

Jongsik Park

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Education

- Sep. 2019 – Post-doc, Department of Chemical Engineering, University of Texas at Austin.
Research Advisor: Prof. Delia Milliron
- Mar. 2018 – Aug. 2019 Post-doc, Department of Chemistry, Korea University.
- Mar. 2012 – Feb. 2018 Ph.D. in Inorganic Chemistry, Korea University.
Dissertation: Synthesis of multimetallic nanoframes based on metastable nanotemplate for efficient electrocatalysts.
Research Advisor: Prof. Kwangyeol Lee
Cumulative GPA: 4.19/4.5
- Mar. 2008 – Feb. 2012 B.S. in Chemistry, Department of Chemistry, Korea University.
Cumulative GPA: 4.02/4.5

Honors and Awards

- Mar. 2019 MRS Postdoc Hardship Registration Grant, 2019 MRS Spring Meeting
- Oct. 2018 Promising Rising Researcher, Inter-Academy Seoul Science Forum (IASSF)
- Feb. 2018 KU Graduate Student Achievement Award, Korea University
- Sep. 2017 Best Paper Award, BK21 plus, Department of Chemistry, Korea University
- Mar. 2017 Chemistry Fellowship, BK21 plus, Department of Chemistry, Korea University
- Mar. 2015 Best Paper Award, Department of Chemistry and Research Institute for Natural Sciences, Korea University
- Sep. 2014 Best Paper Award, Department of Chemistry and Research Institute for Natural Sciences, Korea University
- Apr. 2014 Excellent Poster Award, Korean Chemical Society (KCS)
- 2012 – 2014 Graduate Student Fellowship, KT&G Aid Foundation
- 2012 – 2013 Global Ph. D. Fellowship, National Research Foundation (NRF) of Korea
- 2009 – 2012 Undergraduate Student Fellowship, Lotte Foundation
- 2008 – 2009 Dean's list, Department of Chemistry, Korea University

Research Experiences and Skills

- Solvothermal synthesis of metal, metal oxide, metal sulfide, and metal phosphide materials for catalysis applications
- Preparation of electrocatalysts / Evaluation of the electrocatalytic performance toward oxygen evolution reaction (OER), hydrogen evolution reaction (HER), and oxygen reduction reaction (ORR) using Cyclic Voltammogram (CV).
- Operation of transmission electron microscopy (TEM) (TECNAI G2 20 S-Twin) & Ability to analyze the structural details of nanoparticles such as lattice distance indexing
- Operation of powder X-ray diffraction (PXRD) (Rigaku Ultima III) and basic knowledge of X-ray crystallography
- Analysis of X-ray photoelectron spectroscopy (XPS)
- Ability to write research articles and handle the entire publication process from submission

to galley proof correction

- Ability to communicate and work with experts in different fields

Teaching Experiences

Department of Chemistry, Korea University, Seoul, Korea

Fall Semester 2014	Lab Instructor, General Chemistry Lab II
Spring Semester 2014	Lab Instructor, General Chemistry Lab I
Spring Semester 2013	Teaching Assistant, Nanochemistry
Fall Semester 2012	Teaching Assistant, General Chemistry II
Spring Semester 2012	Teaching Assistant, General Chemistry I

Publications [[†] co-first authors]

- 1) **J. Park**[†], S. Choi[†], A. Oh, H. Jin, J. Joo, H. Baik, and K. Lee, "Hemi-core@Frame AuCu@IrNi Nanocrystals as Active and Durable Bifunctional Catalysts for the Water Splitting Reaction in Acidic Media.", *Nanoscale Horiz.*, **2019**, *4*, 727.
- 2) **J. Park**^{†,*}, S. Lim,[†] T. Kwon,[†] M. Jun, A. Oh, H. Baik, and K. Lee, "Longitudinal Strain Engineering of Cu_{2-x}S by the Juxtaposed Cu₅FeS₄ phase in the Cu₅FeS₄/Cu_{2-x}S/Cu₅FeS₄ Nanosandwich.", *Chem. Mater.*, **2019**, *under revision*.
- 3) T. Kim[†], **J. Park**[†], Y. Hong[†], A. Oh, H. Baik, and K. Lee, "Janus to Core-shell to Janus: Facile Cation Movement in Cu_{2-x}S/Ag₂S Hexagonal Nanoplates induced by Surface Strain Control." *ACS Nano*, **2019**, *under revision*.
- 4) **J. Park**[†], J. Park[†], J. Lee, A. Oh, H. Baik, and K. Lee, "Janus Nanoparticle Structural Motif Control *via* Asymmetric Cation Exchange in Edge-Protected Cu_{1.81}S@Ir_xS_y Hexagonal Nanoplates." *ACS Nano*, **2018**, *12*, 7996.
- 5) **J. Park**[†], T. Kwon[†], J. Kim[†], H. Jin[†], H. Y. Kim, B. Kim, S. H. Joo, and K. Lee, "Hollow Nanoparticles as Emerging Electrocatalysts for Renewable Energy Conversion Reactions.", *Chem. Soc. Rev.*, **2018**, *47*, 8173.
- 6) **J. Park**[†], H. Jin[†], J. Lee, A. Oh, B. Kim, J. H. Kim, H. Baik, S. H. Joo, and K. Lee, "Highly Crystalline Pd₁₃Cu₃S₇ Nanoplates Prepared *via* Partial Cation Exchange of Cu_{1.81}S Templates as an Efficient Electrocatalyst for the Hydrogen Evolution Reaction", *Chem. Mater.*, **2018**, *30*, 6884.
- 7) **J. Park**[†], H. J. Kim[†], A. Oh, T. Kwon, H. Baik, S. -I. Choi, and K. Lee, "RuO_x-decorated Multimetallic Hetero-nanocages as Highly Efficient Electrocatalyst toward the Methanol Oxidation Reaction.", *Nanoscale*, **2018**, *10*, 21178.
- 8) H. Kwon[†], M. K. Kabiraz[†], **J. Park**[†], A. Oh, H. Baik, S. -I. Choi, and K. Lee, "Dendrite-Embedded Platinum-Nickel Multiframes as Highly Active and Durable Electrocatalyst toward the Oxygen Reduction Reaction", *Nano Lett.*, **2018**, *18*, 2930.
- 9) T. Kim, **J. Park**, H. Jin, A. Oh, H. Baik, S. H. Joo, and K. Lee, "A Facet-controlled Rh₃Pb₂S₂ Nanocage as an Efficient and Robust Electrocatalyst toward the Hydrogen Evolution Reaction", *Nanoscale*, **2018**, *10*, 9845.
- 10) T. Kwon, M. Jun, H. Y. Kim, A. Oh, **J. Park**, H. Baik, S. H. Joo, and K. Lee, "Vertex-Reinforced PtCuCo Ternary Nanoframes as Efficient and Stable Electrocatalysts for the Oxygen Reduction Reaction and the Methanol Oxidation Reaction", *Adv. Funct. Mater.*, **2018**, *28*, 1706440.
- 11) H. Hwang, T. Kwon, H. Y. Kim, **J. Park**, A. Oh, B. Kim, H. Baik, S. H. Joo, and K. Lee, "Ni@Ru and NiCo@Ru Core-Shell Hexagonal Nanosandwiches with a Compositionally Tunable Core and a Regioselectively Grown Shell", *Small*, **2018**, *14*, 1702353.

- 12) D. S. Yang, M. Barlóg, **J. Park**, K. Chung, A. Shanker, J. Sun, J. Kang, K. Lee, M. Al-Hashimi, and J. Kim, "Alignment of Lyotropic Liquid Crystalline Conjugated Polymer in Floating Film.", *ACS Omega*, **2018**, *3*, 14807.
- 13) **J. Park**[†], M. K. Kabiraz[†], H. Kwon[†], S. Park, H. Baik, S. -I. Choi, and K. Lee, "Radially Phase Segregated PtCu@PtCuNi Dendrite@Frame Nanocatalyst for the Oxygen Reduction Reaction", *ACS Nano*, **2017**, *11*, 10844.
- 14) **J. Park**[†], Y. J. Sa[†], H. Baik, T. Kwon, S. H. Joo, and K. Lee, "Iridium-Based Multimetallic Nanoframe@Nanoframe Structure: An Efficient and Robust Electrocatalyst toward Oxygen Evolution Reaction", *ACS Nano*, **2017**, *11*, 5500.
- 15) T. Kwon, H. Hwang, Y. J. Sa, **J. Park**, H. Baik, S. H. Joo, and K. Lee, "Cobalt Assisted Synthesis of IrCu Hollow Octahedral Nanocages as Highly Active Electrocatalysts toward Oxygen Evolution Reaction", *Adv. Funct. Mater.*, **2017**, *27*, 1604688.
- 16) **J. Park**, J. Kim, Y. Yang, D. Yoon, H. Baik, S. Haam, H. Yang, and K. Lee, "RhCu 3D Nanoframe as a Highly Active Electrocatalyst for Oxygen Evolution Reaction under Alkaline Condition", *Adv. Sci.*, **2016**, *3*, 1500252.
- 17) Y. Yang, H. Jin, H. Y. Kim, J. Yoon, **J. Park**, H. Baik, S. H. Joo, and K. Lee, "Ternary Dendritic Nanowires as Highly Active and Stable Multifunctional Electrocatalysts", *Nanoscale*, **2016**, *8*, 15167.
- 18) T. Kwon[†], **J. Park**[†], H. Baik, S. Back, B. Błasiak, M. Cho, Y. Jung and K. Lee, "Unexpected Solution Phase Formation of Hollow PtSn Alloy Nanoparticles from Sn Deposition on Pt Dendritic Structures", *CrystEngComm*, **2016**, *18*, 6019.
- 19) J. Yoon[†], **J. Park**[†], Y. J. Sa[†], Y. Yang, H. Baik, S. H. Joo, and K. Lee, "Synthesis of Bare Pt₃Ni Nanorods from PtNi@Ni Core-Shell Nanorods by Acid Etching: One-step Surfactant Removal and Phase Conversion for Optimal Electrochemical Performance toward Oxygen Reduction Reaction", *CrystEngComm*, **2016**, *18*, 6002.
- 20) K. W. Lee[†], **J. Park**[†], H. K. Lee, D. Yoon, H. Baik, S. Haam, J. -H. Sohn, and K. Lee, "Morphological Evolution of 2D Rh Nanoplates to 3D Rh Concave Nanotents, Hierarchically Stacked Nanoframes, and Hierarchical Dendrites", *Nanoscale*, **2015**, *7*, 3460.
- 21) N. T. Khi, **J. Park**, H. Baik, H. K. Lee, J. -H. Sohn, and K. Lee, "Facet-controlled {100} Rh-Pt and {100} Pt-Pt Dendritic Nanostructures by Transferring the {100} Facet Nature of the Core Nanocube to the Branch Nanocubes", *Nanoscale*, **2015**, *7*, 3941.
- 22) H. Jin, K. W. Lee, N. T. Khi, H. An, **J. Park**, H. Baik, J. Kim, H. Yang, and K. Lee, "Rational Synthesis of Heterostructured M/Pt (M=Ru or Rh) Octahedral Nanoboxes and Octapods and Their Structure-Dependent Electrochemical Activity toward the Oxygen Evolution Reaction", *Small*, **2015**, *11*, 4462.
- 23) D. Yoon, S. Bang, **J. Park**, J. Kim, H. Baik, H. Yang, and K. Lee, "One pot Synthesis of Octahedral {111} CuIr Gradient Alloy Nanocrystals with a Cu-rich Core and an Ir-rich Surface and Their Usage as Efficient Water Splitting Catalyst", *CrystEngComm*, **2015**, *17*, 6843.
- 24) **J. Park**[†], A. Oh[†], H. Baik, Y. S. Choi, S. J. Kwon, and K. Lee, "One pot Synthesis of Nanoscale Phase-Segregated PdPt Nanoarchitectures via Unusual Pt-doping Induced Structural Reorganization of a Pd Nanosheet into a PdPt Nanotent", *Nanoscale*, **2014**, *6*, 10551.
- 25) D. Yoon, S. Park, **J. Park**, J. Kim, H. Baik, H. Yang, and K. Lee, "One pot Synthesis of Hollow Cu-doped Ru Octahedral Nanocages via an *in situ* Generated Metastable Cu Nanoparticle Template", *Nanoscale*, **2014**, *6*, 12397

Conferences

- Apr. 2019 Poster: “Binary and ternary metal chalcogenide nanoplates with Janus structural motif *via* asymmetric cation exchange”, 2019 MRS Spring Meeting.
- Apr. 2018 Poster: “Phase segregated Pt-based ternary dendrite@frame nanocatalyst for the oxygen reduction reaction”, 121st General meeting of the Korea Chemical Society.
- Apr. 2017 Poster: “Synthesis of quaternary hetero double layered nanoframe toward oxygen evolution reaction”, 119th General meeting of the Korea Chemical Society.
- Dec. 2016 Poster: “Rational synthesis of double nanoframe with electrocatalytic activity toward oxygen evolution reaction”, 2016 MRS Fall Meeting.
- Oct. 2016 Poster: “Development of nanoframe with double layered structural features with electrocatalytic activity toward oxygen evolution reaction”, 118th General meeting of the Korea Chemical Society.
- Apr. 2016 Oral Presentation: “Synthesis of trimetallic frame nanostructure with electrocatalytic activity toward oxygen evolution reaction”, 117th General meeting of the Korea Chemical Society.
- Sep. 2015 Poster: “Morphological evolution of dendritic metal nanoparticles and their mechanism study”, 2015 IUPAC Meeting.
- Apr. 2015 Poster: “Structural evolution of a metastable nanostructure *via* impurity doping”, 2015 MRS Spring Meeting.
- Jun. 2013 Poster: “Axial twinning in 1-D nanostructure utilized for the formation of 3-D hierarchical nanostructures”, 2013 1st Korea-Jilin-Waseda Symposium.