

DAFTAR PUSTAKA

- ACS, 1996, Active Carbon Symposium on Production and Use of Carbon Based Materials for Environmental Clean up, *Fuel Chem. Div.*, 41 (1).
- Abechi, S.E., Gimba, C.E., Uzairu, A., Dallatu, Y.A., 2013, Preparation and Characterization of Activated Carbon from Palm Kernel Shell by Chemical Activation, *Res. J. Chem. Sci.*, 3,7, 54-61.
- Adamson, A.W., 1990, *Physical Chemistry of Surface*, 5th ed, John Wiley and Sons, Toronto.
- Anonim, 1985, *Industrial Charcoal Making*, FAO Corporate Document Repository, Forestry Department, Roma, www.fao.org/docrep.htm.
- Anonim, 1988, *Mutu dan Cara Uji Arang Aktif, Standar Industri Indonesia (SII) No. 0258-79*, Jakarta: Departemen Perindustrian RI.
- Anonim, 2012, *Rancangan Dasar Proses dan Kajian Ekonomi Global Produksi Karbon Aktif Berbasis Batubara Indonesia*, Puslitbang Teknologi Mineral dan Batubara.
- Ahmadpour, A. King, B. A., and Do, D. D., 1998, Comparison of Equilibria and Kinetics of High Surface Area Activated Carbon Produced from different Precursors and by Different Chemical Treatments, *Ing. Eng. Chem. Res.*, 37, 1329.
- Allwar, A., Ahmad, M.N., Mohd. Asri, M.N., 2008, Textural Characteristics of Activated Carbons Prepared from Oil Palm Shells Activated with ZnCl₂ and Pyrolysis under Nitrogen and Carbon Dioxide, *J. Physic. Sci.*, 19, 2, 93-104.
- Allwar, A., 2013, Porous Structure of Activated Carbons Derived from Oil Palm Empty Fruit Bunch by Phosphoric Acid Activation under Nitrogen and Carbon Dioxide, *International J.Res. Chem. Environ.*, 3, 2, 62-68.
- Alhamed, Y. A., 2006, Activated Carbon from Dates' from Stone by ZnCl₂ Activation, *JKAU: Eng. Sci.*, 17, 2, 75-100.
- Anirudhan, T.S., Sreekumari, S.S., dan Bringle, C.D., 2009, Removal of Phenol from Water and Petroleum Industry Refinery Effluents by Activated Carbon Obtained from Coconut coirpith, *Adsorption*, 15, 439-451.
- ASTM International., 2006, *Annual Book of ASTM Standards*, Section 5: Petroleum product, Lubricant, and Fossil Fuels, 05(06): Gaseous Fuels; Coal and Coke.

- Atkins, P., 2006, *Physical Chemistry*, Oxford University Press., Great Britain.
- Austin,G.T., 1996, *Industri Proses Kimia*, Penerbit Erlangga, Jakarta.
- Aygun, A., Yeniso-y-Karakas, S., Duman, I., 2003, Production of granular Activated Carbon from Fruit Stones and Nutshells and Evaluation of Their Physical, Chemical and Adsorption Properties, *Micro. And Meso. Mater.*, 66, 189-195.
- Babel, K., Jurewicz, K., 2004, KOH Activated Carbon Fabrics as Supercapacitor Material, *J.Phys. Chem. Sol.*, 65, 275-280.
- Balci, S., Doğu, T., And Yücel, H., 1994, Characterization of Activated Carbon Produced from Almond Shell and Hazelnut Shell, *J. Chem. Tech. Biotechnol.*, 60, 419-426.
- Bandosz, T.J., 2006, *Activated Carbon Surfaces in Environmental Remediation*, Elsevier Ltd, New York, USA.
- Bansal, R. Ch., and Goyal, M., 2005, *Activated Carbon Adsorption*, Taylor and Francis Group.
- Barrow, G.M., 1996, *Physical Chemistry*, Sixth Edition, Mc Graw Hill, Boston.
- Castello, L., Rodenas, L., Amaros, C., Solano, L., 2001, Preparation of activated Carbons from Spanish anthracite Part 1. Activation by KOH, *Carbon*, 39, 5, 741-749.
- Cheremisinoff, N.P., 1978, *Carbon Adsorption Handbook*, Ann Arbor Science Publishers Inc, Michigan.
- Considine, D.M., and G.D. Considine (eds), 1984, *Encyclopedia of Chemistry*, 4 ed, Van Nostrand reinhold Company, New York.
- Cuhadaroglu, D dan Uygun, O.A., 2008, Production and Characterization of Activated Carbon from a Bituminous Coal by Chemical Activation, *Afr. J. Biotechnol.*, 7, 20, 3703-3710.
- Demirbas A., 2005, Pyrolysis of Ground Beech Wood in Irregular Heating Rate Conditions, *J. Anal. App. Pyrol.*, 73, 39-43.
- Fan, M., Marshall, W., Daugaard, D., Brown, R.C., 2003, Steam Activation of Chars Produced from Oat Hulls and Corn Stover, *Bioresource Technol.*,1-5

- Foo, P. Y. L., Lee, L. Y, 2010, *Preparation of Activated Carbon from Parkia Speciosa Pod by Chemical Activation*, Proceeding of the WCECS, 2, San Francisco, USA.
- Fraga, M.A; et al., 2002, Properties of Carbon-Supported Platinum Catalysts: Role of Carbon Surface Sites, *J. Catal.*, 209, 355-364.
- Ghosh, D., Bhattacharyya, K.G., 2002, Adsorption of Methylene Blue on Kaolinite, *Appl. Clay Sci.*, 20, 295-300.
- Girgis, B.S., and El-Hendrawy, A.A., 2002, Porosity Development in Activated Carbons Obtained from Date Pits under Chemical Activation with Phosphoric Acid, *Micro. Meso. Mater.*, 52, 105-117.
- Guo, J. and Lua, A.C., 2000, Textural Characterization of Activated Carbons Prepared from Oil-Palm Stones Pre-treated with Various Impregnating Agents, *J. of Porous Mater.*, 7, 491-497.
- Ho, Y.S. and McKay, G., 1998, *Pseudo-second Model Order Model for Sorption Processes*, Process Biochemistry, 34, 451-465.
- Hong, E.H., Jung, Y.H., and Lee, K. H., 2000, Preparation of Mesoporous Activated Carbon Fibers by Catalytic Gasification, *Korean J. Chem. Eng.*, 17, 237.
- Hu, Z., Srinivasan, M.P., 1999, Preparation of High-Surface Area Activated Carbons from Coconut Shell, *Micropor. Mesopor. Mat.*, 27, 11-18.
- Jankowska, H., Swiatkowski, A. and Choma, J., 1991, *Active Carbon*, Ellis Horwood, New York.
- Jibril, B., Maamari, R. S., Houache, O., Aamri, M., Qalhati, A., 2007, Effects of H_3PO_4 and KOH on Pyrolysis of Bituminous Coal in Preparation of Activated Carbon, *J. Appl. Sci. Res.*, 3, 11, 1343-1351.
- Jibril, B., Houache, O., Al-Maamari, R., Al-Rashidi, B., 2008, Effects of H_3PO_4 and KOH in Carbonization of Lignocellulosic Material, *J. Anal. App. Pyrol.*, 83, 151-156.
- Kang, H.Y., Park, S.S., Rim, Y.S., 2006, Preparation of Activated from Paper Mill Sludge by KOH Activation, *Korean J. Chem. Eng.*, 23, 6, 948-953.
- Khalid, Zalida, 2001, Studies of the Photochemical Kinetic of Methylene Blue with Reductants, *Thesis*, Departement of Chemistry, University of Karachi, Karachi.

- Kennedy, L. J., Vijaya, J. J., and Sekaran, G., 2004, Effect of Two-Stage process on the Preparation and Characterization of Porous Carbon Composite from Rice Husk by Phosphoric Acid Activation, *Ind. Eng. Chem. Res.*, 43, 1832-1838.
- Kenneth, C. L., Nasrin, R. K., Marta, C., Giselle, S, and Thiyagarajan, P., 2002, Microstructural Analysis of Carbons Prepared from Paper Mill Sludge by SANS and BET, *Chem. Mater.*, 14, 327.
- Kermani, M., Pourmoghaddas, M., Bina, B., Khazaei, Z., 2006, Removal of Phenol from Aqueous Solutions by Rice Husk Ash and Activated Carbon, *Pakistan J. Biol. Sci.*, 9,10, 1905-1910.
- Ketaren, S., 1986, *Minyak dan Lemak Pangan*, Edisi Pertama, Penerbit Universitas Indonesia, Jakarta.
- Kimura Y. Sato., Kaito C., 2004, Production and Structural Characterization of Carbon Soot with Narrow UV Absorption Feature. *Carbon* 42, 33-38.
- Kirk-Othmer, 1983, *Encyclopedia of Chemical Technology*, edisi ketiga, A. Wiley-Interscience Publication, New York, 15, 149-151.
- Kong, J., Yue, Q., Huang, L., Gao, Y., Su, Y., Gao, B., Li, Q., Wang, Y., 2013, Preparation, Characterization and Evaluation of Adsorptive Properties of Leather Waste Based Activated carbon Via Physical and chemical Activation, *Chem. Eng. J.*, 221, 62-71.
- Koumanova, B., Antova, P.P., 2002, Adsorption of p-Chlorophenol from Aqueous Solution on Bentonite and Perlite, *J. Hazard Mater.*, 90, 229-234.
- Langergren, S., 1898., Zur Theorie der Sogenanten Adsorption Geloster Stoffe., *Kungliga Svenskapsakademiens Handlingar*, 24, 1-39.
- Lee, S. H., and Lee, C. D., 2001, Influence of Pretreatment and Activation Condition in the Preparation of Activated Carbons from Anthracite, *Korean J. Chem. Eng.*, 18, 26.
- Lillo-Rodenas, M.A., Juan-Juan, J., Cazorla-Amoros, D., Linares-Solano, A.,(2004), About Reactions Occurring During Chemical Activation with Hydroxides, *Carbon*, 42, 1371-1375.
- Lozano-Castello, D., Lillo-Rodenas, M.A., Cazorla-Aramos, D., Linares-Solano, A., 2001, Preparation of Activated Carbons from Spanish Anthracite. Part I. Activation by KOH, *Carbon*, 39, 5, 741-749.

- Lua, A.C., Lau, F.Y., Guo, J., 2005, Influence of Pyrolysis Conditions on Pore Development of Oil-Palm-Shell Activated Carbons, *J. Anal. App. Pyrol.*, 1873, 1-7.
- Macedo, J.S., Otubo, I., Ferreira, O.P., Gimenez, I.D.F., Mazali, I.O., Barreto, I.S., 2008, Biomorphic Activated Porous Carbon with Complex Microstructures from Lignocellulosic Residue, *Micropor. Mesopor. Mat.*, 107, 276-285.
- Mahvi, A. H., Maleki, A., Eslami, A., 2004, Potential of Rice Husk and Rice Husk Ash for Phenol Removal in Aqueous Systems, *Am. J. Sci.*, 1, 4, 321-326.
- Manocha, S. M., 2003, *Porous Carbons*, S adhan Vol. 28, Parts 1 dan 2, Feb/Apr, 335-348.
- Marsh, H., dan Reinoso, F.R., 2005, *Activated Carbon*, University of Alicante.
- Meilita, S., dan Tuti., S., 2003 *Arang Aktif*, Jurusan Teknik Industri Fakultas Teknik USU, Medan.
- Menendez, J.A., Menendez, E.M., Iglesias, M.J., Garcia, A., And J.J.Pis., 1999, Modification of the Surface Chemistry of Active Carbons by Means of Microwave Induced Treatments, *Carbon*, 37, 1115-1121.
- Nahil, M.A., Williams, P.T., 2012, Pore Characteristic of Activated Carbons from The Phosphoric Acid Chemical Activation of Cotton Stalks, *Biomass and Bioenerg.*, 37, 142-149.
- Moore and Pearson, 1981, *Chemical Kinetics*, John Wiley and Son, New York.
- Ngeryen, Y., Tangsathitkulchai, C., Tangsathitkulchai, M., 2006, Porous Properties of Activated Carbon Produced from Eucalyptus and Wattle Wood by Carbon Dioxide Activation, *Korean J. Chem. Eng.*, 23, 6, 1046-1054.
- Nikitin, 1996, *The Chemistry of Cellulose and Wood*, Israel Program for Scientific Translation, Jerusalem.
- Oscik, J., 1982, *Adsorption*, John Wiley and Sons, New York.
- Palungkun, R., 2003, *Aneka Produk Olahan Kelapa*, Penebar Swadaya, Jakarta.
- Pari, G., 2004, Kajian Struktur Arang Aktif dari Serbuk Gergajian Kayu Sebagai Adsorben Emisi Formaldehida Kayu Lapis (*Disertasi*), Program Pascasarjana Institut Pertanian Bogor, Bogor.

- Prahas, D., Kartika, Y., Indraswati, N., Ismadji, S., 200, The Use of Activated Carbon Prepared from Jackfruit (*Artocarpus heterohyllus*) Peel Waste for Methylene Blue Removal, *J. Environ. Protec. Sci.*, 2, 1-10.
- Rodenas, M.A., Amoros, D.C., Solano., A.L., 2003, Understanding Chemical Reactions Between Carbons and NaOH and KOH: an Insight into The Chemical Activation Mechanism, *Carbon*, 41, 2, 267-275.
- Rodriquez, R., 1995, *Chemistry and Physics of Carbon*, P.A., Thrower, Vol.21, P.1.
- Rouquerol, F., Rouquerol, J. and Sing, K., 1999, *Adsorption by Powders and Porous Solid*, Akademik Press, San Diego.
- Xiaojun, M., Zhang, F., Zhu, J., Yu, L., Liu., X., 2014, Preparation of Highly Developed Mesoporous Activated Carbon Fiber from Liquefied Wood using Wood Charcoal as Additive and Ist Adsorption of Methylene blue from Solution, *Bioresource Technol.*, 164, 1-7.
- Sánchez,A. R., Elguézabal, A. A. and Saenz, L. L. T., 2001, CO₂ Activation of Char from Quercus Agrifolia Wood Waste, *Carbon*, 39, 1367-1377.
- Sharma R.K; Kumar. A; and Joseph, P.E., 2008, Removal of Atrazine from Water by Low Cost Adsorbents Derived from Agricultural and Industrial Wastes, *B. Environ. Contam Tox.*, 80, 461-464.
- Shaw, J., Duncan, J.J., 1999, *Introductin to Colloid and Surface Chemistry*, 4th Edition, Butterwort-Heinemann.
- Smicek, M. And Cerny, S., 1970, *Active Carbon, Manufacture, Properties and Application*, Elsevier Publishing Company, New York.
- Serrano, E. G., Cordero, T., Mirasol, J. R., and Rodriguez, J. J., 1997, Development of Porosity upon Activation of Kraft Lignin with ZnCl₂, *Ind. Eng. Res.*, 36, 4832-4838.
- Silbey, R. And Alberty, R.A., 2001, *Physical Chemistry*, John Wiley & Sons, New York.
- Sivaraj, R., Rajendran, V., Gunalan, G. S., 2010, Preparation and Characterization of Carbons from Parthenium Biomass by Physical and Chemical Activation Techniques, *E-journal Chem.*, 7, 4, 1314-1319.
- Smisek, M. and Cerny, S., 1970, *Active Carbon, Manufacture, Properties and Applications*, Elsevier Publishing Company, New York.

- Somboon, W., Mutitamongkol, P., and Tapaiboonkul, P., 2001, *Removal of Colored Wastewater Generated from Hand-Made Textile Weaving Industry*, Departement chemistry, Faculty Science, King Mongkut University of Technology.
- Son, S.J, J.S. Choi; K.Y. Chro; S.D. Song; S.T. Vijayalalshmi and T.H. Kim., 2005, Development of Carbon Dioxide Adsorbents Using Carbon Materials Prepared from Coconut Shell, *Korean. J. Chem. Eng.*, 22, 2, 291-297.
- Sricharornchaikul, V., Pechyen, C., Aht-ong, D., Atong, D., 2008, Preparation and Characterization of Activated Carbon from the Pyrolysis of Physic Nut (*Jatropha curcas* L.) Waste, *Energ. Fuels*, 22, 31-37.
- Stretcher, P.G., Windholz, M., Lechy, D.S., Bolton, D.D.M., Eaton, L.G., 1968, *The Merck Index*, Eight edition, Merck & Co. Inc., New York, USA.
- Stum, W., Morgan, J.J., 1981, *Aquatic Chemistry: An Introduction Emphasizing Chemical Equilibria in Natural Waters*, John Wiley and Sons, New York.
- Sudarrayanto, Y., 2006, High Surface Area Activated Carbons Prepared from Cassava Peel by Chemical Activation, *Chem. Eng.*, Widya Mandala Surabaya Catholic University, 734-739.
- Su-Ling, L., Ya-Nan, W., Kung-Tsung, L., 2014, Preparation and Pore Characterization of Activated Carbon from Ma bamboo (*Dendrocalamus latiflorus*) by H_3PO_4 Chemical Activation, *J. Porous Mat.*, 21, 459-466.
- Suzuki, R.M., 2007, Preparation and Characterization of Activated carbon from Rice Bran, Departemen Chemistry, *Universidade Estadual de Maringó*, Brazil, 1985-1991.
- Su, W., Zhou, L., Zhou, Y., 2003., Preparation of Microporous Activated Carbon from Coconut Shell Without Activating Agents, *J. Carbon*, 41, 861-863.
- Tae-Hwan. K; S.J. Lakshmi; S. Seok-Jin; and K.J. Dong., 2002, The Pore Mouth Tailoring of Coal and Coconut Char Through Acid Treatment Followed by Coke Deposition, *J. Porous Mat.* 9, 279-286.
- Tawalbeh, M., Mamdouh, A., Allawzi and Kandah, M. I., 2005, Production of Carbon from Jojoba Seed Residue by Chemical Activation Using a Static Bed Reactor, *J. Appl. Sci.*, 5, 3, 482-487.
- Teng, H., and Yeh, T. S., 1998, Preparation of Activated Carbon from Bituminous Coals with Zinc Chloride Activation, *Ind. Eng. Chem. Res.*, 37, 58-65.

- Teng, H., and Hsu, L.Y., 1999, High-Porosity Carbons Prepared from Bituminous Coal with Potassium Hydroxide Activation, *Ind. Eng. Chem. Res.*, 38, 2947-2953.
- Teng, H., Hsu, L.Y., 2000, Influence of Different Chemical Reagents on the Preparation of Activated Carbons from Bituminous Coal, *Fuel Process. Technol.*, 64, 1-3, 155-166.
- Timur, S., Kantarli, I. C., Ikizoglu, E., Yanik, J., 2006, Preparation of Activated Carbon from Oreganum Stalks by Chemical Activation, *Energ. Fuels*, 20, 2636-2641.
- Tsai, W. T., Chang, C. Y., Wang, S. Y., Chang, C. F., Chien, S.F., and Sun, H.F., 2001, Utilization of Agricultural Waste Com Cob for the Preparation of Carbon Adsorbent, *J. Environ. Sci. Heal.*, 36, 677.
- Udin, M. T., Islam, M.S., and Abedin, M.Z., 2007, Adsorption of Phenol from Aqueous Solution by Water Hyacinth Ash, *J. Eng. Appl. Sci.*, 2, 2.
- Vasu, A.E., 2008, Removal of Phenol and o-Cresol by Adsorption onto Activated carbon, *E-Journal Chem.*, 5, 2, 224-232.
- Wan Mohd Ashri, W.D., Wan Shabuddin, W.A., 2003., Comparison on Pore Development of Carbon Produced from Palm Shell and Coconut Shell., *Bioresource Technol.*, 1-7.
- Wang, J., Wu, F., Wang, M., Qiu, N., Liang, Y., Fang, S., Jiang, X., 2010, Preparation of Activated Carbon from a Renewable Agricultural Residue of Pruning Mulberry Shoot, *Afr. J. Biotechnol.*, 9, 19, 2762-2767.
- West, A.R., 1989, *Solid State Chemistry and Its Applications*, John Wiley & Sons, Singapore.
- Woodroof, J.P., 1970, *Coconuts: Production Processing Products*, Second Edition, Evi publishing Company Inc, Westport-Connecticut.
- Yakout, S.M., Sharaf El-Deen, G., 2012, Characterization of Activated Carbon Prepared by Phosphoric Acid Activation of Olive stones, *Arabian Journal Chemistry*, DOI: 10.1016/j.arabjc.2011.12.002
- Yang, T. and Lua, A. C., 2003, Characteristics of Activated Carbons Prepared from Pistachio-Nut Shells by Physical Activation , *J. Colloid and Interf. Sci.*, 267, 2, 408-417.

- Yasin, Y., Husein, M.Z., and Ahmad, F.H.J., 2007, Adsorption of Methylene Blue onto Treated Activated Carbon, *The Malaysian, J. Anal. Sci.*, 11, 11, 400-406.
- Yupeng, G., Yang, S., Yu, K., Zhao, J., Wang, Z., Xu, H., 2002, The Preparation and Mechanism Studies of Rice Husk Based porous Carbon, *Mater. Chem. and Phys.*, 74, 320-323.
- Zhang, Zhi-an., Mu, C., Yan-qing, L., Jie, L., Ye-xiang, L., 2009, Preparation and Electrochemical of Activated Carbons by Chemical-Physical Activation, *J. Cent. South Univ. Technol.*, 16, 0091-0095.
- Zhonghua, H., Vansant, E. F., 1995, A New Composite Adsorbent Produced by Chemical Activation of Elutrilithe with Zinc Chloride, *J. Colloid and Interf. Sci.*, 176, 422-431.