# CURRICULUM VITAE


## Kyung-Won Park, Ph. D.

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## *Biography*

Kyung-Won Park is an electrochemical energy scientist who performs research in electrochemical energy conversion and storage. In the fields of electrochemical energy conversion and storage, he has studied a wide range of multidisciplinary issues. His past and ongoing research topics cover relationships between electrochemical energy/system and various materials, effects of structures and dimensions of nano-sized materials on electrochemical energy conversion and storage, synthesis and characterization of highly efficient and durable electrochemistry-related materials, design of novel electrochemical energy systems, etc.

He has been leading a variety of government and industry-funded research projects, including projects sponsored by National Research Foundation of Korea, Korea Institute of Energy Research, Korea Battery Research Association, Hyundai Motor Company, and many others. With over 20 years of research activities, he has published over 200 SCI papers and over 60 registered domestic and international patents and received several awards including Oronzio de Nora Foundation Prize on Electrochemical Energy Conversion, International Society of Electrochemistry (ISE), 2006 and Minister Achievement Award, The Ministry of Science and Technology, S. Korea, 2019. Also, he has trained over 50 graduate students as of 2024.

Dr. Park received his B.S. in Materials Science and Engineering from Sungkyunkwan University, S. Korea in 1996 and M.S and Ph.D. degrees from Materials Science and Engineering, Gwangju Institute of Science and Technology (GIST), S. Korea in 1998 and 2003, respectively. During his training of graduate courses with continuous government scholarship, Park received Excellent Graduate Student Award, GIST, and Student Research Award of the Battery Division from the Electrochemical Society, USA. He was trained as a postdoctoral scholar at Research Center for Energy Conversion and Storage in Seoul National University in 2003~2004. He worked as a postdoctoral scholar at The Pennsylvania State University, USA in 2004~2005.


**Keywords**: Electrochemical Energy Conversion and Storage; Electrochemical Energy-related Nanostructure Materials; Electrochemistry-based Applications
**Total Citations: 10208, H-Index: 51** (Google Scholar; as of Feb. 2024)


## *Education & Training*

**Postdoc.** | The Pennsylvania State University, USA, 2004~2005

**Postdoc.** | Research Center for Energy Conversion and Storage, Seoul National University, Korea, 2003~2004

**Ph. D**. | Materials Science and Engineering, Gwangju Institute of Science and Technology (GIST), Gwangju, S. Korea, 1998~2003 (Thesis: Design and Characterization of Pt-based Nanostructure Electrocatalysts for Methanol Electrooxidation in Direct Methanol Fuel Cells, Excellent Graduate Student Award, Gwangju Institute of Science and Technology, BK21)

**M.S**. | Materials Science and Engineering, Gwangju Institute of Science and Technology (GIST), Gwangju, S. Korea, 1996~1998 (Thesis title: Selective Area MOVPE for Photonic Device Integration)

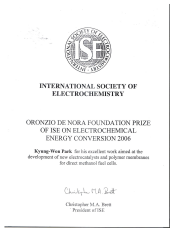
**B.S**. | Materials Science and Engineering, Sungkyunkwan University, Suwon, S. Korea, 1992~1996

## *Academic Positions & Appointments*

**Professor |** Department of Chemical Engineering, Soongsil University, S. Korea, 2016~present
**Department Head |** Department of Chemical Engineering, Soongsil University, S. Korea, 2021~2023
**Associate Professor |** Department of Chemical Engineering, Soongsil University, S. Korea, 2011~2016
**Assistant Professor |** Department of Chemical Engineering, Soongsil University, S. Korea, 2005~2011

## *Honors & Awards*

**Soongsil Teaching Award,** Soongsil University, 2022
**Achievement Award**, The Korean Society of Industrial and Engineering Chemistry, 2021
**Soongsil Research Award**, Soongsil University, 2021
**Best Soongsil Research Award**, Soongsil University, 2020
**Minister Achievement Award**, The Ministry of Science and Technology, S. Korea, 2019
**Achievement Award**, The Korean Society of Industrial and Engineering Chemistry, 2019
**Best Soongsil Research Award**, Soongsil University, 2019
**Achievement Award**, The Korean Society of Industrial and Engineering Chemistry, 2018
**Best Soongsil Research Award**, Soongsil University, 2018
**Achievement Award**, The Korean Society of Industrial and Engineering Chemistry, 2017
**Best Soongsil Research Award**, Soongsil University, 2017
**Selected as "National Outstanding Research Achievement"**, The Ministry of Science & Technology, 2017
**Achievement Award**, The Korean Society of Industrial and Engineering Chemistry, 2016
**Best Soongsil Research Award**, Soongsil University, 2016
**Soongsil Research Award**, Soongsil University, 2014
**Best Soongsil Research Award**, Soongsil University, 2013
**Best Soongsil Research Award**, Soongsil University, 2012
**Best Soongsil Research Award**, Soongsil University, 2011
**Outstanding Engineering Research Award**, Soongsil University, 2008
**Oronzio de Nora Foundation Prize on Electrochemical Energy Conversion,** International Society of Electrochemistry (ISE), 2006


INTERNATIONAL SOCIETY OF ELECTROCHEMISTRY

ORONZIO DE NORA FOUNDATION PRIZE OF ISE ON ELECTROCHEMICAL ENERGY CONVERSION 2006

**Kyung-Won Park**, for his excellent work aimed at the development of new electrocatalysts and polymer membranes for direct methanol fuel cells.

Christopher M.A. Brett
President of ISE

**Student Research Award of the Battery Division,** The Electrochemical Society, US, 2003


The Battery Division

The Electrochemical Society, Inc.
presents its
Student Research Award
to
Kyung-Won Park
for his work in battery studies

Division Chairman
Award Committee Chairman

**Excellent Graduate Student Award**, Gwangju Institute of Science and Technology, BK21, 2003
**Best Presentation Award**, Fuel Cell Symposium, The Korean Electrochemical Society, 2003
**Best Presentation Award**, Fuel Cell Symposium, The Korean Electrochemical Society, 2002
**Best Presentation Award**, The Korean Chemical Society, 2001
**Best Presentation Award**, The Korean Electrochemical Society, 2000
**Korean Government Scholarship**, 1996~2002

# *Professional Activities*

## Editorial Board Memberships / Conference Organization

**Editorial Board member**, Batteries (ISSN: 1226-086X), 2023~present
**Editor**, Journal of Industrial Engineering and Chemistry (ISSN: 1226-086X), 2014~2019
**Editorial Director**, The Korean Society of Industrial and Engineering Chemistry, 2014-2019
**Editorial Director**, The Korean Electrochemical Society, 2010-2011
**Academic Director**, The Korean Electrochemical Society, 2008-2009

## Reviewer of Scientific Journals

**Electrochemical Energy Storage and Conversion**
Applied Catalysis B: Environmental, Elsevier.
ACS Sustainable Chemistry & Engineering, ACS.
Journal of The Electrochemical Society, ECS.
Energy Storage Materials, Elsevier.
Electrochimica Acta, Elsevier.
International Journal of Hydrogen Energy, Elsevier.
ChemCatChem, Wiley.
Journal of Electroanalytical Chemistry, Elsevier.
Journal of Power Sources, Elsevier.
Chemical Engineering Journal, Elsevier.
Applied Catalysis A: General, Elsevier.
Journal of Energy Chemistry, Elsevier.
Energy & Fuels, ACS.

**Nanostructures & Materials**
ACS Nano, ACS.
Small, Wiley.
Journal of Alloys and Compounds, Elsevier.
Solid State Communications, Elsevier.
Materials Today Chemistry, Elsevier.
ACS Applied Nano Materials, ACS.
ACS Applied Materials & Interfaces, ACS.
Composites Part B, Elsevier.
Applied Surface Science, Elsevier.
Materials Chemistry and Physics, Elsevier.

## Service Activities

**National / Regional**
**Reviewer**, On-line evaluation of Mid-level Research Projects, National Research Foundation of Korea, 2023
**Reviewer**, On-line evaluation of Postdoc Domestic Training Projects, National Research Foundation of Korea, 2023
**Reviewer**, On-line evaluation of Mid-level Research Projects, National Research Foundation of Korea, 2022
**Reviewer**, On-line evaluation of Young Researcher Projects, National Research Foundation of Korea, 2022
**Reviewer**, On-line evaluation of Excellent Young Researcher Projects, National Research Foundation of Korea, 2021
**Reviewer**, On-line evaluation of Postdoc Oversea Training Projects, National Research Foundation of Korea, 2021
**Reviewer**, On-line evaluation of Mid-level Research Projects, National Research Foundation of Korea,

2020
**Reviewer**, On-line evaluation of Postdoc Oversea Training Projects, National Research Foundation of Korea, 2020
**Reviewer**, On-line evaluation of Basic Research Projects, National Research Foundation of Korea, 2020
**Reviewer**, On-line evaluation of Young Researcher Projects, National Research Foundation of Korea, 2019
**Reviewer**, On-line evaluation of Postdoc Oversea Training Projects, National Research Foundation of Korea, 2019
**Reviewer**, On-line evaluation of Basic Research Projects, National Research Foundation of Korea, 2019
**Reviewer**, On-line evaluation of Basic Research Projects, National Research Foundation of Korea, 2018
**Reviewer**, On-line evaluation of Young Researcher Projects, National Research Foundation of Korea, 2015
**Reviewer**, On-line evaluation of Young Researcher Projects, National Research Foundation of Korea, 2014
**Reviewer**, On-line evaluation of Mid-level Research Projects, National Research Foundation of Korea, 2014
**Review Panelist**, Technology development project linked to commercialization, Korea Institute for Advancement of Technology, 2014

**University / Departmental**
**Department Head**, Undergraduate & Graduate Programs, Chemical Engineering, Soongsil University, S. Korea, 2021~2023
**Center Director**, Energy Convergence Center, Soongsil University, S. Korea, 2017~present
**Center Director**, Center for Ultra-small Five Sense Sensor Convergence Information Technology, Soongsil University, S. Korea, 2014~2016
**Committee Member**, Institute of Convergence Technology, Soongsil University, S. Korea, 2010~2012
**Committee Member**, New Undergraduate Student Admissions, Soongsil University, S. Korea, 2009~2011
**Program Director**, Accreditation Board for Engineering Education of Korea (ABEEK), Chemical Engineering, Soongsil University, S. Korea, 2006~2008

## Professional Memberships

Member of International Society of Electrochemistry (ISE)
Member of Materials Research Society (USA)
Member of The Electrochemical Society (USA)
Member of American Chemical Society (ACS)
Member of The Korean Society of Industrial and Engineering Chemistry
Member of The Korean Electrochemical Society

# *Research Projects*

## Ongoing Projects

**NRF (2022M3H4A3A01083536) | $575,000 | 07/2022~12/2026**
**Title:** Development of surface stabilization methods for a highly durable porous transport layer in proton exchange membrane water electrolysis
**Source:** National Research Foundation of Korea
**Role:** Principal Investigator
**Description:** The goal of this project is to develop surface stabilization methods for a highly durable porous transport layer in proton exchange membrane water electrolysis.

**NRF (2020R1A6A1A03044977) | $6,300,000 | 06/2020~05/2029**
**Title:** University-focused research institute support project in the field of science and engineering
**Source:** National Research Foundation of Korea
**Role:** Co-Investigator
**Description:** The goal of this project is to establish smart integrated management systems and education

platforms to improve industrial and living environments.

## Past Projects

**NRF (2020R1A2C2010510) | $550,000 | 03/2020~02/2023**
**Title:** Research on functional interfacial structure for lithium-based high-capacity energy storage
**Source:** National Research Foundation of Korea
**Role:** Principal Investigator
**Description:** The goal of this project is to investigate functional interfacial structures for lithium-based high-capacity energy storage devices.

**BE (201930961862) | $100,000 | 11/2019~11/2021**
**Title:** Development of high-capacity hydrogen-iodine redox flow battery element technology
**Source:** Boyaz Energy Co., Ltd.
**Role:** Principal Investigator
**Description:** (Classified)

**NRF (2019M3E6A1104186) | $1,400,000 | 12/2019~12/2023**
**Title:** Development of high current density (1A/cm2 @ 1.7 V) water electrolysis system using lithium-ion exchange membrane
**Source:** National Research Foundation of Korea
**Role:** Principal Investigator
**Description:** The goal of this project is to develop a high current density water electrolysis system using lithium-ion exchange membrane.

**BE (2018) | $50,000 | 09/2017~09/2018**
**Title:** Development of nanostructured catalyst and support for high-efficiency hydrogen generator
**Source:** Boyaz Energy Co., Ltd.
**Role:** Principal Investigator
**Description:** (Classified)

**SMBT (2017) | $41,000 | 09/2017~08/2018**
**Title:** Development of 300W fuel cell using non-precious metal oxygen reduction catalyst
**Source:** Small and Medium Business Technology Information Promotion Agency
**Role:** Principal Investigator
**Description:** The goal of this project is to develop 300W fuel cell using non-precious metal oxygen reduction catalyst.

**SMBT (C0503227) | $36,000 | 06/2017~05/2018**
**Title:** Development of commercialization technology for high-capacity (500mWh/g) metal-air fuel cell
**Source:** Small and Medium Business Technology Information Promotion Agency
**Role:** Principal Investigator
**Description:** The goal of this project is to investigate commercialization technology for high-capacity metal-air fuel cell.

**NRF (2017M1A2A2086648) | $1,633,000 | 12/2017~01/2022**
**Title:** Development of VOCs reduction technology using electrochemical low-temperature oxidation method
**Source:** National Research Foundation of Korea
**Role:** Principal Investigator
**Description:** The goal of this project is to investigate VOCs reduction technology using electrochemical low-temperature oxidation method.

**NRF (2016R1A2B2016033) | $499,000 | 06/2016~05/2019**
**Title:** Development of highly efficient oxygen reduction catalysts using optical analysis and quantum chemical calculations

**Source:** National Research Foundation of Korea
**Role:** Principal Investigator
**Description:** The goal of this project is to investigate highly efficient oxygen reduction catalysts using optical analysis and quantum chemical calculations.

**NRF (BK2016) | $1,660,000 | 03/2016~02/2020**
**Title:** Graduate student training project for beauty-related engineering (Brain Korea Plus)
**Source:** National Research Foundation of Korea
**Role:** Principal Investigator
**Description:** The goal of this project is to train graduate students for beauty-related engineering.

**CNU (20153030031670) | $340,000 | 12/2015~09/2018**
**Title:** High efficiency (over 45%), long life (over 100 cycles) integrated reversible fuel cell
**Source:** Chonnam National University
**Role:** Principal Investigator
**Description:** The goal of this project is to investigate nanostructure catalysts for an integrated reversible fuel cell with high efficiency and long life cycle.

**KIER (20148520120160) | $150,000 | 12/2014~11/2017**
**Title:** Development of 100 W polymer fuel cell stack with porous gas flow path
**Source:** Korea Institute of Energy Research
**Role:** Principal Investigator
**Description:** The goal of this project is to develop Pt-based catalysts for100 W polymer fuel cell stack. (*International co-working project with Imperial College London*).

**KITEP (20138520030800) | $960,000 | 12/2013~11/2016**
**Title:** Development of precious metal-zero low-temperature fuel cells based on high-performance multidimensional carbon nano fusion structure
**Source:** Korea Institute of Energy Technology Evaluation and Planning
**Role:** Principal Investigator
**Description:** The goal of this project is to develop precious metal-zero low-temperature fuel cells based on high-performance multidimensional carbon nanostructures (*International co-working project with Oxford University*).

**NRF (2013R1A1A2012541) | $150,000 | 06/2013~05/2016**
**Title:** Development of triple-junction nanoelectrode materials for highly reliable electrochemical reactions
**Source:** National Research Foundation of Korea
**Role:** Principal Investigator
**Description:** The goal of this project is to investigate triple-junction nanoelectrode materials for highly reliable electrochemical reactions.

**ID (2013) | $10,000 | 01/2013~03/2013**
**Title:** Open-ended IP R&D project (next-generation battery)
**Source:** Intellectual Discovery
**Role:** Principal Investigator
**Description:** (Classified)

**KITEP (2011-0022892) | $600,000 | 04/2011~03/2012**
**Title:** Graduate student training project for developing new and renewable energy sources
**Source:** Korea Institute of Industrial Technology Evaluation and Planning
**Role:** Principal Investigator
**Description:** The goal of this project is to train graduate students for developing new and renewable energy sources.

**KBRA (2010-0022892) | $120,000 | 03/2011~02/2014**
**Title:** Development of 3.6Ah class cylindrical lithium secondary battery technology
**Source:** Korea Battery Research Association

**Role:** Principal Investigator
**Description:** The goal of this project is to develop 3.6 Ah class cylindrical lithium secondary battery technology.

**KETEP (2010) | $2,446,000 | 09/2010~08/2015**
**Title:** Graduate student training project for high-efficiency energy devices
**Source:** Korea Institute of Energy Technology Evaluation and Planning
**Role:** Co-Investigator
**Description:** The goal of this project is to train graduate students for developing high-efficiency energy devices.

**NRF (2010-0022892) | $180,000 | 09/2010~08/2013**
**Title:** Study of electrochemical energy conversion characteristics of mesoporous nanoparticles using template-free synthesis method
**Source:** National Research Foundation of Korea
**Role:** Principal Investigator
**Description:** The goal of this project is to investigate electrochemical energy conversion characteristics of mesoporous nanoparticles using template-free synthesis method.

**NRF (2009-0093051/2011-0030335/2012M1A2A2671689) | $614,000 | 09/2009~09/2015**
**Title:** New concept fuel cell using nitrogen cycle and Pt-free reduction reaction
**Source:** National Research Foundation of Korea
**Role:** Principal Investigator
**Description:** The goal of this project is to develop new concept fuel cell using nitrogen cycle and Pt-free reduction reaction.

**KRF (2010-0065330) | $108,000 | 05/2009~04/2011**
**Title:** Research on nanostructure control and stability of electrocatalysts using organic-inorganic composite materials
**Source:** Korea Research Foundation
**Role:** Principal Investigator
**Description:** The goal of this project is to train graduate students with nanotechnology in fuel cells.

**KIERTPE (200915500050) | $260,000 | 03/2009~02/2012**
**Title:** Training of human resources with nanotechnology convergence for fuel cells
**Source:** Korea Institute of Energy Resources Technology Planning and Evaluation
**Role:** Principal Investigator
**Description:** The goal of this project is to train graduate students for nanotechnology in fuel cells.

**DEM (200917060166) | $70,000 | 03/2009~02/2011**
**Title:** Research on synthesis and electrochemical properties of ultra-high capacity nano-cathode materials
**Source:** Daejeong EM Co., Ltd.
**Role:** Principal Investigator
**Description:** (Classified)

**KIAT (2009) | $501,000 | 09/2009~02/2013**
**Title:** Graduate student training project for engine design and core control technology in high-performance fuel cell technology
**Source:** Korea Institute for Advancement of Technology
**Role:** Co-Investigator
**Description:** The goal of this project is to train human resources with engine design and core control technology in high-performance fuel cell technology.

**RDA (200814890027) | $100,000 | 04/2008~12/2010**
**Title:** Bio-nano energy conversion system using fibrous biomass
**Source:** Rural Development Administration
**Role:** Principal Investigator

**Description:** The goal of this project is to develop bio-nano energy conversion system using fibrous biomass.

**KIST (2008-N-FC08-P-01-3-030) | $101,000 | 08/2008~07/2011**
**Title:** Development of platinum-based catalyst by nano-shape structure control
**Source:** Korea Institute of Science and Technology
**Role:** Principal Investigator
**Description:** The goal of this project is to develop platinum-based catalysts by nano-shape structure control.

**Hyundai Motors (2008-N-FC12-J-01-2-100) | $250,000 | 10/2008~07/2012**
**Title:** Support-catalyst interaction study to ensure MEA stability for hydrogen fuel cells
**Source:** Hyundai Motor Company Environmental Technology Research Center
**Role:** Principal Investigator
**Description:** (Classified)

**Hyundai Motors (200710800174) | $30,000 | 01/2008~07/2008**
**Title:** Research on improving hydrogen fuel cell efficiency and durability using carbon-free nanoelectrodes
**Source:** Hyundai Motor Group NGV
**Role:** Principal Investigator
**Description:** (Classified)

**KRF (200710590134) | $24,200 | 08/2007~07/2008**
**Title:** Development of platinum-based nanocatalyst structure for high-efficiency energy conversion device using electro-chemical energy
**Source:** Korea Research Foundation
**Role:** Principal Investigator
**Description:** The goal of this project is to develop platinum-based nanocatalyst structures for high-efficiency energy conversion devices using electro-chemical energy.

**KRF (200610590133) | $44,000 | 11/2006~10/2007**
**Title:** Research on hydrogen ion-electron conductivity using electrochromic phenomenon in nanohybrid catalyst structure for hydrogen fuel cells
**Source:** Korea Research Foundation
**Role:** Principal Investigator
**Description:** The goal of this project is to understand hydrogen ion-electron conductivity using electrochromic phenomenon in nanohybrid catalyst structure for hydrogen fuel cells.

# *Teaching*

## Graduate Students Advised (as of 2024)

**55. So-Yeon Ahn, M.S.** Chemical Engineering, Soongsil University, 2022~2024
Thesis: F-doped Co-free LiNixMn1-xO2 (0.7£x£0.9) Cathodes for Ameliorating Electrochemical Performance of Li-ion Batteries
Current Position: To be updated

**54. Yoonhi Gu, M.S.** Chemical Engineering, Soongsil University, 2022~2024
Thesis: NiFe layered double hydroxides synthesized based on solvent properties for enhanced oxygen evolution reaction in anion exchange membrane water electrolysis
Current Position: To be updated

**53. Da-Mi Lim, M.S.** Chemical Engineering, Soongsil University, 2022~2024
Thesis: 3D-stacked electrospun Fe-doped NiCo2O4 nanofibers as integrated electrodes for oxygen evolution reaction
Current Position: Hyundai Motors R&D

**52. Seon-Ha Park, M.S.** Chemical Engineering, Soongsil University, 2022~2024
Thesis: Tri-doped mesoporous carbon nanostructures prepared via template method for enhanced oxygen reduction reaction
Current Position: Hyundai Steel R&D

**51. Won-Chan Kim, M.S.** Chemical Engineering, Soongsil University, 2022~2024
Thesis: Ameliorated Electrochemical Performance of Fe-doped Li2MnO3 Cathodes for Li-ion Batteries
Current Position: Samsung SDI R&D

**50. Jeong-Hyeon Byeon, M.S.** Chemical Engineering, Soongsil University, 2021~2023
Thesis: Kirkendall effect-driven formation of hollow PtNi alloy nanostructures with enhanced oxygen reduction reaction performance
Current Position: LG Chemical R&D

**49. Yu-Yeon Park, M.S.** Chemical Engineering, Soongsil University, 2021~2023
Thesis: VN/rGO composite structure as an interlayer with dual lithium polysulfide adsorption effect for lithium-sulfur batteries
Current Position: LG Chemical R&D

**48. Min-Ha Kim, M.S.** Chemical Engineering, Soongsil University, 2021~2023
Thesis: Fe-doped Co3O4 nanostructures prepared via hard-template method and used for the oxygen evolution reaction in alkaline media
Current Position: Hyundai Steel R&D

**47. Seong-Nam Lee, M.S.** Chemical Engineering, Soongsil University, 2021~2023
Thesis: Enhanced cycling performance of Fe-doped LiMn2O4 truncated octahedral cathodes for Li-ion batteries
Current Position: LG Chemical R&D

**46. Hak Joo Lee, M.S.** Chemical Engineering, Soongsil University, 2020~2022
Thesis: Mesoporous Spinel Ir-doped NiCo2O4 Nanostructure as an Efficient Catalyst for Oxygen Evolution Reaction
Current Position: Hyundai Motors R&D

**45. Woo-Jun Lee, M.S.** Chemical Engineering, Soongsil University, 2020~2022
Thesis: Enhanced oxygen reduction reaction performance of Pt catalysts on Nb2O5 nanoparticles decorated carbon nanostructures
Current Position: Hyundai Motors R&D

**44. Jae-Hoon Shin, M.S.** Chemical Engineering, Soongsil University, 2020~2022
Thesis: Porous activated carbons derived from coffee waste for use as functional separators in lithium-sulfur batteries
Current Position: Ecopro BM R&D

**43. Sung-Beom Kim, M.S.** Chemical Engineering, Soongsil University, 2020~2022
Thesis: Li-ion diffusivity and electrochemical performance of high-nickel cathode material doped with fluoride ions
Current Position: SK ON R&D

**42. Sang-Hyun Moon, Ph.D.** Chemical Engineering, Soongsil University, 2017~2022
Thesis: A Study on the Optimization of functional separator and electrode structure for high stability lithium sulfur battery
Current Position: Korea Research Institute of Chemical Technology

**41. Jin-Hyeok Choi, M.S.** Chemical Engineering, Soongsil University, 2019~2021
Thesis: Enhanced electrochemical performance of MoS2/graphite nanosheet nanocomposites

Current Position: Ecopro BM R&D

**40. Seul-Gi Lee, M.S.** Chemical Engineering, Soongsil University, 2019~2021
Thesis: Effect of Sb-doped SnO2 nanostructures on electrocatalytic performance of a Pt catalyst for methanol oxidation reaction
Current Position: Ecopro BM R&D

**39. Yo-Seob Kim, M.S.** Chemical Engineering, Soongsil University, 2018~2020
Thesis: Ni2P/graphitic carbon nanostructure electrode with superior electrochemical performance
Current Position: Samsung SDI R&D

**38. Hyeona Kim, M.S.** Chemical Engineering, Soongsil University, 2018~2020
Thesis: Facile one-pot synthesis of Ge/TiO2 nanocomposite materials with improved electrochemical performance
Current Position: SK ON R&D

**37. Min-Cheol Kim, Ph.D.** Chemical Engineering, Soongsil University, 2014~2019
Thesis: A study on the optimization of cathode catalyst and gas diffusion layer structure for high performance lithium air batteries
Current Position: Dongsung Chemical R&D

**36. Suk-Hui Kwon, M.S.** Chemical Engineering, Soongsil University, 2017~2019
Thesis: Synergistically enhanced electrocatalytic stability of Pt catalyst supported by doped porous carbon nanostructure
Current Position: Hyundai Motors R&D

**35. Ji-Eun Lee, M.S.** Chemical Engineering, Soongsil University, 2017~2019
Thesis: Role of polyvinylpyrrolidone in electrochemical performance of Li2MnO3 cathode for lithium-ion batteries
Current Position: Hyundai Mobis R&D

**34. Yeon-Kyung Shin, M.S.** Chemical Engineering, Soongsil University, 2017~2019
Thesis: Pore-controlled polymer membrane with Mn(II) ion trapping effect for high-rate performance LiMn2O4 cathode
Current Position: Samsung SDI R&D

**33. Sojeong Cho, M.S.** Chemical Engineering, Soongsil University, 2017~2019
Thesis: F-doped Li1.15Ni0.275Ru0.575O2 cathode materials with long cycle life and improved rate performance
Current Position: LG Chemical R&D

**32. Eun-Soo Kim, M.S.** Chemical Engineering, Soongsil University, 2017~2019
Thesis: Surface modified and size-controlled octahedral Cu2O nanostructured electrodes for lithium-ion batteries
Current Position: SK Hynix

**31. Ji-Eun Won, M.S.** Chemical Engineering, Soongsil University, 2016~2018
Thesis: PtIr/Ti4O7 as a bifunctional electrocatalyst for improved oxygen reduction and oxygen evolution reactions
Current Position: To be updated

**30. Kyeng-Bae Ma, M.S.** Chemical Engineering, Soongsil University, 2016~2018
Thesis: Direct ethanol fuel cells with superior methanol-tolerant non-precious metal cathode catalysts for oxygen reduction reaction
Current Position: KT&G R&D

**29. Do-Hyoung Kim, M.S.** Chemical Engineering, Soongsil University, 2016~2018

Thesis: The role of arginine as nitrogen doping and carbon source for enhanced oxygen reduction reaction
Current Position: Samsung Electronics

**28. Da-Hee Kwak, Ph.D.** Chemical Engineering, Soongsil University, 2013~2018
Thesis: Study on Doped Mesoporous Carbon Nanostructures as Non-Precious Metal Catalysts for Oxygen Reduction Reaction
Award: Samsung Human Tech Paper Award, Samsung Electronics, 2015
Current Position: Hyundai Motors R&D

**27. Jin-Young Park, M.S.** Chemical Engineering, Soongsil University, 2016~2018
Thesis: Organic ligand-free PtIr alloy nanostructures for superior oxygen reduction and evolution reactions
Current Position: Doosan DMI R&D

**26. Hyun-Suk Park, M.S.** Chemical Engineering, Soongsil University, 2015~2017
Thesis: Sulfur-doped porphyrinic carbon nanostructures synthesized by amorphous MoS2 for oxygen reduction reaction in an acid medium
Current Position: Boyaz Energy R&D

**25. Sang-Beom Han, Ph.D.** Chemical Engineering, Soongsil University, 2010~2017
Thesis: The Chemically Regenerative redox fuel cells via liquid-catalyst without precious metals
Award: Seoul Fellowship, Seoul Scholarship Foundation, 2009
Current Position: CTO, Boyaz Energy

**24. Hui-Seon Choe, M.S.** Chemical Engineering, Soongsil University, 2015~2017
Thesis: In-situ synthesis of Ge/Ti4O7 composite with enhanced electrochemical properties
Current Position: Samsung SDI R&D

**23. In-Ae Choi, M.S.** Chemical Engineering, Soongsil University, 2015~2017
Thesis: Doped porous carbon nanostructures as non-precious metal catalysts prepared by amino acid glycine for oxygen reduction reaction
Current Position: Samsung SDI R&D

**22. Gyu-Ho Lee, M.S.** Chemical Engineering, Soongsil University, 2015~2017
Thesis: Synthesis of Ge/C composites as anodes using glucose as a reductant and carbon source for lithium-ion batteries
Current Position: Ottogi Co. R&D

**21. Si-Jin Kim, Ph.D.** Chemical Engineering, Soongsil University, 2011~2017
Thesis: Synthesis of high-capacity electrode materials (Li2MnO3 based, Si based) for Li-ion batteries and their electrochemical performance
Award: Material Popularization Contest Award, Materials Research Institute, S. Korea, 2016
Current Position: National Research Foundation of Korea

**20. Jin-Yeon Lee, M.S.** Chemical Engineering, Soongsil University, 2014~2016
Thesis: Porous Cu-rich@Cu3Pt alloy catalyst with a low Pt loading for enhanced electrocatalytic reactions
Current Position: Korea Institute of Industrial Technology

**19. Seul Lee, M.S.** Chemical Engineering, Soongsil University, 2014~2016
Thesis: Bimodal porous iron-nitrogen doped highly crystalline carbon nanostructure as a cathode catalyst for oxygen reduction reaction in an acid medium
Current Position: Samsung Electronics

**18. Da-Mi Kim, M.S.** Chemical Engineering, Soongsil University, 2014~2016
Thesis: In-Situ Synthesis and Characterization of Ge Embedded Electrospun Carbon Nanostructures as High Performance Anode Material for Lithium-Ion Batteries
Current Position: Samsung Electronics

**17. Eui-Tak Hwang, M.S.** Chemical Engineering, Soongsil University, 2013~2015
Thesis: Synthesis of Pt-Rich@Pt–Ni alloy core–shell nanoparticles using halides
Current Position: FITI Testing & Research Institute

**16. Han-Chul Park, M.S.** Chemical Engineering, Soongsil University, 2013~2015
Thesis: Tungsten nitride nanoplates as an anode material for lithium ion batteries
Current Position: Youl Chon Chemical Co. R&D

**15. Young-Woo Lee, Ph.D.** Chemical Engineering, Soongsil University, 2009~2014
Thesis: Synthesis of Shape- and Structure-Controlled Pt-based Nanocatalysts for Electrochemical Catalytic Reactions
Award: H. H. Dow Memorial Student Achievement Award, The Electrochemical Society, US, 2013
Current Position: Professor, Soonchunhyang University, S. Korea

**14. Bo-Mi Hwang, M.S.** Chemical Engineering, Soongsil University, 2012~2014
Thesis: Truncated octahedral LiMn2O4 cathode for high-performance lithium-ion batteries
Current Position: EMW Co. R&D

**13. Kyung-Hoon Lee, M.S.** Chemical Engineering, Soongsil University, 2012~2014
Thesis: Single-crystalline mesoporous Mo2N nanobelts with an enhanced electrocatalytic activity for oxygen reduction reaction
Current Position: Samsun Electronics

**12. Ah-Reum Park, M.S.** Chemical Engineering, Soongsil University, 2012~2014
Thesis: Enhanced electrocatalytic activity and stability of PdCo@Pt core-shell nanoparticles for oxygen reduction reaction
Current Position: HnPower

**11. Je-Suk Moon, M.S.** Chemical Engineering, Soongsil University, 2012~2014
Thesis: Iron-nitrogen-doped mesoporous tungsten carbide nanostructures as an oxygen reduction electrocatalyst
Award: Samsung Human Tech Paper Award, Samsung Electronics, 2013
Current Position: Samsun Electronics

**10. Biao Han, M.S.** Chemical Engineering, Soongsil University, 2011~2013
Thesis: Single crystalline rutile TiO2-NWs for improved lithium-ion intercalation properties
Current Position: SoulBrain Co. Ltd.

**9. Seong-Bae Kim, Ph.D.** Chemical Engineering, Soongsil University, 2009~2013
Thesis: Development of multi-component cathode materials for lithium secondary batteries
Current Position: LG Chemical

**8. Do-Young Kim, M.S.** Chemical Engineering, Soongsil University, 2010~2012
Thesis: TiO2@C core-shell nanostructure electrodes for improved electrochemical properties in alkaline solution
Current Position: NOROO Holdings R&D

**7. A-Ra Ko, M.S.** Chemical Engineering, Soongsil University, 2009~2011
Thesis: Synergy Effect of Nanostructure Electrodes Supported by Tungsten Carbide and Oxide for Methanol Electrooxidation
Current Position: To be updated

**6. Hyun-Su Kim, M.S.** Chemical Engineering, Soongsil University, 2009~2011
Thesis: Controlled nanostructure electrodes for dye-sensitized solar cells
Current Position: To be updated

**5. Jong-Min Lee, M.S.** Chemical Engineering, Soongsil University, 2008~2010

Thesis: Core-Shell Nanostructure Electrodes for Improved Electrocatalytic Properties in Methanol Electrooxidation
Current Position: LG Chemical

**4. Jy-Yeon Kim, M.S.** Chemical Engineering, Soongsil University, 2008~2010
Thesis: Improved Tri-iodide Reduction Reaction of Co-TMPP/C as a Non-Pt Counter Electrode in Dye-Sensitized Solar Cells
Current Position: PICOSTECH Co. Ltd.

**3. Jae-Kyung Oh, M.S.** Chemical Engineering, Soongsil University, 2008~2010
Thesis: TiO2 Nano branch electrodes synthesized by seeding method for dye-sensitized solar cells
Current Position: Hyundia Motors R&D

**2. Jin-Kyu Lee, M.S.** Chemical Engineering, Soongsil University, 2007~2009
Thesis: Synthesis of TiO2 nanoparticles via hydrothermal process for dye-sensitized solar cells
Current Position: SGE Co. Ltd.

**1. You-Jung Song, M.S.** Chemical Engineering, Soongsil University, 2007~2009
Thesis: Synthesis of Pd Dendritic Nanowires by Electrochemical Deposition
Current Position: Hyundai Motors R&D

## Current Graduate Students (as of 2024)

**1. Deok-Hye Park,** Ph.D. Student, Chemical Engineering, Soongsil University, 2019~present
Research Interest: Electrochemical Water Electrolysis

**2. Ji-Hwan Kim,** Ph.D. Student, Chemical Engineering, Soongsil University, 2020~present
Research Interest: Electrolytes for All-Solid-State Batteries

**3. Jae-Sung Jang,** Ph.D. Student, Chemical Engineering, Soongsil University, 2020~present
Research Interest: Li-Air Batteries

**4. Chan-Eui Hong,** M.S. Student, Chemical Engineering, Soongsil University, 2022~present
Research Interest: Electrocatalysts for Ammonia Fuel Cells

**5. Dong-Geon Seo,** M.S. Student, Chemical Engineering, Soongsil University, 2023~present
Research Interest: Pt-based Catalysts for Proton Exchange Membrane Fuel Cells and Water Electrolysis

**6. Gang-In Lee,** M.S. Student, Chemical Engineering, Soongsil University, 2023~present
Research Interest: Cathode for Li-S Batteries

**7. Jong-Won Lim,** M.S. Student, Chemical Engineering, Soongsil University, 2023~present
Research Interest: Cathode for Li-ion Batteries

**8. Jae-Ik Han,** M.S. Student, Chemical Engineering, Soongsil University, 2023~present
Research Interest: Anode Catalysts for Proton Exchange Water Electrolysis

**9. Ji-Min Hong,** M.S. Student, Chemical Engineering, Soongsil University, 2023~present
Research Interest: Oxide Electrolytes for All-Solid-State Batteries

**10. Ji-Min Hong,** M.S. Student, Chemical Engineering, Soongsil University, 2023~present
Research Interest: Oxide Electrolytes for All-Solid-State Batteries

**11. Eo-Jin Kim,** M.S. Student, Chemical Engineering, Soongsil University, 2024~present
Research Interest: Proton Exchange Membrane Water Electrolysis

**12. Hyun-Moon Jo,** M.S. Student, Chemical Engineering, Soongsil University, 2024~present
Research Interest: Alkaline Exchange Membrane Water Electrolysis

**13. Min-Jae Kim,** M.S. Student, Chemical Engineering, Soongsil University, 2024~present
Research Interest: Oxide Electrolytes for All-Solid-State Batteries

**14. Se-Yeon Jang,** M.S. Student, Chemical Engineering, Soongsil University, 2024~present
Research Interest: Cathode for Li-ion Batteries

**15. Ji-Woong Yun,** M.S. Student, Chemical Engineering, Soongsil University, 2024~present
Research Interest: Proton Exchange Membrane Water Electrolysis

## Courses Taught

Instructor, **Hydrogen Production: Electrochemistry**, Graduate Course, Soongsil University, 2024
Instructor, **Electrochemical Energy Engineering**, Undergrad Elective, Soongsil University, 2024
Instructor, **Advanced Battery Engineering**, Undergrad Elective, Soongsil University, 2023 / 2024
Instructor, **Nanomaterials Engineering**, Undergrad Elective, Soongsil University, 2022 / 2023
Instructor, **Hydrogen Energy Applications**, Graduate Course, Soongsil University, 2022
Instructor, **Understanding Scientific Papers**, Graduate Course, Soongsil University, 2022
Instructor, **Electrochemical Engineering**, Undergrad Elective, Soongsil University, 2021 / 2022
Instructor, **Nano Application Engineering**, Graduate Course, Soongsil University, 2021
Instructor, **Instrument analysis**, Undergrad Elective, Soongsil University, 2020~2024
Instructor, **Energy Device Engineering**, Undergrad Elective, Soongsil University, 2020 / 2022
Instructor, **Energy Materials Science**, Graduate Course, Soongsil University, 2017
Instructor, **Chemical Engineering Thermodynamics II**, Undergrad Elective, Soongsil University, 2014~2018 / 2020
Instructor, **Engineering Design**, Undergrad Elective, Soongsil University, 2013~2015
Instructor, **Introduction to Electrochemical Engineering**, Graduate Course, Soongsil University, 2013
Instructor, **Energy Materials**, Undergrad Elective, Soongsil University, 2013 / 2017
Instructor, **Special Topics on Energy Conversion**, Graduate Course, Soongsil University, 2013
Instructor, **Spectial Topics on Secondary Batteries**, Graduate Course, Soongsil University, 2012
Instructor, **Nano Device Engineering**, Undergrad Elective, Soongsil University, 2009~2011 / 2018 / 2022
Instructor, **Chemical Engineering Thermodynamics I**, Core Engineering Course, Soongsil University, 2008 / 2009 / 2014~2018 /2020 /2021
Instructor, **Introduction to Engineering Design**, Undergrad Elective, Soongsil University, 2007 / 2012
Instructor, **Energy Engineering**, Graduate Course, Soongsil University, 2007
Instructor, **Inorganic Chemistry**, Undergrad Elective, Soongsil University, 2007
Instructor, **Physical Chemistry**, Core Engineering Course, Soongsil University, 2006
Instructor, **Materials Science**, Undergrad Elective, Soongsil University, 2006~2008 / 2010 / 2013 / 2014
Instructor, **Introduction to Nanotechnology**, Graduate Course, Soongsil University, 2005
Instructor, **Engineering Mathematics**, Undergrad Elective, Soongsil University, 2005~2007

# *Publications*

## Representative SCI Papers (*Corresponding author)

**[Electrolytes for All-Solid-State Batteries]** "Heterogeneous Double-Layered Hybrid Solid Electrolyte with a Concentration-Gradient Structure for High-Performance All-Solid-State Li Batteries", Ji-Hwan Kim, Ji-Won Sun, Jae-Sung Jang, Deok-Hye Park, So-Yeon Ahn, Won-Chan Kim, Kyoungmin Min*, **Kyung-Won Park***, ***Energy Storage Materials*** 64 (2024) 103080

**[High-Capacity Cathode for Li-ion Batteries]** "Ameliorated Electrochemical Performance of Fe-doped Li2MnO3 Cathodes for Li-ion Batteries", Won-Chan Kim, Ji-Hwan Kim, Juo Kim, Deok-Hye Park, Yu-Yeon Park, Jae-Sung Jang, So-Yeon Ahn, Kyoungmin Min*, Kyung-Won Park*, ***Journal of Materials Chemistry A*** 12 (2024) 1135-1144

**[Advanced Water Electrolysis for Hydrogen Production]** "Lithium-ion exchange membrane water electrolysis using a cationic polymer-modified polyethersulfone membrane", Yong-Soo Lee, Deok-Hye Park, Seon-Ha Park, Yun-Hui Gu, Da-Mi Lim, Sang-Beom Han, **Kyung-Won Park***, ***ACS Sustainable Chemistry & Engineering***, 11(27) (2023) 10183-10190

**[Andoe Catalyst for Water Electrolysis]** "Spherical nickel doped cobalt phosphide as an anode catalyst for oxygen evolution reaction in alkaline media: From catalysis to system", Deok-Hye Park, Min-Ha Kim, Myungjae Kim, Jeong-Hyeon Byeon, Jae-Sung Jang, Ji-Hwan Kim, Da-Mi Lim, Seon-Ha Park, Yun-Hui Gu, Jiwoong Kim, **Kyung-Won Park***, ***Applied Catalysis B***, 327 (2023) 122444

**[Li-Air Batteries]** "Nature Inspired Cathodes using High-density Carbon Papers with Eddy Current Effect for High-rate Performance Li-air Batteries", Min-Cheol Kim, Jin-Young So, Sang-Hyun Moon, Sang-Beom Han, Sojeong Choi, Eun-Soo Kim, Yeon-Kyung Shin, Ji-Eun Lee, Da-Hee Kwak, Chanho Lee, Won-Gyu Bae, and **Kyung-Won Park***, ***Journal of Materials Chemistry A*** 6 (2018) 9550-9560

**[Fuel Cells using Redox/Regeneration Reactions]** "High-Performance Chemically Regenerative Redox Fuel Cells using a NO3-/NO Regeneration Reaction", Sang-Beom Han, Da-Hee Kwak, Hyun Suk Park, In-Ae Choi, Jin-Young Park, Si-Jin Kim, Min-Cheol Kim, Seongho Hong, and **Kyung-Won Park***, ***Angewandte Chemie International Edition***, 56 (2017) 2893-2897.

**[Non-Pt Catalyst for Electrochemical Oxygen Reduction]** "Fe/N/S-doped mesoporous carbon nanostructures as electrocatalyst for oxygen reduction reaction in acid medium", Da-Hee Kwak, Sang-Beom Han, Y.-W. Lee, Hyun-Suk Park, In-Ae Choi, Min-Cheol Kim, Si-Jin Kim, Do-Hyoung Kim, Jung Inn Sohn, **Kyung-Won Park***, ***Applied Catalysis B***, 203 (2017) 889-898.

**[Nanostructured Anode for Li-ion Batteries]** "3D flexible Si based-composite(Si@Si3N4)/CNF electrode with enhanced cyclability and high rate capability for lithium-ion batteries", Si-Jin Kim, Min-Cheol Kim, Sang-Beom Han, Gyu-Ho Lee, Hui-Seon Choe, Da-Hee Kwak, Sun-Yong Choi, Byung-Goo Son, Myoung-Sun Shin, **Kyung-Won Park***, ***Nano Energy***, 27 (2016) 545-553.

**[Fuel Cells using Redox Couple]** "Chemically regenerative redox fuel cells using iron redox couple as a liquid catalyst with co-catalysts", Sang-Beom Han, Da-Hee Kwak, Hyun Suk Park, In-Ae Choi, Jin-Young Park, Kyeng-Bae Ma, Ji-Eun Won, Do-Hyoung Kim, Si-Jin Kim, Min-Cheol Kim, and **Kyung-Won Park***, ***ACS Catalysis***, 6 (2016) 5302-5306.

## Total Journal Articles (Citations 10208, H-index 51, as of Feb. 2024)

1. "F-doped Co-free LiNixMn1-xO2 (0.7£x£0.9) Cathodes for Ameliorating Electrochemical Performance of Li-ion Batteries", So-Yeon Ahn, Deok-Hye Park, Ji-Hwan Kim, Jae-Sung Jang, Won-Chan Kim, Gang-In Lee, Jong-Won Lim, Ji-Min Hong, **Kyung-Won Park***, ***Materials Today Energy*** 41 (2024) 101520
2. "Ameliorated Electrochemical Performance of Fe-doped Li2MnO3 Cathodes for Li-ion Batteries", Won-Chan Kim, Ji-Hwan Kim, Juo Kim, Deok-Hye Park, Yu-Yeon Park, Jae-Sung Jang, So-Yeon

Ahn, Kyoungmin Min*, **Kyung-Won Park***, ***Journal of Materials Chemistry A*** 12 (2024) 1135-1144

3. "NiFe layered double hydroxides synthesized based on solvent properties for enhanced oxygen evolution reaction in anion exchange membrane water electrolysis", Yoonhi Gu, Deok-Hye Park, Min-Ha Kim, Jeong-Hyeon Byeon, Da-Mi Lim, Seon-Ha Park, Ji-Hwan Kim, Jae-Sung Jang, **Kyung-Won Park***, ***Chemical Engineering Journal***, 480 (2024) 147789

4. "Tri-doped mesoporous carbon nanostructures prepared via template method for enhanced oxygen reduction reaction", Seon-Ha Park, Deok-Hye Park, Jeong-Hyeon Byeon, Min-Ha Kim, Yoonhi Gu, Da-Mi Lim, Ji-Hwan Kim, Jae-Sung Jang, Chan-Eui Hong, Dong-Geon Seo, Jae-Ik Han, **Kyung-Won Park***, ***Carbon*** 218 (2024) 118666

5. "Heterogeneous Double-Layered Hybrid Solid Electrolyte with a Concentration-Gradient Structure for High-Performance All-Solid-State Li Batteries", Ji-Hwan Kim, Ji-Won Sun, Jae-Sung Jang, Deok-Hye Park, So-Yeon Ahn, Won-Chan Kim, Kyoungmin Min*, **Kyung-Won Park***, ***Energy Storage Materials*** 64 (2024) 103080

6. "VN/rGO composite structure as an interlayer with dual lithium polysulfide adsorption effect for lithium-sulfur batteries", Yu-Yeon Park, Sang-Hyun Moon, Deok-Hye Park, Jae-Hoon Shin, Ji-Hwan Kim, Jae-Sung Jang, Sung-Beom Kim, Sung-Nam Lee, **Kyung-Won Park***, ***Journal of Alloys and Compounds*** 960 (2023) 170812

7. "Lithium-ion exchange membrane water electrolysis using a cationic polymer-modified polyethersulfone membrane", Yong-Soo Lee, Deok-Hye Park, Seon-Ha Park, Yun-Hui Gu, Da-Mi Lim, Sang-Beom Han, **Kyung-Won Park***, ***ACS Sustainable Chemistry & Engineering***, 11(27) (2023) 10183-10190

8. "Fe-doped Co3O4 nanostructures prepared via hard-template method and used for the oxygen evolution reaction in alkaline media", Min-Ha Kim, Deok-hye Park, Jeong-Hyeon Byeon, Da-Mi Lim, Yun-Hui Gu, Seon-Ha Park, **Kyung-Won Park***, ***Journal of Industrial Engineering and Chemistry***, 123 (2023) 436-446

9. "Spherical nickel doped cobalt phosphide as an anode catalyst for oxygen evolution reaction in alkaline media: From catalysis to system", Deok-Hye Park, Min-Ha Kim, Myungjae Kim, Jeong-Hyeon Byeon, Jae-Sung Jang, Ji-Hwan Kim, Da-Mi Lim, Seon-Ha Park, Yun-Hui Gu, Jiwoong Kim*, **Kyung-Won Park***, ***Applied Catalysis B***, 327 (2023) 122444

10. "Enhanced oxygen reduction reaction performance of Pt catalysts on Nb2O5 nanoparticles decorated carbon nanostructures", Woo-Jun Lee, Deok-Hye Park, Hak-Joo Lee, Jeong-Hyeon Byeon, Min-Ha Kim, and **Kyung-Won Park***, ***Materials Science and Engineering B*** 289 (2023) 116253

11. "Kirkendall effect-driven formation of hollow PtNi alloy nanostructures with enhanced oxygen reduction reaction performance", Jeong-Hyeon Byeon, Deok-Hye Park, Woo-Jun Lee, Min-Ha Kim, Hak-Joo Lee, **Kyung-Won Park***, ***Journal of Power Sources***, 556 (2023) 232483

12. "Solvothermal synthesis-driven quaternary Ni-rich cathode for stability-improved Li-ion batteries", Sung-Beom Kim, So-Yeon Ahn, Ji-Hwan Kim, Jae-Sung Jang, **Kyung-Won Park***, ***Electrochemistry Communications***, 146 (2023) 107426

13. "Development of a lithium-air battery with an improved redox mediator applicable to gel polymer electrolytes", Jae-Sung Jang, Min-Cheol Kim, Ji-Hwan Kim, Deok-Hye Park, Seong-Nam Lee, Yu-Yeon Park, Min-Ha Kim, Jeong-Hyeon Byeon, Jung, Inn Sohn, **Kyung-Won Park***, ***Journal of Industrial Engineering Chemistry*** 117 (2023 220-226

14. "Porous activated carbons derived from coffee waste for use as functional separators in lithium-sulfur batteries", Jae-Hoon Shin, Yu-Yeon Park, Sang-Hyun Moon, Ji-Hwan Kim, Jae-Sung Jang, Sung-Beom Kim, Sung-Nam Lee, **Kyung-Won Park***, ***Energies*** 15 (2022) 7961

15. "High-performance free-standing hybrid solid electrolyte membrane combined with

Li6.28Al0.24La3Zr2O12 and hexagonal-BN for all-solid-state lithium-based batteries", Ji-Hwan Kim, Deok-Hye Park, Jae-Sung Jang, Jae-Hoon Shin, Min-Cheol Kim, Sung-Beom Kim, Sang-Hyun Moon, Seong-Nam Lee, **Kyung-Won Park***, ***Chemical Engineering Journal*** 446(2) (2022) 137035

16. "Polypyrrole coated g-C3N4/rGO/S composite as sulfur host for high stability lithium-sulfur batteries", Sang-Hyun Moon, Jae-Hoon Shin, Ji-Hwan Kim, Jae-Sung Jang, Sung-Beom Kim, Yu-Yeon Park, Seong-Nam Lee, **Kyung-Won Park***, ***Mater Chem Phys*** 287 (2022) 126267

17. "Multifunctional Catalytic Porous Transport Layer Integrated with Chalcogen Compound for High-Performance Electrochemical Energy Devices", Min-Cheol Kim, Seunghwan Jo, Jaesung Jang, Yong-Soo Lee, Sang-Beom Han, Kyung-Won Park and Jung Inn Sohn, ***Applied Surface Science*** 590 (2022) 153030

18. "Enhanced cycling performance of Fe-doped LiMn2O4 truncated octahedral cathodes for Li-ion batteries", Seong-Nam Lee, Sang-Hyun Moon, Deok-Hye Park, Ji-Hwan Kim, Jae-Sung Jang, Sung-Beom Kim, Jae-Hun Shin, Yu-Yeon Park, **Kyung-Won Park***, ***ChemElectroChem*** 9(11) (2022) e202200385

19. "Highly Efficient Lithium-ion Exchange Membrane Water Electrolysis", Yong-Soo Lee, Yong-Hwan Mo, Deok-Hye Park, Woo-Jun Lee, Hak Joo Lee, Hyun-Suk Park, Sang-Beom Han, **Kyung-Won Park***, ***Journal Power Sources***, 529 (2022) 231188

20. "High absorption and fast polysulfides conversion of duel functional separator based on mesoporous-WC/rGO composite for lithium-sulfur batteries", Sang-Hyun Moon, Ji-Hwan Kim, Jae-Hoon Shin, Jae-Sung Jang, Sung-Beom Kim, Seong-Nam Lee, Suk-Hui Kwon, **Kyung-Won Park***, ***Journal Alloys and Compounds***, 904 (2022) 164120

21. "New Highly Stable Ionic Compounds Composed of Multivalent Graphene Quantum Dot Anions and Alkali Metal Cations", Hong-Chul Lim, Min-Chul Kim, Ayoung Kim, Eunji Park, Yunjae Park, Rakwoo Chang, Jong-In Hong, **Kyung-Won Park***, Ik-Soo Shin*, Hansu Kim*, ***Batteries & Supercaps***, (2022) e202100337

22. "Development of Ni-Ir oxide composites as oxygen catalysts for an anion-exchange membrane water electrolyzer", Deok-Hye Park, Min-Ha Kim, Hak-Joo Lee, Woo-Jun Lee, Jeong-Hyeon Byeon, Ji-Hwan Kim, Jae-Sung Jang, **Kyung-Won Park***, ***Advanced Materials Interfaces***, (2022) 2102063

23. "Coffee waste-derived one-step synthesis of a composite structure with Ge nanoparticles surrounded by amorphous carbon for Li-ion batteries", Jae-Hoon Shin, Deok-Hye Park, Woo-Jun Lee, Sang-Hyun Moon, Jin-Hyeok Choi, Ji-Hwan Kim, Jae-Sung Jang, Sung-Beom Kim, **Kyung-Won Park***, ***Journal of Alloys and Compounds*** 889 (2021) 161685

24. "Mesoporous Spinel Ir-doped NiCo2O4 Nanostructure as an Efficient Catalyst for Oxygen Evolution Reaction" Hak Joo Lee, Deok-Hye Park, Woo-Jun Lee, Sang-Beom Han, Min-Ha Kim, Jeong-Hyeon Byeon, **Kyung-Won Park***, ***Applied Catalysis A*** 626 (2021) 118377

25. "Enhanced electrochemical performance of a selectively formed V2O3/C composite structure for Li-ion batteries", Ji-Hwan Kim, Yo-Seob Kim, Sang-Hyun Moon, Min-Cheol Kim, Jin-Hyeok Choi, Deok-Hye Park, Jae-Hoon Shin, **Kyung-Won Park***, ***Electrochimica Acta,*** 389 (2021) 138685

26. "Li-ion diffusivity and electrochemical performance of high-nickel cathode material doped with fluoride ions", Sung-Beom Kim, Hyeona Kim, Deok-Hye Park, Ji-Hwan Kim, Jae-Hoon Shin, Jae-Sung Jang, Sang-Hyun Moon, Jin-Hyuk Choi, **Kyung-Won Park***, ***Journal of Power Sources***, 506 (2021) 230219

27. "Top-down preparation of Ni-Pd-P@graphitic carbon core-shell nanostructure for electrocatalytic reactions", Deok-Hye Park, Yo-Seob Kim, Sang-Beom Han, Woo-Jun Lee, Hak-Joo Lee, Yong-Soo Lee, Sang-Hyun Moon, **Kyung-Won Park***, ***International Journal of Hydrogen Energy***, 46 (2021) 22499-22507

28. “Synergistically enhanced electrocatalytic stability of Pt catalyst supported by doped porous carbon nanostructure", Suk-Hui Kwon, Seul-Gi Lee, Sang-Beom Han, **Kyung-Won Park***, **Electrocatalysis** 11(5) (2021) 497-504

29. "1T-MoS2/carbon nanofiber composite as an interlayer fabricated by an in situ electrochemical fabrication method for lithium-sulfur batteries", Sang-Hyun Moon, Min-Cheol Kim, Hyeona Kim, Yo-Seob Kim, Jin-Hyeok Choi, **Kyung-Won Park***, **Journal of Alloys Compounds** 857 (2020) 158236

30. “Synthesis of highly conductive titanium suboxide support materials with superior electrochemical durability for proton exchange membrane fuel cells", Min-Cheol Kim, Namchul Cho, Tae Jun Kang, Nguyen The Manh, Young-Woo Lee, Kyung-Won Park, **Molecular Crystals and Liquid Crystals**, 707(1) (2020) 110–117

31. "Antioxidant activity of hydrogen water mask pack composed of gel-type emulsion and hydrogen generation powder", Hye-Jin Kwon, Sang-Beom Han, **Kyung-Won Park***, **International Journal of Molecular Sciences**, 21(24) (2020) 9731

32. “Cycling system for decomposition of gaseous benzene by hydrogen peroxide with Fe-containing activated carbon", Yong-Soo Lee, Y.-H Mo, S.-B. Han, JiHyeon Song, Seongho Hong, **Kyung-Won Park***, **RSC Advances** 10 (2020) 39121-39129

33. “Improved electrochemical properties of LiNi0.8Co0.15Al0.05O2 cathode materials synthesized using micelle structures", Sang-Hyun Moon, Eun-Soo Kim, Ji-Eun Lee, Yeon-Kyung Shin, Min-Cheol Kim, **Kyung-Won Park***, **Journal of Solid State Electrochemistry** 24 (2020) 2233-2240

34. "Fluorine doped LiNi0.8Mn0.1Co0.1O2 cathode for high-performance lithium-ion batteries", Hyeona Kim, Min-Cheol Kim, Yo-Seob Kim, Jin-Hyeok Choi, **Kyung-Won Park***, **Energies** 13 (2020) 4808

35. “Effect of Sb-doped SnO2 nanostructures on electrocatalytic performance of a Pt catalyst for methanol oxidation reaction", Seul-Gi Lee, Sang-Beom Han, Woo-Jun Lee, **Kyung-Won Park***, **Catalysts** 10(8) (2020) 866

36. "Enhanced electrochemical performance of MoS2-graphite nanosheet nanocomposites", Jin-Hyeok Choi, Min-Cheol Kim, Sang-Hyun Moon, Hyeona Kim, Yo-Seob Kim, **Kyung-Won Park***, **RSC Advances**, 10 (2020) 19077-19082

37. “Ni2P/graphitic carbon nanostructure electrode with superior electrochemical performance", Yo-Seob Kim, Min-Cheol Kim, Sang-Hyun Moon, Hyeona Kim, **Kyung-Won Park***, **Electrochimica Acta**, 341 (2020) 136045

38. “Biomimetic Cathodes Applying Imprinted Carbon Paper with Vortex for Enhanced Oxygen Reduction Reaction of Lithium-Air Batteries", Joonha Jun, Min-Cheol Kim, Jin-Young So, Chan-Ho Lee, Hyeona Kim, Yo-Seob Kim, **Kyung-Won Park***, Won-Gyu Bae*, **ACS Sustainable Chemistry & Engineering** 8(11) (2020) 4325-4330

39. "Porous SnO2 nanostructure with a high specific surface area for improved electrochemical performance", Hyeona Kim, Min-Cheol Kim, Sung-Beom Kim, Yo-Seob Kim, Jin-Hyeok Choi, **Kyung-Won Park***, **RSC Advances** 10 (2020) 10519-10525

40. “Polymeric Redox Mediator as a Stable Cathode Catalyst for Lithium-O2 Batteries", Min-Cheol Kim, Sojeong Choi, Hyeona Kim, Sang-Beom Han, Sang-Hyun Moon, Eun-Soo Kim, Yo-Seob Kim, **Kyung-Won Park***, **Journal of Power Sources**, 453(31) (2020) 227850

41. "Emission characteristics of particulate matter, odors, and volatile organic compounds from the grilling of pork", Yun-Yeong Lee, Hyungjoo Park, Yoonjoo Seo, Jeonghee Yun, Jihyun Kwon, Kyung-Won Park, Sang-Beom Han, Kyung Chel Oh, Jun-Min Jeon, Kyung-Suk Cho, **Environmental Research** 183 (2020) 109162

42. “Mesoporous Iridium Oxide/Sb-doped SnO2 Nanostructured Electrodes for Polymer Electrolyte Membrane Water Electrolysis", Sang-Beom Han, Yong-Hwan Mo, Yong-Soo Lee, Seul-Gi Lee, Deok-

Hye Park and **Kyung-Won Park***, **International Journal of Hydrogen Energy** 45 (3) 1409-1416

43. “Chemical valence electron-engineered LiNi0.4Mn1.5MtO4 (Mt=Co and Fe) cathode materials with high-performance electrochemical properties", Min-Cheol Kim, Young-Woo Lee, Tuan Kiet Pham, Jung Inn Sohn, **Kyung-Won Park***, **Applied Surface Science** 504 (2020) Article 144514

44. “F-doped Li1.15Ni0.275Ru0.575O2 cathode materials with long cycle life and improved rate performance", Sojeong Choi, Min-Cheol Kim, Sang-Hyun Moon, Hyeona Kim, **Kyung-Won Park***, **Electrochimica Acta** 326 (2019) 135015

45. “Doped porous carbon nanostructure materials as non-precious metal cathode catalysts for oxygen reduction reaction in acid and alkaline media", Suk-Hui Kwon, Sang-Beom Han, Da-Hee Kwak, JiHyeon Song, and **Kyung-Won Park***, ***Journal of Industrial Engineering Chemistry*** 80 (2019) 171-181

46. "Evaluation of antioxidant activity of amaranthus hypochondriacus L. extract using cyclic voltammetry", Hye-Jin Kwon, Na-Seul Jung, Sang-Beom Han, **Kyung-Won Park***, ***Electrochemistry***, 87(6) (2019) 336-340

47. “Facile one-pot synthesis of Ge/TiO2 nanocomposite materials with improved electrochemical performance", Hyeona Kim, Min-Cheol Kim, Sojeong Choi, Sang-Hyun Moon, Yo-Seob Kim, **Kyung-Won Park***, ***Nanoscale*** 11 (2019) 17415-17424

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## *Technology Transfers*

**Intellectual Discovery Co., Ltd. | $30,000 | 01/2013**
**Title:** Transfer of invention to develop a new concept fuel cell system using a new electrochemical reduction reaction
**Role:** Principal Investigator

**Boyaz Energy Co., Ltd. | $2,000 | 12/2016**
**Title:** Carbon-based composite structure oxygen reduction catalyst technology for low-temperature fuel cells
**Role:** Principal Investigator

**Boyaz Energy Co., Ltd. | $8,000 | 11/2017**
**Title:** Fuel cells and fuel cells including cathode electrodes using iron redox pairs

**Role:** Principal Investigator

**Wifinetech Co., Ltd. | $4,000 | 03/2019**
**Title:** Method for producing porous carbon catalyst doped with transition metal and nitrogen
**Role:** Principal Investigator

**CU Energy Co., Ltd. | $4,000 | 04/2019**
**Title:** Manufacturing method of positive electrode active material
**Role:** Principal Investigator

**Dongwoo Cast Co., Ltd. | $4,000 | 04/2019**
**Title:** Titanium oxide-coated cathode active material for lithium-ion batteries and method for manufacturing the same
**Role:** Principal Investigator

**Dongwoo Cast Co., Ltd. | $4,000 | 04/2019**
**Title:** Nanostructure-controlled alloy for fuel cell catalyst electrode and manufacturing method thereof
**Role:** Principal Investigator

**JIS Co., Ltd. | $4,000 | 05/2019**
**Title:** Catalyst support for oxygen reduction electrode
**Role:** Principal Investigator

**JIS Co., Ltd. | $4,000 | 05/2019**
**Title:** Core/shell structured nano support for catalyst electrodes for fuel cells and method of manufacturing the same
**Role:** Principal Investigator

**SM Hitech Co., Ltd. | $5,000 | 08/2021**
**Title:** MoS2-TiN thin film electrode manufacturing method for improved electrochemical performance of lithium ion batteries
**Role:** Principal Investigator

**SAMIL Chemical Co., Ltd. | $5,000 | 09/2021**
**Title:** Method for manufacturing porous germanium-carbon composite using glucose
**Role:** Principal Investigator

**FILAST Chemical Co., Ltd. | $5,000 | 10/2021**
**Title:** Method for simultaneous removal of nitrogen oxides and sulfur oxides
**Role:** Principal Investigator

**Boyaz Energy Co., Ltd. | $3,000 | 11/2021**
**Title:** Method for manufacturing a porous polymer separator and porous polymer separator manufactured thereby
**Role:** Principal Investigator

**Boyaz Energy Co., Ltd. | $3,000 | 11/2021**
**Title:** SnO2 nanoparticles with porous structure and method of manufacturing the same
**Role:** Principal Investigator

**Hydrogine Tech Co., Ltd. | $20,000 | 07/2022**
**Title:** Precious metal/transition metal oxide catalyst for water electrolysis and method for manufacturing the same
**Role:** Principal Investigator