

DAFTAR PUSTAKA

- Belmabkhout, Y., and Sayari, A., 2009, Adsorption of CO₂ from dry gases on MCM-41 silica at ambient temperature and high pressure. 2: Adsorption of CO₂/N₂, CO₂/CH₄ and CO₂/H₂ binary mixtures, *Chem. Eng. Sci.*, 64 (17), 3729–3735.
- Bustamante, E.L., Fernández, J.L., and Zamaro, J.M., 2014, Influence of the solvent in the synthesis of zeolitic imidazolate framework-8 (ZIF-8) nanocrystals at room temperature, *J. Colloid Interface Sci.*, 424 37–43.
- Butova, V. V., Soldatov, M.A., Guda, A.A., Lomachenko, K.A., and Lamberti, C., 2016, Metal-organic frameworks: structure, properties, methods of synthesis and characterization, *Russ. Chem. Rev.*, 85 (3), 280–307.
- Butova, V. V., Budnyk, A.P., Bulanova, E.A., Lamberti, C., and Soldatov, A. V., 2017, Hydrothermal synthesis of high surface area ZIF-8 with minimal use of TEA, *Solid State Sci.*, 69 13–21.
- Chen, C., and Ahn, W.S., 2014, CO₂ adsorption on LTA zeolites: Effect of mesoporosity, *Appl. Surf. Sci.*, 311 107–109.
- Choi, J., Lin, L.C., and Grossman, J.C., 2018, Role of Structural Defects in the Water Adsorption Properties of MOF-801, *J. Phys. Chem. C*, 122 (10), 5545–5552.
- Contreras, Jose Luis, Gomez, G., Contreras, J L, Gómez, G., Zeifert, B., Salmones, J., Vázquez, T., Fuentes, G.A., Navarrete, J., Nuño, L., and Nuño, N., 2015, Synthesis of Pt/Al₂O₃ catalyst using mesoporous alumina prepared with a cationic surfactant Synthesis of Pt/Al₂O₃ catalyst using mesoporous alumina prepared with a cationic surfactant, *Catal. Today*, 250 72–86.
- Cravillon, J., Münzer, S., Lohmeier, S.J., Feldhoff, A., Huber, K., and Wiebcke, M., 2009, Rapid room-temperature synthesis and characterization of nanocrystals of a prototypical zeolitic imidazolate framework, *Chem. Mater.*, 21 (8), 1410–1412.
- Das, I., Noori, M.T., Shaikh, M., Ghangrekar, M.M., and Ananthakrishnan, R., 2020, Synthesis and Application of Zirconium Metal-Organic Framework in Microbial Fuel Cells as a Cost-Effective Oxygen Reduction Catalyst with Competitive Performance, *ACS Appl. Energy Mater.*, 3 (4), 3512–3520.
- Didik, L.A., 2020, Penentuan Ukuran Butir Kristal CuCr_{0,98}Ni_{0,02}O₂ dengan Menggunakan X-Ray Diffraction (XRD) dan Scanning Electron Microscope (SEM), *Indones. Phys. Rev.*, 3 (1), 6–14.
- Duffy, A., Walker, G.M., and Allen, S.J., 2006, Investigations on the adsorption of acidic gases using activated dolomite, *Chem. Eng. J.*, 117 (3), 239–244.
- Elfeky, S.A., Mahmoud, S.E., and Youssef, A.F., 2017, Applications of CTAB modified magnetic nanoparticles for removal of chromium (VI) from contaminated water, *J. Adv. Res.*, 8 (4), 435–443.
- Fischer, M., and Bell, R.G., 2014, Interaction of hydrogen and carbon dioxide with sod-type zeolitic imidazolate frameworks: A periodic DFT-D study, *CrystEngComm*, 16 (10), 1934–1949.
- García-Palacín, M., Martínez, J.I., Paseta, L., Deacon, A., Johnson, T., Malankowska, M., Téllez, C., and Coronas, J., 2020, Sized-Controlled ZIF-8

- Nanoparticle Synthesis from Recycled Mother Liquors: Environmental Impact Assessment, *ACS Sustain. Chem. Eng.*, 8 (7), 2973–2980.
- Han, Y., Yang, H., and Guo, X., 2020, Synthesis Methods and Crystallization of MOFs, *Synth. Methods Cryst.*, 1–22.
- He, M., Yao, J., Liu, Q., Wang, K., Chen, F., and Wang, H., 2014, Facile synthesis of zeolitic imidazolate framework-8 from a concentrated aqueous solution, *Microporous Mesoporous Mater.*, 184 55–60.
- Horcajada, P., Serre, C., Maurin, G., Ramsahye, N.A., Balas, F., Vallet-Regí, M., Sebba, M., Taulelle, F., and Férey, G., 2008, Flexible porous metal-organic frameworks for a controlled drug delivery, *J. Am. Chem. Soc.*, 130 (21), 6774–6780.
- Hu, Y., Liu, Z., Xu, J., Huang, Y., and Song, Y., 2013, Evidence of pressure enhanced CO₂ storage in ZIF-8 probed by FTIR spectroscopy, *J. Am. Chem. Soc.*, 135 (25), 9287–9290.
- Jeon, S.G., Ko, J.W., and Ko, W.B., 2021, Ultrasound assisted synthesis of gadolinium oxide-zeolitic imidazolate framework-8 nanocomposites and their optimization for photocatalytic degradation of methyl orange using response surface methodology, *Catalysts*, 11 (9), 1022.
- Jiang, D., Mallat, T., Krumeich, F., and Baiker, A., 2011, Polymer-assisted synthesis of nanocrystalline copper-based metal-organic framework for amine oxidation, *Catal. Commun.*, 12 (7), 602–605.
- Julbe, A., Drobek, M., Européen, I., and De, U., 2016, Encyclopedia of Membranes, *Encycl. Membr.*, 2056–2070.
- Kaur, H., Mohanta, G.C., Gupta, V., Kukkar, D., and Tyagi, S., 2017, Synthesis and characterization of ZIF-8 nanoparticles for controlled release of 6-mercaptopurine drug, *J. Drug Deliv. Sci. Technol.*, 41 106–112.
- Keramati, M., and Ghoreyshi, A.A., 2014, Improving CO₂ adsorption onto activated carbon through functionalization by chitosan and triethylenetetramine, *Phys. E Low-dimensional Syst. Nanostructures*, 57 161–168.
- Kida, K., Okita, M., Fujita, K., Tanaka, S., and Miyake, Y., 2013, Formation of high crystalline ZIF-8 in an aqueous solution, *CrystEngComm*, 15 (9), 1794–1801.
- Küsgens, P., Rose, M., Senkovska, I., Fröde, H., Henschel, A., Siegle, S., and Kaskel, S., 2009, Characterization of metal-organic frameworks by water adsorption, *Microporous Mesoporous Mater.*, 120 (3), 325–330.
- Lee, Y.R., Jang, M.S., Cho, H.Y., Kwon, H.J., Kim, S., and Ahn, W.S., 2015, ZIF-8: A comparison of synthesis methods, *Chem. Eng. J.*, 271 276–280.
- Lee, Y.R., Kim, J., and Ahn, W.S., 2013, Synthesis of metal-organic frameworks: A mini review, *Korean J. Chem. Eng.*, 30 (9), 1667–1680.
- Li, H., Li, L., Lin, R.B., Zhou, W., Zhang, Z., Xiang, S., and Chen, B., 2019, Porous metal-organic frameworks for gas storage and separation: Status and challenges, *EnergyChem*, 1 (1), 100006.
- Li, W., Zhang, A., Jiang, X., Chen, C., Liu, Z., Song, C., and Guo, X., 2017, Low Temperature CO₂ Methanation: ZIF-67-Derived Co-Based Porous Carbon Catalysts with Controlled Crystal Morphology and Size, *ACS Sustain. Chem.*

- Eng.*, 5 (9), 7824–7831.
- Li, Z., Liu, P., Ou, C., and Dong, X., 2020, Porous Metal-Organic Frameworks for Carbon Dioxide Adsorption and Separation at Low Pressure, *ACS Sustain. Chem. Eng.*, 8 (41), 15378–15404.
- Low, J.J., Benin, A.I., Jakubczak, P., Abrahamian, J.F., Faheem, S.A., and Willis, R.R., 2009, Virtual high throughput screening confirmed experimentally: Porous coordination polymer hydration, *J. Am. Chem. Soc.*, 131 (43), 15834–15842.
- Maia, R.A., Louis, B., Gao, W., and Wang, Q., 2021, CO₂ adsorption mechanisms on MOFs: a case study of open metal sites, ultra-microporosity and flexible framework, *React. Chem. Eng.*, 6 (7), 1118–1133.
- Van Mourik, T., Bühl, M., and Gaigeot, M.-P., 2014, Density functional theory across chemistry, physics and biology, *Philos Trans A Math Phys Eng Sci*, 372 (2011), .
- Nordin, N.A.H.M., Ismail, A.F., Mustafa, A., Goh, P.S., Rana, D., and Matsuura, T., 2014, Aqueous room temperature synthesis of zeolitic imidazole framework 8 (ZIF-8) with various concentrations of triethylamine, *RSC Adv.*, 4 (63), 33292–33300.
- Olbrycht, R., Kałuza, M., Wittchen, W., Borecki, M., Więcek, B., and De Mey, G., 2016, Gas identification and estimation of its concentration in a tube using hyperspectral thermography approach, *Proc. 13th Quant. Infrared Thermogr. Conf*, 15 (1), 605–610.
- Ordoñez, M.J.C., Balkus, K.J., Ferraris, J.P., and Musselman, I.H., 2010, Molecular sieving realized with ZIF-8/Matrimid® mixed-matrix membranes, *J. Memb. Sci.*, 361 (1–2), 28–37.
- Pan, Y., Liu, Y., Zeng, G., Zhao, L., and Lai, Z., 2011, Rapid synthesis of zeolitic imidazolate framework-8 (ZIF-8) nanocrystals in an aqueous system, *Chem. Commun.*, 47 (7), 2071–2073.
- Pangastuti, P., Mudjahid, M.N., and Ediati, R., 2015, Sintesis Zif-8 dengan Metode Solvothermal dalam Pelarut Etanol dan Dimetilformamida, *J. Sains dan Seni ITS*, 4 (1), 13–16.
- Park, K.S., Ni, Z., Côté, A.P., Choi, J.Y., Huang, R., Uribe-Romo, F.J., Chae, H.K., O’Keeffe, M., and Yaghi, O.M., 2006, Exceptional chemical and thermal stability of zeolitic imidazolate frameworks, *Proc. Natl. Acad. Sci. U. S. A.*, 103 (27), 10186–10191.
- Pascanu, V., González Miera, G., Inge, A.K., and Martín-Matute, B., 2019, Metal-Organic Frameworks as Catalysts for Organic Synthesis: A Critical Perspective, *J. Am. Chem. Soc.*, 141 (18), 7223–7234.
- Pérez-Pellitero, J., Amrouche, H., Siperstein, F.R., Pirngruber, G., Nieto-Draghi, C., Chaplais, G., Simon-Masseron, A., Bazer-Bachi, D., Peralta, D., and Bats, N., 2010, Adsorption of CO₂, CH₄, and N₂ on zeolitic imidazolate frameworks: Experiments and simulations, *Chem. - A Eur. J.*, 16 (5), 1560–1571.
- Phan, A., Doonan, C.J., Uribe-Romo, F.J., Knobler, C.B., O’Keeffe, M., and Yaghi, O.M., 2010, Synthesis, structure, and carbon dioxide capture properties of zeolitic imidazolate frameworks, *Acc. Chem. Res.*, 43 (1), 58–67.

- Prabhu, Y.T., Rao, K.V., Kumar, V.S.S., and Kumari, B.S., 2014, X-Ray Analysis by Williamson-Hall and Size-Strain Plot Methods of ZnO Nanoparticles with Fuel Variation, *World J. Nano Sci. Eng.*, 04 (01), 21–28.
- Ramsahye, N.A., Maurin, G., Bourrelly, S., Llewellyn, P.L., Serre, C., Loiseau, T., Devic, T., and Férey, G., 2008, Probing the adsorption sites for CO₂ in metal organic frameworks materials MIL-53 (Al, Cr) and MIL-47 (V) by density functional theory, *J. Phys. Chem. C*, 112 (2), 514–520.
- Ren, Y., Luan, W., and Jiang, T., 2020, Surfactant CTAB Controlled Synthesis of ZIF-8 Supported Pt for Oxygen Reduction Catalyst,. In, *International Conference on Applied Energy.*, pp. 1–5.
- Rocío-Bautista, P., Taima-Mancera, I., Pasán, J., and Pino, V., 2019, Metal-organic frameworks in green analytical chemistry, *Separations*, 6 (3), 1–21.
- Rosi, N.L., Eckert, J., Eddaoudi, M., Vodak, D.T., Kim, J., O’Keeffe, M., and Yaghi, O.M., 2003, Hydrogen storage in microporous metal-organic frameworks, *Science* (80-.), 300 (5622), 1127–1129.
- Santoso, E., Ediati, R., Istiqomah, Z., Sulistiono, D.O., Nugraha, R.E., Kusumawati, Y., Bahruji, H., and Prasetyoko, D., 2021, Facile synthesis of ZIF-8 nanoparticles using polar acetic acid solvent for enhanced adsorption of methylene blue, *Microporous Mesoporous Mater.*, 310 (May 2020), 110620.
- Shaik, M.R., Adil, S.F., Alothman, Z.A., and Alduhaish, O.M., 2022, Fumarate Based Metal–Organic Framework: An Effective Catalyst for the Transesterification of Used Vegetable Oil, *Crystals*, 12 (2), 1–12.
- Singh, C., Mukhopadhyay, S., and Hod, I., 2021, Metal–organic framework derived nanomaterials for electrocatalysis: recent developments for CO₂ and N₂ reduction, *Nano Converg.*, 8 (1), 1–10.
- Stock, N., and Biswas, S., 2012, Synthesis of metal-organic frameworks (MOFs): Routes to various MOF topologies, morphologies, and composites, *Chem. Rev.*, 112 (2), 933–969.
- Suh, M.P., Park, H.J., Prasad, T.K., and Lim, D.W., 2012, Hydrogen storage in metal-organic frameworks, *Chem. Rev.*, 112 (2), 782–835.
- Sumadiyasa, M., and Manuaba, I.B.S., 2018, Determining Crystallite Size Using Scherrer Formula, Williamson-Hull Plot, and Particle Size with SEM, *Bul. Fis.*, 19 (1), 28.
- Sun, Y., and Zhou, H.C., 2015, Recent progress in the synthesis of metal-organic frameworks, *Sci. Technol. Adv. Mater.*, 16 (5), 1–11.
- Tranchemontagne, D.J., Hunt, J.R., and Yaghi, O.M., 2008, Room temperature synthesis of metal-organic frameworks: MOF-5, MOF-74, MOF-177, MOF-199, and IRMOF-0, *Tetrahedron*, 64 (36), 8553–8557.
- Tsuruoka, T., Furukawa, S., Takashima, Y., Yoshida, K., Isoda, S., and Kitagawa, S., 2009, Nanoporous nanorods fabricated by coordination modulation and oriented attachment growth, *Angew. Chemie - Int. Ed.*, 48 (26), 4739–4743.
- Venna, S.R., Jasinski, J.B., and Carreon, M.A., 2010, Structural evolution of zeolitic imidazolate framework-8, *J. Am. Chem. Soc.*, 132 (51), 18030–18033.
- Yang, J.M., Liu, Q., Kang, Y.S., and Sun, W.Y., 2014, Controlled growth and gas

sorption properties of IRMOF-3 nano/microcrystals, *Dalt. Trans.*, 43 (44), 16707–16712.

Zafer, Ö., Filez, M., and Weckhuysen, B.M., 2017, Decoding Nucleation and Growth of Zeolitic Imidazolate Framework Thin Films with Atomic Force Microscopy and Vibrational Spectroscopy, *Chem. - A Eur. J.*, 23 (45), 10915–10924.

Zhang, H., Huo, J., Li, F., Duan, C., and Xi, H., 2018, Rapid Synthesis of Hierarchical Porous Metal-Organic Frameworks and the Simulation of Growth, *Cryst. Growth Des.*, 18 (11), 6661–6669.

Zhang, Z., Xian, S., Xi, H., Wang, H., and Li, Z., 2011, Improvement of CO₂ adsorption on ZIF-8 crystals modified by enhancing basicity of surface, *Chem. Eng. Sci.*, 66 (20), 4878–4888.

Zhao, Z., Li, Z., and Lin, Y.S., 2009, Adsorption and Diffusion of Carbon Dioxide on Metal - Organic Framework (MOF-5), 10015–10020.