

DAFTAR PUSTAKA

- Ahmad, M., and Benjakul, S., 2011, Characteristics of Gelatin from the Skin of Unicorn Leather Jacket (*Aluterus monoceros*) as Influenced by Acid Pretreatment and Extraction Time, *Food Hydrocoll.*, 25, 381-388.
- Ahmadi, S., Yuan, Z., Rohani, S., and Xu, C., 2016, Effect of Nano-Structured CoMo Catalyst on Hydrodeoxygenation of Fast Pyrolysis Oil in Supercritical Ethanol, *Catal. Today.*, 269, 182 – 194.
- Baikousi, M., Daikopoulos, C., Georgiou, Y., Bourlinos, A., Zboril, R., Deligiannakis, Y., and Karakassides, 2013, Novel Ordered Mesoporous Carbon with Innate Functionalities and Superior Heavy Metal Uptake, *J. Phys. Chem. C*, 2013 (117), 16961-16971.
- Bhaskar, T., Uddin, M. A., Muto, A., Sakata, Y., Omura, Y., Kimura, K., and Kawakami, Y., 2004, Recycling of Waste Lubricant Oils into Chemical Feedstock or Fuel Oil over Supported Iron Oxide Catalysts, *Fuel*, 83, 9-15.
- Boukoberine, Y. and Hamada, B., 2011, Thiophene Hydrodesulfurization over CoMo/Al₂O₃-CuY catalysts: Temperature Effect Study, *Arabian J. Chem.*, 3-6.
- Chandrasekar, G., Son, W. J., and Ahn, W. S., 2009, Synthesis of Mesoporous Materials SBA-15 and CMK-3 from Fly Ash and Their Application for CO₂ Adsorption, *J. Porous Mater.*, 16, 545-551
- Dewi, P. T., 1999, Pengaruh Pengecilan Ukuran Tulang Sapi dan Lama Perendaman dalam Larutan Kalsium Hidroksida Terhadap Randemen dan Karakteristik Gelatin Tipe B, *Skripsi*, Jurusan Teknologi Industri Pertanian, Fakultas Teknologi Pertanian, Institut Pertanian Bogor, Bogor.
- Diphare, M., and Muzenda, E., 2013, Analysis and Characterization of Waste Lubricating Grease Derived Oil, *2nd International Conference on Agricultural, Environment, and Biological Sciences*, 17-18 Desember 2013, Pattaya.
- Egorova, M., and Prins, R., 2004, Hydrodesulfurization of Dibenzothiophene and 4,6 Dimethyl Dibenzothiophene over Sulfided NiMo/ γ -Al₂O₃, CoMo/ γ -Al₂O₃, and Mo/ γ -Al₂O₃ Catalysts, *J. Catal.*, 225 (2004), 417-427.
- Emam, E. A. and Shoaib, M. A., 2012, Re-refining of Used Lube Oil by Solvent/Clay-Percolation Processes, *ARPJ. Sci. Tech.*, 11 (2), 1034-1041.

- Fan, Y., Lu, J., Shi, G., Liu, H., and Bao, X., 2007, Effect of Synergism Between Potassium and Phosphorus on Selective Hydrodesulfurization Performance of Co-Mo/Al₂O₃ FCC Gasoline Hydro-Upgrading Catalyst, *Catal. Today*, 125, 220-229.
- Ge, Y., Wang, J., Shi, Z., and Yin, J., 2012, Gelatin-Assisted Fabrication of Water Dispersible Graphene and Its Inorganic Analogues, *J. Mater. Chem.*, 22, 17619-17624.
- Gomez-Guillen, M.C., Gimenez, B., Lopez-Caballero, M.E., and Montero, M.P., 2011, Functional and Bioactive Properties of Collagen and Gelatin from Alternative Sources: A Review, *Food Hydrocoll.*, 25, 1813-1827.
- Hagen, J., 2006, *Industrial Catalyst: A Practical Approach, Second Edition.*, Wiley-VCH, Weinheim.
- He, X., Zhang Y., Zhu, C., Huang, H., Hu, H., Liu, Y., and Kang, Z., 2015, Mesoporous Carbon Nanoparticles: A Super Catalyst Support for Fuel Cells, *New J. Chem.*, 1-7.
- Hong, H., Liu, C., and Wu, W., 2009, Preparation and Characterization of Chitosan/PEG /Gelatin Composites for Tissue Engineering, *J. Appl. Polym. Sci.*, 114, 1220-1225.
- Hussain, M., Song, K. S., Lee, H. J., and Ihm, K. S., 2006, Characteristics of CoMo Catalysts Supported on Modified MCM-41 and MCM-48 Materials for Thiophene Hydrodesulfurization, *Ind. Eng. Chem. Res.*, 45, 536-543.
- Hussain, M. and Ihm, S., 2009, Synthesis, Characterization, and Hydrodesulfurization Activity of New Mesoporous Carbon Supported Transition Metal Sulfide Catalysts. *Ind. Eng. Chem. Res.*, 3, 698-707.
- Hsu, L. Y. and Liu, C.C., 2011, Evaluation and Selection of Regeneration of Waste Lubricating Oil Technology, *Environ. Monit. Assess* 176, 197-212.
- Ignat, M., Oers, C.J., Van, Vernimmen, J., Mertens, M., and Potgieter-vermaak, S., 2010, Textural Property Tuning of Ordered Mesoporous Carbon Obtained by Glycerol Conversion Using SBA-15 Silica as Template. *Carbon N. Y.*, 48, 1609-1618.
- Ishihara, A., Tanaka, S., Aiba, M., Hashimoto, T., and Nasu, H., 2015, Preparation of Alumina-supported Cobalt-Molybdenum Catalyst by Sol-gel Method and Hydrodesulfurization Activities, *J. Jpn. Petrol. Inst.*, 58 (2), 103-109.

- Jamilah, B. and Harvinder, K. G., 2002, Properties of Gelatins from Skins of Fish Black Tilapia (*Oreochromismossambicus*) and Red Tilapia (*Oreochromisnilotica*, *Food Chem.*, 77, 81-84.
- Kaluža, L., Zdražil, M., Vít, Z., and Gulková, D., 2012, CoMo/ZrO₂ Hydrodesulfurization Catalysts Prepared by Chelating Agent Assisted Spreading. *Procedia Eng.*, 42, 261–266.
- Kamegawa, K., Kodama, M., Nishikubo, K., Yamada, H., Adachi, Y., and Yoshida, H., 2005, Production of Micro- and Mesoporous Carbons by Pyrolysis of the Lithium Salts of Aromatic Acids. *Microporous Mesoporous Mater.*, 87, 118–123.
- Karim A.A., and Bhat R., 2009, Review Fish gelatin: Properties, Challenges, and Prospects as an Alternative to Mammalian Gelatins, *Food Hydrocoll.*, 23, 563-576.
- Khowatimy, A. F., Priastomo, Y., Febriyanti, R., Riyantoko, H., and Trisunaryanti, W., 2014, Study of Waste Lubricant Hydrocracking into Fuel Fraction over The Combination of Y-Zeolite and ZnO Catalyst, *Procedia Environmental Scie.*, 20 (2014): 225-234.
- Kruk, M., Jaroniec, M., Ryoo, R., and Joo, S. H., 2000, Characterization of Ordered Mesoporous Carbon Synthesized Using MCM-48 Silicas as Templates, *J. Phys. Chem.*, 104, 7960 – 7968.
- Lee, J., Kim, J., and Hyeon., T., 2006, Recent Progress in the Synthesis of Porous Carbon Material, *Adv. Mater.*, 18, 2073-2094.
- Le, M. T., Do, V. H., Truong, D. D., Bruneel, L., Driessche, I. V., Riisager, A., Fehrmann, R., and Tinh, Q. T., 2016, Synergy Effect of the Mixture of Bismuth Molybdate Catalyst with SnO₂/ZrO₂/MgO in Selective Propene Oxidation, and the Connection between Conductivity and Catalytic Activity, *Ind. Eng. Chem. Res.*, 55, 4846-4855.
- Lin, C. Y., Wu, H. S., Liu, W. C., Lim, Y. Z., Huang, W. C., Lin, P. H., Deng, S., Yang, C. M., Tang, Y. C., and Lin, Y. C., 2008, Synthesis of Mesoporous Carbons of High Surface Area and Porosity by Using Polymer Blends as Template, *J. Solid State Electrochem.*, 12, 895-901.
- Lowel, T., and Shields, T., 2004, *Characterization of Porous Materials and Powders: Surface Area, Pore Size, and Density*, Springer, New York.
- Lu, A., Li, W., Schmidt, W., Kiefer, W., and Ferdi, S., 2004, Easy Synthesis of an Ordered Mesoporous Carbon with a Hexagonally Packed Tubular

Structure, *Carbon*, 42, 2939–2948.

Lufrano, F., and Staiti, P., 2010, Mesoporous Carbon Materials as Electrodes for Electrochemical Super Capacitors, *Int. J. Electrochem. Sci.*, 5, 903 – 916.

Maiyalagan, T., Nassr, A. B., Alaje, T. O., Bron, M., and Scott, K., 2012, Three-Dimensional Cubic Ordered Mesoporous Carbon (CMK-8) As Highly Efficient Stable Pd Electro-Catalyst Support for Formic Acid Oxidation, *J. Power Sources*, 211, 147-153.

Mariod, A. A., and Adam, H. F., 2013, Review: Gelatin, Source, Extraction, and Industrial Applications, *Acta Sci. Pol., Technol. Aliment*, 12 (2), 135-147.

Mariod, A. A., Matthaus, B., Eichner, K., and Hussein, I. H., 2006, Effects of Processing Steps on The Quality and Stability of Three Unconventional Sudanese Oils, *Eur. J. Lipid Sci. Tech.* 108 (4), 298-308.

Montero P., and Gómez-Guillén M.C., 2000, Extracting Conditions for Megrim (*Lepidorhombus Boscii*) Skin Collagen Affect Functional Properties of The Resultant Gelatine, *J. Food Sci.*, 65, 434-438.

Muyonga, J. H., Cole, C.G. B., and Duodo, K. G., 2004, Fourier Transform Infrared (FTIR) Spectroscopic Study of Acid Soluble Collagen from Skins and Bones of Young and Adult Nile Perch (*Latesniloticus*), *Food Chem.*, 86, 325-332.

Olejniczak, A., Lezanska, M., Pacula, A., Nowak, P., Wloch, J., and Lukaszewicz, 2015, Nitrogen-containing mesoporous carbons with high capacitive properties derived from a gelatin biomolecule, *Carbon*, 91, 200-214.

Oliveira, E.C. De, Pires, C.T.G.V.M.T., and Pastore, H.O., 2006, Why Are Carbon Molecular Sieves Interesting, *J. Braz. Chem. Soc.*, 17, 16–29.

Permsubscul, A., Vitidsant, T., and Damronglerd, S., 2006, Catalytic Cracking Reaction of Used Lubricating Oil to Liquid Fuels Catalyzed by Sulfated Zirconia, *Korean J. Chem. Eng.* 24 (1), 37-43.

Perwitasari, D. S., 2008, Hidrolisis Tulang Sapi Menggunakan HCl untuk Pembuatan Gelatin, *Seminar Nasional Pengolahan Sumber Daya Alam dan Energi Terbarukan*, 18 Juni 2008, Surabaya.

Porter, D., and Vollhart, F., 2012, Water Mobility, Denaturation, and the Glass Transition in Proteins, *Biochim. Biophys. Acta*, 1824 (2012), 785-791.

Ramos, J.M., Wang, J.A, Chen, L. F., Arellano, U., Ramirez, S. P., Sotelo, R., and Schachat, P., 2015, Synthesis and Catalytic Evaluation of CoMo/SBA-15 catalysts for Oxidative Removal of Dibenzothiophene from A Model Diesel,

Catal. Commun., 72, 57-62.

Ryoo, R., Joo, S. H., and Kim, J. M., 1999, Synthesis of Highly Ordered Carbon Molecular Sieves Via Template-Mediated Structural, *J. Phys. Chem.B.*, 103, 7743-7746.

Sai, K. P., and Babu, M., 2001, Studies on Rana Tigerina Skin Collagen, *Comp. Biochem. Physiol. B.*, 128, 81-90.

Sakintuna, B. and Yurum, Y., 2006, Preparation and Characterization of Mesoporous Carbons Using a Turkish Natural Zeolitic Template/Furfuryl Alcohol System, *Microporous Mesoporous Mater.*, 93, 304 – 312.

Setyawan, H., Yuwana, M., and Balgis, R., 2015, Microporous and Mesoporous Materials PEG-Templated Mesoporous Silicas Using Silicate Precursor and Their Applications in Desiccant Dehumidifier Cation Cooling Systems. *Microporous Mesoporous Mater.*, 218, 95–100.

Sie, S. T., 1993, Acid-Catalyzed Cracking of Paraffinic Hydrocarbons. Evidence for The Protonated Cyclopropane Mechanism from Hydrocracking/Hydroisomerization Experiments, *Ind. Eng. Chem. Res.*, 32 (3), 403-408.

Sihombing, L. J., 2010, Preparation and Characterization of NiO-CoO-MoO₃/Natural zeolite and NiO-MoO₃-CoO/Natural Zeolite for Hydrocracking of Waste Lubricant Oil to Gasoline and Diesel Fraction, *Thesis*, Departemen Kimia FMIPA UGM, Yogyakarta.

Singhabhandhu, A. and Tezuka, T, 2010, The Waste-to-Energy Framework for Integrated Multi-Waste Utilization: Waste Cooking Oil, Waste Lubricating Oil, and Waste Plastics, *Energy*, 35, 2544-2551.

Soghrati, E., Kazemeini, M., Rashidi, M, A., and Jozani, J. K., 2012, Preparation and Characterization of Co-Mo Catalyst Supported on CNT Coated Cordierite Monoliths Utilized for Naphta HDS Process, *Procedia Eng.*, 42, 1484-1492.

Sriningsih, W., Saerodji, M.G., Trisunaryanti, W., Armunanto, R., and Falah, I.I., 2014. Fuel Production from LDPE Plastic Waste over Natural Zeolite Supported Ni, Ni-Mo, Co and Co-Mo Metals. *Procedia Environ. Sci.*, 20, 215–224.

Susanto, H., 2015, Sintesis Silika Mesopori menggunakan Cetakan Gelatin Tulang Sapi dan Impregnasi Cr untuk Katalis Hidrorengkah Pelumas Bekas, *Skripsi*, Departemen Kimia FMIPA UGM, Yogyakarta.

- Swasdika, F., 2015, Sintesis Karbon Mesopori dari Gelatin Tulang Sapi dan Co/Karbon Mesopori sebagai Katalis Hidrorengkah Pelumas Bekas, *Skripsi*, Departemen Kimia FMIPA UGM, Yogyakarta.
- Taba, P., Fauziah, S., Syuwarna, Passaran, E., 2004, Pengurangan Konsentrasi Merah Reaktif-1 dari Lingkungan Perairan Melalui Adsorpsi Pada Karbon Mesopori (CMK-1) dan Karbon Aktif Kulit Kakao (*Theobroma cacao*), *MCA.*, 5 (2), 15-21.
- Trisunaryanti, W., Lisna, P.S., Kartini, I., Sutarno., Falah, I.I., and Triyono, 2016, Extraction of Gelatin from Bovine Bone and Its Use as Template in Synthesis of Mesoporous Silica, *Asian J. Chem.*, 28(5), 996-2000.
- Trisunaryanti, W., Purwono, S., and Putranto, A., 2008, Catalytic Hydrocracking of Waste Lubricant Oil into Liquid Fuel Fraction using ZnO, Nb₂O₅, Activated Natural Zeolite and Their Modification, *Indo. J. Chem.*, 8 (3), 342 - 347.
- Trisunaryanti, W., Syoufian, A., and Purwono, S., 2013, Characterization and Modification of Indonesian Natural Zeolite for Hydrocracking of Waste Lubricant Oil into Liquid Fuel Fraction, *J. Chem. Chem. Eng.*, 7, 175-180.
- Ulfa, M., Trisunaryanti, W., Falah, I.I., Kartini, I., and Sutarno, 2014, Synthesis of Mesoporous Carbon using Gelatin as Source of Carbon by Hard Template Technique and Its Characterizations, *JAC*, 7, 5, 1-7.
- Vigón V. P., Sevilla, M., and Fuertes, A. B., 2012, Sulfonated Mesoporous Silica Carbon Composites and Their Use as Solid Acid Catalyst, *Appl. Surf. Sci.*, 261, 574-583.
- Wang, Y., Wang, F., Chen, Y., Li, B., Zhang, C., Cui, L., Kang, S., and Li, X., 2013, One-step Nanocasting Synthesis of Ordered Mesoporous Carbon with Graphitic Frameworks, *Int. J. Electrochem. Sci.*, 8, 7868 – 7874.
- Wang, Y., Zhang, C., Kang, S., Li, B., Wang, Y., Wang, L., and Li, X., 2011, Simple Synthesis of Graphitic Ordered Mesoporous Carbon Supports Using Natural Seed Fat, *J. Mater. Chem.*, 21, 14420 – 14423.
- Wetwatana, U., Lohsoontorn, K. P., Assabumrungrat, S., and Laosiripojana, N., 2010, Catalytic Steam and Autothermal Reforming of Used Lubricating Oil (ULO) over Rh- and Ni-Based Catalysts, *Ind. Eng. Chem. Res.*, 49: 10981-10985.
- Witanto, E., Trisunaryanti, W., dan Triyono, 2011, Hidrorengkah Fraksi Aspalten dari Aspal Buton Menjadi Fraksi Bensin dan Diesel Menggunakan Katalis Ni-Mo/Zeorlit Alam Aktif, *Seminar Nasional SDM Teknologi Nuklir VII*, 16 November 2011, Yogyakarta.

Yudiono, H., 2003, Karakteristik Fisikokimia Gelatin Hasil Perendaman Tulang Sapi dalam Campuran $\text{Ca(OH)}_2\text{-CaCl}_2$, *Skripsi*, Jurusan Kimia FMIPA, Institut Pertanian Bogor, Bogor.

Zelechowska, E., Sadowska, M., and Turk, M., 2010, Isolation and Some Properties of Collagen, Gelatin and Collagen Hydrolysate Derived from Bovine Lined Split Wastes, *J. Soc. Leath. Tech. Ch.*, 90, 23-28.

Zhou, P., and Regeinstein, J. M., 2005, Effect of Alkaline and Acid Pretreatments on Alaska Pollock Skin Gelatin Extraction, *J. Food Sci.*, 70, 392-396.