# DAFTAR PUSTAKA

Amiri, A., Øye, G., & Sjöblom, J., 2011. Temperature and pressure effects on stability and gelation properties of silica suspensions. Colloids and Surfaces A: Physicochemical and Engineering Aspects, 378(1-3), 14–21. https://doi.org/10.1016/j.colsurfa.2011.01.048

Argyle, M., Bartholomew, C., 2015. Heterogeneous Catalyst Deactivation and Regeneration: A Review. Catalysts 5. https://doi.org/10.3390/catal5010145

Arslanoğlu, H., Yaraş, A., 2019. Recovery of precious metals from spent Mo–Co–Ni/Al2O3 catalyst in organic acid medium: Process optimization and kinetic studies. Petroleum Science and Technology 37. https://doi.org/10.1080/10916466.2019.1618867

Arteaga, A., Fierro, J.L.G., Grange, P., Delmon, B., 1987. Simulated regeneration of an industrial CoMo gamma -$Al_2O_3$ catalyst influence of steam. American Chemical Society, Division of Petroleum Chemistry, Preprints. 32, 339-346.

Avrami, M., 1939. Kinetics of Phase Change. I General Theory. The Journal of Chemical Physics 7, 1103–1112. https://doi.org/10.1063/1.1750380

Bartholomew, C.H., 2001. Mechanisms of catalyst deactivation. Applied Catalysis A: General 212, 17–60.

Bartholomew, C.H., 1982. Carbon Deposition in Steam Reforming and Methanation. Catalysis Reviews 24. https://doi.org/10.1080/03602458208079650

Berrebi, G., Dufresne, P., Jacquier, Y., 1994. Recycling of spent hydroprocessing catalysts: EURECAT technology. Resources, Conservation and Recycling 10, 1–9.

Budukva, S. v., Klimov, O. v., Uvarkina, D.D., Chesalov, Y.A., Prosvirin, I.P., Larina, T. v., Noskov, A.S., 2019. Effect of citric acid and triethylene glycol addition on the reactivation of CoMo/Γ-Al 2 O 3 hydrotreating catalysts. Catalysis Today 329, 35–43. https://doi.org/10.1016/j.cattod.2018.10.017

Chiranjeevi, T., Pragya, R., Gupta, S., Gokak, D.T., Bhargava, S., 2016. Minimization of Waste Spent Catalyst in Refineries. Procedia Environmental Sciences 35, 610–617. https://doi.org/10.1016/j.proenv.2016.07.047

Delmon, B., 1990. Dynamic processes in active phase-support interactions. Journal of Molecular Catalysis. 59, 179-206.

Dufresne, P., 2007. Hydroprocessing catalysts regeneration and recycling. Applied Catalysis A: General 322, 67–75. https://doi.org/10.1016/j.apcata.2007.01.013

Eijsbouts, S., Heinerman, J.J.L., Elzerman, H.J.W., 1993. $MoS_2$ structures in high activity hydrotreating catalysts. II. Evolution of the active phase during the catalyst life cycle. Deactivation model. Applied Catalysis A, General. 105, 69-82.

Faraji, F., Alizadeh, A., Rashchi, F., Mostoufi, N., 2022. Kinetics of leaching: a review. Reviews in Chemical Engineering 38, 113–148. https://doi.org/10.1515/revce-2019-0073

Furimsky, E., 1996. Spent refinery catalysts: Environment, safety and utilization. Catalysis Today 30, 223–286. https://doi.org/10.1016/0920-5861(96)00094-6

Guisnet, M., Magnoux, P., 2001. Organic chemistry of coke formation. Applied Catalysis A: General 212, 83–96. https://doi.org/10.1016/S0926-860X(00)00845-0

Iler, R.K., 1979. The chemistry of silica : solubility, polymerization, colloid and surface properties, and biochemistry. Wiley.

Lauritsen, J.V., Kibsgaard, J., Olesen, G.H., Moses, P.G., Hinnemann, B., Helveg, S., Nørskov, J.K., Clausen, B.S., Topsøe, H., Lægsgaard, E., Besenbacher, F., 2007. Location and coordination of promoter atoms in Co-and Ni-promoted $MoS_2$-based hydrotreating catalysts. Journal of Catalysis 249.2, 220-233.

Leoni, T.M., Smith, A.J., Wainwright, M.S., 2010. Leaching Kinetics of Fe2Al5 and Skeletal Iron Formation. Topics in Catalysis 53, 1166–1171. https://doi.org/10.1007/s11244-010-9555-z

Levenspiel, O., 1999. Chemical reaction engineering. John Wiley and Sons, Inc.

Li, Q., Liu, Z., Liu, Q., 2014. Kinetics of Vanadium Leaching from a Spent Industrial $V_2O_5$ /$TiO_2$ Catalyst by Sulfuric Acid. Industrial & Engineering Chemistry Research 53, 2956–2962. https://doi.org/10.1021/ie401552v

Luo, T., Zhang, R., Zeng, W.-W., Zhou, C., Yang, X., & Ren, Z., 2021. Alkoxylation Reaction of Alcohol on Silica Surfaces Studied by Sum Frequency Vibrational Spectroscopy. The Journal of Physical Chemistry C, 125(16), 8638–8646. https://doi.org/10.1021/acs.jpcc.1c02418

Madeley, R.A., Wanke S.E., 1988. Variation of the dispersion of active phases in commercial nickel-molybdenum-alumina hydrotreating catalysts during oxidative regeneration. Applied Catalysis. 39, 295-314.

Marafi, M., Furimsky, E., 2005. Selection of organic agents for reclamation of metals from spent hydroprocessing catalysts. Erdöl, Erdgas, Kohle 121, 93–96.

Marafi, M., Rana, M.S., 2016. Refinery waste: the spent hydroprocessing catalyst and its recycling options, in: WIT Transaction of Ecology and Environment. https://doi.org/10.2495/WM160201

Marafi, M., Stanislaus, A., 2008. Spent catalyst waste management: A review. Resources, Conservation and Recycling 52, 859–873. https://doi.org/10.1016/j.resconrec.2008.02.004

Marafi, M., Stanislaus, A., Furimsky, E., 2017a. Rejuvenation, in: Handbook of Spent Hydroprocessing Catalysts. Elsevier, pp. 221–259. https://doi.org/10.1016/B978-0-444-63881-6.00006-8

Marafi, M., Stanislaus, A., Furimsky, E., 2017b. Catalyst Deactivation, in: Handbook of Spent Hydroprocessing Catalysts. Elsevier, pp. 67–140. https://doi.org/10.1016/B978-0-444-63881-6.00004-4

Meng, Q., Zhang, Y., Dong, P., Liang, F., 2018. A novel process for leaching of metals from LiNi1/3Co1/3Mn1/3O2 material of spent lithium ion batteries: Process optimization and kinetics aspects. Journal of Industrial and Engineering Chemistry 61, 133–141. https://doi.org/10.1016/j.jiec.2017.12.010

Menoufy, M.F., Ahmed, H.S., 2008. Treatment and reuse of spent hydrotreating catalyst. Energy Sources, Part A: Recovery, Utilization and Environmental Effects 30, 1213–1222. https://doi.org/10.1080/15567030600829048

Nadeina, K.A., Kazakov, M.O., Kovalskaya, A.A., Danilevich, V.V., Klimov, O.V., Danilova, I.G., Khabibulin, D.F., Gerasimov, E.Yu., Prosvirin, I.P., Ushakov, V.A., Fedotov, K.V., Kondrashev, D.O., Kleimenov, A.V., Noskov, A.S., 2019. Guard bed catalysts for silicon removal during hydrotreating of middle distillates. Catalysis Today 329. https://doi.org/10.1016/j.cattod.2018.11.075

Olsen, C., 2013. The ART of trapping silicon and arsenic. Digital Refining: Processing, Operations & Maintenance.

Pacheco-Malagón, G., Pérez-Romo, P., Sanchez-Flores, N.A., Guzmán-Castillo, M.L., López, C., Saniger, J.M., Hernández-Beltrán, F., Fripiat, J.J., 2005. Local Order in Depolymerized Silicate Lattices. Inorganic Chemistry 44. https://doi.org/10.1021/ic050562p

Pathak, A., Vinoba, M., Kothari, R., 2021. Emerging role of organic acids in leaching of valuable metals from refinery-spent hydroprocessing catalysts, and potential techno-economic challenges: A review. Critical Reviews in Environmental Science and Technology 51, 1–43. https://doi.org/10.1080/10643389.2019.1709399

Pemerintah Indonesia, 2014. Pengelolaan Limbah Bahan Berbahaya dan Beracun. Indonesia.

Pérez-Romo, P., Aguilar-Barrera, C., Laredo, G.C., Ángeles-Chávez, C., Fripiat, J., 2021. Novel solution for removing poisonous silica from a Ni-Mo/Al2O3 industrial HDT spent catalyst. Applied Catalysis A: General 611, 117964-undefined. https://doi.org/10.1016/j.apcata.2020.117964

Pimerzin, Aleksey, Roganov, A., Mozhaev, A., Maslakov, K., Nikulshin, P., Pimerzin, Andrey, 2018. Active phase transformation in industrial CoMo/Al2O3 hydrotreating catalyst during its deactivation and rejuvenation with organic chemicals treatment. Fuel Processing Technology 173, 56–65. https://doi.org/10.1016/j.fuproc.2018.01.008

Reda, M.R., 1991. Regeneration of Spent Hydroprocessing Catalysts. 1. Effect of the Iron(II)/Iron(III) Redox Couple on the Selectivity of the Removal of Metals, Ind. Eng. Chem. Res.

Robinson, P.R., Dolbear, G.E., 2006. Hydrotreating and Hydrocracking: Fundamentals, in: Practical Advances in Petroleum Processing. Springer New York, New York, NY, pp. 177–218. https://doi.org/10.1007/978-0-387-25789-1_7

Sadeek, S.A., Ahmed, H.S., ElShamy, E.A., el Sayed, H.A., Abd El Rahman, A.A., 2014. Hydrotreating of waste lube oil by rejuvenated spent hydrotreating catalyst. Egyptian Journal of Petroleum 23, 53–60. https://doi.org/10.1016/j.ejpe.2014.02.008

Santolalla-Vargas, C.E., Santes, V., Gómez, E., Sanchez-Minero, F., Romero-Ibarra, I., Goiz, O., Lartundo-Rojas, L., Díaz, L., Luna-Ramirez, R., de los Reyes, J.A., Valdés, O.U., 2019. In situ reactivation of spent NiMoP/γ-

Al2O3 catalyst for hydrodesulfurization of straight-run gas oil. Catalysis Today 329, 44–52. https://doi.org/10.1016/j.cattod.2019.03.015

Shen, W., Li, T., Chen, J., 2012. Recovery of Hazardous Metals from Spent Refinery Processing Solid Catalyst. Procedia Environmental Sciences 16. https://doi.org/10.1016/j.proenv.2012.10.035

Stanislaus, A., Marafi, A., Rana, M.S., 2010. Recent advances in the science and technology of ultra low sulfur diesel (ULSD) production. Catalysis Today 153, 1–68. https://doi.org/10.1016/j.cattod.2010.05.011

Stockreiter, N., 2018. Spent catalyst: safety and regulation. Catalyst Europe.

Trimm, D.L., 1989. Deactivation, Regeneration and Disposal of Hydroprocessing Catalysts. Studies in Surface Science and Catalysis. https://doi.org/10.1016/S0167-2991(08)61059-9

Vaiss, V.S., Fonseca, C.G., Antunes, F.P.N., Chinelatto Jr., L.S., Chiaro, S.S.X., Souza, W.F., Leitão, A.A., 2020. Experimental and theoretical study of deactivated HDT catalysts by Si species deposited on their surfaces: Models proposition, structural and thermodynamic analysis. Journal of Catalysis 389, 578–591. https://doi.org/10.1016/j.jcat.2020.06.007

Willey, J.D., 1974. The effect of pressure on the solubility of amorphous silica in seawater at 0°C. Marine Chemistry, 2(4), 239-250. https://doi.org/10.1016/0304-4203(74)90018-8

Xie, K., Fang, Y., Liu, B. Li, C., 2018. Enhanced catalytic activity of monodispersed porous $Al_2O_3$ colloidal spheres with NiMo for simultaneous hydrodesulfurization and hydrogenation. *RSC advances*, *8*(32), pp.18059-18066. http://doi.org/10.1039/C8RA01866A

Xie, Y., Kocaefe, D., Kocaefe, Y., Cheng, J., Liu, W., 2016. The Effect of Novel Synthetic Methods and Parameters Control on Morphology of Nano-alumina Particles. Nanoscale Research Letters 11. https://doi.org/10.1186/s11671-016-1472-z

Yoshimura, Y., 1991. Temperature-programmed oxidation of sulfided cobalt-molybdate/alumina catalysts. Industrial and Engineering Chemistry Research. 30, 1092-1099.

Yoshimura, Y., Yokokawa, H., Sato, T., Shimada, H., Matsubayashi, N., Nishijima, A., 1991. Temperature-programmed oxidation of sulfided nickel-molybdate/alumina catalysts Change of composition and structure of active

metals. Applied Catalysis. 73, 39-53.

Zemenová, P., Král, R., Rodová, M., Nitsch, K., Nikl, M., 2020. Calculations of Avrami exponent and applicability of Johnson–Mehl–Avrami model on crystallization in Er:LiY(PO3)4 phosphate glass. Journal of Thermal Analysis and Calorimetry 141, 1091–1099. https://doi.org/10.1007/s10973-019-09068-w

Zheng, Y., Chen, K., 2014. Leaching kinetics of selenium from selenium–tellurium-rich materials in sodium sulfite solutions. Transactions of Nonferrous Metals Society of China 24, 536–543. https://doi.org/10.1016/S1003-6326(14)63093-4

Zhou, J., Zhao, J., Zhang, J., Zhang, T., Ye, M., Liu, Z., 2020. Regeneration of catalysts deactivated by coke deposition: A review. Chinese Journal of Catalysis. https://doi.org/10.1016/S1872-2067(20)63552-5