M. Kahardian, and D. Hartanto, “Pengaruh Perbandingan Pelarut Etanol dan Dimetilformamida pada Sintesis Metal Organik Framework HKUST-1,” *Akta Kimia Indonesia*, vol. 1, no. 1, p. 25, Nov. 2016, doi: 10.12962/j25493736.v1i1.1425.
- [13] F. Liu, Z. Li, L. Tang, C. Wu, F. Xia, and B. Hu, “Efficient elimination of U(VI), Th(IV) and Eu(III) from nuclear waste using MXenes-derived three-dimensional metal organic frameworks: Performance evaluation and mechanism insight,” *Separation and Purification Technology*, vol. 364, p. 132399, Aug. 2025, doi: 10.1016/j.seppur.2025.132399.
- [14] F. Abdilah, M. Hulupi, K. Keryanti, N. Nabilah, and T. H. Nabilah, “Sintesis Zn-BDC dengan Metode Sonokimia dan Aplikasinya Pada Proses Adsorpsi Ion Logam Pb²⁺,” *REACTOR: Journal of Research on Chemistry and Engineering*, vol. 3, no. 1, Art. no. 1, Jun. 2022, doi: 10.52759/reactor.v3i1.48.
- [15] D. Zeng *et al.*, “Hydrolytically stable foamed HKUST-1@CMC composites realize high-efficient separation of U(VI),” *iScience*, vol. 24, no. 9, p. 102982, Sep. 2021, doi: 10.1016/j.isci.2021.102982.
- [16] H. V. Doan, A. Sartbaeva, J.-C. Eloi, S. A. Davis, and V. P. Ting, “Defective hierarchical porous copper-based metal-organic frameworks synthesised via facile acid etching strategy,” *Sci Rep*, vol. 9, no. 1, p. 10887, Jul. 2019, doi: 10.1038/s41598-019-47314-1.
- [17] M. A. Gatea, G. F. Jumaah, R. H. Al Anbari, and Q. F. Alsalhy, “Removal of Cs-137 from Real Liquid Radioactive Wastes Using Pumice in Fixed-Bed Column,” *KSCE Journal of Civil Engineering*, vol. 28, no. 9, pp. 3591–3600, 2024, doi: 10.1007/s12205-024-0921-y.
- [18] T. D. Pangeztu, “Analisis Kinetika Adsorpsi Stronsium pada Limbah Radioaktif Simulasi 88Sr(NO₃)₂ menggunakan Metal-Organic Frameworks [Zn₄O(BDC)₃],” Skripsi Teknik Nuklir Fakultas Teknik, Universitas Gadjah Mada, Yogyakarta, 2020.
- [19] L. Cundari, L. R. Ginting, T. Suryadinata, uthfiyah A. Sayyidah, A. Taufiqurrahman, and R. Rosalina, “Model adsorpsi pada larutan pewarna sintetis direct secara kontinyu: pengaruh konsentrasi zat warna,” *Jurnal Teknik Kimia*, vol. 26, no. 2, Art. no. 2, Jul. 2020, doi: 10.36706/jtk.v26i2.458.
- [20] F. W. Handy, K. R. Juwana, and I. Nawang, “Penurunan Kadar COD dan BOD Pada Limbah Cair PT Candi Jaya Amerta Menggunakan Adsorben dari Abu Layang (Fly Ash) dengan Proses Adsorpsi Secara Kolom,” *Al-Ard: Jurnal Teknik Lingkungan*, vol. 10, 2024.
- [21] Y.-R. Lee, J. Kim, and W.-S. Ahn, “Synthesis of metal-organic frameworks: A mini review,” *Korean J. Chem. Eng.*, vol. 30, no. 9, pp. 1667–1680, Sep. 2013, doi: 10.1007/s11814-013-0140-6.
- [22] Q. A. Hanif, R. E. Nugraha, and W. W. Lestari, “Kajian Metal–Organic Frameworks (MOFS) sebagai Material Baru Pengantar Obat,” *ALCHEMY J.Pen.Kim*, vol. 14, no. 1, p. 16, Feb. 2018, doi: 10.20961/alchেমy.14.1.8218.16-36.



- [23] N. Suhascaryo, Y. Ristianingsih, and Mahreni, *Sintesis dan Aplikasi Material Baru Kerangka Logam Organik (Metal Organik Framework, MOF)*. Lembaga Penelitian dan Pengabdian Kepada Masyarakat, UPN Veteran Yogyakarta, 2020.
- [24] O. Semyonov *et al.*, “Smart recycling of PET to sorbents for insecticides through in situ MOF growth,” *Applied Materials Today*, vol. 22, p. 100910, Mar. 2021, doi: 10.1016/j.apmt.2020.100910.
- [25] R. Sabouni, H. Kazemian, and S. Rohani, “A novel combined manufacturing technique for rapid production of IRMOF-1 using ultrasound and microwave energies,” *Chemical Engineering Journal*, vol. 165, no. 3, pp. 966–973, Dec. 2010, doi: 10.1016/j.cej.2010.09.036.
- [26] W. W. Lestari, J. Hartono, D. W. T. Wulansari, E. Pramuja, F. Azhari, and T. Kusumaningsih, “Pengaruh Metode Sintesis secara Solvo-Hidrotermal dan Elektrokimia terhadap Morfologi Struktur HKUST-1 sebagai Katalis Heterogen dalam Reaksi Esterifikasi Asam Palmitat,” *ALCHEMY J.Pen.Kim*, vol. 19, no. 1, p. 1, Mar. 2023, doi: 10.20961/alchemy.19.1.62466.1-13.
- [27] R. Sera and D. Lesmana, “Pengaruh Temperatur dan Waktu Kontak terhadap Adsorpsi Minyak Jelantah Menggunakan Adsorben dari Bagas,” *INOVASI PEMBANGUNAN – JURNAL KELITBANGAN*, vol. 7, 2019.
- [28] J. Hu, W. Dai, and X. Yan, “Comparison study on the adsorption performance of methylene blue and congo red on Cu-BTC,” *Desalination and Water Treatment*, vol. 57, no. 9, pp. 4081–4089, Feb. 2016, doi: 10.1080/19443994.2014.988654.
- [29] S. Nurkhasinah, “Penentuan Kinetika Adsorpsi Karbon Aktif Cangkang Sawit dan Kulit Kopi Terhadap Zat Warna Metil Orange,” Skripsi Pendidikan Kimia Fakultas Tarbiyah dan Keguruan, UNIVERSITAS ISLAM NEGERI AR-RANIRY, Banda Aceh, 2024.
- [30] Y. Wibisono, *Biomaterial dan Bioproduk*. Malang: Universitas Brawijaya Press, 2017.
- [31] S. Fayanto, S. Pati, E. Suwardi, A. Afiudin, H. H. Uleo, and S. A. Nigsih, “Peluruhan Zat Radioaktif,” *Jurnal Praktikum Fisika Modern Laboratorium Jurusan Pendidikan Fisika*, 2016.
- [32] A. J. A. Arma, “Zat Radioaktif Dan Penggunaan Radioisotop Bagi Kesehatan,” *USU digital library*, 2004.
- [33] “Peraturan Pemerintah Republik Indonesia Nomor 27 Tahun 2002 Tentang Pengelolaan Limbah Radioaktif.” Accessed: Jan. 14, 2025. [Online]. Available: <https://jdih.bapeten.go.id/unggah/dokumen/peraturan/49-full.pdf>
- [34] “Peraturan Pemerintah Nomor 61 Tahun 2013 tentang Pengelolaan Limbah Radioaktif”.
- [35] S. Sulaiman, A. Hardi G, and N. Anis Kundari, “Pemisahan dan Karakterisasi Spesi Senyawa Kompleks Ytrium-90 dan Stronsium-90 dengan Elektrofosis Kertas,” *jfn*, vol. 1, no. 2, p. 93, Nov. 2007, doi: 10.17146/jfn.2007.1.2.3275.
- [36] A. Singh and A. S. Dhaliwal, “Studies of total bremsstrahlung in thick targets of Al, Ti, Sn and Pb for ^{90}Sr beta particles in the photon energy region



- of 1–100keV,” *Radiation Physics and Chemistry*, vol. 119, pp. 167–172, Feb. 2016, doi: 10.1016/j.radphyschem.2015.10.017.
- [37] “Livechart - Table of Nuclides - Nuclear structure and decay data.” Accessed: Jan. 14, 2025. [Online]. Available: <https://www-nds.iaea.org/relnsd/vcharthtml/VChartHTML.html>
- [38] A. Agusriyadin, “Karakterisasi, Kinetika, dan Isoterm Adsorpsi Limbah Ampas Kelapa sebagai Adsorben Ion Cu(II),” *saintifik*, vol. 6, no. 2, pp. 104–115, Aug. 2020, doi: 10.31605/saintifik.v6i2.265.
- [39] L. Wang, C. Shi, L. Pan, X. Zhang, and J.-J. Zou, “Rational Design, Synthesis, Adsorption Principles and Applications of Metal Oxide Adsorbents: A Review,” *Nanoscale*, vol. 12, Jan. 2020, doi: 10.1039/C9NR09274A.
- [40] U. M. Anggriani, A. Hasan, and I. Purnamasari, “Kinetika Adsorpsi Karbon Aktif dalam Penurunan Konsentrasi Logam Tembaga (Cu) dan Timbal (Pb),” vol. 12, no. 02, 2021.
- [41] W. Zhang *et al.*, “Removal of methylene blue from aqueous solutions by straw based adsorbent in a fixed-bed column,” *Chemical Engineering Journal*, vol. 173, no. 2, pp. 429–436, Sep. 2011, doi: 10.1016/j.cej.2011.08.001.
- [42] L. Laysandra *et al.*, “Highly adsorptive chitosan/saponin-bentonite composite film for removal of methyl orange and Cr(VI),” *Environ Sci Pollut Res*, vol. 26, no. 5, pp. 5020–5037, Feb. 2019, doi: 10.1007/s11356-018-4035-2.
- [43] H. B. Eka Putri Maharani, “A Comprehensive Review on Atomic Absorption Spectroscopy: Principles, Techniques, and Applications,” Aug. 31, 2024, *Zenodo*. doi: 10.5281/ZENODO.13764070.
- [44] H. F. D. Supratman, “Studi Perubahan Karakteristik $[Cu_3(C_6H_3(COO)_3)_2(H_2O)_3]_n$ (HKUST-1) Terhadap Radiasi Menggunakan Metode Iradiasi Gamma,” Skripsi Teknik Nuklir Fakultas Teknik, Universitas Gadjah Mada, Yogyakarta, 2022.
- [45] Y. Chen, X. Mu, E. Lester, and T. Wu, “High efficiency synthesis of HKUST-1 under mild conditions with high BET surface area and CO₂ uptake capacity,” *Progress in Natural Science: Materials International*, vol. 28, no. 5, pp. 584–589, Oct. 2018, doi: 10.1016/j.pnsc.2018.08.002.
- [46] W. W. Lestari, D. Ni’maturrohman, U. S. F. Arrozi, and H. Suwarno, “Mg²⁺ Doped into Electro-synthesized HKUST-1 and Their Initial Hydrogen Sorption Properties,” *IOP Conf. Ser.: Mater. Sci. Eng.*, vol. 299, p. 012031, Jan. 2018, doi: 10.1088/1757-899X/299/1/012031.
- [47] E. Kardena and M. S. Yusharani, “Pemanfaatan Mikroalga Amobil sebagai Adsorben pada Penyisihan Zat Warna Reactive Blue 4 (RB4) dan Reactive Red 120 (RR120) dalam Limbah Cair Tekstil,” *AT*, vol. 37, no. 2, p. 75, Dec. 2022, doi: 10.31266/at.v37i2.7777.

