SINTESIS KOMPOSIT ARANG-Fe3O4 DARI PLASTIK PVC DENGAN METODE HIDROTERMAL KARBONISASI-PIROLISIS SERTA
APLIKASINYA SEBAGAI ADSORBEN ION FOSFAT
NOVER ARUMENTA SIHOT, Prof. Dr. Mudasir, M.Eng.
Universitas Gadjah Mada, 2017 | Diunduh dari http://etd.repository.ugm.ac.id/

DAFTAR PUSTAKA

Akay, G., Keskinler, B., Çakici, A., Danis, U., 1998, Phosphate Removal from Water by Red Mud Using Crossflow Microfiltration, *Water Res*., 32(3), 717-726.

Al-Salem, S.M., Lettieri, P., dan Baeyens, J., 2009, Recycling and recovery routes of plastic solid waste (PSW): a review. *Waste Manag*., 29, 2625–2643.

Andarias, I., 1991, Pengaruh Pupuk Urea dan TSP terhadap Produksi Klekap, *Tesis*, Fakultas Pascasarjana IPB, Bogor.

Andrady, A.L., 2011. Microplastics in the marine environment, *Mar*. *Pollut*. *Bull*. 62, 1596-1605.

Asip, F., Mardhiah, R., dan Husna, 2008, Uji Efektifitas Cangkang Telur dalam Mengadsorbsi Ion Fe dengan Proses Batch, *Jurnal Teknik Kimia*, 2(15).

Atkins, P. W,1997, *Kimia Fisika 2*, Erlangga, Jakarta.

Baghel, A., Singh, B., Pandey, P., Dhaked, R.K., Gupta, A.K., Ganeshan, K., dan Sekhar, K., 2006, Adsorptive Removal of Water Poisons from Contaminated Water by Adsorbents, *J*. *Hazard*. *Mater*., 137 (1), 396-400.

Bai, H.D., dan He, N., 2013, PVC Market Situation in China, *Polyvinyl Chloride*, 41 (6), 13-34.

Boeykens, S.P., Piol, M.N., Legal, L.S., Saralegui, A.B., Vazquez, C., 2017, Eutrophication decrease: Phosphate adsorption processes in presence of nitrates, *Journal of Environmental Management*, xxx,1-8.

Braun, D., 2002, Recyling of PVC, *Prog, Polym, Sci, 27 (10), 2171–2195*.

Braun, D., 2003, Poly(vinyl chloride) on the Way from the 19th Century to the 21st Century, *Journal of Polymer Science*, 42, 578-586.

carbonization and pyrolysis temperatures on pyrochar formation

Castro, A., Carneiro, C., Vilarinho, C., Soares, D., Maçães, C., Sousa, C., dan Castro, F., 2013, Study of a two steps process for the valorization of PVC-containing wastes, *Waste Biomass Valorization* 4 (1), 55–63.

Catalkopru, A.K., Kantarli, I.C., dan Yanik, J., 2017, Effects of spent liquor recirculation in hydrothermal carbonization, *Bioresource Technology*, 226, 89–93.

Chia, C.H., Sigh, B.P., Joseph, S., Graber, E.R., dan Munroe, P., 2014, Characterization of an Enriched Biochar, *J*. *Anal*. *Appl*. *Pyrolisis*., 108, 26-34.

UNIVERSITAS
GADJAH MADA
SINTESIS KOMPOSIT ARANG-Fe3O4 DARI PLASTIK PVC DENGAN METODE HIDROTERMAL KARBONISASI-PIROLISIS SERTA APLIKASINYA SEBAGAI ADSORBEN ION FOSFAT
NOVER ARUMENTA SIHOT, Prof. Dr. Mudasir, M.Eng.
Universitas Gadjah Mada, 2017 | Diunduh dari http://etd.repository.ugm.ac.id/

Climent-Llorca, M.A., Viqueira-Pe´rez, E., Vera-Almenar, G., dan Lo´pez-Atalaya, M.M., 1998, Chloride Contamination of Concrete by Interaction with PVC Combustion Gases, *Cement and Concrete Research*, 28 (2), 209-219.

Cotton, F.A., dan Wilkinson, G., 1998, *Kimia Anorganik Dasar*, UI Press, Jakarta

Darni, Yuli, 2011, Penentuan Kondisi Optimum Ukuran Partikel dan Bilangan Reynold Pada Sintesis Bioplastik Berbasis Sorgum, *Jurnal Rekayasa Kimia dan Lingkungan*, 8 (2), 1412-5064

Endo, K., dan Emori, N., 2001, Dechlorination of poly(vinyl chloride) without anomalous units under high pressure and at high temperature in water, *Polym*. *Degrad*. *Stabil*., 74, 113-117.

Font, R., Gálvez, A., Moltó, J., Fullana, A., dan Aracil, I., 2010, Formation of polychlorinated compounds in the combustion of PVC with iron nanoparticles, *Chemosphere* 78, 152–159.

Funke, A., dan Ziegler, F., 2009, Hydrothermal carbonization of biomass: a summary and discussion of chemical mechansims for process engineering, *Biofuels Bioprod*. *Bioref*. 4, 160–177.

Garlapalli, R.K., Wirth, B., dan Reza, M.T., 2016, Pyrolysis of Hydrochar from Digestate: Effect of Hydrothermal, *Bioresource Technology*, 220, 168–174.

Ghosal, P.S., dan Gupta, A.K., 2017, Determination of thermodynamic parameters from Langmuir isotherm constant-revisited, *Journal of Molecular Liquids*, 225,137–146.

Guo, S., Dong, X., Wu, T., Shi, F., dan Zhu, C., 2015, Characteristic evolution of hydrochar from hydrothermal carbonization of corn stalk, *J*. *Anal*. *Appl*. *Pyrol*., 116, 1–9.

Ho, Y.S., dan McKay, G., 1999, Pseudo Second Order Model for Sorption Process, *Process Biochem*., 34, 451–465.

Huang H., Xiao, D., Liu, J.H., Hou, L., dan Ding, L., 2015, Recovery and removal of nutrients from swine wastewater by using a novel integrated reactor for struvite decomposition and recycling, *Sci*. *Rep*., 5, 10183,

Inyang, M., Gao, B., Yao, Y., Xue, Y., Zimmerman, A.R., Pullammanappallil, P., dan Cao, X., 2012, Removal of Heavy Metals from Aqueous Solution by Biochars Derived from Anaerobically Digested Biomass, *Bioresour*. *Technol*., 110, 50-56.

Jalali, M., dan Jalali, M., 2016, Relation between Various Soil Phosphorus Extraction Methods and Sorption Parameters in Calcareous Soils with Different Texture, *Sci*. *Total Environ*., 556-557, 1080–1093.

Jamari, S.S., dan Howse, J.R., 2012, The Effect of The Hydrothermal Carbonization Process on Palm Oil Empty Fruit Bunch, *Biomass Bioenergy*, 47, 82–90.

UNIVERSITAS
GADJAH MADA
SINTESIS KOMPOSIT ARANG-Fe3O4 DARI PLASTIK PVC DENGAN METODE HIDROTERMAL KARBONISASI-PIROLISIS SERTA APLIKASINYA SEBAGAI ADSORBEN ION FOSFAT
NOVER ARUMENTA SIHOT, Prof. Dr. Mudasir, M.Eng.
Universitas Gadjah Mada, 2017 | Diunduh dari http://etd.repository.ugm.ac.id/

Jambeck, J.R., Geyer, R., Wilcox, C., Siegler, T.R., Perryman, M., Andrady, A.L., Narayan, R., dan Law, K.L., 2015, Marine pollution. *Plastic waste inputs from land into the ocean*. *Science* 347 (6223), 768‑771.

Jindo, K., Mizumoto, H., Sawada, Y., Sanches-Monodero, M.A., dan Sonoki, T., 2014, Physical and Chemical Characterization of Biochar, Derived from Different Agriculture Residues, *Biogeosciences*, 11, 6613-6621.

Kabyamela, B.M., Adschiri, T., Malaluan, R.M., dan Arai, K., 1998, Glucose and Fructose Decomposition in Subcritical and Supercritical Water : Detailed Reaction Pathway, Mechanisms, and Kinetics, *Ind*. *Eng*. *Chem*. *Res*., 38, 2888-2895.

Kaff, M.A., 2012, Eutrophication in Shallow Lakes and Water Dams, *Envirocities eMagazine*, 2, 33-35.

Kaminsky, W., dan Kim, J.S., 1999, Pyrolysis of mixed plastics into aromatics, *J*. *Anal*.*Appl*., *Pyrol*. *51 (1), 127–134*.

Kaur, K., Mor, S., dan Ravindra, K., 2016, Removal of Chemical Oxygen Demand from Landfill Leachate Using Cow-Dung as Ash a Low-Cost Adsorbent, *J*. *Colloid Interface Sci*., 469 .

Kim, M., Park, K., dan Kim, J.M., 2016, Phosphate Recovery from Livestock Wastewaterusing Iron Oxide Nanotubes, *chemical engineering research and design*, 114, 119–128.

Klapper H., 1991, *Control of Eutrophication in Inland Water [M]*. *Ellis Horwood*, Chichester, U K.

Kuhlmann, B., Arnett, E.M., dan Siskin, M., 1994. Classical organic reactions in pure superheated water. *J*. *Org*. *Chem*., 59, 3098–3101.

Kuokkanen, V., Kuokkanen, T., Ramo, J., dan Roininen, J., 2015, Removal of phosphate from wastewaters for further utilization using electro coagulation with hybrid electrodes – Techno-economic studies, *Journal of Water Process Engineering*, 8, 50–57.

Kustiawan, N.S., Zahrah, S. dan Maizar, 2014, Pemberian Pupuk TSP dan Abu Janjang Kelapa Sawit Pada Tanaman Kacang Hijau, *Jurnal RAT*, 3 (1), 395-405.

Lagergren, S., 1898, Zur theorie Der Sogenannten adsorptiongeloster stoffe, Kungliga Svenska Vetenskapsakademiens, *Handlingar*, 24, 1–39.

Largite, L., dan Pasquier, R., 2016, A Review of The Kinetics Adsorption Models and Their Application to The Adsorption of Lead by An Activated Carbon, *chemical engineering research and design*, 109 ,495–504.

UNIVERSITAS
GADJAH MADA
SINTESIS KOMPOSIT ARANG-Fe3O4 DARI PLASTIK PVC DENGAN METODE HIDROTERMAL KARBONISASI-PIROLISIS SERTA APLIKASINYA SEBAGAI ADSORBEN ION FOSFAT
NOVER ARUMENTA SIHOT, Prof. Dr. Mudasir, M.Eng.
Universitas Gadjah Mada, 2017 | Diunduh dari http://etd.repository.ugm.ac.id/

Lin, Y.H., Tseng, C.C., Wei, T.T., dan Hsu, C.T., 2011, Recycling of dual hazardous wastes in a catalytic fluidizing process, *Catal*. *Today,* 174 (1), 37–45.

Liu, Y., Yao, S., Wang, Y., Lu, H., Brar, S.K., dan Yang, S., 2017, Bio- and hydrochars from rice straw and pig manure: Inter-comparison, *Bioresource Technology*, 235, 332-337.

Lu, J., Ma, S., dan Gao, J., 2002, Study on the pressurized hydrolysis dechlorination of PVC, *Energ* Fuel, 16, 1251-1255.

McKay, G., 2002. Dioxin characterisation, formation and minimisation during municipal solid waste (MSW) incineration. *Chem*. *Engn*. *J*., 86, 343–368.

Miranda, R., Pakdel, H., Roy, C., dan Vasile, C., 2001, Vacuum pyrolysis of commingled plastics containing PVC II, Product analysis, *Polym, Degrad, Stab,* 73 (1), 47–67.

Mor, S., Chhoden, K., dan Ravindra, K., 2016, Application Of Agro-Waste Rice Husk Ash for The Removal of Phosphate from The Wastewater, *Journal of Cleaner Production*, 129, 673-680.

Mumme, J., Eckervogt, L., Pielert, J., Diakité, M., Rupp, F., dan Kern, J., 2011, Hydrothermal Carbonization of Anaerobically Digested Maize Silage, *Bioresour*. *Technol*., 102, 9255–9260.

Muslem, 2017, Karbonisasi Polivinil Klorida dan Preparasi Komposit Arang-Fe_3O_4 Sebagai Adsorben Co(II) dengan Metode Hidrotermal dan Hidrotermal-Pirolisis, *Tesis*, Porgram Studi S2 Ilmu Kimia MIPA UGM, Yogyakarta.

Nagai, N., Smith, R.L., Inomata, H., dan Arai, K., 2007, Direct observation of polyvinylchloride degradation in water at temperatures up to 500 ^oC and at pressures up to 700 MPa. *J*. *Appl*. *Polym*. *Sci*., 106, 1075–1086.

Oliveira, M., Machado, A.V., dan Nogueira, R., 2012, *Phosphorus Removal from Eutrophic Waters with an Aluminium Hybrid Nanocomposite*., *Water Air Soil Pollut*., 223(8),4831-4840.

Pengthamkeerati, P., Satapanajaru, T., dan Chularuengoaksorn, P., 2008, Chemical Modification of Coal Fly Ash for The Removal of Phosphate from Aqueous Solution., *Fuel* 87(12), 2469-2476.

Pismenskaya, N., Laktionov, E., Nikonenko, V., El Attar, A., Auclair, B., dan Pourcelly, G., 2001, Dependence of composition of anionexchange membranes and their electrical conductivity on concentration of sodium salts of carbonic and phosphoric acids, *J*. *Membr*. *Sci*., 181 (2), 185–197.

Plastics Europe, 2015, Plastics - the Facts 2015, *an Analysis of European Plastics Production, Demand and Waste Data*, Plastics Europe, Brussels, Belgium.

SINTESIS KOMPOSIT ARANG-Fe3O4 DARI PLASTIK PVC DENGAN METODE HIDROTERMAL KARBONISASI-PIROLISIS SERTA
APLIKASINYA SEBAGAI ADSORBEN ION FOSFAT
NOVER ARUMENTA SIHOT, Prof. Dr. Mudasir, M.Eng.
Universitas Gadjah Mada, 2017 | Diunduh dari http://etd.repository.ugm.ac.id/

Poerschmann, J., B., Weiner, S., Woszidlo, R., Koehler dan F.-D., Kopinke , 2015, Hydrothermal carbonization of poly(vinyl chloride), *Chemosphere,* 119, 682–689.

Purwaningrum, Pramiati, 2016, Upaya Mengurangi Timbulan Sampah Plastik di Lingkungan, *JTL,* 8 (2).

Rathod, M., Mody, K., dan Basha, S., 2014, Efficient Removal of Phosphate from Aqueous Solutions by Red Seaweed, Kappaphycus alverezii. *J. Clean. Prod.*, 84, 484-493.

Rout, P.R., Bhunia, P., dan Dash, R.R., 2014, Modeling isotherms, kinetics and understanding the mechanism of phosphate adsorption onto a solid waste: ground burnt patties, *J. Environ. Chem. Eng.*, 2 (3), 1331-1342.

Sadat-Sojai, M., dan Bakhsandesh, G. R., 2011, Recycling of PVC Wastes, *Polym. Degrad. Stab.,* 96, 404-415.

Sahwan, F.L., Djoko, Martono, D.H., Wahyono, S., dan Wisoyodharmo, L.A., 2005, Sistem Pengolahan Limbah Plastik di Indonesia, *J. Tek. Ling.* 6 (1),311-318.

Selbig, W.R., 2016, Evaluation of Leaf Removal as A Means To Reduce Nutrient Concentrations and Loads in Urban Stormwater, *Sci. Total Environ.*, 571, 124–133.

Sevilla, M., dan Fuertes, A.B., 2009, Chemical and Structural Properties of Carbonaceous Products Obtained by Hydrothermal Carbonization of Saccharides. *Chemistry*, 15, 4195–4203.

Simonin, J, 2016, On the comparison of pseudo-first order and pseudo-second order rate laws in the modeling of adsorption kinetics, *Chemical Engineering Journal*, 300, 254–263.

Sutedjo, M.M., 1996, *Mikrobiologi Tanah*, Rineka Cipta. Jakarta.

Takeshita, Y., Kato, K., Takahashi, K., Sato, Y., dan Nishi, S., 2004, Basic Study on Treatment of Waste Polyvinyl Chloride Plastics by Hydrothermal Decomposition in Subcritical and Supercritical Regions, *J. Supercrit. Fluids*, 31, 185–193.

Thitanuwat, B., Polprasert, C., dan Englande, A.J., 2016, Quantification of Phosphorus flows throughout the consumption system of Bangkok Metropolis, Thailand, *Sci. Total Environ.*, 542, 1106–1116.

Tu, Y., Peng, Z., Xu, P., Lin, H., Wu, X., Yang, L., dan Huang, J., 2017, Characterization and Application of Magnetic Biochars from Corn Stalk by Pyrolysis and Hydrothermal Treatment, *bioresources*, 12 (1), 1077-1089.

Wang, D., Xu, X., Chu, S., dan Li, Q.X., 2006, Polychlorinated naphthalenes and other chlorinated tricyclic aromatic hydrocarbons emitted from combustion of polyvinylchloride, *Journal of Hazardous Materials*, 138, 273-277.

UNIVERSITAS
GADJAH MADA
SINTESIS KOMPOSIT ARANG-Fe3O4 DARI PLASTIK PVC DENGAN METODE HIDROTERMAL KARBONISASI-PIROLISIS SERTA APLIKASINYA SEBAGAI ADSORBEN ION FOSFAT
NOVER ARUMENTA SIHOT, Prof. Dr. Mudasir, M.Eng.
Universitas Gadjah Mada, 2017 | Diunduh dari http://etd.repository.ugm.ac.id/

Wang, L., Li, A., dan Chang, Y., 2016, Hydrothermal Treatment Coupled with Mechanical Expression at Increased Temperature for Excess Sludge Dewatering: Heavy Metals, Volatile Organic Compounds and Combustion Characteristics of Hydrochar, *Chemical Engineering Journal*, 297,1–10.

Wardhana, I.W., Handayani, D.S. dan Rahmawati, D.I., 2009, Penurunan Kandungan Phosphat pada Limbah Cair Industri Pencucian Pakaian (*Laundry*) Menggunakan Karbon Aktif dari Sampah Plastik dengan Metode Batch dan Kontinyu, *TEKNIK*, 30 (2), 119-130.

Windyasmara, L., Pertiwiningrum, A. dan Yusiati, L.M., 2012, Pengaruh Jenis Kotoran Ternak Sebagai Substrat dengan Penambahan Serasah Daun Jati (*Tectona Grandis*) Terhadap Karakteristik Biogas pada Proses Fermentasi, *Buletin Peternakan*, 36 (1), 40-47.

Xiong, J., He, Z., Mahmood, Q., Liu, D., Yang, X., dan Islam, E., 2008, Phosphate Removal from Solution Using Steel Slag Through Magnetic Separation, *J. Hazard. Mater.*, 152(1), 211-215.

Xu, X., Gao, B., Wang, W., Yue, Q., Wang, Y., dan Ni, S., 2009, Adsorption of Phosphate from Aqueous Solutions onto Modified Wheat Residue: Characteristics, Kinetic And Column Studies, *Colloids Surf., B: Biointerfaces*, 70(1), 46-52.

Yang, X.E., Wu, X., Hao, H.I. dan He, Z.I., 2008, Mechanisms and assessment of water eutrophication, *J. Zhejiang Univ. Sci. B.*, 9, 197-209.

Yeom, S.H., dan Jung, K.-Y., 2009, Recycling wasted scallop shell as an adsorbent for the removal of phosphate., *J. Ind. Eng. Chem.*, 15(1), 40-44.

Yildiz, E., 2004, Phosphate Removal from Water by Fly Ash Using Crossflow Microfiltration, *Sep. Purif., Technol.*, 35 (3), 241-252.

Yu, J., Sun, L., Ma, C., Qiao, Y., dan Yao, H., 2016, Thermal Degradation of PVC: A review, *Waste Management*, 58 , 241–249.

Zhong-liang, S., Fu-Mei, L. dan Shua-hua, Y., 2011, Adsorptive removal of phosphate from aqueous solutions using activated carbon loaded with Fe(III) oxide, *New Carbon Materials*, 26 (4), 299-306.

Zhou, Y., Yin, G., Asplund, L., Qiu, Y., Bignert, A., Zhu, Z., Zhao, J., dan Bergmen, A., 2016, A novel pollution pattern: Highly chlorinated biphenyls retained in Black-crowned night heron (Nycticorax nycticorax) and Whiskered tern (Chlidonias hybrida) from the Yangtze River Delta, *Chemosphere* 150, 491-498.