

Dr. Yong Tae Kim

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EDUCATION

- Ph. D. in Division of Energy Systems Research and Division of Chemical Engineering and Material Engineering, Ajou University, Suwon, Republic of Korea 02.2011
Thesis: Gas-phase dehydration of glycerol over solid acid catalysts.
Advisor: Professor Dr. Eun Duck Park
- M.Sc. in Division of Energy Systems Research and Division of Chemical Engineering and Material Engineering, Ajou University, Suwon, Republic of Korea 02.2008
Thesis: Water-gas shift reaction with Pt-based catalysts.
Advisor: Professor Dr. Eun Duck Park
- B.Sc. in Division of Chemical Engineering and Material Engineering, Ajou University, Suwon, Republic of Korea 02.2006

RESEARCH EXPERIENCE

- Department of Chemical and Biological Engineering, University of Wisconsin-Madison, Wisconsin, USA, 09.2012 - Current Postdoctoral Researcher
Advisor: Professor Dr. George W. Huber
- Department of Chemical Engineering, University of Massachusetts-Amherst, Massachusetts, USA, 10.2011 - 08.2012 Postdoctoral Researcher
Advisor: Professor Dr. George W. Huber
- Clean Energy Research Center, Korea Institute of Science and Technology (KIST), Seoul, Republic of Korea, 02.2011 – 10.2011 Postdoctoral Researcher
Advisor: Dr. Kwang-Deog Jung
- Clean Energy Research Center, Korea Institute of Science and Technology (KIST), Seoul, Republic of Korea, 09.2008 – 01.2011 Researcher

RESEARCH INTEREST

- Heterogeneous Catalysis: Reaction Engineering, Design of Catalyst
- Biomass Conversion, Shale Gas Conversion, Hydrogen Production, Clean Technology

SELECTED PUBLICATION LIST

- 1) J. Lee, Y.T. Kim, G.W. Huber, "Aqueous-phase hydrogenation and hydrodeoxygenation of biomass-derived oxygenates with bimetallic catalysts", *Green Chemistry, Revised*.
- 2) R. Weingarten, Y.T. Kim, G.A. Tompsett, A. Fernández, K.S. Han, E.W. Hagaman, W.C. Conner Jr., J.A. Dumesic, G.W. Huber, "Conversion of glucose into levulinic acid with solid metal (VI) phosphate catalysts", *Journal of Catalysis*, 304 (2013) 123-134.
- 3) Y.T. Kim, J.A. Dumesic, G.W. Huber, "Aqueous-phase hydrodeoxygenation of sorbitol: A comparative study of Pt/Zr phosphate and Pt-ReO_x/C", *Journal of Catalysis*, 304 (2013) 72-85.
- 4) J.H. Park, Y.T. Kim, E.D. Park, H.C. Lee, J. Kim, D. Lee, "Markedly high catalytic activity of supported Pt-MoO_x nanoclusters for methanol reforming to hydrogen at low temperatures", *ChemCatChem*, 5 (2013) 806-814.
- 5) Y.T. Kim, S.J. You, E.D. Park, "Water-gas shift reaction over Pt and Pt-CeO_x supported on Ce_xZr_{1-x}O₂", *International Journal of Hydrogen Energy*, 37 (2012) 1465-1474.
- 6) Y.T. Kim, K.-D. Jung, E.D. Park, "Gas-phase dehydration of glycerol over silica-alumina catalysts", *Applied Catalysis B: Environmental*, 107 (2011) 177-187.
- 7) Y.T. Kim, K.-D. Jung, E.D. Park, "A comparative study for gas-phase dehydration of glycerol over H-zeolites", *Applied Catalysis A: General*, 393 (2011) 275-287.
- 8) Y.T. Kim, K.-D. Jung, E.D. Park, "Gas-phase dehydration of glycerol over ZSM-5 catalysts", *Microporous and Mesoporous Materials*, 131 (2010) 28-36.
- 9) Y.T. Kim, E.D. Park, H.C. Lee, D. Lee, K.H. Lee, "Water-gas Shift Reaction over Supported Pt-CeO_x Catalysts", *Applied Catalysis B: Environmental*, 90 (2009) 45-54.
- 10) Y.T. Kim, E.D. Park, "Transesterification between dimethyl carbonate and phenol in the presence of (NH₄)₈Mo₁₀O₃₄ as a catalyst precursor", *Applied Catalysis A: General*, 361 (2009) 26-31.
- 11) Y.T. Kim, E.D. Park, "Deactivation phenomena of MoO₃/SiO₂ and TiO₂/SiO₂ during Transesterification between Dimethyl carbonate and Phenol", *Applied Catalysis A: General*, 356 (2009) 211-215.

FULL PUBLICATION LIST

International Journals

- 1) J. Lee, Y.T. Kim, G.W. Huber, "Aqueous-phase hydrogenation and hydrodeoxygenation of biomass-derived oxygenates with bimetallic catalysts", *Green Chemistry, Revised*.
- 2) S.J. You, Y.T. Kim, E.D. Park, "Liquid-phase dehydration of D-xylose over silica-alumina catalysts with different alumina contents", *Reaction Kinetics, Mechanisms and Catalysis, Revised*.
- 3) R. Weingarten, Y.T. Kim, G.A. Tompsett, A. Fernández, K.S. Han, E.W. Hagaman, W.C. Conner Jr., J.A. Dumesic, G.W. Huber, "Conversion of glucose into levulinic acid with solid metal (VI) phosphate catalysts", *Journal of Catalysis*, 304 (2012) 123-134.
- 4) Y.T. Kim, J.A. Dumesic, G.W. Huber, "Aqueous-phase hydrodeoxygenation of sorbitol: A comparative study of Pt/Zr phosphate and Pt-ReO_x/C", *Journal of Catalysis*, 304 (2013) 72-85.
- 5) J.H. Park, Y.T. Kim, E.D. Park, H.C. Lee, J. Kim, D. Lee, "Markedly high catalytic activity of supported Pt-MoO_x nanoclusters for methanol reforming to hydrogen at low temperatures", *ChemCatChem*, 5 (2013) 806-814.
- 6) Y.T. Kim, S.J. You, K.-D. Jung, E.D. Park, "Effect of Al content on the gas-phase dehydration of glycerol over silica-alumina-supported silicotungstic acid catalysts", *Bulletin of the Korean Chemical Society*, 33 (2012) 2369-2377.
- 7) Y.T. Kim, S.J. You, E.D. Park, "Water-gas shift reaction over Pt and Pt-CeO_x supported on Ce_xZr_{1-x}O₂", *International Journal of Hydrogen Energy*, 37 (2012) 1465-1474.
- 8) Y.T. Kim, K.-D. Jung, E.D. Park, "Gas-phase dehydration of glycerol over silica-alumina catalysts", *Applied Catalysis B: Environmental*, 107 (2011) 177-187.
- 9) S.J. You, I.G. Baek, Y.T. Kim, K.E. Jeong, H.J. Chae, T.W. Kim, C.U. Kim, S.Y. Jeong, S.Y. Jeong, T.J. Kim, Y.M. Chung, S.H. Oh, E.D. Park, "Direct conversion of cellulose into polyols or H₂ over Pt/Na(H)-ZSM-5", *The Korean Journal of Chemical Engineering*, 28 (2011) 744-750.
- 10) S.B. Kim, S.J. You, Y.T. Kim, S.M. Lee, H. Lee, K. Park, E.D. Park, "Dehydration of D-xylose into furfural over H-zeolites", *The Korean Journal of Chemical Engineering*, 28 (2011) 710-716.
- 11) Y.T. Kim, K.-D. Jung, E.D. Park, "A comparative study for gas-phase dehydration of glycerol over H-zeolites", *Applied Catalysis A: General*, 393 (2011) 275-287.
- 12) Y.T. Kim, K.-D. Jung, E.D. Park, "Gas-phase dehydration of glycerol over ZSM-5 catalysts", *Microporous and Mesoporous Materials*, 131 (2010) 28-36.
- 13) Y.T. Kim, K.-D. Jung, E.D. Park, "Gas-phase dehydration of glycerol over supported silicotungstic acids catalysts", *Bulletin of the Korean Chemical Society*, 31 (2010) 3283-3290.

- 14) Y.T. Kim, E.D. Park, "Water-gas shift reaction over supported Pt and Pt-CeO_x catalysts", The Korean Journal of Chemical Engineering, 27 (2010) 1123-1131.
- 15) Y.T. Kim, E.D. Park, H.C. Lee, D. Lee, K.H. Lee, "Water-gas Shift Reaction over Supported Pt-CeO_x Catalysts", Applied Catalysis B: Environmental, 90 (2009) 45-54.
- 16) Y.T. Kim, E.D. Park, "Transesterification between dimethyl carbonate and phenol in the presence of (NH₄)₈Mo₁₀O₃₄ as a catalyst precursor", Applied Catalysis A: General, 361 (2009) 26-31.
- 17) Y.T. Kim, E.D. Park, "Deactivation phenomena of MoO₃/SiO₂ and TiO₂/SiO₂ during Transesterification between Dimethyl carbonate and Phenol", Applied Catalysis A: General, 356 (2009) 211-215.
- 18) M. Kang, J. Choi, Y.T. Kim, E.D. Park, C.B. Shin, D.J. Suh, J.E. Yie, "Effects of Preparation Methods for V₂O₅-TiO₂ Aerogel Catalysts on Selective Catalytic Reduction of NO with NH₃", The Korean Journal of Chemical Engineering, 26 (2009) 884-889.
- 19) Y.T. Kim, E.D. Park, M. Kang, J.E. Yie, "The effect of Physicochemical Treatment on Pd Dispersion of Carbon-supported Pd Catalysts", Solid State Phenomena, 135 (2008) 57-60.
- 20) H.C. Lee, D. Lee, O.Y. Lim, S. Kim, Y.T. Kim, E.-Y. Ko, E.D. Park, "ZrO₂-supported Pt catalysts for water gas shift reaction and their non-pyrophoric property", Studies in Surface Science and Catalysis, 167 (2007) 201-206.

Domestic Journals

- 1) S.B. Kim, S.J. You, Y.T. Kim, H.J. Chae, S.Y. Jeong, E.D. Park, "Dehydration of D-xylose over SAPO Catalysts Synthesized with Various Structure Directing Agents", Korean Chemical Engineering Research, 48 (2010) 684-689.
- 2) S.J. You, S.B. Kim, Y.T. Kim, E.D. Park, "Conversion of Cellulose into Polyols over Noble Metal Catalysts Supported on Activated Carbon", Clean Technology, 16 (2010) 19-26.

INTELLECTUAL PROPERTY

International Patents

- 1) George W. Huber, Y.T. Kim, "Method for preparing triols and diols from biomass-derived reactants", US 13/838226.
- 2) E.D. Park, Y.T. Kim, "Method for Preparing Aromatic Carbonate Compound", PCT/KR 2010/000344.

Domestic Patents

- 1) E.D. Park, K.-D. Jung, Y.T. Kim, "Method for Preparing Acrolein over Dehydration of Glycerol", KP 10-2010-0020694.
- 2) E.D. Park, Y.T. Kim, "Method for Preparing Aromatic Carbonate Compound", KP 10-1002106.
- 3) E.D. Park, Y.T. Kim, "Method for Preparing Aromatic Carbonate Compound", KP 10-1002123.

AWARD

International Awards

- Best Presentation Award, The 6th Tokyo Conference on Advanced Catalytic Science and Technology and the 5th Asia Pacific Congress on Catalysis, Organized by Catalysis Society of Japan, 07.2010.
- Young Scientist Poster Award, The 12th Japan-Korean Symposium on Catalysis, Organized by Catalysis Society of Japan, 10.2009.

Domestic Awards

- Post-doc fellowship, National Research Foundation in Korea, 11.2011.
- The Graduate School Catalyst Research Award, Catalysis and Reaction Engineering Division, The Korean Institute of Chemical Engineers, 01.2011.
- The Graduate School Research Award, The Korean Institute of Chemical Engineers Fall Meeting, Organized by the Korean Institute of Chemical Engineers, 10.2009.
- The Excellent Award, Energy and Environmental Paper Competitions, Organized by the Ministry of Knowledge Economy, 10.2008.

CONFERENCE

International Conferences

- 1) G.W. Huber, N. Li, Y.T. Kim, “Design of Catalysts for Hydrodeoxygenation of Biomass”, 2nd International Congress on Catalysis for Biorefineries, 22-25, September, 2013, Dalian, China.
- 2) Y.T. Kim, R. Weingarten, J. Lee, Y. Xu, G.W. Huber, “Catalysis design for HDO of biomass: Towards a molecular level understanding”, 2013 Energy Frontier Research Centers (EFRCs) DOE PI meeting, 18-19, July, 2013, Washington, USA.
- 3) Y.T. Kim, J.A. Dumesic, G.W. Huber, “Aqueous-phase hydrodeoxygenation of sorbitol over Pt catalysts”, The 23rd North American Catalysis Society Meeting, 2-7 June, 2013, Kentucky, USA.
- 4) Y.T. Kim, G.W. Huber, “Aqueous-phase hydrodeoxygenation of sorbitol over Pt catalysts”, The 2013 Catalysis Club of Chicago, 07 May, 2013, Chicago, USA.
- 5) G.W. Huber, R. Weingarten, Y.T. Kim, W.C. Conner Jr., “Design of solid acid catalysts for aqueous phase conversion of carbohydrates: The role of Lewis and Brønsted acid sites”, 245th ACS National Meeting & Exposition, 7-11 April, 2013, Louisiana, USA.
- 6) R. Weingarten, Y.T. Kim, G.A. Tompsett, W.C. Conner Jr., G.W. Huber, “Production of Levulinic Acid From Cellulose by Hydrothermal Decomposition Combined with Aqueous Phase Dehydration with a Solid Acid Catalyst”, 2012 AIChE Annual Meeting, 28 October – 2 November, 2012, Pittsburgh, USA.
- 7) G.W. Huber, N. Li, Y.T. Kim, J. Lee, “Aqueous Phase Hydrodeoxygenation of Carbohydrates”, CAT4BIO, 8-11 July, 2012, Thessaloniki, Greece.
- 8) Y.T. Kim, G.W. Huber, “Aqueous-phase hydrodeoxygenation of sorbitol over Pt/zirconium phosphate and Pt-ReO_x/C”, The 2012 Gordon Research Conferences, 24-29 June, 2012, New London, USA.
- 9) Y.T. Kim, H.C. Lee, E.D. Park, “Water-gas shift reaction over Pt and Pt-CeO_x supported on C_xZr_{1-x}O₂ catalysts”, The 22nd North American Catalysis Society Meeting, 5-10 June, 2011, Detroit, USA.
- 10) Y.T. Kim, K.-D. Jung, E.D. Park, “Gas-phase dehydration of glycerol into acrolein over solid acid catalysts”, The 22nd North American Catalysis Society Meeting, 5-10 June, 2011, Detroit, USA.
- 11) Y.T. Kim, K.-D. Jung, E.D. Park, “Vapor-phase dehydration of glycerol into acrolein over solid acid catalysts”, The 13th Japan-Korean Symposium on Catalysis, 23-25 May, 2011, Jeju, Korea.
- 12) S.B. Kim, S.J. You, Y.T. Kim, H.J. Chae, S.Y. Jeong, E.D. Park, “Dehydration of D-xylose into Furfural over SAPOs”, The 6th Tokyo Conference on Advanced Catalytic Science and Technology and the 5th Asia Pacific Congress on Catalysis, 18-23 July, 2010, Sapporo, Japan.
- 13) S.J. You, S.B. Kim, Y.T. Kim, E.D. Park, “Liquid-phase Dehydration of D-xylose over Solid-acid Catalyst”, The 6th Tokyo Conference on Advanced Catalytic Science and Technology and the 5th Asia Pacific Congress on Catalysis, 18-23 July, 2010, Sapporo, Japan.
- 14) Y.T. Kim, K.-D. Jung, E.D. Park, “Gas-phase Dehydration of Glycerol into Acrolein over ZSM-5 Catalysts”, The 6th Tokyo Conference on Advanced

- Catalytic Science and Technology and the 5th Asia Pacific Congress on Catalysis, 18-23 July, 2010, Sapporo, Japan.
- 15) Y.T. Kim, E.D. Park, “The Effect of Support on Water-gas Shift Reaction over Supported Pt and Pt-CeO_x Catalysts”, The 9th Novel Gas Conversion Symposium, 30 May - 3 Jun, 2010, Lyon, France.
 - 16) Y.T. Kim, E.D. Park, H.C. Lee, D. Lee, K.H. Lee, “The Effect of Support on Water-gas Shift Reaction over Supported Pt-CeO_x Catalysts”, The 12th Japan-Korean Symposium on Catalysis, 14-16 October, 2009, Akita, Japan.
 - 17) S.B. Kim, S.J. You, Y.T. Kim, E.D. Park, “Dehydration of D-xylose into Furfural over Microporous Zeolite Catalysts”, The 12th Japan-Korean Symposium on Catalysis, 14-16 October, 2009, Akita, Japan.
 - 18) Y.T. Kim, E.D. Park, “Homogeneous Mo-based Catalysts for Transesterification between Dimethyl carbonate and Phenol”, The 21th North American Catalysis Society Meeting, 7-12 June, 2009, San Francisco, USA.
 - 19) Y.T. Kim, E.D. Park, H.C. Lee, D. Lee, K.H. Lee, “Water-gas Shift Reaction over Ceria-promoted Pt Catalyst”, The 21th North American Catalysis Society Meeting, 7-12 June, 2009, San Francisco, USA.
 - 20) Y.T. Kim, H.C. Lee, D. Lee, K.H. Lee, E.D. Park, “The effect of CeO_x species in Pt Catalyst on the Water-gas Shift Reaction”, The 12th Asia-Pacific Confederation of Chemical Engineering, 4-6 August, 2008, Dalian, China.
 - 21) Y.T. Kim, H.C. Lee, D. Lee, K.H. Lee, E.D. Park, “Water-gas Shift Reaction over Supported Pt-CeO_x Catalysts”, A Post-Symposium of the 14th International Congress on Catalysis, 20-22 July, 2008, Gyeongju, Korea.
 - 22) Y.T. Kim, E.D. Park, “Deactivation phenomena of MoO₃/SiO₂ and TiO₂/SiO₂ during Transesterification between Dimethyl carbonate and Phenol”, The 14th International Congress on Catalysis, 13-18 July, 2008, Seoul, Korea.
 - 23) H.C. Lee, D. Lee, K.H. Lee, H. Chang, D. Seung, Y.T. Kim, Y.H. Kim, E.D. Park, “Supported Pt-Ce catalysts for low-temperature water gas shift reaction and their stability on frequent start/stop operations for fuel cell application”, The 14th International Congress on Catalysis, 13-18 July, 2008, Seoul, Korea.
 - 24) M. Kang, J. Choi, Y.T. Kim, E.D. Park, C.B. Shin, D.J. Suh, J.E. Yie, “Effect of Preparation Method for V₂O₅-TiO₂ Aerogel Catalysts on Selective Reduction of NO with NH₃”, The 7th China-Korea Workshop on Clean Energy Technology, 25-28 June, 2008, Taiyuan, China.
 - 25) H.C. Lee, D. Lee, O.Y. Lim, S. Kim, Y.T. Kim, E.-Y. Ko, E.D. Park, “Non-pyrophoric Pt-Ce/ZrO₂ catalysts for water gas shift reaction”, The 8th Natural Gas Conversion Symposium, 27-31 May, 2007, Natal, Brasil.
 - 26) Y.T. Kim, E.D. Park, “A Comparative Study of MoO₃/SiO₂ and TiO₂/SiO₂ in Transesterification between Phenol and Dimethylcarbonate”, The 11th Korea-Japan Symposium on Catalysis, 21-23 May, 2007, Seoul, Korea.
 - 27) Y.T. Kim, E.-Y. Ko, E.D. Park, “The Effect of Promoter on Water-gas Shift Reaction over Zirconia-supported Pt Catalysts”, The 8th International Symposium on Nanocomposites & Nanoporous Materials, 22-24 February, 2007, Jeju, Korea.
 - 28) Y.T. Kim, E.D. Park, M. Kang, J.E. Yie, “The Effect of Physicochemical Properties of Carbon on Pd Dispersion over Carbon-supported Pd Catalysts”, The 8th International Symposium on Nanocomposites & Nanoporous Materials,

22-24 February, 2007, Jeju, Korea.

- 29) Y.H. Kim, Y.T. Kim, E.-Y. Ko, E.D. Park, "Preferential CO oxidation over Supported Ruthenium Catalysts", The 1st Annual Korea-USA Joint Symposium on Hydrogen & Fuel Cell Technologies, 24 May, 2006, Daejeon, Korea.

Domestic Conferences

- 1) Y.T. Kim, K.-D. Jung, E.D. Park, "Gas-phase Catalytic Dehydration from Glycerol to Acrolein", The Korean Institute of Chemical Engineers Fall Meeting, 20-22 October, 2010, Daejeon, Korea.
- 2) Y.T. Kim, E.D. Park, "The Effect of Mo-based Catalyst for the Synthesis of Methyl Phenyl Carbonate", The Korean Institute of Chemical Engineers Fall Meeting, 21-23 October, 2009, Ilsan, Korea.
- 3) Y.T. Kim, E.D. Park, H.C. Lee, D. Lee, K.H. Lee, "The Marked Effect of Added-cerium on the WGS performance over Pt Catalysts", The Korean Institute of Chemical Engineers Spring Meeting, 22-24 April, 2009, Gwangju, Korea.
- 4) S.B. Kim, S.J. You, Y.T. Kim, E.D. Park, "Dehydration of D-xylose into Furfural over Zeolite Catalysts", The Korean Society of Industrial and Engineering Chemistry Spring Meeting, 15-17 April, 2009, Daegu, Korea.
- 5) Y.T. Kim, E.D. Park, "Transesterification between Dimethyl carbonate and Phenol over Mo-based Catalyst", The Korean Society of Industrial and Engineering Chemistry Spring Meeting, 15-17 April, 2009, Daegu, Korea.
- 6) Y.T. Kim, H.C. Lee, D. Lee, K.H. Lee, E.D. Park, "Water-gas Shift Reaction over Supported Pt-CeO_x Catalysts", The Korean Institute of Chemical Engineers Fall Meeting, 23-24 October, 2008, Busan, Korea.
- 7) Y.T. Kim, H.C. Lee, D. Lee, K.H. Lee, E.D. Park, "Water Gas Shift Reaction over Supported Pt-Ce Catalysts", The Korean Institute of Chemical Engineers Spring Meeting, 23-25 April, 2008, Jeju, Korea.
- 8) Y.T. Kim, H.C. Lee, D. Lee, K.H. Lee, E.D. Park, "The Low-temperature Water-gas Shift Reaction over Al₂O₃- and SiO₂- supported Pt Catalysts", The Korean Institute of Chemical Engineers Spring Meeting, 26-27 October, 2007, Daejeon, Korea.
- 9) Y.T. Kim, E.D. Park, E.-Y. Ko, H.C. Lee, D. Lee, "The Support Effect of Pt-Ceria Catalysts in Water Gas Shift Reaction", The Korean Institute of Chemical Engineers Spring Meeting, 19-20 April, 2007, Ulsan, Korea.
- 10) Y.H. Kim, Y.T. Kim, E.D. Park, H.C. Lee, S. Kim, D. Lee, "A Comparative Study of Commercial Noble Metal Catalysts for the Selective CO Oxidation", The Korean Society of Industrial and Engineering Chemistry Fall Meeting, 10-11 November, 2006, Suwon, Korea.
- 11) Y.T. Kim, E.D. Park, "The Role of Homogeneous Molybdenum Catalysts in Transesterification between Phenol and Dimethylcarbonate", The Korean Institute of Chemical Engineers Fall Meeting, 27-28 October, 2006, Seoul, Korea.
- 12) E.-Y. Ko, E.D. Park, Y.H. Kim, Y.T. Kim, H.C. Lee, D. Lee, S. Kim, "Selective CO Oxidation over Supported Gold Catalysts", The Korean Society of Industrial and Engineering Chemistry Spring Meeting, 12-13 May, 2006, Jeonbuk, Korea.