

Chan Seung Park, Ph.D.,

Associate Research Engineer, Winston Chung Global Energy Center, University of California Riverside

Education and Training

INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
Seoul National University	BS	1982	Chemistry
Seoul National University	Ph.D.	1990	Analytical Chemistry
University of California, Riverside	Postdoctoral	1998-2000	Chemical Engineering

Research and Professional Experience

2021 ~ Present: Adjunct Professor Emeritus, Department of Chemical and Environmental Engineering

Research Engineer/ Winston Chung Global Energy Center, Bourns College of Engineering, University of California, Riverside

2018 ~2021: Associate Research Engineer, Renewable Energy, Energy Storage, Energy System Analysis, Winston Chung Global Energy Center, University of California, Riverside

2012~2020: Associate Adjunct Professor, Department of Chemical Environmental Engineering, Bourns College of Engineering, University of California, Riverside

2003 ~2018: Assistant and Associate Research Engineer, Renewable Energy, Thermochemical Conversion technology, Center for Environmental Research and Technology, University of California, Riverside

2000-2003: Senior Development Engineer, Fuel Emission, HD Diesel on-road emission, CE-CERT, University of California, Riverside

1993-1998: Research Scientist, DeNOx Filter Development SCR, PM Filtration Development, SK Corp, Taejon Korea

1988-1993: Research Scientist, Fuel Cell/ Battery, Yukong Limited, Ulsan Korea

Publications

Journal Papers

1. Sarothi Roy, P., Yoo, Y. D., Kim, Suhyun & Park, C. S. (2022). Techno-economic Analysis of Power to Gas (P2G) Process for the Development of Optimum Business Model: Part 1 Methane Production. *Clean Technol.*, 28-1, 1-8.
2. Sarothi Roy, P., Ryu, C., Dong, S. K., & Park, C. S. (2019). Development of a natural gas Methane Number prediction model. *Fuel*, 246, 204–211.
3. Roy, P., Song, J., Kim, K., Park, C., Raju, A. 2018. Effects of CeZrO₂-Al₂O₃ support composition of metal-foam-coated Pd-Rh catalysts for the steam-biogas reforming reaction. *Journal of Industrial and Engineering Chemistry*. Vol. 62: p.120.
4. Kim, K., Roy, P., Park, C., Raju, A., Song, J. 2018. CO₂ conversion to syngas through the steam-biogas reforming process. *Journal of CO₂ Utilization* . Vol. 25: p.275.
5. Roy PS, Ryu C, CS Park, Predicting Wobbe Index and methane number of a renewable natural gas by the measurement of simple physical properties, *Fuel*. Vol. 224 p121 7p, 2018.

6. Park CS, Raju ASK, Franco SA, Roy PS, Jung HS. Development of a Fuel Sensor Technology for a Variable-blend Natural Gas Vehicle. *J Nat Gas Sci Eng* 2016; 31:149-155.
7. Liu, Z., Norbeck, J., Park, C. Synthetic Natural Gas Production by Sorption Enhanced Steam Hydrogasification Based Processes for Improving CH₄ Yield and Mitigating CO₂ Emissions. *Energy Conversion and Management*. Vol. 126: p.256-265. 2016.
8. Durbin, T., Norbeck, J., Park, C. 2016. Material Compatibility Evaluation for Elastomers, Plastics, and Metals Exposed to Ethanol and Butanol Blends. *Fuel*. Vol. 163: p.248. 12p.
9. Fan, X., Park, CS., Norbeck, J., Liu, Z. 2016. A Simple Kinetic Analysis of Syngas during Steam Hydrogasification of Biomass Using a Novel Inverted Batch Reactor with Instant High Pressure Feeding Bioresource Technology. *Bioresource Technology*. Vol. 200: p.731. 7p.
10. Bae, D., Yun, M., Park, CS. Hydrodynamics of a hybrid circulating fluidized bed reactor with a partitioned loop seal system. *Korean Journal of Chemical Engineering*,. Vol. 32: 7 p.1440. 7p. 2015.
11. Roy, P., Park, CS., Raju, A., Kim, K. Steam-biogas reforming over a metal-foam-coated (Pd-Rh)/(CeZrO₂-Al₂O₃) catalyst compared with pellet type alumina-supported Ru and Ni catalysts. *Journal of CO₂ Utilization*. 12, 12-20 2015.
12. Luo, Q., Park, C., Raju, A., Norbeck, J. Experimental Study of Gaseous Sulfur Species Formation during the Steam Hydrogasification of Coal. *Energy & Fuels*. Vol. 28: 5 p.3399. 2014
13. Liu, Z., Norbeck, J., Park, C. 2013. Sorption enhanced steam hydrogasification of coal for synthesis gas production with in-situ CO₂ self-sustained hydrogen supply. *International Journal of Hydrogen Energy*. Vol. 38: p.7016. 9p.
14. Lu, X., Norbeck, J., Park, C. 2012. Production of Fischer Tropsch fuels and electricity from bituminous coal based on steam hydrogasification. *Energy*. Vol. 48: p.525. 6p.
15. He, W., Park, C.S., Norbeck, J. 2009. Rheological Study of Comingled Biomass and Coal Slurries with Hydrothermal Pretreatment. *Energy & Fuel*. Vol. 23: p.4763-4767.
16. Jeon, S., Park, C., Kim, S., Song, B., Norbeck, J. 2008. Methane steam reforming for synthetic diesel fuel production from steam-hydrogasifier product gases. *Korean Journal of Chemical Engineering*. Vol. 25: 6 p.1279-1285.
17. Raju, A., Park, C., Norbeck, J. 2009. Synthesis gas production using steam hydrogasification and steam reforming. *Fuel Processing Technology*. Vol. 90: p.330-336.
18. See Hoon Lee, Chan Seung Park, Jae Goo Lee, and Jae Ho Kim "Attrition Characteristics in an Advanced Gasifier with Swirl Injection" *J. Korean Ind. Eng. Chem.*, Vol. 19, No. 3, 295-298, 2008.
19. S.K. Jeon, C. S. Park, C. Hackett, J. M. Norbeck, "Characteristics of steam hydrogasification of wood using the micro batch reactor," *Fuel*, 86, 2817, 2007.
20. K. Kim, S. K. Jeon, C. Vo, C. S. Park, J. M. Norbeck "Removal of H₂S from steam-hydrogasifier product gas by zinc oxide sorbent" *Ind. Eng. Chem. Res.* 46,5848, 2007.

Patent

1. P. S. Roy , C. S. Park, P. S. Roy "Simple method to analyze the propane/butane ratio in LPG fuel ", UCOP invention disclosure, 2020-894, Jun, 2, 2020.
2. C. S. Park, P. S. Roy "Fuel Sensor for a Variable Blend Natural Gas Appliance using the Wobbe Index", U.S. Patent No: US 10,132251 Nov. 20, 2018.
3. C. S. Park, P. S. Roy " Chemo-Metrical Prediction of Methane Index for the Natural Gas", U.S. Patent application No. US20190257808A1.
4. C. S. Park, J. M. Norbeck "Gas Sensor Based on Dynamic Thermal Conductivity and Molecular Velocity". U.S. Patent No. or International Patent No: 0169541 A1, Date Issued: May 2008

5. J. W. Heffel, P. B. Scott, C. S. Park "Apparatus and Method for Operating Internal Combustion Engines from Variable Mixtures of Gaseous Fuels". U.S. Patent No. or International Patent No: 6,612,269, Date Issued: September 2003
6. C. S. Park, J. M. Norbeck, Surinder P. Singh "Method and Apparatus for Steam Hydro-Gasification in a Fluidized Bed Reactor" U.S. Patent No. or International Patent No: US 7,619,012 B2, Nov. 17, 2009
7. J. M. Norbeck, C. S. Park, Kiseok Kim "Process for enhancing the operability of hot gas cleanup for the production of synthesis gas from steam-hydrogasification producer gas" U.S. Patent No. or International Patent No: US 8,349,288 Date Issued: Jan. 8, 2013

Book Chapter

1. "Current Developments in Thermochemical Conversion of Biomass to Fuels and Chemicals" Chan Seung Park, Partho Sarothi Roy and Su Hyun Kim, <http://dx.doi.org/10.5772/intechopen.71464>, 2018
2. "Valorization of Lignocellulosic Biomass in a Bio-refinery: From logistic to Environmental and Performance Impact", Nova Science Publisher Inc., 2016, NY USA., Chapter title: Life Cycle Analysis of Lignocellulosic Routes & Current Developments on the Thermochemical conversion of biomass to fuels and chemicals, 2016

Recent Invited talk

1. 캘리포니아주등, 미국내 Cooking Emissions 연구 및 저감장비 인증 규정 제도화. 대한민국 국회, 지구를 위한 콜라보 토론회, Jan. 24, 2022
2. Determination of PM Removal Efficiency of Regenerative Ceramic Filter Device for the cooking emission, for New York City Certification. 18th Annual Conference of Korean Society for Indoor Environment. Nov. 04, 2021, Busan Korea
3. Applied Research Workshop, UC Global Climate Leadership Council, June 1, 2020, 1 – 3 PM via Zoom Video Conference
4. Carbon Neutrality and Deep De-carbonization Applied Research Workshop, UC Global Climate Leadership Council, June 1, 2020, 1 – 3 PM via Zoom Video Conference
5. "Energy Science for Renewable Gas", KOICA-Ajou Special Lecture Series. Feb. 17, 2019, Ajou University, Suwon Korea
6. "Development of Natural Gas Fuel Quality Sensor" Invited Talk, The Korean Computer Scientists and Engineers Association of America (KOCSEA) Fall Symposium. Nov. 16. 2019, Atlanta, GA