UNIVERSITAS
GADJAH MADA
SINTESIS KOMPOSIT FOTOKATALIS Fe-N-TiO2/ZEOLIT-Y/NiO UNTUK PRODUKSI HIDROGEN
SIGIT PRIATMOKO, Prof. Dr. Triyono, S.U
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

DAFTAR PUSTAKA

Abdullah, M., 2009, *Pengantar Nanosains*, Penerbit ITB, Bandung.

Abe, R., 2011, Development of a New System for Photocatalytic Water Splitting into H_2 and O_2 under Visible Irradiation, *Bull. Chem. Soc. Jpn*., 84(10), 1000-1030.

Ahmed, M.A., El-Katori, E.E., and Gharni, Z.H., 2012, Photocatalytic Degradation of Methylene Blue Dye using Fe_2O_3/TiO_2 Nanoparticles Prepared by Sol-gel Method, *J. Alloys. Com.*, 553, 19-29.

Akpan, U.G and Hameed, B.H., 2010, Review: The Advancements in Sol-Gel Method of Doped-TiO_2 Photocatalysts, *App. Catal. A.*, 375, 1-11.

Ali, T., Tripathi, P., Azam, A., Raza, W., Ahmed, A.S., Ahmed, A., and Muneer, M., 2017, Photocatalytic Performance of Fe-doped TiO_2 Nanoparticles Under Visible-light Irradiaton, *Mater. Res. Express.*, 1-12.

Alkaim, A.F., Aljeboree, A.M., Alrazaq, N.A., Baqir, S.J., Hussein, F.H., and Lilo, A.J., 2014, Effect of pH on Adsorpstion and Photocatalytic Degradation Efficiency of Different Catalysis on Removal of Methylene Blue, *Asian J. Chem.*, 24, 8445-8448.

Ameta, A., Bhati, I., Ameta, R. and Ameta, S.C., 2010, *Indo. J. Chem.*, 10(1), 20-25.

Anandan, S and Yoon, M., 2003, Review: Photocatalytic Activities of the Nano-sized TiO_2-supported Y-zeolites, *J. Photochem. Photobiol. C*., 4, 5-18.

Anpo, M. and Takeuchi, M., 2003, The Design and Development of Highly Reactive Titanium Oxide Photocatalysts Operating under Visible Light Irradiation, *J. Catal.*, 216, 505-516.

Ansari, S.A., Khan, M.M., Ansari, M.O., and Cho, M.H., 2016, Nitrogen-doped Titanium Dioxide (N-doped TiO_2) for Visible Light Photocatalysis, *New J. Chem*., 40, 3000-3009

Asahi, R., Morikawa, I., Ohwaki, T., Aoki, K. and Taga, Y., 2001, Visible-Light Photocatalysis in Nitrogen-doped Titanium Dioxide, *Science*, 293, 269-271.

Barbero, N., and Vione., D., 2016, Why Dyes Should not be Used to Test the Photocatalytic Activity of Semiconductor Oxides, *Environ. Sci. Technol.*, 50, 2130-2131.

UNIVERSITAS
GADJAH MADA
SINTESIS KOMPOSIT FOTOKATALIS Fe-N-TiO2/ZEOLIT-Y/NiO UNTUK PRODUKSI HIDROGEN
SIGIT PRIATMOKO, Prof. Dr. Triyono, S.U
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

Barboux-Doeuff, S. and Sanchez, C., 1994, Synthesis and Characterization of Titanium Oxide-based Gels Synthesized From Acetate Modified Titanium Butoxide Precursors, *Mat. Res. Bull*., 29, 1-13.

Bard, A.J. and Fox, M.A, 1995, Artificial Photosynthesis: Solar Splitting of Water to Hydrogen and Oxygen, *Acc. Chem. Res.*, 28, 141-145.

Bell, S.J., 2011, The Effect of Light Intensity and Temperature on Photocatalytic Water Splitting, *Dissertation*, Faculty of Built Environment and Engineering, Queensland University of Technology.

Bharti, B., Barnas, P.B., umar, R., 2015, XRD Analysis of Undoped and Fe doped TiO_2 Nanoparticles by Williamson-Hall Method, *AIP. Conf. Proc*., 1675, 030025.

Borse, P.H., Cho, C.R., Lim, K.T., Bae, J.S., Jeong, E.D., Hong, T.E., Kim, H.J. and Kim, H.G., 2011, Effect of co-doped Ratio (Cr/Fe) on Visible Light Photocatalytic Activity of Cr-Fe co-doped TiO_2 nanoparticles, *J. Ceram. Process. Res.*, 12(5), 592-598.

Brinker, C. J. and Scherer, G.W., 1990, *The Physics and Chemistry of Sol-Gel Science*, Academic Press., New York.

Budee, S., 2009, Photocatalytic Studies of Cr (III) and Fe (III) Doped Amorphous TiO_2 Powder, *Thesis*, Prince of Songkhla University, Chang Wat Songkhla.

Budee, S., Wongnawa, S., Sirimahacgai, U. and Puetpaibool, W., 2011, Recycle UV and Visibble Light Photocatalytically Active Amorphous TiO_2 Doped With M (III) Ions (M = Cr and Fe), *Mater. Chem. Phys.*, 126, 167-177.

Cao, Y., Yang, W., Zhang, W., Liu, G. and Yue, P., 2004, Improved Photocatalitic Activity of Sn^{4+} doped TiO_2 Nanoparticulate Films Prepared by Plasma-enhanced Chemical Vapour Deposition, *New J. Chem.*, 26, 218-222.

Chao, R.E., 1974, Thermochemical Water Decomposition Processes, *Ind. Eng. Chem., Prod. Res. Develop.*, 13(2), 94-101.

Chen, B., Haring, A.J., Beach, J.A., Li, M., Douctete, G.S., Morris, A.J., Moore, R.B. and Priya, S., 2012, Visible Light Induced Photocatalytic Activity of Fe^{3+}/Ti^{3+} co-Doped TiO_2 Nanostructures, *RSC Adv*., ,4, 18033-18037

Chen, H., Matsumoto, A., Nishimiya, N. and Tsutsumi, K., 1999, Preparation and Chacarterization of TiO_2 Incorporated Y-zeolite, *Colloids Surf. A.*, 157, 295-305.

UNIVERSITAS
GADJAH MADA
SINTESIS KOMPOSIT FOTOKATALIS Fe-N-TiO2/ZEOLIT-Y/NiO UNTUK PRODUKSI HIDROGEN
SIGIT PRIATMOKO, Prof. Dr. Triyono, S.U
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

Chen, X., and Mao, S., 2007, Titanium Dioxide Nanomaterials: Synthesis, Properties, Modification, and Apllication, *Chem. Rev*., 7, 2891-2959.

Chen, X., Shen, S., Guo, L. and Mao, S.S., 2010, Semiconductor-based Photocatalytic Hydrogen Generation, *Chem. Rev*., 110, 6503-6570.

Chiarello, G.L,. Myriam H.A. and Elena, S., 2010, Hydrogen Production by Photocatalytic Steam Reforming of Methanol on Noble Metal-modified TiO_2. *J. Catal.*, 273, 182-190.

Chiarello, G.L., Selli, L., Forni, E., 2008, Photocatalytic Hydrogen Production Over Flame Spray Pyrolysis-synthesised TiO_2 and Au/TiO_2, *App. Catal. B.*, 84, 332-339.

Chica, A., 2013, Review Article Zeolites: Promised materials for The Sustainable Production of Hydrogen, *ISRN Chem. Eng.*, 2013, 1-20.

Choi, J., 2010. Development of Visible-Light-Active Photocatalyst for Hydrogen Production and Enviromental Application, *Dissertation*, California Institute of Technology.

Choi, W., Termin. A. and Hoffmann, M.R., 1994, The Role of Metal Ion Dopant in Quantum-Sized TiO_2: Correlation between Photoreactivity and Charge Carrier Recombination Dynamics, *J. Phys. Chem.*, 98, 13669-13679.

Chong, M.N., Tneu, Z.Y., Poh, P.E., Jin, B., and Aryal, R., 2014, Synthesis, Charactherisation and Application of TiO_2-zeolite Nanocomposites for the Advanced Treatment of Industrial Dye, *J. Taiwan Inst. Chem. Eng.*, 1-9.

Chou, C.S., Lin, Y.J, Yang, R.Y, and Liu, K.H., 2011, Preparation of TiO_2/NiO Composite Particles and Their Applications in Dye-sensitized Solar Cells, *Adv. Powder Technol.*, 22, 31-42.

Cong, Y., Zhang, J., Chen, F. and Anpo, M., 2007, Synthesis and Characterization of Nitrogen-Doped TiO_2 Nanophotocatalyst with High Visible Light Activity, *J. Phys. Chem. C.*, 111, 6976-6982.

Cong, Y., Zhang, J., Chen, F., Anpo, M. and He, D., 2007, Preparation, Photocatalytic Activity and Mechanism of Nano-TiO_2 co-doped With Nitrogen and Iron (III), *J. Phys. Chem. C.*, 111, 10618-10623.

Coronado-Reyes, D., Rodrìguez-Gattorno, G., Espinosa-Pespeueira, M.E., Cab. C., de Coss, R. and Oskam, G., 2008, Phase-pure TiO_2 Nanoparticles: Anatase, Brookit and Rutile, *Nanotechnol.*, 19.

UNIVERSITAS
GADJAH MADA
SINTESIS KOMPOSIT FOTOKATALIS Fe-N-TiO2/ZEOLIT-Y/NiO UNTUK PRODUKSI HIDROGEN
SIGIT PRIATMOKO, Prof. Dr. Triyono, S.U
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

Cosa, G., Galletero, M.S., Fernandez, L., Marquez, F., Garcia, H. And Scaiano, J.C., 2002, Tuning the Photocatalytic Activity of Titanium Dioxide by Encapsulation Inside Zeolites Exemplified by the Cases of Thanthrene Photooxigenation and Horseradish Peroxidase Photodeactivation, *New J. Chem.*, 26, 1448-1455.

Das, S.,K., and Dutta, P., K., 1998, Synthesis and Characterization of a Ruthenium Oxide-zeolite Y Catalyst for Photochemical Oxidation of Water to Dioxigen, *Microporous Mesoporous Mater.*, 22, 475-483.

Devi, L.G. and Kumar, S.G., 2011, Influence of Physicochemical-electronic Properties of Transition Metal Ion Doped Polycrystalline Titania on The Photocatalytic Degradation of Indigo Carmine and 4-Nitrophenol Under UV/solar Light, *App. Surf. Sci.*, 257, 2779-2790.

Diebold, U., 2003, The Surface Science of Titanium Dioxide, *Surf. Sci. Rep.*, 48, 53-229.

Dolat, D., Mozia, S., Ohtani, B. and Morawski, A.W., 2013, Nitrogen, Iron-Single Modified (N-TiO_2, Fe-TiO_2) and co-modified (Fe, N-TiO_2) Rutile Titanium Dioxide as Visible-Light Active Photocatalysts, *Chem. Eng. J.*, 225, 358-364.

Dolat, D., Ohtani, B., Mozia, S., Moszyński, D., Guskos, N., Lendzion-Bieluń, Z. and Morawski, A.W., 2014, Preparation, Characterization and Charge Transfer Studies of Nickel-modified and Nickel, Nitrogen co-modified Rutile Titanium Dioxide for Photocatalytic Application, *Chem. Eng. J.*, 239, 149-157.

Domen, K., Kondo, J.N., Hara, M. and Takata, T., 2000, Photo-and Mechano-Catalytic Overall Water Splitting Reactions to form Hydrogen and Oxygen on Heterogeous Catalysts, *Bull. Chem. Soc. Jpn.*, 73, 1307-1331.

Domen, K., Kudo, A., Onishi, T., 1986, Photocatalytic Decomposition of Water Into H_2 and O_2 over NiO-$SrTiO_3$ Powder. 1. Structure of the Catalyst, *J. Phys. Chem.*, 90, 292-295.

Domen, K., Naito, S., Onishi, T. and Tamaru, K., 1982, Photocatalytic Decomposition of Liquid Water on A NiO-SrO_3 Catalyst, *Chem. Phys. Lett.*, 92, 4.

Dubey, N., Labhsetwar, N.K., Devotta, S. and Rayalu, S.S., 2007, Hydrogen Evolution by Water Splitting Using Novel Composite Zeolite-based Photocatalyst, *Catal. Today*, 129, 428-434.

UNIVERSITAS
GADJAH MADA
SINTESIS KOMPOSIT FOTOKATALIS Fe-N-TiO2/ZEOLIT-Y/NiO UNTUK PRODUKSI HIDROGEN
SIGIT PRIATMOKO, Prof. Dr. Triyono, S.U
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

Dubey, N., Rayalu, S.S., Labhsetwar, N.K., naidu, R.R., Chatti, R.V. and Devotta, S., 2006, Photocatalytic Properties of Zeolite-based Materials for The Photoreduction of Methyl Orange, *App. Catal*., 303, 152-157.

Dyer, A., 1988, *An Introduction to Zeolite Molecular Sieves*, John Wiley and Sons Ltd., Chicester.

Factorovich, M., Guz, L. and Candal, R., 2011, Research Article N-TiO_2: Chemical Synthesis and Photocatalysis, *Adv. Phys. Chem.*, 2011, Article ID 821204.

Frank, S.N. and Bard, A.J., 1977, Heterogenous Photocatalytic Oxidation of Cyanide and Sulfite in Aqueous Solutions at Semiconductor Powder, *J. Phys. Chem.*, 81, 15.

Fujishima, A. and Honda, K., 1972, Electrochemical Photolysis of Water at A Semiconductor Electrode, *Nature*, 238(5358), 37.

Fujishima, A., Rao, T.N. and Tryk, D.A., Titanium Dioxide Photocatalyst, *J. Photochem. Photobiol. C.*, 1, 1-21.

Fujishima, A., Zhang X. and Tryk, D.A., 2008, TiO_2 Photocatalysis and Related Surface Phenomena, *Surf. Sci. Rep.*, 63, 515-582.

Fujita, S., Kawamori, H., Honda, D., Yoshida, H., and Arai, M., 2016, Photocatalitic Hydrogen Production from Aqueous Glyserol Solution Using NiO/TiO_2 catalysts: Effects of Preparation and Reaction Conditions, *App. Catal. B.*, 181, 818-824.

Gaspell, G. and Manivannan, A., 2005, Sol-Gel Synthesis and Magnetic Studies of Titanium Dioxide Doped with 10% M (M=Fe, Mn and Ni), *J. Cluster Sci.*, 16, 4.

George, S., Pokhrel, S., Ji, Z., Henderson, B.L., Xia, T., Li, L.J., Zink, J.I., Nel, A.E., and Madler, L., 2011, Role of Fe Doping in Tuning the Band Gap of TiO_2 for Photooxidation Induced Cytotoxicity Pardigm, *J. Am. Chem. Soc.*, 133 (29): 11270-11278.

Gnanaprakasam, A., Sivakumar, V.M., and Thirumarimurugan, M., 2015, Influencing Parameters in the Photocatalytic Degradation of Organic Effluent via Nanometal Oxide Catalyst: A Review, *Indian J. Mater. Sci.*, 3, 1-16.

UNIVERSITAS
GADJAH MADA
SINTESIS KOMPOSIT FOTOKATALIS Fe-N-TiO2/ZEOLIT-Y/NiO UNTUK PRODUKSI HIDROGEN
SIGIT PRIATMOKO, Prof. Dr. Triyono, S.U
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

Gombac, V., De-Rogatis, L., Gasparotto, A., Vicario, G., Montini, T., Barreca, D., Balducci, G., Fornasiero, P., Tondello, E. and Graziani, M., 2007, TiO_2 nanopowders Doped with Boron and Nitrogen for Photocatalytic Applications, *Chem. Phys.*, 339, 111-123.

Guo, Y., Zu, B. and Dou, X., 2013, Zeolite-based Photocatalyst: A Promising Strategy for Efficient Photocatalysis, *J. Termodyn. Catal*., 4, 2.

Gupta, N., and Pal, B., 2013, Photocatalytic Activity of Transition Metal Ions Impregnated TiO_2 Nanostructures for Iodide Oxidation to Iodine Formation, *J. Mol. Catal. A.*, 371, 48-55.

Gupta, S.M. and Tripathi, M., 2011, A Review of TiO_2 Nanoparticles, *Chin. Sci. Bull.*, Vol. 56(16), 1639-1657.

Gurkan, Y.Y., Turkten, N., Hatipoglu, A. and Cinar, Z., 2012, Photocatalytic Degradation of Cefazolin over N-doped TiO_2 under UV and Sunlight Irradiation: Prediction of The Reaction Paths via Conceptual DFT, *Chem. Eng. J*., 184, 113-124.

Han, C., Shao, Q., Lei, J., Zhu, Y., and Ge, S., 2017, Preparation of NiO/TiO_2 *p-n* Heterojunction Composite and Its Photocathodic Protection Properties for 304 Stainless Steel Under Simulated Solar Light, *J. Alloys Compd*., 17, 30403-6.

Hanaor, D.A.H and Sorrell, C.C., 2011, Review of The Anatase to Rutile Phase Transformation, *J. Mater. Sci.*, 46, 855 – 874.

Hanaor, D.A.H., Assadi, M.H.N., Li, S., Yu, A., and Sorrell, C.C., 2012, Ab Initio Study of Phase Stability in Doped TiO_2, *Comp. Mech*., 50(2), 185-194.

Hao, H. and Zhang, J., 2009, The Study of Iron (III) and Nitrogen co-doped Mesoporous TiO_2 Photocatalysts: Synthesis, Characterization and Activity, *Microporous Mesoporous Mater*., 121, 52-57.

Hashimoto, S., 2003, Review Zeolite Photochemistry: Impact of Zeolites on Photochemistry and Feedback from Photochemistry to Zeolite Science, *J. Photochem. Photobiol. C.*, 4, 19-49.

Hassan, H., and Hameed., B.H., 2011, Oxidative Decolorization of Acid Red 1 Solutions by Fe-zeolite Y Type Catalyst, *Desalination*, 276, 45-52.

Hermawan, P., Pranowo, H.D. and Kartini, I., 2011, Physical Characterization of Ni (II) Doped TiO_2 Nanocrystal by Sol-gel Process, *Indo. J. Chem.*, 11(2), 135-139.

UNIVERSITAS
GADJAH MADA
SINTESIS KOMPOSIT FOTOKATALIS Fe-N-TiO2/ZEOLIT-Y/NiO UNTUK PRODUKSI HIDROGEN
SIGIT PRIATMOKO, Prof. Dr. Triyono, S.U
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

Hisatomi, T., Minegishi, T. and Domen, K., 2012, Kinetic Assessment and Numerical Modeling of Photocatalytic Water Splitting Toward Efficient Solar Hydrogen Production, *Bull. Chem. Soc. Jpn*., 85(6), 647-655.

Hoffmann, M.R., Martin, S.C., Choi, W. and Bahnemann, D.W., 1995, Enviromental Applications of Semiconductor Photocatalysis, *Chem. Rev.*, 95, 69-96.

Hondow, N.S., Chou, Y.-H., Sader, K., Brydson, R., Douthwaite, R.E., 2010, Semiconductor-Metal Composites: The Role of Ion Migration and Alloy Formation on the Stability of Core Shell Cocatalysts for Photoinduced Water Splitting, *J. Phys. Chem. C*., 114, 22758–22762.

Hong, X., Wang, Z. and Cai, W., 2005, Visible Light Activated nanoparticle Photocatalysts of Iodine-Doped Titanium Dioxide, *Chem. Mater*., 17, 1548-1552.

Hsu, B.-C., 2009, Preparation, Characterization and Visible-light Responsive Photocatalytic Activity of Iron/Nitrogen Doped Titanium Dioxide Nanocrystalline, *Dissertation*, National Taipei University of Technology.

Hu, C.-C and Teng, H., 2010, Structural Features of p-type Semiconducting NiO as a co-Catalyst for Photocatalytic water Splitting, *J. Catal*., 272, 1-8.

Hu, Y., Tsai, H.-L. and Huang, C.-L., 2003, Effect of Brookit Phase on Anatas-Rutile Transition in Titania Nanoparticles, *J. The Eur. Ceram. Soc.*, 23, 691-696.

Huang, K., Xiong, L.C. and Liao, M., 2012, Research Article Preparation and Characterization of Visible-Light-Activated Fe-N Co-doped TiO_2 and Its Photocatalytic Inactivation Effect on Leukimia Tumors, *Int. J. Photoenergy*, 2012, Article ID 631435.

Huang, M., Xu, C., Wu, Z., Huang, Y., Lin, J. and Wu, J., 2008, Photocatalytic Discolorization of Methyl Orang Solution by Pt Modified TiO_2 Loaded on Natural Zeolite, *Dyes and Pigm.*, 77, 327-334.

Humayun, H., Raziq, F., Khan, A., and Luo, W., 2018, Modification Strategies of TiO_2 for Potential Applications in Photocatalysis: Critical Review, *Green Chem. Lett. Rev.*, 11:2, 86-102.

Ichiura, H., Kitaoka, T. and Tanaka, H., 2003, Preparation of Composite TiO_2-Zeolite Sheets Using a Papermaking Technique and Their Application to Enviromental Improvement, *J. Mater. Sci*., 38, 1611-1615.

UNIVERSITAS
GADJAH MADA
SINTESIS KOMPOSIT FOTOKATALIS Fe-N-TiO2/ZEOLIT-Y/NiO UNTUK PRODUKSI HIDROGEN
SIGIT PRIATMOKO, Prof. Dr. Triyono, S.U
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

Ihara T, Miyoshi, M., Triyama, Y., Marsumato, O. and Sugihara, S., 2003, Visible-light-active Titanium Oxide Photocatalyst Realized by an Oxygen-deficient Structure and by Nitrogen Doping, *Appl. Catal. B.*, 42, 403-409.

Irie, H., Watanabe, Y. and Hashimoto, K., 2003, Carbon-doped Anatas TiO_2 Powders as a Visible-Light Sensitive Photocatalyst, *Chem. Lett.*, 32, 8.

Ismail, A.A., and Bahnemann, D.W., 2014, Photochemical Splitting of Water for Hydrogen Production by Photocatalysis: A Review, *Sol. Energy Mater. Sol. Cells*, 128, 85-101.

Jafari, S., Investigation of Adsorption of Dyes Onto Modified Titanium Dioxide, 2016, *Dissertation*, Mikkeli University Consortium, Mikkeli, Finland.

Jiang, C., Lee, K.Y., Parlett, C.M.A., Bayazit, M.K., Lau, C.C., Ruan, Q., Moniz, S.J.A., Lee, A.F., and Tang, J., 2015., Size-controlled TiO_2 Nanoparticles on Porous Hosts for Enhanced Photocatalystic Hydrogen Production, *App. Catal. A.*, 1-3.

Jing, D., Zhang, Y. and Guo, L., 2005, Study on The Synthesis of Ni doped Mesoporous TiO_2 and its Photocatalytic Activity for Hydrogen Evolution in Aqueous Methanol Solution, *Chem. Phys. Lett*., 415, 74-78.

Joshi, K.M., Patil, B.N. and Shrivastava V.S., 2011, Preparation, Characterization and Applications of Nanostructure Photocatalysts, *Arch. App. Sci. Res.*, 3(2), 596-605.

Keshmiri, M., Troczynski, T. and Mohseni, M., 2006, Oxidation of Gas Phase Trichloroethylene and Toluene Using Composite Sol-gel TiO_2 Photocatalytic Coatings, *J. Hazard. Mater.*, 128, 130-137.

Khan, H., and Swati, I.K., 2016, Fe^{3+}-doped Anatase TiO_2 with d-d Transition, Oxygen Vacancies and Ti^{3+} Centres: Synthesis, Characterization, UV/vis Photocatalytic and Mechanistic Studies, *Ind. Eng. Chem. Res.*, 2-23.

Khan, M.A., Woo, S.I., and Yang, O.B., 2008, Hydrothermally Stabilized Fe(III) Doped Titania Active Under Visible Light for Water Splitting Reaction, *Int. J. Hydrogen Energy*, 33, 5345-5351.

Kim, T.H., Gonzalez-R, V., Gyawali, G., Cho, S-H., Sekino, T., and Lee, S-W., 2012, Synthesis of Solar Light Responsive Fe, N co-doped TiO_2 Photo-catalyst by sonochemical method, http://dx.doi.org/j.cattod.2012.09.014

UNIVERSITAS
GADJAH MADA
SINTESIS KOMPOSIT FOTOKATALIS Fe-N-TiO2/ZEOLIT-Y/NiO UNTUK PRODUKSI HIDROGEN
SIGIT PRIATMOKO, Prof. Dr. Triyono, S.U
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

Kibasomba, P.M., Dhlamini, S., Maaza, M., Liu, C.P., Rashad M.M., Rayan, D.A., and Makikunga, B.W., 2018, Strain and Grain Size of TiO_2 Nanoparticles from TEM, Raman Spectroscopy and XRD: The Revisiting of Williamson-Hall plot Method, *Results in Phys.*, 9, 628-635.

Korosi, A. and Dekany, L., 2006, Preparation and Investigation of Structural and Photocatalytic Properties of Phosphate Modified Titanium Dioxide, *Colloids Surf. A*, 280, 146-154.

Kudo, A. and Miseki, Y., 2009, Heterogenous Photocatalyst for water Splitting, *Chem. Soc. Rev.*, 38(1), 253-78.

Kudo, A., 2006, Development of Photocatalyst Materials for Water Splitting, *Int. J. Hydrogen Energy*, 31, 197-202.

Kudo, A., Domen, K., Maruya, K. and Onishi, T., 1987, Photocatalytic Activities of TiO_2 Loaded With NiO, *Chem. Phys. Lett.*, 133, 6.

Kudo, A., Tanaka, A., Domen, K., Maruya, K., Aika, K. and Onishi, T., 1988, Photocatalytic Decomposition of Water over NiO-$K_4Nb_6O_{17}$ Catalyst, *J. Catal*., 111, 67-76.

Kumar, A., and Pandey, G., 2017, A Review on the Factors Affecting the Photocatalytic Degradation of Hazardous Materials, *Material Sci. Eng. Int. J*, 1 (3), 18.

Kuvarega, A.T., Krause, R.W.M., and Mamba., B.B., 2014, Comparasion Between Base Metals and Platinum Group Metals in Nitrogen, M Codoped TiO_2 (M = Fe, Cu, Pd, Os) for Photocatalytic Removal of Organic Dye in Water, *J. Nanomater*., 1-12.

Kuwahara Y., Ohmichi, T., Mori, K., Katayama, I. and Yamashita H., 2008, Synthesis of Zeolite from Steel Slag and its Application as a Support of Nano-sized TiO_2 Photocatalyst, *J. Mater. Sci.*, 43, 2407-2410.

Kuwahara, Y. and Yamashita, H., 2010, Efficient Photocatalytic Degradation of Organics Diluted in Water and Air using TiO_2 Designated with Zeolites and Mesoporous Silica Materials, *J. Mater. Chem*., 21, 2407-2416.

Landmann, M., Rauls, E. and Schmidt, W.G., 2012, The Electronic Structure and Optical Response of Rutile, Anatase and Brookite TiO_2, *J. Phys.: Condens. Matter.*, 24 (19).

Li, K., Wang, H., Pan, C., Wei, J., Xiong, R. and Shi, J., 2012, Enhanced Photoactivity of Fe + N Codoped Anatas-Rutile TiO_2 Nanowire Film under Visible-light Irradiation, *Int. J. Photoenergy*, 398508.

UNIVERSITAS
GADJAH MADA
SINTESIS KOMPOSIT FOTOKATALIS Fe-N-TiO2/ZEOLIT-Y/NiO UNTUK PRODUKSI HIDROGEN
SIGIT PRIATMOKO, Prof. Dr. Triyono, S.U
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

Li, M., Li, Y., Peng, S., Lu, G., Li, S., 2009, Photocatalytic Hydrogen Generation Using Gliserol Wastewater Over Pt/TiO_2, *Front. Chem. China*, 4, 32-38.

Li, W., Wang, Y., Lin, H., Shah, S.I., Huang, C.-P., Doren, D.J., Rykov, S.A., Chen, J.-G., and Barteau, M.A., 2003, Band Gap Tailoring of Nd^{3+}-doped TiO_2 Nanoparticles, *Appl. Phys. Lett.*, 83, 4143-4145.

Li, X., Chen, Z., Shi, Y. and Liu, Y., 2011, Preparation of N, Fe co-doped TiO_2 With Visible Light Response, *Powder Technol.*, 207, 165-169.

Li, Y., Chen, J., Liu, J., Ma, M. and Li, L., 2010, Activated Carbon Supported TiO_2-photocatalysis Doped with Fe^{3+} Ions for Continuous Treatment of Dye Wastewater in a Dynamic Reactor, *J. Environ. Sci*., 22, 1290-1296.

Li, Y., Peng, S., Jiang, F., Lu, G. and Li, S., 2007, Effect of doping TiO_2 with alkaline-earth metal ions on its photocatalytic activity, *J. Serb. Chem. Soc*., 72(4), 393-402.

Liao, C.-H., Huang, C.-W. and Wu, J.C.S., 2012, Review Hydrogen Production from Semiconductor-based Photocatalysis via Water Splitting, *Catal.*, 2, 490-516.

Lin, C.-P., Chen, H., Nakaruk, A., Koshy, P., Sorell, C.C., Effect of Annealing Temperature on the Photocatalytic Activity of TiO_2 Thin Films, *Energy Procedia*, 34, 627-636.

Lin, Y.-T., Weng, C.-H., Hsu, H.-J., Lin, Y.-H. and Shiesh, C.-C., 2013, Research Article: The Sinergistic Effect of Nitrogen Dopant and Calcination Temperature on the Visible-Light-Induced Photoactivity of N-Doped TiO_2, *Int. J. Photoenergy*, 2013, Article ID 268723.

Lipman, T., 2011, *An Overview of Hydrogen Production and Storage Systems with Renewable Hydrogen Case Studies*, A Clean Energy States Alliance Report, United States.

Liu, G., Sun, C., Cheng, L., Jin, Y., Lu, H., Wang, L., Smith, S.C., Lu, G.Q. and Cheng, H.-M, 2009, Efficient Promotion of Anatase TiO_2 Photocatalysis via Bifunctional Surface-Terminating Ti-O-B-N Structure, *J. Phys. Chem. C*, 113, 12317-12324.

Liu, X., Lu, K.-K. and Thomas, J.K., 1992, Encapsulation of TiO_2 in Zeolite Y, *Chem. Phys. Lett.*, 195, 2-3, 163-168.

Livage, J., Henry, M. and Sanchez, C., 1988, Sol-Gel Chemistry of Transition Metal Oxides, *Prog. Solid State. Chem*., 18, 259-341.

UNIVERSITAS
GADJAH MADA
SINTESIS KOMPOSIT FOTOKATALIS Fe-N-TiO2/ZEOLIT-Y/NiO UNTUK PRODUKSI HIDROGEN
SIGIT PRIATMOKO, Prof. Dr. Triyono, S.U
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

Luo, N., Jiang, Z., Shi, H., Chao, F., Xiao, T., and Edwards, P.P., 2009, Photo-catalytic Conversion of Oxygenated Hydrocarbons to Hydrogen over Heteroatom-doped TiO_2 Catalysts, *Int. J. Hydrogen Energy*, 34, 125-129.

Long, R. and English, N.J., 2010, Synergistic Effects on Band Gap-narrowing in Titania by codoping from First-Principles Calculations, *Chem. Mat.*, 22(5), 1616-1623.

Maeda, K., and Domen, K., 2007, New Non-Oxide Photocatalysts Designed for Overall water Splitting under Visible Light, *J. Phys. Chem.*, 22, 7851-7861.

Mahadwad, O.K., Parikh, P.A., Jasra, R.V. and Patil, Photocatalytic Degradation of Reactive Black-5 Dye using TiO_2 Impregnated ZSM-5, *Bull. Mater. Sci*, 34(3), 551-556.

Masahiko, S., Niwa, M. and Murakami, Y., 1990, Relationship Between Acid Amount and Framework Aluminium Content in Modernite, *Zeolites*, 10, 532-538.

Melgoza, D., Hernandez-Ramirez, A., and Peralta-Hernandez, J.M., 2008, Comparative Efficiencies of the Decolourisation of Methylene Blue using Fenton's and Photo-Fenton's Reactions, *J. Photochem. Photobiol. Sci.*, 8, 596-599.

Mills, A., 2012, An Overview of the Methylene Blue ISO test for Assessing the Activities of Photocatalytic Films, *App. Catal. B.*, 28, 144-149.

Momirlan, M. and Vezirog, T., 1999, Review: Recent directions of world hydrogen production, *J. Renewable and Sustainable Energy*, 3, 219-231.

Moon, S.C., Mametsuka, H., Tabata, S. and Suzuki, E., 2000, Photocatalytic Production of Hydrogen from Water Using TiO_2 and B/TiO_2, *Catal. Today*, 58, 125-132.

Morikawa, T., Asahi, R., Ohwaki, T., Aoki, K. and Taga, Y., 2001, Band-gap Narrowing of Titanium Dioxide by Nitrogen Doping, *Jpn. J. Appl. Phys.*, 40, 561-563.

Motahari, F., Mozdianfard M.R., Soofivand, F. and Niasari, M.S., 2013, NiO Nanostructures: Synthesis, Characterization and Photocatalyst Application in Dye Pollution Wastewater Treatment, *RSC Adv.*, 4, 27654-27660.

Mote, V.D., Purushotham, Y., Dole, B.N., 2012, Williamson-Hall Analysis in Estimation of Lattice Strain in Nanometer-size ZnO Particles, *J. Theor. Appl. Phys.*, 6, 6.

UNIVERSITAS
GADJAH MADA
SINTESIS KOMPOSIT FOTOKATALIS Fe-N-TiO2/ZEOLIT-Y/NiO UNTUK PRODUKSI HIDROGEN
SIGIT PRIATMOKO, Prof. Dr. Triyono, S.U
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

Muggli, D.S., McCue, J.T. and Falconer, J.L., 1998, Mechanism of the Photocatalytic Oxidation of Ethanol on TiO_2, *J. Catal.*, 173, 470-483.

Nasralla, N., Yeganeh, M., Astuti, Y., Piticharoenphun, S., Shahtahmasebi, N., Kompany, A., Karimipour, M., Mendis, B.G., Poolton, N.R.J. and Šiller, L., 2013, Structural and Spectroscopic Study of Fe-doped TiO_2 nanoparticles Prepared by Sol-Gel Method, *Sci. Iran. F*, 20(3), 1018-1022.

Ni, M., Leung, M.K.H., Leung, D.Y.C. and Sumathy, K., 2007, A Review and Recent Developments in Photocatalytic Water-splitting Using TiO_2 for Hydrogen Production, *Renewable and Sustainable Energy Rev.*, 11, 401-425.

Nikazar, M., Gholivand, K. and Mahanpoor, K., 2007, Using TiO_2 Supported on Clinoptilolite as a Catalyst for Photocatalytic Degradation of Azo Dye Disperse Yellow 23 in Water, *Kinet. Catal.*, 48(2), 230-236.

Nolan, N.T., 2010, Sol-Gel Synthesis and Characterization of Novel Metal Oxide Nanomaterials for Photocatalytic Application, *Dissertation*, Dublin: Dublin Institute of Technology.

Nolan, N.T., Pillai, S. and Seery, M.K., 2011, Spectroscopic Investigation of the Anatase-to-Rutile Transformation of Sol-Gel Synthesised TiO_2 Photocatalysts, *J. Phys. Chem. C*, 113, 16151-16157.

Oberhofer, H., and Reuter K., 2013, First-principles Thermodynamic Screening Approach to Photo-catalytic Water Splitting with co-catalysts, *J. Chem. Phys*. 139, 044710.

Ohno, T., Mitsui, T. and Matsumura, M., 2003, Photocatalytic Activity of S-doped TiO_2 Photocatalyst under Visible Light, *Chem. Lett.*, 32, 364-365.
Optical Response of Rutile, Anatase, and Brookite TiO_2, *J. Phys. Condens. Mater*., 195503.

Osterloh, F.E., 2007, Inorganic Materials as Catalysts for Photochemical Splitting of Water, *Chem. Mater*., 20, 35–54.

Pan, X., Yang, M.-Q., Fu, X., Zhang, N. and Xu, Y.-J., 2013, Defective TiO_2 With Oxygen Vacancies: Synthesis, Properties and Photocatalytic Apllications, *Nanoscale*, 5, 3601-3614.

Patsoura, D.I., Kondarides, X.E. and Verykios, 2006, Enhancement of Photoinduced Hydrogen Production from Irradiated Pt/TiO_2 Suspensions with Simultaneous Degradation of Azo-dyes, *App. Catal. B.*, 64.

UNIVERSITAS
GADJAH MADA
SINTESIS KOMPOSIT FOTOKATALIS Fe-N-TiO2/ZEOLIT-Y/NiO UNTUK PRODUKSI HIDROGEN
SIGIT PRIATMOKO, Prof. Dr. Triyono, S.U
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

Pelaez, M., Nolan, N.T., Pillai, S., Seery, M., Kontosd, A.G., Falaras, P., Dunlop, P.S.M., Hamiltone, J.W.J., Byrnee, J.A., O'Shea, K., Entezari, M.H. and Dionysioua, D.D., 2012, A Review on the Visible Light Active Titanium Dioxide Photocatalysts for Enviromental Applications, *App. Catal. B.*, 125, 331-349.

Peter, A., Mihaly-Cozmuta, L., Mihaly-Cozmuta, A., Nicula, C., Toduran, L.B., Vulpoi, A., Baia, L., 2013, Photocatalytic Efficiency of Zeolite-Based TiO_2 Composites for Reduction of Cu(II): Kinetic Models, *Int. J. Appl. Ceram. Technol*., 1-14.

Pookmanee, P. and Phanichphant, S., 2009, Titanium Dioxide Powder Prepared by a Sol-Gel Method, *J. Ceram. Process. Res.*, 10(2), 167-170.

Qu, Y., Sun, C., Sun, G., Kong, X. and Zhang, W., 2016, Preparation, Characterization, and Kinetic and Thermodynamic Studies of Mixed-phase TiO_2 Nanoparticles Prepared by Detonation Method, *Results in Phys.*, 100-106.

Rane, K.S., Mhalsiker, R., Yin, S., Sato, T., Cho, K., Dunbar, E. and Biswas, P., 2006, Visible Light-sensitive Yellow $TiO_{2-x}N_x$ and Fe-N co-doped $Ti_{1-y}Fe_yO_{2-x}N_x$ Anatas Photocatalysts, *J. Solid State Chem.*, 179, 3033-3044.

Reddy, J.K., Lalitha, K., Reddy, P.V.L., Sadanandam, G., Subrahmanya, M. And Kumari, V.D., 2014, Fe/TiO_2: A Visible Light Active Photocatalyst for the Continous Production of Hydrogen from Water Splitting Under Solar Irradiation, *Catal. Lett.*, 144, 340-346.

Richardson J.T., Scates, R., and Twigg, M.V., 2003, X-ray Diffraction Study of Nickel Oxide reduction by Hydrogen, *Appl. Catal. A.*, 246, 137-150.

Robert, D. and Weber, J.V., 1999, Titanium Dioxide Synthesis by Sol-Gel Methods and Evaluation of Their Photocatalytic Activity, *J. Mater. Sci. Lett.*, 18, 97-98.

Robinson, W.R., Odom, J.D. and Holtzdaw Jr., H.F., 1997, *Essensials of General Chemistry*, Houghton Mifflin Company, Boston.

Roeb, M., Gathmann, N., Neises, M., Sattler, C. and Pitz-Paal, R., 2009, Thermodynamic Analysis of Two-step Solar Water Splitting With Mixed Iron Oxides, *Int. J. Energy Res.*, 33, 893-902.

UNIVERSITAS
GADJAH MADA
SINTESIS KOMPOSIT FOTOKATALIS Fe-N-TiO2/ZEOLIT-Y/NiO UNTUK PRODUKSI HIDROGEN
SIGIT PRIATMOKO, Prof. Dr. Triyono, S.U
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

Ryu, S.Y., Balcerski, W., Lee, T.K. and Hoffman, M.R., 2007, Photocatalytic Production of Hydrogen from Water with Visible Light Using Hybrid Catalyst of CdS Attached to Microporous and Mesoporous Silicas, *J. Phys. Chem. C.*, 111(49), 18195-18203.

Sakthivel, S. and Kisch, H., 2003, Daylight Photocatalysts by Carbon-modified Titanium Dioxide, *Angew. Chem. Int. Ed*., 42, 4908-4911.

Salas, S.E., 2013, Photocatalytic Water Splitting using A Modified Pt-TiO_2, Kinetic Modeling and Hydrogen Production Efficiency, *Dissertation*, The University of Western Ontario, Canada.

Salehi, M., Hashemipour, H., and Mirzaee, M., 2012, Experimental Study of Influencing Factors and Kinetics in Catalytic Removal or Methylene Blue with TiO_2 Nanopowder, *American J. Environ. Eng.*, 2 (1), 1-7.

Samsudin, E.M. and Abd. Hamid, S.B., 2016, Effect of Band Gap Engineering in Anionic-doped TiO_2 Photocatalyst, *Appl. Surf. Sci.* 391, 326-336

Samsudin, E.M., Abd. Hamid, S.B., Juan, J.C., Basirun, W.J., Kandjani, A.E., and Bhargava S.K., 2015, Controlled Nitrogen Insertion in Titanium Dioxide for Optimal Photocatalytic Degradation of Atrazine, *RSC Adv.*, 5, 44041-44052.

Sato, S., 1986, Photocatalytic Activity of NO_x-doped TiO_2 in The Visible Light Region, *Chem. Phys. Lett*., 123, 126-128.

Schmidt, H., 1988, Chemistry of Material Preparation by Sol-Gel Process, *J. Non-Cryst. Solids*, 100, 51-64.

Shahini S., Askari, M. and Sadnezhaad, S.K., 2011, Gel-Sol Synthesis and Aging Effect on Highly Crystalline Anatas Nanpowder, *Bull. Mater. Sci*, 34(6), 1189-1195.

Shatish, M., Vishwanathan, B., Vishwanath, R.P. and Gopinath, C.S., 2005, Synthesis, Characterization, Electronic Structure, and Photocatalytic Activity of Nitrogen-doped TiO_2 Nanocatalysts, *Chem. Mater.*, 17(25), 6349-6353.

Shifu, C., Sujuan, Z., Wei, L. and Wei, Z., 2008, Preparation and Activity Evaluation of p-n Junction Photocatalyst NiO/TiO_2, *J. Hazard. Mater.*, 155, 320-326

Slamet, Triantini, D., Valentina and Ibadurrohman, M., 2013, Photocatalytic Hydrogen Production from Glyserol-Water Mixture over Pt-N-TiO_2 Nanotube Photocatalyst, *Int. J. Energ. Res*., 37(11), 1372-1381.

UNIVERSITAS
GADJAH MADA
SINTESIS KOMPOSIT FOTOKATALIS Fe-N-TiO2/ZEOLIT-Y/NiO UNTUK PRODUKSI HIDROGEN
SIGIT PRIATMOKO, Prof. Dr. Triyono, S.U
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

Smith, K., 1992, *Solid Supports and Catalyst in Organic Synthesis*, Ellis Horwood PTR., Prentice Hall, London.

Streethawong, T., Suzuki, Y. and Yoshikawa S., 2005, Photocatalytic Evolution Hydrogen over Mesoporous TiO_2 Supported NiO Photocatalyst Prepared by Single-step Sol-gel Process with Surfactan, *Int. J. Hydrogen Energy*, 30, 1053-1062.

Su, C., Hong, B.-Y. and Tseng, C.-M., 2004, Sol-Gel Preparation and Photocatalysis of Titanium Dioxide, *Catal. Today*, 96, 119-126.

Su, C., Lin, K.-F., Lin, Y.-H. and You, B.-H., 2006, Preparation and Characterization of High-Surface-Area Titanium Dioxide by Sol-Gel Process, *J. Porous Mater.*, 13, 251-258.

Sun, X., Liu, H., Dong, J., Wei, J. and Zhang, Y., 2010, Preparation and Characterization of Ce/N-Codoped TiO_2 Particles for Production of H_2 by Photocatalytic Water Splitting Under Visible-light, *Catal. Lett.*, 135, 219-225.

Surolia, P.K., Tayade, R.J. and Jasra, R.V., 2007, Effect of Anions on the Photocatalytic Activity of Fe(III) Salts Impregnated TiO_2, *Ind. Eng. Chem. Res.*, 46, 6196-6203.

Takeda, N., Torimoto, T., Sampath, S., Kuwabata, S. and Yoneyama, H., 1995, Effect of Inert Supports for Titanium Dioxide Loading on Enhancement of Photodecomposition Rate of Gaseous Propionaldehyde, *J. Phys. Chem.*, 99, 9986-9991.

Thamaphat, K., Limsuwan., P., and Ngotawornchai, B., 2008, Phase Characterization of TiO_2 Powder by XRD and TEM, *J. National Sci.*, 42, 357-361.

Thimsen, E., Biswas, S., Lo, C.S. and Biswas, P., 2009, Predicting the Band Stucture of Mixed transition Metal Oxides: Theory and Experiment, *J. Phys. Chem. C.*, 113, 2014-2021.

Thiruvenkatachari, R., Vigneswaran, S. and Moon, I.S., 2008, A Review on Photocatalytic Oxidation Process, *Korean J. Chem. Eng.*, 25(1).

Townsend, T.K., Browning, N.D. and Osterloh, F.E., 2012, Overall Photocatalytic Water Splitting with NiO_x-$SrTiO_3$ – A Revised Mechanism, *Energy Environ. Sci.*, 5, 9543.

UNIVERSITAS
GADJAH MADA
SINTESIS KOMPOSIT FOTOKATALIS Fe-N-TiO2/ZEOLIT-Y/NiO UNTUK PRODUKSI HIDROGEN
SIGIT PRIATMOKO, Prof. Dr. Triyono, S.U
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

Tseng, T.K., Lin, Y.S.L, Chen, Y.J. and Chu, H., 2010, A Review of Photocatalysts Prepared by Sol-Gel Method for VOCs Removal, *Int. J. Mol. Sci.*, 11, 2336-2361.

Tsutsumi, A., 2005, Thermodynamics of Water Splitting, Energy Carriers and Conversion Systems, *Encyclopedia of Life Support System* (EOLSS), 1.

Umebabayashi T., Yamaki, T., Itoh, H. and Asai, K., 2002, Band Gap Narrowing of Titanium Dioxide by Sulfur Doping, *Appl. Phys. Lett*, 81, 454-456.

Van Hoff, J.H.C., and Roclofsen, J.W., 1991, Techniques of Zeolites Characterization, dalam H. Van Bekkum, Jc. Jansen, EM Flanigen (ed), *Introduction to Zeolite Science and Practice*, Elsevier, Amsterdam.

Vinoth, R., Karthik, P., Devan, K., Neppolian, B., Ashokkumar, M., 2016, TiO_2-NiO *p-n* Nanocomposite with Enhanced Sonophotocatalytic Activity under Diffused Sunlight, *Ultrason. Sonochem.*, 16, 30071-2.

Viswanathan, B. and Krishanmurthy, K.R., 2012, Nitrogen Incorporation in TiO_2: Does It Make a Visible Light Photo-Active Material?, *Int. J. Photoenergy*, 2012.

Vlack, L.H., 1985, *Ilmu dan Teknologi Bahan* (Terjemahan Sriati Djaprie), Penerbit Erlangga, Jakarta.

Vu, A.T., Nguyen, Q.T., Bui, T.H.L., Tran, M.C., Dang, T.P. and Tran, T.K.H., 2010, Synthesis and Characterization of TiO_2 Photocatalyst Doped by Transition Metal ion (Fe^{3+}, Cr^{3+} and V^{5+}), *Adv. Nat. Sci.*, 1, 015009.

Wang, R., Hashimoto, K., Fujishima, A., Chikuni, M., Kojima, E., Kitamura, A., Shimohigoshi, M. and Watanabe, T., 1997, Light-induced Amphiphilic Surfaces, *Nature*, 388, 431-432.

Wang, Y. and Doren, D.J., 2005, First-principles Calculations on TiO_2 Doped by N, Nd, and Vacancy, *Solid State Comm.*, 136, 186–189.

Wang, Y., Huang., Y., Ho, W., Zhang L., Zou Z. and Lee, S., 2009, Biomolecule-controlled Hydrothermal Synthesis of C-N-S-tridoped TiO_2 Nanocrystalline Photocatalysts for NO Removal under Stimulated Solar Light Irradiation, *J. Hazard. Mater.*, 169, 77-87.

Weissermel, K. and Arpe., H.J., 2003, *Industrial Organic Chemistry*, fourth ed., Wiley-VCH,Weinheim.

UNIVERSITAS
GADJAH MADA
SINTESIS KOMPOSIT FOTOKATALIS Fe-N-TiO2/ZEOLIT-Y/NiO UNTUK PRODUKSI HIDROGEN
SIGIT PRIATMOKO, Prof. Dr. Triyono, S.U
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

White, J.C. and Dutta, P.K., 2011, Assembly of Nanoparticles in Zeolite Y for The Photocatalytic Generation of Hydrogen from Water, *J. Phys. Chem. C.*, 115, 2938-2947.

Xi, W., 2011, Synthesis of Visible Light-driven Catalysts for Photocatalitic Hydrogen Production and Simultaneous Wastewater Treatment under Solar Light, *Dissertation*, The University of Hongkong.

Yalçin, Y., Kiliç, M., and Çinar, Z., 2010, Fe^{3+}-doped TiO_2: A Combined Experimental and Computational Approach to the Evaluation of Visible Light Activity, *Appl. Catal. B.*, 99, 469-477.

Yamashita, H., Ichihashi, Y., Takeuchi, M., Kishiguchi S. and Anpo, M., 1999, Characterization of Metal Ion-implated Titanium Oxide Photocatalysts Operating under Visible Light radiation, *J. Synchrotron Rad.*, 6, 451-452.

Yan, H., Wang, X., Yao, M. and Yao, X., 2013, Band Structure Design of Semiconductors for Enhanced Photocatalytic Activity: The Case of TiO_2, *Nat., Sci. Prog.*, 23(4), 402-407.

Yan, X., Ohno, T., Nishijima, K., Abe, R., and Ohtani, B., 2006, Is Methylene Blue an Appropriate Substrate for a Photocatalytic Activity Test? A Study with Visible-light Responsive Titania, *Chem. Phys. Lett..*, 429, 606-610.

Yang, G., Jiang, Z., Shi, H., Xiao, T. and Yan, Z., 2010, Preparation of Highly Visible-Light Active N-doped TiO_2 Photocatalysts, *J. Mater. Chem.*, 20, 5301-5309.

Yang, J., Bai, H., Tan, X., and Lian, J., 2006, IR and XPS Investigation of Visible-light Photocatalysis-Nitrogen-Carbon-Doped TiO_2 Film, *App. Surf. Sci.*, 253, 1988-1994.

Yen, C.-C., Wang, D.-Y., Chang, L.-S. and Shih, H.C., 2011, Characterization and Photocatalytic Activity of Fe- and N-co-deposited TiO_2 and First-principles Study for Electronic Structure, *J. Solid State Chem.*, 184, 2053-2060.

Yoldas, B.E., 1986, Hydrolysis of Titanium Alkoxide and Effects of Hydrolytic Polycondensation Parameters, *J. Mater. Sci.*, 21, 1087-1092.

Yu, J.C, Zhang, L., Zheng, Z. and Zhao, J., 2003, Synthesis and Characterization of Phosphated Mesoporous Titanium Dioxide With High Photocatalytic Activity, *Chem. Mater.*, 15, 2280-2286.

UNIVERSITAS
GADJAH MADA
SINTESIS KOMPOSIT FOTOKATALIS Fe-N-TiO2/ZEOLIT-Y/NiO UNTUK PRODUKSI HIDROGEN
SIGIT PRIATMOKO, Prof. Dr. Triyono, S.U
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

Yu, J.C., Yu, J., Ho, W., Jiang, Z. and Zhang, L., 2002, Effect of F-Doping on Photocatalytic Activity and Microstuctures of Nanocrystalline TiO_2 Powders, *Chem. Mater*., 14, 3808-3816.

Yu, S., Yun H., Lee, D. and Yi, J., 2012, Preparation and Characterization of Fe-doped TiO_2 Nanoparticles as A Support for A High Performance CO Oxidation Catalyst, *J. Mater. Chem.*, 22, 12629-12635.

Yue, P. and Khan, F., 1991, Methods for Increasing Photo-assisted Production of Hydrogen Over Titanium Exchanged Zeolites, *Int. J. Hydrogen Energy*, 16(9), 609-613.

Yun, H.J., Lee, H., Joo, J.B., Kim, N.D. and Yi, J., 2011, Effect of TiO_2 Nanoparticle Shape on Hydrogen Evolution via Water Splitting, *J. Nanosci. Nanotechnol.*, 11, 1-4.

Zaleska, A., 2008, *Doped-TiO_2: A Review*, *Recent Patents on Engineering*, Bentham Science Publishers Ltd., 2, 157-164.

Zhang, J., Wu, Y., Xing, M., Leghari, S.A.K., and Sajjad, S., 2010, Development of Modified N Doped TiO_2 Photocatalyst with Metals, Nonmetals, and Metal Oxides, *Energy Environ. Sci.*, 3, 715-726.

Zhang, K., Wang, X., Guo, X., He, T. and Feng, Y., 2014, Preparation of Highly Visible Light Active Fe-N co-doped Mesoporous TiO_2 Photocatalysts by Fast Sol-Gel Method, *J. Nanopart. Res*., 16, 2246.

Zhang, N., Liu, S., Fu, X. and Xu, Y.J., 2011, Synthesis of M@TiO_2 (M = Au, Pd, Pt) Core-Shell Nanocomposites with Tunable Photoreactivity, *J. Phys. Chem.*, 115, 9136-9145.

Zhang, Q. and Gao, L., 2003, Preparation of Oxide Nanocrystals with Tunable Morphologies by the Moderate Hydrothermal Method: Insights from Rutile TiO_2, *Langmuir*, 19, 967-971.

Zhang, W., Xiao, X., Zheng, L., and Wan, C., 2015, Fabrication of TiO_2/MoS_2@zeolite Photocatalyst and Its Photocatalytic Activity for Degradation of Methyl Orange Under Visible Light, *App. Surf. Sci.*, 1-11.

Zhang, X., and Liu, Q., 2008, Preparation and Characterization of Titania Photocatalyst co-doped with Boron, Nickel and Cerium, *Mater. Lett.*, 62, 2589-2592.

UNIVERSITAS
GADJAH MADA
SINTESIS KOMPOSIT FOTOKATALIS Fe-N-TiO2/ZEOLIT-Y/NiO UNTUK PRODUKSI HIDROGEN
SIGIT PRIATMOKO, Prof. Dr. Triyono, S.U
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

Zhao, H., Fu, W., Yang, H., Xu, Y., Zhao, W., Zhang, Y., Chen, H., Jing, Q., Qi, X., Cao, J., Zhou, X., and Li, Y., 2011, Synthesis and Characterization of TiO_2/Fe_2O_3 Core-shell Nanocomposition Film and Their Photoelectrochemical Property, *Appl. Surf. Sci.*, 257, 8778-8783.

Zhao, J., Wu, T., Wu, K., Oikawa, K., Hidaja, H. and Serpone, N., 1998, Degradation of The Cationic Dye Rhodamine B in Aqueous Anionic Surfactant/TiO_2 Dispersions Under Visible Light Irradiation: Evidence for The Need of Substrate Adsorption on TiO_2 Particles, *Environ. Sci. Technol*, 32, 2394-2400.

Zheng, L., Teng, F., Zhang, Z., Zhao, B., and Fang X., 2016, Large Scale, High Efficient and Self-powered UV Photodetectors Enabled by All-solid-sstate n-TiO2 Nanowell/p-NiO Mesoporous Nanosheet Heterojunctions, *J. Mater. Chem. C*, 4, 10032.

Zhou, J., Ren, J., Huo, Y., Bian, Z. and Li, H., 2007, Nanocrystalline Fe/TiO_2 Visible Photocatalyst With a Mesoporous Structure Prepared via a Nonhydrolytic Sol-Gel Route, *J. Phys. Chem. C*., 111, 18965-18969.

Zhou, M., Yu, J., Cheng, B. and Yu, H., 2005, Preparation and Photocatalytic Activity of De-doped Mesoporous Titanium Dioxide Nanocrystalline Photocatalysts, *Mater. Chem. Phys.*, 93, 159-163.

Zhu, J., Chen, F., Zhang, J., Chen, H. and Anpo, M., 2006, Fe^{3+}-TiO_2 Photocatalysts Prepared by Combining Sol-Gel Method With Hydrothermal Treatment and Their Characterization, *J. Photochem. Photobiol. A.*, 180, 196-204.

Zhu, J., Zhang, J., Chen, F., Iino, K. and Anpo, M., 2005, High Activity TiO_2 Photocatalysts Prepared by A Modified Sol-Gel Method: Characterization and Their Photocatalytic Activity for The Degradation of XRG and X-GL, *Top. Catal.*, 35, 3-4.

Zou Z., Ye, J., Sayama, K. and Arakawa H., 2001, Direct Splitting of Water under Visible Light Irradiation with an Oxide Semiconductor Photocatalyst, *Nature*, 414, 625-627.

Zsolt, P., 2011, Synthesis, morpho-structural characterization and Enviromental Application of Titania Photocatalysts Obtained by Rapid Crystallization, *Dissertation*, University of Szeged, Babes-Bolyai University.

Zuo, R., Du, G., Zhang, W., Liu, L., Liu, Y., Mei, L., and Li, Z., 2014, Photocatalytic Degradation of Methylene Blue Using TiO_2 Impregnated Diatomite, *Adv. Mater. Sci. Eng.*, 1-7.