# JAEHOON KIM

Associate Professor
School of School of Mechanical Engineering, Chemical Engineering & SKKU Advanced Institute of Nano Technology, Sungkyunkwan University
2066, Seobu-Ro, Jangan-Gu, Suwon, Gyeong Gi-Do, 16419, Republic of Korea
Tel : +82-31-299-4843; Cell : +82-10-5432-3792; Fax : +82-31-290-5889; E-mail : jaehoonkim at skku.edu
Date of Birth: May 08, 1971

## EDUCATION:

**Doctorate of Philosophy,** Chemical and Biomolecular Engineering — Aug 2005
North Carolina State University (NCSU), Raleigh, North Carolina (NC), USA

**Master of Science,** Chemical Engineering and Biomolecular Engineering — Dec 2003
North Carolina State University (NCSU), Raleigh, North Carolina (NC), USA

**Master of Science,** Chemical Engineering and Industrial Chemistry — Feb 2001
Hanyang University, Seoul, Korea.

**Bachelor of Science,** Chemical Engineering and Industrial Chemistry — Feb 1999
Hanyang University, Seoul, Korea.
**Graduated S*umma Cum Laude***

## PROFESSIONAL HONORS & AWARDS:

- Best Paper Presentation Award, The Korea Society of Industrial and Engineering Chemistry — May 2021
- Excellent Paper Presentation Award, The Korea Society of Industrial and Engineering Chemistry — May 2021
- Best Presentation Award, The Korea Society of Clean Technology — Mar 2021
- Outstanding Presentation Award, The Korea Society of Clean Technology — Mar 2021
- Outstanding Presentation Award, Korean Society for Fluid Machinery — Aug 2020
- SKKY Young Fellowship, Suwon, Korea — Feb 2019
- Best Poster Award, 11$^{th}$ International Conference on Separation Science and Technology, Busan, Korea — Nov 2017
- Outstanding Presentation Award, 10$^{th}$ International Conference on Separation Science and Technology, Japan — Nov 2014
- The Most Outstanding Professor Award, University of Science and Technology, Deajon, Korea — Aug 2013
- Outstanding Environmental Technology Award, Korea Environmental Industry & Technology Institute — Jun 2013
- Outstanding Professor Award, University of Science and Technology, Deajon, Korea — Aug 2012
- Outstanding Research Mentor Award, University of Science and Technology, Deajon, Korea — Aug 2012
- KIST Young Fellow Research Fellowship, Korea Institute of Science and Technology, Seoul, Korea — July 2012
- KIST Researcher of the Month, Korea Institute of Science and Technology, Seoul, Korea — May 2012
- The Prime Minister of Korea Award, The Government of South Korea — Apr 2012
- Best KIST Researcher Record (Top Ranked No 1) — Dec 2011
- Outstanding Young Researcher Award, Korea Research Council of Fundamental Science and Technology — Dec 2011
- Distinguished Service Award, The Korea Society of Industrial and Engineering Chemistry, Seoul, Korea — May 2011
- Best KIST Researcher Record (Top Ranked No 2) — Dec 2010
- Outstanding Lecture Award, University of Science and Technology, Deajon, Korea — Jul 2010
- The Distinguished Lectureship Award, The Chemical Society of Japan, Osaka, Japan — Mar 2010
- President Won-Hee Park's Outstanding Research Award, KIST, Seoul, Korea — Jan 2010
- Best KIST Researcher Record (Top Ranked No 1) — Dec 2009
- Outstanding Research Award, National Research Foundation of Korea, Seoul, Korea — Dec 2009
- Outstanding Paper Award, The Korean Hydrogen and New Energy Society, Kwangju, Korea — Nov 2009
- Best Paper Awards, 8$^{th}$ International Conference on Separation Science and Technology, Japan — Oct 2008
- Best Paper Awards, Supergreen 2007, Seoul, Korea — Nov 2007
- Young Scientist Awards, The Korea Society of Industrial and Engineering Chemistry, Seoul, Korea — May 2007
- Research Associateship Award, National Research Council of National Academies, Washington, DC — Dec 2005–Mar 2007
- Fellowship for Research Intern Program, Korea Science and Engineering Foundation, Deajon, Korea — Mar 2001–Jul 2001
- Scroll of Gratitude, 8$^{th}$ United States Army, Seoul, Korea — May 1995
- The Army Achievement Medal, 8$^{th}$ United States Army, Seoul, Korea — Mar 1995
- Graduated Platoon Leadership Development Course with Honor, 8$^{th}$ United States Army, Seoul, Korea — Jun 1994

## STUDENT HONORS & AWARDS:

- Advanced Material Research Scholarship, Hanyang University, Korea — Aug 1999
- Excellent Graduation Award, Hanyang University, Korea — Feb 1999

- Full-tuition Undergraduate Scholarship, Hanyang University, Seoul, Korea Mar 1998
- Partial-tuition Undergraduate Scholarship, Hanyang University, Seoul, Korea Aug 1997
- Full-tuition Undergraduate Scholarship, Hanyang University, Seoul, Korea Mar 1997
- Full-tuition Undergraduate Scholarship, Hanyang University, Seoul, Korea Aug 1996
- Partial-tuition Undergraduate Scholarship, Hanyang University, Seoul, Korea Aug 1993

## HONORS & AWARDS TO GRADUATE STUDENTS IN MY GROUP:

- Best Paper Presentation Award, The Korea Society of Industrial and Engineering Chemistry (Dr. M.K. Khan) May 2021
- Excellent Paper Presentation Award, The Korea Society of Industrial and Engineering Chemistry (Dr. M.G. Sibi) May 2021
- Best Poster Award, The Korea Society of Chemical Engineer (Lee, Minsang) Apr 2021
- Best Presentation Award, The Korea Society of Clean Technology (Dr. Aye Aye Myint) Mar 2021
- Outstanding Presentation Award, The Korea Society of Clean Technology (Dr. Aye Aye Myint) Mar 2021
- Excellent Paper Award, Korea Society of Industrial and Engineering Chemistry, Busan, Korea (N. Karanwal) May 2019
- Poster Award, School of Mechanical Engineering, Sungkyunkwan University (B. A. Florence) Jan 2019
- Poster Award, School of Mechanical Engineering, Sungkyunkwan University (A. Riaz) Jan 2019
- Poster Award, School of Mechanical Engineering, Sungkyunkwan University (C. Chandra) Jan 2018
- Poster Award, Supergreen 2017, Nagoya, Japan (Christian Chandra) Dec 2017
- Best Poster Award, 11$^{th}$ International Conference on Separation Science and Technology, Busan, Korea (J. Park) Nov 2017
- Outstanding Poster Award, The Korea Society of Clean Technology Fall Meeting, Junju, Korea (A. A. Pollardo) Sep 2016
- Outstanding Presentation Award, 2016 KiChE Spring Meeting, Busan, Korea (M. K. Khan) Apr 2016
- Best Poster Award, Supergreen2015, Seoul, Korea (M. K. Kashif) Nov 2015
- Outstanding Presentation Award, 2015 KiChE Spring Meeting, Jaju, Korea (W. Li) Apr 2015
- Poster Award, 10$^{th}$ International Conference on Separation Science and Technology, Nara, Japan (W. Li) Nov 2014
- Best Poster Award of International Symposium on Advances in Supercritical Fluids, Seoul, Korea (H. Zeb) Jul 2014
- Best Poster Award of International Symposium on Advances in Supercritical Fluids, Seoul, Korea (J. Hwang) Jul 2014
- The Grand Prize, University of Science and Technology, Deajon, Korea (A. Nugroho) Feb 2013
- Academic Excellence Award, Korea Institute of Science and Technology, Seoul, Korea (A. Nugroho) Feb 2013
- Excellent Graduate Student Award, Korea University, Seoul, Korea (Dr. S. A. Hong) Jan 2013
- Excellent Award of Paper Field, University of Science and Technology, Deajon, Korea (A. Nugroho) Aug 2012
- Excellence Award, Korea Institute of Science and Technology, Seoul, Korea (E. B. Nursanto) Feb 2012
- Academic Excellence Award, Korea Institute of Science and Technology, Seoul, Korea (R. F. Susanti) Feb 2012
- Academic Excellence Award, Korea Institute of Science and Technology, Seoul, Korea (E. B. Nursanto) Feb 2012
- Best Poster Award of Supergreen 2011, Beijing, China (R. F. Susanti) Aug 2011
- Best Presentation Award of the 5$^{th}$ International Symposium on Application of Supercritical Fluids in Green Chemistry and Material Science, Taipei, Taiwan (W. H. Jang) Mar 2010
- Young Researcher Award of the 5$^{th}$ International Symposium on Application of Supercritical Fluids in Green Chemistry and Material Science, Taipei, Taiwan (B. Veriansyah) Mar 2010
- Outstanding Paper Award, The Korean Hydrogen and New Energy Society, Kwangju, Korea (R. F. Susanti) Nov 2009
- Outstanding Paper Award, The Korean Society of Clean Technology, Seoul, Korea (H. M. Choi) May 2009
- Outstanding Paper Award, The Korean Society of Supercritical Fluids, Seoul, Korea (R. F. Susanti) Nov 2008
- Best Paper Awards, 8$^{th}$ International Conference on Separation Science and Technology, Japan (B. Veriansyah) Oct 2008
- Best Poster Awards, Supergreen 2007, Seoul, Korea (B. Veriansyah) Nov 2007
- Best Poster Awards, The Korea Institute of Chemical Engineers, Seoul, Korea (S. A. Hong) Oct 2007

## PROFESSIONAL POSITIONS:

**Associate Professor,** School of Mechanical Engineering, School of Chemical Engineering & SKKU Advanced Institute of Nano Technology, Sungkyunkwan University, Suwan, Korea — Mar 2017–Present

**Assistant Professor,** School of Mechanical Engineering & SKKU Advanced Institute of Nano Technology, Sungkyunkwan University, Suwan, Korea — Mar 2013–Feb 2017

**Editorial Board Member,** Biomass — Mar 2021–present

**Editorial Board Member,** Catalysts — Feb 2020–Present

**Editorial Board Member,** Journal of Supercritical Fluids — Jan 2018–Present

**Guest Editor,** Journal of Supercritical Fluids — Oct 2015–Dec 2016

**Editorial Board Member,** Energy Science & Engineering (ESE) — Jan 2013–Present

**Visiting Professor,** CNRS-ICMCB, France — Jul 2019–Aug 2019

**Visiting Scientist,** NCSU, Department of Chemical and Biomolecular Engineering, Raleigh, NC — Jun 2011–Aug 2011

**Senior Research Scientist,** Clean Energy Research Center, Energy Division**,** Korea Institute of Science and Technology (KIST), Seoul, Korea — May 2007–Mar 2013
- Investigated energy materials (solar cells, active materials for Li battery) and energy process (bioenergy, biofuel, reaction, bioplastics) using supercritical fluids

**Adjunct Professor,** University of Science and Technology (UST)**,** Clean Energy and Chemical Engineering**,** Seoul, Korea — Mar 2008–Mar 2013
- English lecture of Chemical Engineering Thermodynamics and Supercritical Fluid Technologies

**Adjunct Professor,** Green School, Korea University**,** Seoul, Korea — Jul 2013–Mar 2013
- Investigated next generation biofuel and bioenergy

**National Research Council Research Associate**, Army Research Office, Raleigh, NC — Dec 2005–Mar 2007
- Investigated melt swollen step-growth polymerization and solid-state polymerization

**Post-doctoral Research Associate,** NCSU, National Science Foundation–Science and Technology Center for Environmentally Responsible Solvents and Processes, Raleigh, NC — Jun 2005–Dec 2005
- Investigated metal nanoparticle fabrication, metal-polymer nanocomposites and polymer hydrogenation

**Intern Researcher,** Korea Science and Engineering Foundation, Taejon, Korea — Mar 2001–Jul 2001
- Investigated poly(imide siloxane) segmented copolymer-silica hybrid composite membranes for gas separation applications

**Military Service**, Korea Augmentation to the United States Army (KATUSA), 257$^{th}$ Signal Company, 1$^{st}$ Signal Brigade, 8$^{th}$ United States Army — Jul 1993–May 1995
- **Training Noncommissioned Officer** - organized weekly training schedules for headquarters and 4 dispersed detachments and instructed Common Task Test**,** Nuclear Biological and Chemical and weapon qualification courses to junior soldiers
  **Senior KATUSA** - represented 20 KATUSA soldiers for all matters with a chain of command

## ACTIVITIES:

- **Section chairman,** Petroleum Chemistry·Renewable Fuel Section, The Korean Society of Industrial and Engineering Chemistry — Jan 2021–present
- **Section sub-chairman,** Petroleum Chemistry·Renewable Fuel Section, The Korean Society of Industrial and Engineering Chemistry — Jan 2019–Dec 2020
- **Section chairman,** Clean Solvent Section, The Korea Society of Clean Technology — Jan 2019–Dec 2020
- **Business and International manager,** The Korea Society of Clean Technology — Jan 2018-Present
- **International manager,** The Korea Society of Clean Technology — Jan 2012–Dec 2012
- **Academic manager,** The Korea Society of Industrial & Engineering Chemistry — Jan 2009–Dec 2011
- **Members**, American Institute of Chemical Engineers, American Chemical Society, The Korean Society of Industrial and Engineering Chemistry, Korea Institute of Chemical Engineers, The Korea Society of Clean Technology. — Jan 2005–present

## PUBLICATIONS-SUMMARY:

- SCI papers 201, H-index 47, total citation > 7000 (Google scholar)
- International patent 12, domestic patent 44

**PUBLICATIONS:** (*: corresponding author, Total 196 papers)

**2022 (1 paper)**

- C. Chandra, W. Devina, H. S. Cahyadi, S. K. Kwak, **J. Kim***, "Understanding lithium, sodium, and potassium storage mechanisms in silicon oxycarbide", *Chemical Engineering Journal*, 2022, 428, 131072

**2021 (11 papers)**

- C. Chandra, W. Devina, S. Alvin, **J. Kim***, "New strategy for increasing sodium-ion uptake in silicon oxycarbides" *Chemical Engineering Journal*, 2021, 404, 126520
- P. Hariyanto, A. A. Myint*, J. Kim*, "Complete drying and micronization of ecamsule using supercritical CO2 as the antisolvent", *Journal of Supercritical Fluids*, 2021, 170, 105157
- S. Alvin, C. Chandra, **J. Kim***, "Controlling intercalation sites of hard carbon for enhancing Na and K storage performance" *Chemical Engineering Journal*, 2021, 411, 128490
- M. Z. Irriyanto, H.-S. Lim, B.-S. Choi, A. A. Myint*, **J. Kim***, "Material stability assessment of R-1234ze(E) as a working fluid for supercritical organic Rankine cycle" *Journal of Industrial and Engineering Chemistry*, 2021, 96, 169–182
- N. Karanwal, M. G. Sibi, M. K. Khan, A. A. Myint, B. C. Ryu, J. W. Kang, **J. Kim***, "Trimetallic Cu–Ni–Zn/H-ZSM-5 Catalyst for the One-Pot Conversion of Levulinic Acid to High-Yield 1,4-Pentanediol under Mild Conditions in an Aqueous Medium" *ACS Catalysis*, 2021, 11, 2846–2864
- U. Mushtaq, J. Park, A. Riaz, V. Ranaware, M. K. Khan, D. Verma, **J. Kim***, "High-yield production of deoxygenated monomers from Kraft lignin over ZnO-Co/N-CNTs in water" *ACS Sustainable and Engineering Research*, 2021, 9, 3232−3245
- R. Insyania, A. F. Barusb, R. Gunawan, J. Park, G. T. Jaya, H. S. Cahyadi, M. G. Sibi, S. K. Kwak, D. Verma, **J. Kim***, "RuO2–Ru/Hβ zeolite catalyst for high-yield direct conversion of xylose to tetrahydrofurfuryl alcohol", *Applied Catalysis B: Environmental*, 2021, 291, 120120
- R. Gunawan, H. Setiadi, R. Insyani, S. K. Kwak*, **J. Kim***, "Density functional theory investigation of the conversion of 5-(hydroxymethyl)furfural into 2,5-dimethylfuran over the Pd(111), Cu(111), and Cu3Pd(111) surfaces" *Journal of Physical Chemistry C*, 2021
- M. G. Sibi, D. Verma, H. C. Setiyadi, M. K. Khan, N. Karanwal, S. K. Kwak, K. Y. Chung, J.-H. Park, D. Han, K.-Wan Nam, **J. Kim***, "Synthesis of Monocarboxylic Acids via Direct CO2 Conversion over Ni–Zn Intermetallic Catalysts" *ACS Catalysis*, 2021, 11, 8382–8398
- R. F. Susanti, H. Kristianto, C. Chrismanto, F. C. Ondy, **J. Kim***, W. Chang, "Cerium Chloride-Assisted Subcritical Water Carbonization for Fabrication of High-performance Cathodes for Lithium-Ion Capacitors" *Journal of Applied Electrochemistry*, Accepted.
- S. Senguttuvan, Y. Rhee, J. Lee, **J. Kim***, S.-M. Kim*, "Enhanced heat transfer in a refrigerated container using an airflow optimized refrigeration unit", *International Journal of Refrigeration*, Accepted.

**2020 (16 papers)**

- A. A. Myint, M. G. Aregay, M. Kang, B.-S. Kim, Y.-W Lee,* **J. Kim***, "Comprehensive study on the formation mechanism of highly bioactive compounds from Allium hookeri root using subcritical water and their antioxidant and anticancer effects", *Journal of Supercritical Fluids*, 2020, 157, 104709
- R. Mujahid, A. Riaz, R. Insyani, **J. Kim***, "A centrifugation-first approach for recovering high-yield bio-oil with high calorific values in biomass liquefaction: a case study of sewage sludge" *Fuel*, 2020, 262, 116628
- T. X. Do, R. Mujahid, H. S. Lim, J. Kim, Y.-l Lim*, **J. Kim***, "Techno-economic analysis of bio heavy-oil production from sewage sludge using supercritical and subcritical water" *Renewable Energy*, 2020, 151, 30-42
- S. Alvin, C. Chandra, **J. Kim***, "Extended plateau capacity of phosphorus-doped hard carbon as an anode in Na- and K-ion batteries" *Chemical Engineering Journal*, 2020, 391, 123576
- C. Chandra, H. S. Cahyadi, S. Alvin, W. Devina, J.-H. Park, W. Chang, K. Y. Chung, S. K. Kwak, **J. Kim***, "Revealing sodium storage mechanism in high-temperature-synthesized silicon oxycarbides", *Chemistry of Materials*, 2020, 32, 410−423
- Y. Kuk, J. Hwang, D. Nam, **J. Kim***, "Facile synthesis of high-performance LiFePO4-reduced graphene oxide composites using ball milling" *Ioincs*, 2020, 26, 2803–2812
- N. Karanwal, D. Verma, S. M. Kim, **J. Kim***, "One-pot direct conversion of levulinic acid into high-yield valeric acid over a highly stable bimetallic Nb-Cu/Zr-doped porous silica catalyst", *Green Chemistry*, 2020, 22, 766-787
- J. Hwang, J.-H. Park, K.-Y. Chung, **J. Kim***, "One-pot synthesis of Bi-reduced graphene oxide composite using supercritical acetone as anode for Na-ion batteries" *Chemical Engineering Journal*, 2020, 387, 124111
- R. Gunawan, M. Z. Irriyanto, H. S. Cahyadi, M. Irshad, H.-S. Lim, B.-S. Choi, S. K. Kwak, A. A. Myint,*, **J. Kim***, "Mechanism of thermal decomposition of HFO-1234ze(E) under supercritical fluid conditions" Journal of Supercritical Fluids, 2020, 160, 104792
- P. Hariyanto, A. A. Myint,*, **J. Kim***, "Ultrafast and complete drying of ecamsule solution using supercritical carbon dioxide with fluctuating pressure techniqu", *Journal of Supercritical Fluids*, 2020, 160, 104795

- S. Alvin, H. S. Cahyadia, J. Hwang, W. Chang, S. K. Kwak*, **J. Kim***, "Revealing the intercalation mechanisms of lithium, sodium, and potassium in hard carbon", *Advanced Energy Materials*, 2020, 200283
- M. Z. Irriyanto, H.-S. Lim, B.-S. Choi, A. A. Myint*, **J. Kim***, "Thermal stability study of HFO-1234ze(E) for supercritical organic Rankine cycle: Chemical kinetic model approach through decomposition experiments" *Journal of Industrial and Engineering Chemistry*, 2020, 90, 244-250
- C. Chandra, W. Devina, S. Alvin, **J. Kim***, "New strategy for increasing sodium-ion uptake in silicon oxycarbides" *Chemical Engineering Journal*, 2021, 404, 126520
- R. F. Susanti, S. Alvin, **J. Kim***, "Toward high-performance hard carbon as an anode for sodium-ion batteries: Demineralization of biomass as a critical step", Journal of Industrial and Engineering Chemistry, *Journal of Industrial and Engineering Chemistry*, Accepted, 2020
- R. Mujahid, **J. Kim***, "Aging stability of bio-oil produced from dewatered sewage sludge in subcritical water" *Journal of Supercritical Fluids*, Accepted, 2020
- M. K. Khan, B. P. Butolia, H. Jo, M. Irshad, D. Han, K.-W. Nam, **J. Kim***, "Selective Conversion of Carbon Dioxide into Liquid Hydrocarbons and Long-Chain α-Olefins over Fe-Amorphous $AlO_x$ Bifunctional Catalyst", *ACS Catalysis*, 2020, 10, 10325−10338

**2019 (13 papers)**

- M. K. Khan, H. S. Cahyadi, S.-M. Kim, **J. Kim***, "Efficient oil recovery from highly stable and toxic oily sludge using supercritical water", *Fuel*, 2019, 235, 460–472
- R. Insyani, D. Verma, H. S. Cahyadi, S. M. Kim, S. K. Kim, N. Karanwal, **J. Kim***, "One-pot di- and polysaccharides conversion to highly selective 2,5-dimethylfuran over Cu-Pd/Amino-functionalized Zr-based Metal-organic framework (UiO-66($NH_2$))@SGO tandem catalyst", *Applied Catalysis, B*, 2019, 243, 337–354
- S. Alvin, D. Yoon, H. Setiadi, C. Chandra, J.-H. Park, W. Chang, K. Y. Chung, **J. Kim***, "Revealing Sodium Ion Storage Mechanism in Hard Carbon" *Carbon*, 2019, 145, 67–81
- V. Ranaware, D. Verma, R. Insyani, A. Riaz, S. M. Kim, **J. Kim***, "Highly-efficient and magnetically-separable ZnO/Co@N-CNTs catalyst for hydrodeoxygenation of lignin and its derived species under mild conditions" *Green Chemistry*, 2019, 21,1021–1042
- J. Park, A. Riaz, D. Verma, H. Lee, H. Woo, **J. Kim***, "Fractionation of lignocellulosic biomass over core-shell Ni-alumina catalysts with formic acid as a co-catalyst and hydrogen source", *ChemSusChem*, 2019, 12, 1–21
- J. Hwang, H. Setiadi, W. Chang, **J. Kim***, "Uniform and ultrathin carbon-layer coated layered $Na_2Ti_3O_7$ and tunnel $Na_2Ti_6O_{13}$ hybrid with enhanced electrochemical performance for anodes in sodium ion batteries", *Journal of Supercritical Fluids*, 2019, 148, 116–129
- T. X. Do, H. Prajitno, Y.-l Lim*, **J. Kim***, "Process modeling and economic analysis for bio-heavy-oil production from sewage sludge using supercritical ethanol and methanol" *Journal of Supercritical Fluids*, 2019, 150, 137-146.
- S. Alvin, D. Yoon, H. S. Cahyadi, R. F. Susanti, W. Chang, C. Ryu, **J. Kim***, "Extended plat voltage profile of the hard carbon synthesized using a two-step carbonization approach as an anode in sodium ion batteries", *Journal of Power Sources*, 2019, 430, 157-168
- M. Irshad, A. A. Myint. E. Hong, **J. Kim***, S. J. Sim*, "One-pot, simultaneous cell wall disruption and complete extraction of astaxanthin from Haematococcus pluvialis at room temperature", *ACS Sustainable Chemistry & Engineering*, 2019, 7, 13898–13910
- W. Devina, D. Nam, J. Hwang, C. Chandra, W. Chang, **J. Kim***, "Carbon-coated, Hierarchically Mesoporous $TiO_2$ Microparticles as an Anode Material for Lithium and Sodium Ion Batteries" *Electrochimica Acta*, 2019, 321, 134639–134654
- M. G. Sibi, D. Verma, **J. Kim***, "Magnetic Core-Shell Nano-catalysts: A promising Versatile Catalyst for Organic and Photocatalytic Reactions" *Catalysis Review: Science and Engineering*, Accepted 2019
- M. Z. Irriyanto, H.-S. Lim, B.-S. Choi, A. A. Myint*, **J. Kim***, "Thermal stability and decomposition behavior of HFO-1234ze(E) as a working fluid in the supercritical organic Rankine cycle", *Journal of Supercritical Fluids*, 2019, 154, 104602–104613.
- M. Irshad, M. E. Hong, A. A. Mint, **J. Kim***, S. J. Sim*, "Safe and complete extraction of astaxanthin from Haematococcus pluvialis by efficient mechanical disruption of cyst cell wall" *International Journal of Food Engineering*, 2019, 15, 20190128

**2018 (16 papers)**

- W. Kwek, M. K. Khan, B. Sarkar, **J. Kim***, "Supercritical methanol as an effective medium for producing asphaltene-free light fraction from vacuum residue" *Journal of Supercritical Fluids*, 2017, 133, 184-194
- J. Park, A. Riaz, R. Insyani, **J. Kim***, "Understanding the Relationship between the Structure and Depolymerization Behavior of Lignin", *Fuel*, 2018, 217, 202-210
- D. Yoon, J. Hwang, W. Chang, **J. Kim***, "Carbon with expanded and well-developed graphene planes derived directly from condensed lignin as a high-performance anode for sodium-ion batteries", *ACS Applied Materials & Interfaces*, 2018, 10, 569−581

- M. Choi, W. William, J. Hwang, D. Yoon, **J. Kim*,** "A Supercritical Ethanol Route for One-pot Synthesis of Tin Sulfide–Reduced Graphene Oxide Composites and their Anode Performance for Lithium Ion Batteries", *Journal of Industrial and Engineering Chemistry*, 2018, 59,160−168
- C. Chandra, **J. Kim*,** "Silicone oil carbonation produced silicon oxycarbide for high-performance anode materials in sodium ion batteries", *Chemical Engineering Journal*, 2018, 338,126−136
- M. K. Khan, W. Kwek, **J. Kim*,** "Conversion of Petroleum Emulsion into Light Fraction-Rich Upgraded Oil in Supercritical Methanol" *Fuel*, 2018, 218, 78−88
- A. A. Pollardo, H.-S. Lee, D. Lee, S. Kim*, **J. Kim*,** "Solvent effect on the enzymatic production of biodiesel from waste animal fat", *Journal of Cleaner Production*, 2018, 185, 382−388
- H. Prajitno, J. Park, C. Ryu, H. Y. Park, H. S. Lim, **J. Kim*,** "Effects of Solvent Participation and Controlled Product Separation on Biomass Liquefaction: A Case Study of Sewage Sludge", *Applied Energy*, 2018, 218, 402−416
- W. Devina, J. Hwang, **J. Kim*,** "Synthesis of $MoO_2$/$Mo_2C$/RGO Composite in Supercritical Fluid and its Enhanced Cycling Stability in Li-Ion Batteries" *Chemical Engineering Journal*, 2018, 345, 1−12
- S. H. Lee, J. H. Lee, D. H. Nam, M. Cho, **J. Kim**, C. Chanthad, Y. Lee, "Epoxidized Natural Rubber-Chitosan Network Binder for Silicon Anode in Lithium Ion Battery" *ACS Applied Materials & Interfaces*, 2018, 16, 16449-16457
- H. S. Cahyadi, W. William, D. Verma, S. K. Kwak*, **J. Kim***, "Enhanced Lithium Storage Capacity of A Tetralithium 1,2,4,5-Benzenetetracarboxylate (Li4C10H2O8) Salt through Crystal Structure Transformation", *ACS Applied Materials & Interfaces*, 2018, 10, 17183−17194
- M. J. Hidajat, A. Riaz, **J. Kim***, "A two-step route for producing oxygen-free aromatics from lignin using formic acid as a hydrogen source", *Chemical Engineering Journal*, 2018, 348, 799–810
- H. Jo, D. Verma, **J. Kim***, "Excellent aging stability of upgraded fast pyrolysis bio-oil in supercritical ethanol", *Fuel*, 2018, 232, 610-619
- A. A. Myint, W.-K. Rhim, J.-M. Nam, **J. Kim***, and Y.-W Lee*, "Water-soluble fluorescent carbon dots derived from lignin for bioimaging", *Journal of Industrial and Engineering Chemistry*, 2018, 66, 387-395
- D. Verma, R. Insyani, H. S. Cahyadi, J. Y. Park, S. M. Kim, J. M. Cho, J. W. Bae, **J. Kim***, "Ga-doped Cu/H-nanozeolite-Y catalyst for selective hydrogenation and hydrodeoxygenation of lignin-derived chemicals", *Green Chemistry*, 2018, 20, 3253-3270
- A. Riaz, D. Verma, H. Zeb, J. H. Lee, J. C. Kim, S. K. Kwak*, **J. Kim***, "Solvothermal liquefaction of alkali lignin to obtain a high yield of aromatic monomers while suppressing solvent consumption", Green Chemistry, 2018, 20, 4957–4974

**2017 (26 papers)**

- H. Zeb, A, Riaz, **J. Kim*,** "Understanding the effect of biomass-to-solvent ratio on macroalgae (Saccharina japonica) liquefaction in supercritical ethanol" *Journal of Supercritical Fluids*, 2017, 120, 65-74
- W. Kwek, M. K. Khan, B. Sarkar, M. Yi, **J. Kim*,** "A non-catalytic, supercritical methanol route for producing high-yield saturated and aromatic compounds from de-oiled asphaltenes", *Journal of Supercritical Fluids*, 2017, 120, 140-150
- E. B. Nursanto, S. J. Park, Y. J. Hwan, **J. Kim*,** B. K. Min*, "Liquid $CO_2$-based coating for dense $CuIn_xGa_{1-x}S_2$ film fabrication", *Journal of Supercritical Fluids*, 2017, 120, 453-459
- H. Zeb, D. J. Choi, Y, Kim*, **J. Kim*,** "A new role of supercritical ethanol in macroalgae liquefaction: understanding ethanol participation, yield, and energy efficiency", *Energy*, Energy, 2017, 118, 116-126
- A. A. Myint, B. Seo, W.-S. Son, J. Yoon, N. Shin, J. Kim, Y.-W. Lee,* "Effect of compressed liquid $CO_2$ antisolvent treatment on the synthesis of hierarchically porous nanocarbon from kraft lignin" *Journal of Supercritical Fluids*, 2017, 123, 1-10
- G. Ali, A. Mehmood, H. Y. Ha, J. Kim, K. Y. Chung,* "Reduced graphene oxide as a stable and high-capacity cathode material for Na-ion batteries", *Scientific Reports*, 2017, 7, 40910
- M. J. Hidajat, A. Riaz, J. Park, R. Insyani, **J. Kim*,** "Depolymerization of Concentrated Sulfuric Acid Hydrolysis Lignin to High-yield Aromatic Monomers in Basic Sub- and Supercritical Fluids", *Chemical Engineering Journal*, 2017, 317, 9-19
- D. Yoon, J. Hwang, D. H. Kim, W. Chang, K. Y. Chung, **J. Kim*,** "One-pot route for uniform anchoring of $TiO_2$ nanoparticles on reduced graphene oxides and their anode performance for lithium-ion batteries" *Journal of Supercritical Fluids*, 2017, 125, 66-78
- D. Yoon, J. Hwang, W. Chang, **J. Kim*,** "Uniform One-Pot Anchoring of $Fe_3O_4$ to Defective Reduced Graphene Oxide for Enhanced Lithium Storage" *Chemical Engineering Journal*, 2017, 317, 890-900
- M. K. Khan, B. Sarkar, H. Zeb, M. Yi, **J. Kim*,** "Simultaneous breaking and conversion of petroleum emulsions into synthetic crude oil with low impurities", *Fuel*, 2017, 199, 135-144
- R. Insyani, D. Verma, S. M. Kim, **J. Kim*,** "Direct One-pot Conversion of Monosaccharides into High-yield 2,5-Dimethylfuran over a Multifunctional Pd/Zr-Based Metal−Organic Framework@Sulfonated Graphene Oxide Catalyst", *Green Chemistry*, 2017, 19, 2842-2490
- D. Verma, R. Insyani, Y.-W. Suh, S. K. Kim, **J. Kim*,** "Direct conversion of Cellulose to High-Yield Methyl Lactate over Ga-doped Zn on H-Nanozeolite Y Catalysts in Supercritical Methanol" *Green Chemistry*, 2017, 19, 1969-1982

- H. Prajitno, J. Park, C. Ryu, **J. Kim*,** "Efficient Renewable Fuel Production from Sewage Sludge Using a Supercritical Fluid Route" Fuel, 2017, 200, 146-152
- C. Kim, D. Verma, N. D. Ho, W. Chang, **J. Kim*,** "Conformal carbon layer coating on well-dispersed Si nanoparticles on graphene oxide and the enhanced electrochemical performance" *Journal of Industrial and Engineering Chemistry*, 2017, 52, 260-269
- M. Choi, J. Hwang, W. Chang, **J. Kim*,** "One-pot Synthesis of Molybdenum Disulfide–Reduced Graphene Oxide (MoS2-RGO) Composites and Their High Electrochemical Performance as an Anode in Lithium Ion Batteries" *Journal of Supercritical Fluids*, 2017, 127, 81-89
- J. Hwang, K. C. Kong, W. Chang, E. Cho, K. Nam, **J. Kim*,** "New Liquid Carbon Dioxide Based Strategy for High Energy/Power Density $LiFePO_4$", *Nano Energy*, 2017, 36, 398-410
- K. Khan, A. Riaz, M. Yi, **J. Kim*,** "Removal of naphthenic acids from high acid crude via esterification with methanol", *Fuel Processing Technology*, 2017, 165, 123-130
- H. Jo, H. Prajitno, H. Zeb, **J. Kim*,** "Upgrading low-boiling-fraction fast pyrolysis bio-oil using supercritical alcohol: Understanding alcohol participation, chemical composition, and energy efficiency", *Energy Conversion and Management*, 2017.148, 197-209
- S. K. Kim, **J. Kim**, Seung-Cheol Lee, "Surface-termination dependence of propanoic acid deoxygenation on $Mo_2C$" *Catalysis Communications*, 2017, 99, 61-65
- H. Zeb, J. Park, A. Riaz, C. Ryu, **J. Kim*,** "High-yield bio-oil production from macroalgae (*Saccharina japonica*) in supercritical ethanol and its combustion behavior" *Chemical Engineering Journal*, 2017, 327, 79-90
- J. Hwang, **J. Kim*,** "A supercritical methanol route for the synthesis of sodium iron oxide submicron plates for use as a cathode material for sodium-ion batteries" *Materials Letters*, 2017, 206, 100-104
- B. Sarkar, W. Kwek, D. Verma, **J. Kim*,** "Effective vacuum residue upgrading using sacrificial nickel(II) dimethylglyoxime complex in supercritical methanol", *Applied Catalysis A: General*, 2017, 545, 148–158
- H. Zeb, A. Riaz, **J. Kim*,** "Effective conversion of the carbohydrate-rich macroalgae (*Saccharina japonica*) into bio-oil using low-temperature supercritical methanol", *Energy Conversion and Management*, 2017, 151, 357–367
- M. K. Khan, W. Kwek, **J. Kim*,** "Upgrading heavy crude oils and extra heavy fractions in supercritical methanol", Energy and Fuels, 2017, 31, 12054-12063
- A. A. Pollardo, H.-S. Lee, D. Lee, S. Kim*, **J. Kim**, "Effect of supercritical carbon dioxide on the enzymatic production of biodiesel from waste animal fat using immobilized Candida antarctica lipase B variant" BMC Biotechnology, 2017, 17, 70

**2016 (12 papers)**

- K. S. Kumar, W. Li, M. Choi, S. M. Kim, **J. Kim*,** "Synthesis and lithium storage properties of $MoS_2$ nanoparticles prepared using supercritical ethanol" *Chemical Engineering Journal*, 2016, 285, 517-527
- D. Yoon, D. H. Kim, W. Chang, K. Y. Chung, S. M. Kim, **J. Kim*,** "Hydrogen-enriched Porous Carbon Nanosheets with Superior Rate Performance for Sodium Ion Batteries" *Carbon*, 2016, 98, 213-220
- A. Riaz, C. S. Kim, Y, Kim*, **J. Kim*,** "High-yield and high-calorific bio-oil production from concentrated sulfuric acid hydrolysis lignin in supercritical ethanol" *Fuel*, 2016, 172, 238-247
- M. Choi, K. S. Kumar, D. Yoon, J. Hwang, S. M. Kim, **J. Kim*,** "A route to synthesis molybdenum disulfide-reduced graphene oxide ($MoS_2$-RGO) composites using supercritical methanol and their enhanced electrochemical performance for Li-ion batteries*" Journal of Power Sources*, 2016, 309, 202-211
- C. Chao, S. H. Lee, M. Cho, **J. Kim**, Y. Lee*, "Cross-linked chitosan as an efficient binder for Si anode of Li-ion batteries" *ACS Applied Materials & Interfaces*, 2016, 8, 2658-2665
- J. Hwang, D. Min, W. Chang, **J. Kim*,** "Liquid carbon dioxide-based coating of a uniform carbon layer on hierarchical porous $MoO_2$ microspheres and assessment of their electrochemical performance" *Chemical Engineering Journal*, 2016, 290, 335-345
- Y. K. Endah, S. H. Han, **J. Kim**, N.-K. Kim, W. N. Kim, H.-S. Lee, H. Lee*, Solid-state polymerization and characterization of a copolyamide based on adipic acid, 1,4-butanediamine, and 2,5-furandicarboxylic acid, *Journal of Applied Polymer Science*, 2016, 133, 43391.
- H. Prajitno, R. Insyani, J. Park, C. Ryu, **J. Kim*,** "Non-catalytic upgrading of fast pyrolysis bio-oil in supercritical ethanol and combustion behavior of the upgraded oil" *Applied Energy*, 2016, 172, 12
- M. K. Khan, R. Insyani, J. Lee, M. Yi, J. W. Lee, **J. Kim*,** "A non-catalytic, supercritical methanol route for effective deacidification of naphthenic acids" *Fuel*, 2016, 182, 650–659
- W. Li, J. Hwang, W. Chang, K. Y. Chung, **J. Kim*,** "Ultrathin and uniform carbon-layer-coated hierarchically porous $LiFePO_4$ microspheres and their electrochemical performance" *Journal of Supercritical Fluids*, 2016, 116, 164-171
- S. H. Lee, S. Park, M. Kim, D. Yoon, C. Chanthad, M. Cho, **J. Kim**, J. H. Park, Y. Lee, "Supercritical Carbon Dioxide Assisted Process for Well-Dispersed Silicon/Graphene Composite as a Li ion Battery Anode", *Scientific Reports*, 2016, 6, 32011
- J. Hwang, D. Yoon, B. Kweon, W. Chang, **J. Kim*,** "A Simple, One-pot Synthesis of Molybdenum Oxide-Reduced Graphene Oxide Composites in Supercritical Methanol and Their Electrochemical Performance", *RSC Advances*, 2016, 6, 108298

- M. S. Abbasi, R. Song, **J. Kim**, J. Lee*, "Electro-hydrodynamic behavior and interface instability of double emulsion droplets under high electric field" *Journal of Electrostatics*, 2017, 85, 11-22

**2015 (7 papers)**

- D. Yoon, K. Y. Chung, W. Chang, S. M. Kim, M. J. Lee, Z. Lee, **J. Kim*,** "Hydrogen-Enriched Reduced Graphene Oxide with Enhanced Electrochemical Performance in Lithium Ion Batteries", *Chemistry of Materials*, 2015, 27, 266-275
- **J. Kim***, S.-A. Hong, J. Yoo, "Continuous synthesis of hierarchical porous ZnO microspheres in supercritical methanol and their enhanced electrochemical performance in lithium ion batteries", *Chemical Engineering Journal*, 2015, 266, 179-188
- S. Brand **J. Kim***, "Liquefaction of major lignocellulosic biomass constituents in supercritical ethanol", *Energy*, 2015, 80, 64-74
- A. Nugroho, K. Y. Chung, **J. Kim*** "Synthesis of $Li_4Ti_5O_{12}$/Carbon Nanocomposite in Supercritical Methanol for Anode in Li-Ion Batteries: Effect of Surface Modifiers", *Journal of Supercritical Fluids*, 2015, 101, 72-80
- S. K. Kim, D. H. Yoon, S.-C. Lee, **J. Kim***, "$Mo_2C$/graphene nanocomposite as a superior hydrodeoxygenation catalyst with enhanced hydrogen mobility for the production of diesel-range hydrocarbons" *ACS Catalysis*, 2015, 5, 3292-3303
- W. Li, D. Yoon, J. Hwang, W. Chang, **J. Kim*** "One-pot Route to Synthesize $SnO_2$-Reduced Graphene Oxide Composites and Their Enhanced Electrochemical Performance as an Anode in Lithium Ion Batteries", *Journal of Power Sources*, 2015, 293, 1024-1031
- H.-S. Lee, H. Lee, J.-M. Ha, **J. Kim**, D. J. Suh, ",Production of Aromatic Compounds from Oil Palm Empty Fruit Bunches by Hydro- and Solvothermolysis", *Industrial Crops and Products*, 2015, 76, 104-111

**2014 (12 papers)**

- L. W. Dianningrum, H. Choi, Y. Kim, K.-D. Jung, R. F. Susanti, **J. Kim***, B.-I. Sang*, "Hydrothermal gasification of pure and crude glycerol in supercritical water: A comparative study", *International Journal of Hydrogen Energy*, 2014, 39, 1262-1273
- S. K. Kim, J. Y. Han, H.-S. Lee, T. Yum, Y. Kim, **J. Kim***, "Production of renewable diesel via catalytic deoxygenation of natural triglycerides: Comprehensive understanding of reaction intermediates and hydrocarbons", *Applied Energy*, 2014, 116, 199-205
- A. D. C. Permana, A. Nugroho, K. Y. Chung, W. Chang, **J. Kim*** "Template-free synthesis of hierarchical porous anatase $TiO_2$ microspheres with carbon coating and their electrochemical properties", *Chemical Engineering Journal*, 2014, 241, 216-227
- A. Nugroho, K. Y. Chung, **J. Kim***, "A facile supercritical alcohol route for synthesizing carbon coated hierarchically mesoporous Li4Ti5O12 microspheres", *Journal of Physical Chemistry, C*, 2014, 118, 183-193
- S. K. Kim, H.-S. Lee, Y.-W. Lee, **J. Kim***, "Low-temperature, Selective Catalytic Deoxygenation of Vegetable Oil in Supercritical Fluid Media", *ChemSusChem*, 2014, 7, 492-500
- S. Brand, F. Hardi, D. J. Suh **J. Kim***, "Effect of heating rate on biomass liquefaction: differences between subcritical water and supercritical ethanol", *Energy*, 2014, 68, 420-427
- S.-A. Hong, D. H. Kim, K. Y. Chung, W. Chang, J. Yoo, **J. Kim*** "Toward uniform and ultrathin carbon layer coating on lithium iron phosphate using liquid carbon dioxide for enhanced electrochemical performance", *Journal of Power Sources*, 2014, 262, 219-223
- A. D. C. Permana, A. Nugroho, H.-S. Lee, S.-M. Bak, K. Y. Chung, B. K. Min, **J. Kim***, "Synthesis of hydrous ruthenium oxide nanoparticles in sub- and supercritical water and their capacitive properties", *Chemical Engineering Communications*, 2014, 2014, 1259-1269
- E. B. Nursanto, S. J. Park, H. S. Jeon, Y. J. Hwang, **J. Kim***, B. K. Min*, "Uniform Deposition of Ternary Chalcogenide Nanoparticles onto Mesoporous $TiO_2$ Film using Liquid Carbon Dioxide-based Coating", *Thin Solid Films*, 2014, 565, 122-127
- A. Nugroho, D. Yoon, Oh-Shim Joo,* K. Y. Chung, **J. Kim***, "Continuous Synthesis of $Li_4Ti_5O_{12}$ Nanoparticles in Supercritical Fluids and Their Electrochemical Performance for Anode in Li-Ion Batteries", *Chemical Engineering Journal*, 2014, 258, 357-366
- R. F. Susanti, L. W. Dianningrum, T. Yum, Y. Kim, Y.-W. Lee, **J. Kim***, "High-yield Hydrogen Production by Supercritical Water Gasification of Various Feedstocks: Alcohols, Glucose, Glycerol and Long-chain Alkanes", *Chemical Engineering Research and Design*, 2014, 92, 1834-1844
- A. Nugroho, **J. Kim***, "Effect of KOH on the Continuous Synthesis of Cobalt Oxide and Manganese Oxide Nanoparticles in Supercritical Water" *Journal of Industrial and Engineering Chemistry*, 2014, 20, 4443-4446

**2013 (12 papers)**

- S.-A Hong, S. J. Kim, K. Y. Chung, M.-S. Chun, B. G. Lee, **J. Kim***, "Continuous synthesis of lithium iron phosphate ($LiFePO_4$) nanoparticles in supercritical water: Effect of mixing tee", *Journal of Supercritical Fluids*, 2013, 73, 70
- H. S. Jeon, A. D. C. Permana, **J. Kim***, B. K. Min* "Water splitting for hydrogen production using a high surface area $RuO_2$ electrocatalyst synthesized in supercritical water", *International Journal of Hydrogen Energy*, 2013, 38, 6092

- R. F. Susanti, Y. S. Han, Y. H. Lee*, **J. Kim***, R. G. Carbonell "A new strategy for ultralow biofouling membranes: Uniform and ultrathin hydrophilic coatings using liquid carbon dioxide", *Journal of Membrane Science*, 2013, 440, 88
- A. Nugroho, S. J. Kim, K. Y. Chung, **J. Kim***, "Facile synthesis of hierarchical mesoporous $Li_4Ti_5O_{12}$ microspheres in supercritical methanol", *Journal of Power Sources*, 2013, 244, 164
- S. K. Kim, J. Y. Han, S.-A. Hong, S. Brand, **J. Kim***, "Supercritical $CO_2$-purification of waste cooking oil for high-yield diesel-like hydrocarbons via catalytic hydrodeoxygenation" *Fuel*, 2013, 111, 510
- H.-S. Lee, J. H. Jeong, G. Hong, H.-K. Cho, B. K. Baek, C. M. Koo, S. M. Hong, **J. Kim**, Y.-W. Lee* "Effect of solvents on de-cross-linking of cross-linked polyethylene under subcritical and supercritical conditions" *Industrial and Engineering Chemistry Research*, 2013, 52, 6633
- S. K. Kim, S. Brand, H.-S. Lee, Y. Kim, **J. Kim***, "Production of renewable diesel by hydrotreatment of soybean oil: Effect of reaction parameters", *Chemical Engineering Journal*, 2013, 228, 114
- S.-A. Hong, S. J. Kim, K. Y. Chung, Y.-W. Lee, **J. Kim***, B.-I. Sang*, "Continuous synthesis of lithium iron phosphate nanoparticles in supercritical water: Effect of process parameters", *Chemical Engineering Journal*, 2013, 229, 313
- S. Brand, R. F. Susanti, S. K. Kim, H.-S. Lee, **J. Kim***, B.-I. Sang*, "Supercritical ethanol as an enhanced medium for lignocellulosic biomass liquefaction: Influence of physical process parameters", *Energy*, 2013, 59, 173
- M. Seo, D. Yoon, K. S. Hwang, J. W. Kang, **J. Kim*,** "Supercritical alcohols as solvents and reducing agents for the synthesis of reduced graphene oxide", *Carbon*, 2013, 64, 207
- K. H. Ahn, Y.-H. Lee, M. Kim, H.-S. Lee, Y.-S. Youn, **J. Kim**, Y.-W. Lee*, "Effects of Surface Area of Titanium Dioxide Precursors on the Hydrothermal Synthesis of Barium Titanate by Dissolution-Precipitation", *Industrial and Engineering Chemistry Research*, 2013, 52, 13370
- S. K. Kim, J. Shin, S. H. Moon, **J. Kim**, S.-C. Lee*, "Theoretical Investigation of the Adsorption and C–C Bond Scission of $CCH_3$ on the (111) and (100) Surfaces of Pd: Comparison with Pt", *Journal of Physical Chemistry C*, 2013, 117, 18131

**2012 (14 papers)**

- B. Veriansyah, J. Y. Han, S. K. Kim, S.-A. Hong, Y. J. Kim, J. S. Lim, Y.-W. Shu, S.-G. Oh, **J. Kim***, "Production of renewable diesel by hydroprocessing of soybean oil: Effect of catalysts", *Fuel*, 2012, 94, 578
- Y. J. Kim, **J. Kim***, S-G. Oh, "Solid-State Polymerization of Poly(trimethylene terephthalate): Reaction Kinetics and Prepolymer Molecular Weight Effects", *Industrial and Engineering Chemistry Research*, 2012, 51, 2904
- J. W. Cho, S. J. Park, **J. Kim**, W. Kim, H. K. Park, Y. R. Do, B. K. Min "Bulk heterojunction formation between indium tin oxide nanorods and CuInS2 nanoparticles for inorganic thin film solar cell applications", *ACS Applied Materials & Interfaces*, 2012, 4, 849
- H. S. Jeon, **J. Kim**, H. Kim, S. D. Lee, B. K. Min*, "Design of an electrolytic cell for a monolithic photovoltaic-electrolytic hydrogen generation system: the electrode aspects", *Chemical Engineering Communications*, 2012, 199, 1063
- A. Nugroho, B. Veriansyah, S. K. Kim, B. G. Lee, **J. Kim***, Y.-W. Lee, "Continuous Synthesis of Surface-Modified Nanoparticles in Supercritical Methanol: A Facile Approach to Control Dispersibility", *Chemical Engineering Journal*, 2012, 193-194, 146
- S.-A Hong, S. J. Kim, **J. Kim***, B. G. Lee, K. Y. Chung, Y.-W. Lee, "Carbon coating on lithium iron phosphate ($LiFePO_4$): Comparison between continuous supercritical hydrothermal method and solid-state method", *Chemical Engineering Journal*, 2012, 198-199, 318
- R. F. Susanti, L. W. Dianningrum, T. Yum ,Y. Kim, B. G. Lee, **J. Kim***, "High-Yield Hydrogen Production from Glucose by Supercritical Water Gasification without Added Catalyst", *International Journal of Hydrogen Energy*, 2012, 37, 11677
- W. Jang, E. B. Nursanto, **J. Kim***, S. J. Park, B. K. Min*, K.-P. Yoo, "Liquid Carbon Dioxide Coating of CdS Quantum-Dots onto Mesoporous $TiO_2$ film for Sensitized Solar Cell Applications", *Journal of Supercritical Fluids*, 2012, 70, 40
- A. Nugroho, S. J. Kim, K. Y. Chung, **J. Kim***, "Synthesis of $Li_4Ti_5O_{12}$ in Supercritical Water for Li-Ion Batteries: Reaction Mechanism and High-Rate Performance", *Electrochimica Acta*, 2012, 78, 623
- A. Nugroho, W. Chang, S. J. Kim, K. Y. Chung, **J. Kim***, "Superior High Rate Performance of Core–shell $Li_4Ti_5O_{12}$/Carbon Nanocomposite Synthesized by a Supercritical Alcohol Approach", *RSC Advances*, 2012, 2, 10805
- Y. H. Shin, H.-S. Lee, B. Veriansyah, **J. Kim**, D. S. Kim, H. W. Lee, Y.-W. Lee*, "Simultaneous carbon capture and nitrogen removal during supercritical water oxidation", *Journal of Supercritical Fluids*, 2012, 72, 120
- J.-M. Ha, D. Kim, **J. Kim***, B. S. Ahn, S. K. Kim, J. W. Kang, "Supercritical-Phase-Assisted Highly Selective and Active Catalytic Hydrodechlorination of the Ozone-Depleting Refrigerant HCFC-22", *Chemical Engineering Journal*, 2012, 213, 346
- Y.-S. Youn, J. H. Oh, K. H. Ahn, M. Kim, **J. Kim**, Y.-W Lee*, "Vegetable oil aided hydrothermal synthesis of cerium oxide nanocrystals", *Korean Journal of Chemical Engineering*, 2012, 29, 1289
- Y. J. Kim, K. E. Yohana, H.-S. Lee, **J. Kim***, "Solid-State Polymerization of Semi-aromatic Copolyamides of Nylon-4,T and Nylon-4,6: Composition Ratio Effect and Thermal Properties", *Industrial and Engineering Chemistry Research*, 2013, 51, 15801

**2011 (12 papers)**

- S.-A. Hong, S. J. Kim, **J. Kim***, K. Y. Chung, B.-W. Cho, J. W. Kang, "Small capacity decay of lithium iron phosphate ($LiFePO_4$) synthesized continuously in supercritical water: Comparison with solid-state method", *Journal of Supercritical Fluids*, 2011, 55, 1027
- B. Veriansyah, R. F. Susanti, A. Nugroho, B. K. Min, **J. Kim***, "Continuous synthesis of high-surface-area aluminum hydroxide methoxide nano- and microparticles in supercritical methanol and their conversion into γ-$Al_2O_3$", *Materials Letters*, 2011, 65, 772
- H. S. Jeon, W. Park, **J. Kim**, H. Kim, W. Kim, B. K. Min*, "Printed $Co_3O_4$ film as an electrocatalyst for hydrogen production by a monolithic photovoltaic-electrolysis system", *International Journal of Hydrogen Energy*, 2011, 36, 1924
- S.-A. Hong, A. Nugroho, S. J. Kim, **J. Kim***, K. Y. Chung, B.-W. Cho, J. W. Kang, "Continuous Supercritical Hydrothermal Synthesis: Lithium Secondary Ion Battery Applications", *Research on Chemical Intermediates*, 2011, 37, 429-440
- R. F. Susanti, A. Nugroho, J. Lee, Y. Kim, **J. Kim***, "Noncatalytic Gasification of Isooctane in Supercritical Water : A Strategy for High Yield Hydrogen Production" *International Journal of Hydrogen Energy*, 2011, 36, 3895
- N. S. Han, H. S. Shim, J. H. Seo, B. K. Min, **J. Kim***, J. K. Song, "Optical Properties and Lasing of ZnO Nanoparticles Synthesized Continuously in Supercritical Fluids", *Chemical Physics Letters*, 2011, 505, 51
- B. Veriansyah, M.-S. Chun, **J. Kim***, "Dispersion Stability of Unmodified and Surface-Modified Ceria Oxide Nanoparticles in Ethylene Glycol Medium", *Chemical Engineering Journal*, 2011, 168, 1346
- J.-M. Ha, D. Kim, **J. Kim***, B. S. Ahn, Y. Kim, J. W. Kang, "High Temperature Hydrodechlorination of Ozone-Depleting Chlorodifluoromethane (HCFC-22) on Supported Pd and Ni Catalysts", *Journal of Environmental Science and Health, Part A*, 2011, 46, 989
- H. S. Jeon, A. Nugroho, **J. Kim***, H. Kim, B. K. Min*, "Size-dependent electrocatalytic activities of printed $Co_3O_4$ films for a monolithic photovoltaic-electrolytic hydrogen generation system", *International Journal of Hydrogen Energy*, 2011, 36, 10587
- E. B. Nursanto, A. Nugroho, S.-A. Hong, S. J. Kim, K. Y. Chung, **J. Kim***, "Facile and green synthesis of reduced graphene oxide in supercritical alcohols and its lithium storage capacity, *Green Chemistry*, 2011, 13, 2714
- A. Nugroho, S. J. Kim, K. Y. Chung, B.-W. Cho, Y.-W. Lee, **J. Kim***, "Facile Synthesis of Nanosized $Li_4Ti_5O_{12}$ in Supercritical Water", *Electrochemistry Communications*, 2011, 13, 650
- Y.-S. Youn, J. H. Oh, K. H. Ahn, M. Kim, **J. Kim**, Y.-W. Lee "Dissolution rate improvement of valsartan by low temperature recrystallization in compressed CO2: Prevention of excessive agglomeration", *Journal of Supercritical Fluids*, 2011, 59, 117

**2010 (17 papers)**

- E. Lee, J. W. Cho, **J. Kim**, J. Yun, J. H. Kim, B. K. Min*, " Synthesis of CIGS Powders: Transition from Binary to Quaternary Crystalline Structure", *Journal of Alloys and Compounds*, 2010, 506, 969 (Impact factor = 2.289)
- N. C. Shin, Y-H Lee, Y. H. Shin, **J. Kim**, Y-W Lee*, "Synthesis of Cobalt Nanoparticles in Supercritical Methanol", *Materials Chemistry and Physics*, 2010, 124, 140-144
- S. J. Yoo, H.-S. Lee, B. Veriansyah, **J. Kim**, J. D. Kim, Y.-W. Lee*, "Synthesis of biodiesel from rapeseed oil using supercritical methanol with metal oxide catalysts", *Bioresource Technology*, 2010, 101, 8686
- B. Veriansyah, J. D. Kim, B. K. Min, Y. H. Shin, Y.-W. Lee, **J. Kim***, "Continuous Synthesis of Surface-modified Zinc Oxide Nanoparticles in Supercritical Methanol", *Journal of Supercritical Fluids*, 2010, 52, 76
- **J. Kim***, C. J. Wu, W. J. Kim, J. Kim, H. J. Lee, J. D. Kim, "Ring Opening Metathesis Polymerization of Tetracyclododecene Using Various Catalyst Systems", *Journal of Applied Polymer Science*, 2010, 116, 479
- W. J. Kim, B. Veriansyah, Y. W. Lee, J. D. Kim, **J. Kim*** , " Extraction of Mangiferin from Mahkota Dewa (Phaleria macrocarpa) using Subcritical Water ", *Journal of Industrial and Engineering Chemistry*, 2010, 116, 425
- N. K. Youn, J. E. Heo, O. S. Joo, H. Lee, **J. Kim**, B. K. Min, " The Effect of Dissolved Oxygen on the 1,4-dioxane Degradation with $TiO_2$ and Au-$TiO_2$ Photocatalysts", *Journal of Hazardous Materials*, 2010, 177, 216
- R. F. Susanti, B. Veriansyah, Y-W, Lee, J. D. Kim, and **J. Kim***, "Continuous Supercritical Water Gasification of Isooctane: A Promising Reactor Design" *International Journal of Hydrogen Energy*, 2010, 35, 1957
- H. M. Choi, B. Veriansyah, **J. Kim***, J. D. Kim, J. W. Kang, "Continuous Synthesis of Metal Nanoparticles in Supercritical Methanol", *Journal Supercritical Fluids*, 2010, 52, 285
- **J. Kim**, J. P. Rolland, J. M. DeSimone, R. G. Carbonell, "Ultrathin Crosslinked Perfluoropolyether Film Coatings from Liquid CO2 and Subsequent UV Curing", *Chemistry of Materials*, 2010, 22, 2411
- **J. Kim**, R. G. Carbonell, "Deposition of Palladium Catalyzed Copper Films by the Displacement of Two Immiscible Supercritical Phases and Subsequent Reaction", *Journal of Materials Chemistry*, 2010, 20, 3973
- S.-A. Hong, **J. Kim***, J. D. Kim, J. W. Kang, Y.-W. Lee, "Purification of Waste Cooking Oils via Supercritical Carbon Dioxide Extraction", *Separation Science and Technology*, 2010, 45, 1139
- **J. Kim***, Y. J. Kim, T. S. Ahmed, L. B. Dong, G. W. Roberts, S.-G. Oh, "The Effect of Prepolymer Crystallinity on Solid State Polymerization of Poly(bisphenol A carbonate)", *Polymer*, 2010, 51, 2520
- W. Jang, D. Kim, **J. Kim***, B. K. Min, J.-D. Kim. K. Yoo "Uniform decoration of linker-free quantum dots onto mesoporous $TiO_2$ using liquid carbon dioxide", *Chemistry of Materials*, 2010, 22, 4350
- S.-A. Hong, J. D. Kim, **J. Kim***, J. W. Kang, I.-J. Kang "Phase Equilibria of Palm Oil, Palm Kernel Oil, and Oleic acid + Supercritical Carbon Dioxide and Modeling Using Peng-Robinson EOS", *Journal of Industrial and Engineering Chemistry*, 2010, 16, 859

- C.-W. Lee, S.-J. Kim, Y.-S. Youn, E. Widjojokusumo, **J. Kim**, Y.-W. Lee, R. R.Tjandrawinata, "Preparation of Bitter Taste Masked Cetirizine Dihydrochloride/b-cyclodextrin Inclusion Complex by Supercritical Antisolvent (SAS) Process", *Journal of Supercritical Fluids*, 2010, 55, 348
- B. Veriansyah, J.-D. Kim, B. K. Min, **J. Kim***, "Continuous Synthesis of Magnetite Nanoparticles in Supercritical Methanol", *Materials Letters*, 2010, 64, 2197

**2009 (11 papers)**

- Y. H. Shin, H. S. Lee, Y. H. Lee, **J. Kim**, J. D. Kim, Y. W. Lee*, "Synergetic Effect of Copper-plating Wastewater as a Catalyst for the Destruction of Acrylonitrile Wastewater in Supercritical Water Oxidation", *Journal of Hazardous Materials*, 2009, 167, 824
- **J. Kim**, L. B. Dong, D. J. Kiserow, G. W. Roberts, "Complex Effects of the Sweep Fluid on Solid-State Polymerization: Poly(bisphenol A carbonate) in Supercritical Carbon Dioxide", *Macromolecules*, 2009, 42, 2472
- Y. H. Shin, N. C. Shin, B. Veriansyah, **J. Kim**, Y. W. Lee*, "Supercritical Water Oxidation of Wastewater from Acrylonitrile Manufacturing Plant", *Journal of Hazardous Materials*, 2009, 163, 1142
- W. J. Kim, **J. Kim***, B. Veriansyah, J. D. Kim, Y. W. Lee, S. G. Oh, R. R. Tjandrawinata, "Extraction of Bioactive Components from Centella asiatica using Subcritical Water", *Journal of Supercritical Fluids*, 2009, 48, 211
- H. M. Choi, B. Veriansyah, **J. Kim***, J. D. Kim, Y. W. Lee, "Recycling of Transformer Oil Contaminated by Polychlorinated biphenyls (PCBs) using Catalytic Hydrodechlorination", *Journal of Environmental Science and Health, Part A*, 2009, 44, 494
- **J. Kim**, D. C. Taylor, J. DeYoung, J. B. McClain, J. M. DeSimone, R. G. Carbonell*, "Deposition of Copper Particles and Films by the Displacement of Two Immiscible Supercritical Phases and Subsequent Reaction", *Chemistry of Materials*, 2009, 21, 913
- Y. H. Lee, J. D. Kim, **J. Kim**, H. Kim, Y. W. Lee* "Effect of Promoter and Moisture on the Deactivation of FSO3H Catalyst in the Synthesis of HFC-152a by Hydorfluorination of Acetylene" *Korean Journal of Chemical Engineering*, 2009, 26, 702
- **J. Kim***, D. Kim, B. Veriansyah, J. W. Kang, J. D. Kim, "Metal Nanoparticles Synthesis Using Supercritical Alcohols", *Materials Letters*, 2009, 63, 1880
- B. Veriansyah, H. Park, J. D. Kim, B. K. Min, Y. W. Lee **J. Kim***, "Characterization of Surface-modified Ceria Oxide Nanoparticles Synthesized Using Supercritical Methanol in a Continuous System", *Journal of Supercritical Fluids*, 2009, 50, 283
- Y. H. Shin, S. M. Koo, D. S. Kim, Y. H Lee, B.Veriansyah, **J. Kim**, Y.-W. Lee*, "Continuous hydrothermal synthesis of HT-$LiCoO_2$ in supercritical water" *Journal of Supercritical Fluids*, 2009, 50, 250
- B. Veriansyah, H. M. Choi, Y. W. Lee, J. W. Kang, **J. Kim***, J. D. Kim, "Continuous Catalytic Hydrodechlorination of Polychlorinated biphenyls (PCBs) in Transformer Oil" *Journal of Environmental Science and Health, Part A*, 2009, 44, 1583

**2008 (8 papers)**

- **J. Kim***, Y. S. Park, B. Veriansyah, J. D. Kim, Y.W. Lee "Continuous Synthesis of Surface-Modified Metal Oxide Nanoparticles Using Supercritical Methanol for Highly Stabilized Nanofluids", *Chemistry of Materials*, 2008, 20, 6301
- H. C. Hahm, W.J. Kim, B. Veriansyah, J. D. Kim*, **J. Kim**, S. G. Oh, Y. W. Lee "A New Correlation to Predict the Stability of Liquid Jet in Dense Carbon Dioxide", *Journal of Industrial and Engineering Chemistry*, 2008, 14, 824
- **J. Kim**, G. W. Roberts*, D. J. Kiserow, "Characterization of Palladium (Pd) on Alumina Catalysts Prepared Using Liquid Carbon Dioxide", *Journal of Physical Chemistry C*, 2008, 112, 10446
- J. Kelly, **J. Kim**, G. W. Roberts, H. H. Lamb*, "Characterization of Pd/$\gamma$-$Al_2O_3$ Catalysts Prepared Using [$Pd(hfac)_2$] in Liquid $CO_2$", *Topics in Catalysis*, 2008, 49, 178
- **J. Kim**, G. W. Roberts*, D. J. Kiserow, "Effect of prepolymer molecular weight on solid state polymerization of poly(bisphenol A carbonate) with nitrogen as a sweep fluid", *Journal of Polymer Science Part A: Polymer Chemistry*, 2008, 46, 4959
- B. Veriansyah, **J. Kim**, J. D. Kim*, Y.-W. Lee, "Hydrogen Production by Gasification of Isooctane using Supercritical Water", *International Journal of Green Energy*, 2008, 5, 322
- W.J. Kim, J. D. Kim*, **J. Kim**, S. G. Oh, Y.-W. Lee, "Selective Caffeine Removal from Green Tea using Supercritical Carbon Dioxide Extraction", *Journal of Food Engineerin*g, 2008, 89, 303
- **J. Kim**, H. S. Gracz, G. W. Roberts*, D. J. Kiserow, "Spectroscopic Analysis of Poly(bisphenol A carbonate) Using High Resolution 13C and 1H NMR" *Polymer*, 2008, 49, 394

**2007 (3 papers)**

- **J. Kim**, J. B. McClain, R. G. Carbonell*, "Deposition of Poly[2-(perfluorooctyl)ethyl acrylate] on Silicon Wafers by the Displacement of Two Immiscible Supercritical Phases (DISP)" *Journal of Supercritical Fluids*, 2007, 43, 139
- **J. Kim**, R. G. Carbonell*, "Deposition of Poly[2-(perfluorooctyl)ethyl acrylate] from Liquid $CO_2$ High Pressure Free Meniscus Coating – Uniformity and Morphology" *Journal of Supercritical Fluids*, 2007, 42, 129
- **J. Kim**, K. Efimenko, J. Genzer, R. G. Carbonell*, "Surface Properties of Poly[2-(perfluorooctyl)ethyl acrylate] Deposited from Liquid CO2 High-Pressure Free Meniscus Coating", *Macromolecules*, 2007, 40, 588

**2006 (3 papers)**

- **J. Kim**, G. W. Roberts*, D. J. Kiserow, "Supported Pd Catalyst Preparation using Liquid Carbon Dioxide", *Chemistry of Materials*, 2006, 18, 4710
- **J. Kim**, R. G. Carbonell*, "Deposition of Small Organic Molecules by the Displacement of Two Immiscible Supercritical Phases", *Langmuir*, 2006, 22, 2117
- **J. Kim**, B. J. Novick, J. M. DeSimone, R. G. Carbonell*, "Ultrathin Film Deposition by Liquid CO2 Free Meniscus Coating-Uniformity and Morphology", *Langmuir*, 2006, 22, 642

**2000-2002 (5 papers)**

- H. B. Park, **J. Kim**, J. K. Kim, Y. M. Lee*, "Morphology of Poly(imide siloxane) Segmented Copolymer-Silica Hybrid Composite", *Macromolecular Rapid Communications*, 2002, 23, 544
- **J. Kim**, S. Y. Ha, Y. M. Lee*, "Gas Permeation of Poly(amide-6-b-ethylene oxide) Copolymer", *Journal of Membrane Science*, 2001, 190, 179
- **J. Kim**, Y. M. Lee*, "Gas permeation properties of poly(amide-6-b-ethylene oxide)–silica hybrid membranes", *Journal of Membrane Science*, 2001, 193, 209
- Y. M. Lee*, **J. Kim**, J. S. Kang, S. Y. Ha "Annealing effects of dilute polyaniline/NMP solution", *Macromolecules*, 2000, 33, 7431
- **J. Kim**, S. Y. Ha, S. Y. Nam, J. W. Rhim, K. H. Baek, Y. M. Lee*, "Selective Permeation of $CO_2$ through Pore-filled Polyacrylonitrile Membrane with Poly(ethylene glycol)", *Journal of Membrane Science*, 2000, 186, 97

**INTERNATIONAL PATENTS:** Total 12 patents registered

**2020**

- **J. Kim**, J.Y. Park, "Heterogeneous Catalyst, Method of Producing the Heterogeneous Catalyst, and Method of Producing Lignin-derived High-substituted Aromatic Monomer from Wood Biomass Material", US Patent applied, US16/832,693
- **J. Kim**, M. K. Khan, M. Irshad, H. Jo, "Single Catalyst for Converting Carbon Dioxide and Carbon Dioxide Conversion Method Using the Catalyst", EP Patent applied, EP20217016.3

**2019**

- **J. Kim**, J.M. Park, J. Y. Han, S. K. Kim, "Method for Producing Renewable Fuel Using Supercritical Fluid", EP Patent registered, EP2612900A1

**2018**

- **J. Kim**, J. Park, K.-Y. Chung, B. W. Choi, A. Nugroho, "Method for Coating Carbon on Lithium Titanium Oxide-Based Anode Active Material Nanoparticles and Carbon-coated Lithium Titanium Oxide-based Anode Active Material Nanoparticles Produced by the Method", US Patent registered, US9,865,866
- **Kim,** D. H. Yoon, W. Li, J. E. Hwang, "Method for Preparing Metal Oxide Nanoparticles/Graphene Composite Using Supercritical Fluid and Metal Oxide Nanoparticle/Graphene Composite Prepared by the Same", US Patent registered, US9899671B2

**2017**

- **J. Kim,** J. M. Park, J. Y Han, S.-K Kim, "超臨界流体を利用した再生燃料の製造方法" JP Patent registered, JP 6083945
- **J. Kim,** M. K. Khan, K. Winarto, "Conversion method of rag layer using supercritical alcohols," PCT/IB2017/000231

**2016**

- **J. Kim,** J. M. Park, S.-K Kim, M. H. Hong, "Method for Synthesis of Molybdenum carbide catalyst for Hydrodeoxygenation" US Patent registered, US9,249,361
- **J. Kim**, Z. Hassan, H. Prajitno, "Method for Upgrading Bio-oil using Supercritical Alcohols and Upgraded Bio-oil by the Method", US Patent applied, US15/133,914
- **J. Kim**, C. K Ryu, H. Prajitno, J. K Park, Z. Hassan, "Method for Producing Bio-Heavy Oil from Sewage Sludge and Bio-Heavy Oil Produced by the Method", US Patent applied, US15/262,314

**2015**

- **J. Kim**, J. M. Park, H. S. Lee, Y. K., Endah, "Method for Preparing Furanic Copolyamide Derived from Biomass Using Solid-state Polymerization", US Patent registered, US9109092
- **J. Kim**, J. M. Park, J. Y Han, S.-K. Kim, "Method for Producing Renewable Fuel Using Supercritical Fluid" US Patent registered, US8,968,425
- **J. Kim**, K.-Y. Chung, B. W. Choi, A. Nugroho, J. M. Park, "Synthesizing Method for Lithium Titanium Oxide Nanoparticles Using Supercritical Fluids", US Patent registered US9,159,996
- **J. Kim** "A micron sized anode active material containing titanium dioxide nanoparticles and method for the preparation thereof", US Patent applied, US14/591,665
- **J. Kim** "Method of Manufacturing Carbon-coated Electrode Active Material and Electrode Active Material Manufactured by the Method", US Patent applied, US 14/951,918

**2014**

- **J. Kim**, A. Nugroho, E. Nursanto, J. M. Park, B. K. Min, J.-M. Ha, "Method for Fabricating Graphene Sheet or Graphene Particles Using Supercritical Fluid", US Patent registered, US8,691,179
- **J. Kim**, B. K Min, J.-D. Kim, J. M. Park, W. Jang, "Fabrication Method for Quantum Dot Sensitized Solar Cell using Supercritical Fluids or Subcritical Fluids and Quantum Dot Sensitized Solar Cell prepared thereby", US Patent registered, US8,703,526

**2013**

- **J. Kim**, Y. H. Lee, J.-D. Kim, J. M. Park, J. J. Sue, "The Method of Preparation for Hydrophilic Water Filtration Membrane having Improved Antifouling and Hydrophilic Water Filtration Membrane According to the Method", US Patent registered, US8,528,746

**2012**

- **J. Kim**, J. D. Kim, J. M. Park, H. K. Kim, B. K. Min, "Method for Preparing Metal Nanoparticles using Supercritical Fluids and Metal Nanoparticles Prepared Thereby", US Patent registered, US8,317,894

**2011**

- Y. H. Lee, **J. Kim**, J. S. Chung, Y. S Han, "Method and Apparatus for Quantitative Analysis of the Extent of Membrane Fouling by Using Fluorescent Protein Structures", US Patent applied, 13/018,958

- B. K. Min, **J. Kim**, J. W. Cho, J.-M. Ha, C. S. Kim, "Solar Cell Comprising Bulk Heterojunction Inorganic Thin Film and Fabrication of the Solar Cell", US Patent applied, 13/332,627

**DOMESTIC PATENTS:** Total 41 patents registered

**2021**

- **J. Kim,** A. A. Mint, H. Patrick, Method for drying ecamsule powder" Korea Patent registered, 10-2214668.
- **J. Kim,** J. Park, V. Deepak**,** "Method for the synthesis of lignin depolymerization catalyst and for the production of lignin-derived aromatic monomers from lignocellulosic biomass" Korea Patent applied, 10-2021-0019681
- **J. Kim,** J. Park, "Heterogeneous catalyst, its preparation method and A method for producing a high-substituted aromatic monomer derived from lignin from woody biomass material" Korea Patent registered, 10-2229929.
- **J. Kim,** V. Deepak**,** N. Karanwal, **"**Multifunctional catalyst, preparation method of thereof and synthesis method of valeric acid using of the catalyst" Korea Patent applied, 10-2019-0140758

**2020**

- **J. Kim,** A. A. Mint, M. Irshad, P, Hyrianto, "Methods for the simultaneous extraction of astaxanthin, its derivatives, and lipids in high yield from cell wall-enhanced Haematococcus pluvialis" Korea Patent applied, 10-2020-0042077
- **J. Kim,** V. Deepak, V. Ranaware, "Catalysts for depolymerization and hydrocracking of lignin, their preparation, and processes for preparing liquid biofuels from lignin compounds" Korea Patent registered, 10-2116871

**2019**

- **J. Kim,** M. K. Kahn, M. Irshad, H. Jo, "Single Catalyst for Converting Carbon Dioxide and Carbon Dioxide Conversion Method Using the Catalyst" Korea Patent applied, 10-2019-0175389

**2018**

- **J. Kim,** R. Inshani, V. Deepak, "Catalyst, and its synthetic method, and 2,5-Dimethyl furan synthesis using the catalyst" Korea Patent registered, 10-1846783
- **J. Kim,** V. Deepak, "Heterogeneous Acid Catalyst and Method of Manufacturing Latic Acid or its Derivatives from Cellulose or Lignocellulosic Biomass" Korea Patent registered, 10-1891430
- **J. Kim,** V. Deepak, K. Winarto, "Method for reforming heavy fraction" Korea Patent registered, 10-1928204

**2017**

- **J. Kim,** H. Zeb, "Bio-oil from macroalgae and method for producing thereof" Korea Patent registered, 10-2015-0042481
- **J. Kim,** M. K. Khan, K. Winarto, "Conversion Method of Rag Layer Using Supercritical Alcohols" Korea Patent registered, 10-1726972
- **J. Kim,** C. K. Ryu, J. K. Park, H. Prajitno, Method for producing bio-heavy oil from sewage sludge and bio-heavy oil by the method, Korea Patent registered, 10-1777919
- **J. Kim,** K. Winarto, M. K. Khan, "Method of Producing Light Oil from Heavy Oil Using Supercritical Alcohol" Korea Patent applied, 10-2017-0026979

**2016**

- **J. Kim,** M. K. Khan, K. Winarto, "Method for Conversion of Rag Layer Using Supercritical Water" Korea Patent applied, 10-2016-0038077
- **J. Kim,** M. K. Khan, K. Winarto, "Method for Reducing Total Acid Number of High Crude Oil Using Methanol" Korea Patent applied, 10-2016-0169256

**2015**

- **J. Kim**, J. M. Park, S. K. Kim, M. H. Hong, "Method for Synthesis of Molybdenum carbide catalyst for Hydrodeoxygenation", Korea Patent registered, 10-1481111-0000
- **J. Kim,** D. H. Yoon, J. E. Hwang, W. Li, "Method for Preparing Metal Oxide Nanoparticles/Graphene Composite using Supercritical Fluids and Metal Oxide Nanoparticles/Graphene Composite Prepared the Same" Korea Patent registered, 10-1543971
- **J. Kim,** C. K. Ryu, H. Prajitno, J. K. Park, Z. Hassan, "Method for upgrading bio-oil using supercritical alcohols and upgraded bio-oil by the method", Korea Patent applied 10-2015-0171449

**2014**

- **J. Kim**, J. M. Park, Y. J. Kim, "Method for Synthesizing Semi-crystalline and Semi-aromatic Copolyamide with Ultra High Molecular Weight Using Solid-state Polymerization", Korea Patent registered, 10-1358226
- **J. Kim**, J. M. Park, J. Y. Han, S. K. Kim, "Method for Producing Renewable Fuel Using Supercritical Fluid", Korea Patent registered, 10-1404228
- **J. Kim**, "A Micron Sized Anode Active Material Containing Titanium Dioxide Nanoparticles and Method for the Preparation Thereof", Korea Patent registered, 10-1465385
- **J. Kim**, D. Yoon, "Fabrication Method Using Double Oxidation and Graphene Fabrication Thereby", Korea Patent registered, 10-1465391

- **J. Kim**, J. M. Park, H. S. Lee, Y. K. Endah, "Method for Synthesizing Copolyamide Containing Furan-based Monomer from Biomass Using Solid-state Polymerization", Korea Patent registered, 10-1465466
- **J. Kim**, "Carbon Coating Method for Active Material of Secondary Battery Using Liquid Carbon Dioxide and Carbon-coated Active Material of Secondary Battery Fabricated Thereby", Korea Patent registered, 10-1468119

**2013**

- **J. Kim**, Y. H. Lee, J. S. Jung, J. M. Park, "The Fabrication Method of Filtration Membrane Coated with Metal Nanoparticle using Supercritical Fluid", Korea Patent registered, 10-1244695
- J. M. Ha, B. S. Ahn, **J. Kim**, J. M. Park, D. W. Kim, "The Method for Production of Difluoromethane from Chlorodifluoromethane by Supercritical Fluid Process", Korea Patent registered, 10-1270583
- **J. Kim**, J. M. Park, K. Y. Chung, B. W. Cho, N. Agung, "Carbon coating method of lithium titanium oxide nanoparticle and carbon-coated nanoparticle made by using it", Korea Patent registered, 10-1282593
- **J. Kim**, J. M. Ha, J. M. Park, B. S. Ahn, D. W. Kim, "The Preparation Method of High-yield Difluoromathane from Cholorodifluoromethane using Hydrodechlorination", Korea Patent registered, 10-1287974
- **J. Kim**, A. Nugroho, E. Nursanto, J. M. Park, B. K. Min, J.-M. Ha, "Method for Fabricating Graphene Sheet or Graphene Particles Using Supercritical Fluid", Korea Patent registered, 10-1254173
- B. K. Min, **J. Kim**, S. J. Park, C. S. Kim, J. M. Ha, "Fabrication of Bulk Heterojunction Inorganic Thin Film Solar Cells by Solution Processes" Korea Patent registered, 10-1235856
- B. K. Min, H. G. Kim, J. Kim, H. S. Jeon, "Electrolytic Cell for a Monolithic Photovoltaic-electrolytic Hydrogen Generation System", Korea Patent registered, 10-1263177
- **J. Kim**, J. M. Park, G. H. Song, J. Y. Choi, J. Y. Bae, W. Y. Kim, K. G. Gu, "Apparatus and Method for Drying Substrate", Korea Patent registered, 10-1329317

**2012**

- **J. Kim**, Y. H. Lee, J. D. Kim, J. M. Park, J. S. Jung, "The Method of Preparation for Hydrophilic Water Filtration Membrane having Improved Antifouling and Hydrophilic Water Filtration Membrane According to the Method", Korea Patent registered, 10-1047476
- Y. H. Lee**,** **J. Kim**, S. H. Lee, Y. S. Han, "Method and apparatus for quantitative analysis the extent of membrane fouling by using fluorescence protein structures", Korea Patent registered, 10-1210914
- Y. H. Lee**,** **J. Kim**, S. H. Lee, Y. S. Han, "Method and apparatus for quantitative analysis of the extent of membrane fouling by using fluorescence microorganisms", Korea Patent registered, 10-1106616
- **J. Kim**, J. D. Kim, J. M. Park, D. W. Kim, "The preparation method of difluoromathane using hydrodechlorination in supercritical fluid phase", Korea Patent registered, 10-1143448
- **J. Kim**, S. A. Hong, J. D. Kim, J. M. Park, K. Y. Chung, B. W. Cho, "Method for Continuous Preparation of Lithium-Containing Phosphate Nanoparticles for Positive Active Materials", Korea Patent registered, 10-1146556
- **J. Kim**, J. D. Kim, J. M. Park, H. M. Choi, B. K. Min, "Method for Continuous Preparing Metal Nanoparticles and Metal Nanoparticles Prepared Thereby", Korea ratent Registered, 1166365
- **J. Kim**, J. M. Park, B. W. Cho, A. Nugroho, J. M. Park, "Synthesizing Method for Lithium Titanium Oxide Nanoparticle using Supercritical Fluids", Korea Patent registered, 1191155
- J. D. Kim, **J. Kim**, H. M. Choi, J. M. Park, "Method for Continuous Detoxifying Polychlorinatedbiphenyls (PCBs) Containing Insulating Oil Using Hydrodechlorination in Supercritical Fluids", Korea Patent registered, 1191153
- **J. Kim**, S. A. Hong, J. M. Park, J. D. Kim, K. Y. Chung, B. W. Cho, "Method using Whirlpool Mixer for Lithium-containing Phosphate Nano-particles in Supercritical Water and the Lithium-containing Phosphate Nano-particles Thereof", Korea Patent registered, 10-1210495

**2011**

- **J. Kim**, B. K. Min, J. D. Kim, J. M. Park, W. H. Jang, "Fabrication Method for Quantum Dot Sensitized Solar Cell using Supercritical Fluids or Subcritical Fluids and Quantum Dot Sensitized Solar Cell Prepared Thereby", Korea Patent registered, 10-1047476
- **J. Kim**, J. M. Park, J. D. Kim, "Continuous Preparation of Surface-modified Nanoparticles using Supercritical Fluids and Surface-modified Nanoparticles Prepared Thereby", Korea Patent registered, 10-1054444
- **J. Kim**, J.-D. Kim, J. M. Park, H. G. Kim, B. K. Min "Method for Preparing Metal Nanoparticles Using Supercritical Fluids and Metal Nanoparticles Prepared Thereby", Korea Patent registered, 10-1083005
- B. K. Min, H. G. Kim, **J. Kim**, W. I. Park, "The Method of Preparation for Catalyst Film of Oxidizing Electrode using Photoelectrochemical cell, Catalyst Film Thereof and Photoelectrochemical Cell using the Same", Korea Patent registered, 10-1075876
- I. K Sung, W. S. Hwang, W. J. Park, H. J. Lee, **J. Kim**, B. S. Ahn "Process for Preparing Tetracyclododecene Derivatives", Korea Patent registered, 10-1053507

**2010**

- J.-D. Kim, **J. Kim**, S.-A. Hong, "Method for Purifying Used Cooking Oil Using Supercritical Fluid", Korea Patent registered, 094791
- J.-D. Kim, **J. Kim**, W.J. Kim "Extraction and Separation of Asiatic Acid and Asiaticoside from Centella Asiatica Using Subcritical Water", Korea Patent registered, 0984531

- **J. Kim**, J.-D. Kim, H. J. Lee, B. S. Ahn, Y. K. Sung, W. S. Hwang, H. S. Kim, J. H. Suh "Method for Preparing Cyclic Olefin Polymer", Korea Patent registered, 10-0998025

**2009**

- **J. Kim**, J.-D. Kim "Method to Synthesis Supported Metal Catalysts Using Supercritical or Subcritical Carbon Dioxide", Korea Patent registered, 10-0878459

## INVITED, KEYNOTE & PLENARY RESEARCH PRESENTATIONS & SEMINARS:

**2021**

- "Role of supercritical fluids in synthesizing high-performance cathodes and anodes for lithium- and sodium-ion batteries", European Meeting on Supercritical Fluids, 05 May 2021 (Keynote Lecture)
- "Upgrading of unconventional crude and heavy fraction using supercritical fluids", 69th R&D Symposium of Japan Petroleum Institute, 25 May 2021 (Invited Lecture)
- "Role of supercritical fluids in synthesizing high-performance cathodes and anodes for lithium- and sodium-ion batteries", University of Nottingham, 08 Jul 2021

**2020**

- "Supercritical Fluid Processes", Korea Institute of Science and Technology, 01 Jan 2020

**2019**

- "Supercritical Fluids: New Opportunities for Battery Materials and Biomass Conversion", ICMCB, France, 09 Sep 2019
- "Synthesis of Biofuel and Biochemical in Supercritical Fluids", Supergreen2019, Xi'an, Chian, 28 Sep 2019
- "The conversion of biomass into biofuel and biochemical; separation and catalysis", Korea University, 15 Oct 2019

**2018**

- "Lignin Depolymerization in Sub- and Supercritical Fluids", Korea Society for Biotechnology and Bioengineering, Yeosu, Korea, 04 Apr 2018
- "Hydrothermal & Solvothermal Liquefaction of Biomass to Liquid Fuel", Korea Society of Industrial and Engineering Chemistry, 02 Nov 2018
- "Lignin-to-fuels, chemicals, and electrode materials", Korea Society for Energy, Yeosu, Korea, 11 Nov 2018
- "Lignin-to-fuels, chemicals, and electrode materials", Korea Institute of Energy Research, Daejon, Korea, 12 Dec 2018

**2017**

- "Biofuel and Biochemical Synthesis in Supercritical Fluids", Supergreen 2017, Nagoya, Japan, 01 Dec 2017 (Keynote Lecture)
- "Supercritical Fluids: New Opportunities for Green Energy Materials and Processes", Department of Chemical Engineering, Institut Teknologi Bandung, Bandung, Indonesia, 22 Feb 2017
- "Supercritical Fluids: New Opportunities for Green Energy Materials and Processes", Department of Chemical Engineering, Parahyangan Catholic University, Bandung, Indonesia, 23 Feb 2017
- Supercritical Fluids: New Opportunities for Green Energy Materials and Processes", Korea Institute of Chemical Technology, 12 Dec 2017

**2016**

- "The Role of Supercritical Fluids in the Synthesis of High-performance, Nanostructured Lithium 2nd Battery Materials", 5th International Solvothermal and Hydrothermal Association Conference, Tainan, Taiwan, 18 Jan 2016 (Invited Lecture)
- "Supercritical Fluid Technology and Process" Daejoo Mechanical Co, Daegu, Korea, 1 Mar 2016
- "Supercritical Fluids: New Opportunities for Energy Material Synthesis and Energy Process", KIST Chanbuk, 25 May 2016
- "Biofuel Synthesis in Supercritical Fluids", 8th International Conference on Separation Science and Technology, Tianjin, China, 5 Jul 2016 (Keynote Lecture)
- "Supercritical Fluid Technologies and Process", Korea Institute of Industrial Technology, Jeju, 8 Aug 2016

**2015**

- "Supercritical Fluids: New Opportunities for Energy Material Synthesis and Energy Production", Korea Society of Mechanical Engineering, Busan, Korea, 22 May 2015
- "The use of supercritical fluids in the synthesis of nanostructured lithium 2nd battery materials" 11th International Symposium on Supercritical Fluids, Seoul, Korea, 14 Oct 2015 (Keynote Lecture)

**2014**

- "Nanoparticle Synthesis in Supercritical Fluids", KC Tech, Suwon, Korea, 02 Feb 2014
- "Supercritical Fluids: New Opportunities for Energy Material Synthesis and Energy Production", Korea Research Institute of Chemical Technology, Deajon, Korea, 04 Apr 2014

- "Supercritical Water Oxidation & Supercritical Water Gasification for Energy Production from Biomass", Hyundai Heavy Industries, Ulsan, Korea, 26 May 2014
- "Supercritical Fluids: New Opportunities for Energy Material Synthesis and Energy Production", International Symposium on Advances in Supercritical Fluids, Seoul, Korea, 02 Jul 2014 (Plenary Lecture)
- "Solid State Polymerization", Cheil Industries, Uiwang, Korea, 18 Sep 2014
- "Biofuel Production in Supercritical Fluids", 4th International Solvothermal and Hydrothermal Association Conference, Boudoux, France, 28 Oct 2014 (Invited Lecture)
- "Supercritical Fluids: New Opportunities for Energy Material Synthesis and Energy Production", UNIST, Ulsan, Korea, 13 Nov 2014

**2013**

- "Supercritical Fluids: New Opportunities for Energy Material Synthesis and Energy Production", Sungkyunkwan University, Suwon, Korea, 31 May 2013
- "Synthesis of Cathode/Anode Active Materials for Large-Scale Li 2nd Battery in Supercritical Fluids", Sustainable Manufacturing of Nanomaterials and their Organization for Hybrid Device Structures, Oléron, France, 11 Jun 2013 (Invited Lecture)
- "Synthesis of Cathode/Anode Active Materials for Large-Scale Li 2nd Battery in Supercritical Fluids", 9th World Congress of Chemical Engineering, Seoul, Korea, 19 Aug 2013 (Invited Lecture)
- "Supercritical Fluids: New Opportunities for Energy Material Synthesis and Energy Production", Hanyang University, Seoul, Korea, 11 Sep 2013
- "Synthesis of Cathode/Anode Active Materials for Large-Scale Li 2nd Battery in Supercritical Fluids", The International Conference on Chemical Engineering UNPAR 2013, Bali, Indonesia, 04 Dec 2013 (Plenary Lecture)

**2012**

- "Supercritical Fluids: New Opportunities for Energy Material Synthesis and Energy Production", Hanyang University, Seoul, Korea, 06 Dec 2012
- Supercritical Fluids: New Opportunities for Energy Material Synthesis", Hanwha Chemical, Deajon, Korea, 26 Jul 2012
- "Biofuel Production using Supercritical Fluids", Seoul National University, Seoul, Korea, 04 May 2012
- "Supercritical Fluids Route to Synthesis Nano-sized Lithium-ion Battery Materials", CM Partner, Youngin, Korea, 03 Apr 2012

**2011**

- "Supercritical Fluids: New Opportunities for Energy Material Synthesis and Energy Production", 9th International Conference on Separation Science and Technology, Jeju Grand Hotel, Jeju, Korea, 04 Nov 2011 (Keynote Lecture)
- "Synthesis of Cathode/anode Active Materials for Large-scale Li 2nd Battery in Supercritical Fluids", Supergreen 2011, Beijing Freindship Hotel, Beijing, China, 28 Aug 2011 (Invited Lecture)
- "Supercritical Fluids: New Opportunities for Energy Material Synthesis and Energy Process", Department of Chemical and Biological Engineering, North Carolina State University, Raleigh, NC, U.S.A. 19 Aug 2011
- "Synthesis of Cathode/anode Active Materials for Large-scale Li 2nd Battery in Supercritical Fluids", Telluride Science and Research Center, Telluride, U.S.A. 19 Jul 2011 (Invited Lecture)
- "Supercritical Water Gasification of Biomass to Produce Hydrogen", Bioenergy Symposium, Korea Institute of Energy Research, Daejun, Korea, 19 Jun 2011
- "Principle and Applications of Supercritical Water", Daeil E&C, Seoul, Korea, 17 Jun 2011
- "Status of Biodiesel Production Technology", KOICA Bioenergy workshop, Korea Institute of Science and Technology, Seoul, Korea, 19 May 2011
- "Supercritical Fluids :New Opportunities for Energy Material Synthesis and Energy Process", Korea Research Institute of Chemical Technology, Daejun, Korea, 25 Feb 2011
- "Technology Transfer from Lab to Industries – Supercritical Fluid Technologies", Sookmyung Women's University, Seoul, Korea, 21 Jan 2011

**2010**

- "Supercritical Fluids: New Opportunities for Energy Material Synthesis and Energy Process", Department of Chemical Engineering, Chung-Ang University, Seoul, Korea, 8 Sep 2010
- "Supercritical Fluids: New Opportunities for Energy Material Synthesis and Energy Process", Korea Institute of Chemical Engineers, Thermodynamic/Separation Division, 27 Aug 2010
- "Supercritical Fluids: New Opportunities for Biofuel and Biochemical Production", Bioenergy Symposium, Korea Institute of Science and Technology, Seoul, Korea, 19 Jul 2011
- "Green Chemical Processes based on Supercritical Fluid Technologies", 90th Annual Meeting of the Chemical Society of Japan (CSJ), Higashi-Osaka, Japan, 27 Mar 2010 (Kenote Lecture)
- "Supercritical Fluids: New Opportunities for Energy Material Synthesis and Energy Process", Department of Bio&Nano Chemistry, Kookmin University, 22 Mar 2010

- "Supercritical fluids: new opportunities for energy material synthesis and energy production", 5th International. Symposium on Application of Supercritical Fluids in Green Chemistry and Material Science (ISASF 2009), Taiwan, Taipei, 4 Mar 2010 (Invited Lecture)

**2009**

- "Fusion Green Technology based on Supercritical Fluid Process", Department of Chemical and Biological Engineering, Seoul National University, Seoul, Korea, 29 Oct 2009
- "Continuous Synthesis of Surface-Modified Metal Oxide Nanoparticles for Highly Dispersed Nanofluids", Department of Mechanical Engineering, Kyung Hee University, Young-In, Korea, 3 Jul 2009
- "Rapid and Continuous Synthesis of Energy Materials in Supercritical Fluids", Korea Institute of Ceramic Engineering and Technology, Seoul, Korea, 3 Jun 2009
- "Continuous Synthesis of Energy Materials in Supercritical Water and Supercritical Alcohol", Department of Chemical and Biological Engineering, Seoul National University, Seoul, Korea, 26 Feb 2009

**2008**

- "Supercritical Fluid Researches at KIST", Department of Chemical Engineering, Tohoku University, Tohoku, Japan, 6 Oct 2008
- "Supercritical Fluid Technologies", Hybrid Research Center, Korea Institute of Science and Technology, Seoul, Korea, 4 Apr 2008
- "Rapid and Continuous Synthesis of Energy Materials in Supercritical Fluids", Korea Institute of Ceramic Engineering and Technology, Seoul, Korea, 3 Jun 2009
- "Supercritical Fluid Researches in Korea Institute of Science and Technology", Korea Institute of Chemical Engineers, Seoul National University, Seoul, Korea, 26 Feb 2009

**2007**

- "Supercritical Fluid Technologies", Department of Chemical Engineering, Institut Teknologi Bandung, Bandung, Indonesia, 16 Nov 2007
- "Extraction of Bioactive Components from Natural Plants using Supercritical Fluid", Dexa Medica, Indonesia, 11 Nov 2007
- "Dry Processing in Microelectronics using Carbon Dioxide", Dongjin Semichem, Kyung-Ki, Korea, 23 Aug 2007
- "Metal and Metal Nanoparticle Synthesis using Supercritical Fluids", Korea Institute of Chemical Engineers, Seoul National University, Seoul, Korea, 12 Jul 2007
- "Supercritical Fluid Technologies", Department of Chemical Engineering, Hanyang University, 10 Sep 2007
- "Supercritical Fluid Technologies", Polymer Hybrid Research Center, Korea Institute of Science and Technology, Seoul, Korea, 10 May 2007

**2006**

- "Deposition, Catalyst Preparation, and polymerization using Liquid and Supercritical Carbon dioxide", LG Chemicals, Daejun, Korea, 4 May 2006
- "Deposition, Catalyst Preparation, and polymerization using Liquid and Supercritical Carbon dioxide", Department of Chemical Engineering, Hanyang University, 5 May 2006
- "Applications of Supercritical Fluid Technologies", Department of Chemical Engineering, Yeungnam University, 27 Apr 2006
- "Deposition, Catalyst Preparation, and polymerization using Liquid and Supercritical Carbon dioxide", Department of Chemical and Biological Engineering, Seoul National University, Seoul, Korea, 11 Apr 2006
- "Deposition, Catalyst Preparation, and polymerization using Liquid and Supercritical Carbon dioxide", Department of Chemical and Biological Engineering, Sogang University, Seoul, Korea, 7 Apr 2006

## TECHNOLOGY TRANSFER:

- "Cleaning of Semiconductor using Supercritical Fluid", SEMES, $280,000, 2011
- "Environmental-friend HCF Refrigerant Production using Supercritical Hydrogenation", Hanchang, $35,000, 2012

## CURRENT EXTERNALLY SUPPORTED RESEARCH GRANTS:

**TOTAL: $4,902,000 (PI ONLY)**

| **Project title:** Development and demonstration of energy efficient reaction-separation·purification process for fine chemical industry | |
|---|---|
| **Role:** Co-investigator | **Period:** 2020.05-2023.12 |
| **Agency:** Ministry of Trade, Industry and Energy | **Amount:** $ 1,500,000 |

| **Project title:** Synthesis of high-carbon biojet fuel from pyrolysis oil-derived aromatic compounds | |
|---|---|
| **Role:** Co-investigator | **Period:** 2020.07-2025.01 |
| **Agency:** Ministry of Science and ICT | **Amount:** $ 450,000 |

| **Project title:** Direct Conversion of Waste Lignocellulosic Biomass into 1,4-Butanediol, 1,5-Pentanediol and 1,6-Hexanediol using a New Paradigm Fractionation·Cascade Tandem Process | |
|---|---|
| **Role:** Principal Investigator | **Period:** 2020.03-2023.02 |
| **Agency:** Ministry of Science and ICT | **Amount:** $ 600,000 |

| **Project title:** Development of catalytic process for the direct conversion of $CO_2$ to aromatics | |
|---|---|
| **Role:** Principal Investigator | **Period:** 2019.04-2021.12 |
| **Agency:** Ministry of Science and ICT | **Amount:** $ 300,000 |

| **Project title:** Development of hybrid separation·purification-drying process for high-value fine chemical production | |
|---|---|
| **Role:** Co-investigator | **Period:** 2018.05-2021.12 |
| **Agency:** Ministry of Trade, Industry and Energy | **Amount:** $ 600,000 |

| **Project title:** Value-added Fine Chemicals from Intact Lignin-derived Aromatic Monomers using Catalyst·Biochemical Convergence Process | |
|---|---|
| **Role:** Principal Investigator | **Period:** 2017.12-2022.30 |
| **Agency:** Ministry of Science and ICT | **Amount:** $ 1,062,000 |

| **Project title:** Development of tandem catalysts and catalytic process for producing fuels and value-added chemicals from waste wood and CO2 | |
|---|---|
| **Role:** Principal Investigator | **Period:** 2020.06-2024.12 |
| **Agency:** Ministry of Science and ICT | **Amount:** $ 150,000 |

| **Project title:** Synthesi of α,ω-diol and α,ω-diacid from lignocellulosic biomass using cascade tandem reaction | |
|---|---|
| **Role:** Principal Investigator | **Period:** 2020.06-2022.12 |
| **Agency:** Ministry of Science and ICT | **Amount:** $ 120,000 |

| **Project title:** Recovery of value-added fine chemicals and production of biogasoline from biomass | |
|---|---|
| **Role:** Principal Investigator | **Period:** 2020.05-2022.31 |
| **Agency:** Ministry of Science and ICT | **Amount:** $ 120,000 |

## PAST FUNDED EXTERNAL RESEARCH GRANTS:

**TOTAL: $8,940,000 (PI ONLY)**

| **Project title:** Development of Core Technology for Waste Heat Recovery Power System using Supercritical Organic Rankine Cycle | |
|---|---|
| **Role:** Co-investigator | **Period:** 2017.12-2020.03 |
| **Agency:** Ministry of Trade, Industry and Energy | **Amount:** $ 300,000 |

| **Project title:** Production of fuel for electricity generation from waste generated in the organic waste-to-energy process | |
|---|---|
| **Role:** Co-investigator | **Period:** 2018.07-2020.12 |
| **Agency:** Ministry of Environment | **Amount:** $ 220,000 |

| **Project title:** Supercritical Fluid·Catalyst Convergence Process for Producing Transportation Fuel and Value-added Chemicals | |
|---|---|
| **Role:** Principal Investigator | **Period:** 2016.01-2020.05 |
| **Agency:** Ministry of Education, Science and Technology | **Amount:** $ 220,000 |

| **Project title:** A Supercritical Fluid Route for Superhybrids with New Ion Storage Mechanism and Kinetics | |
|---|---|
| **Role:** Principal Investigator | **Period:** 2016.7-2019.6 |
| **Agency:** Ministry of Education, Science and Technology | **Amount:** $ 600,000 |

| **Project title:** Development of Pretreatment Processes for Removing Impurities from Nonconventional Crude Oils | |
|---|---|
| **Role:** Principal Investigator | **Period:** 2015.6-2018.5 |
| **Agency:** Ministry of Knowledge Economy | **Amount:** $ 5,800,000 |
| **Participation Companies:** SK Innovation, EMAX solution, Ilshin Autoclaves | |

| |
|---|
| **Participation Institutions:** Korea Institute of Industrial Technology, Seoul National University |

| | |
|---|---|
| **Project title:** Synthesis of Liquid Fuel from Sewage Sludge and Process Analysis | |
| **Role:** Principal Investigator | **Period:** 2016.12-2018.08 |
| **Agency:** Korea Electrical Engineering and Science Research Institute (Industry Funding) | **Amount:** $ 160,000 |

| | |
|---|---|
| **Project title:** Development of Non-drying Bioheavy Oil Production Technology from Macroalgae for Electricity Generation | |
| **Role:** Principal Investigator | **Period:** 2015.12-2017.11 |
| **Agency:** Korea Electrical Engineering and Science Research Institute (Industry Funding) | **Amount:** $ 100,000 |

| | |
|---|---|
| **Project title:** Development of 50 kg/day-scale bio-heavy oil production process using deoxy-liquefaction for electricity generation | |
| **Role:** Principal Investigator | **Period:** 2014.11-2017.9 |
| **Agency:** Ministry of Knowledge Economy | **Amount:** $ 530,000 |
| **Participation Companies:** Ilshin Autoclaves | |

| | |
|---|---|
| **Project title:** Development of Non-drying Bioheavy Oil Production Technology from Macroalgae for Electricity Generation | |
| **Role:** Principal Investigator | **Period:** 2015.12-2017.11 |
| **Agency:** Korea Electrical Engineering and Science Research Institute (Industry Funding) | **Amount:** $ 100,000 |

| | |
|---|---|
| **Project title:** One-pot Synthesis of Highly efficient Nano-to-Micron Hierarchical Energy Storage Materials using Supercritical Fluid Process | |
| **Role:** Principal Investigator | **Period:** 2013.11-2016.10 |
| **Agency:** Ministry of Education, Science and Technology | **Amount:** $ 150,000 |

| | |
|---|---|
| **Project title:** Development of Semiconductor cleaning process using supercritical carbon dioxide | |
| **Role:** Principal Investigator | **Period:** 2015.3-2016.2 |
| **Agency:** Samsung Electronics (Industry Funding) | **Amount:** $ 50,000 |

| | |
|---|---|
| **Project title:** Bio-oil stabilization using supercritical fluids | |
| **Role:** Principal Investigator | **Period:** 2014.8-2015.7 |
| **Agency:** Ministry of Knowledge Economy | **Amount:** $ 100,000 |
| **Participation Companies:** Deakyung Esco | |

| | |
|---|---|
| **Project title:** Continuous Synthesis of $Li_4Ti_5O_{12}$ Using Supercritical Fluids For Power Supply Applications | |
| **Role:** Principal Investigator | **Period:** 2012.12-2015.12 |
| **Agency:** Ministry of Knowledge Economy | **Amount:** $ 460,000 |
| **Participation Companies:** CM Partner (Korea) | |

| | |
|---|---|
| **Project title:** Nanostructured Energy Material Synthesis using Supercritical Fluids | |
| **Role:** Principal Investigator | **Period:** 2012.7-2015.6 |
| **Agency:** KIST Young Fellow Research Program | **Amount:** $ 900,000 |

| | |
|---|---|
| **Project title:** A Study on the Abuse Tolerable/High Capacity Electrode Materials for Lithium Secondary Batteries using Synchrotron based X-ray Analysis Techniques | |
| **Role:** Investigator (PI: Dr. Chung KW) | **Period:** 2010.7-2013.6 |
| **Agency:** Ministry of Education, Science and Technology | **Amount:** $ 1,500,000 |

| | |
|---|---|
| **Project title:** High Temperature Nylon Synthesis using Biomass Based Chemicals | |
| **Role:** Principal Investigator | **Period:** 2010.4-2014.3 |
| **Agency:** Ministry of Knowledge Economy | **Amount:** $ 1,050,000 |
| **Participation Companies:** Samsung SDI (Korea) | |

| **Project title:** Fabrication of Bulk Heterojunction Inorganic Solar Cells Using Supercritical Fluid Deposition | |
|---|---|
| **Role:** Principal Investigator | **Period:** 2009.9-2015.8 |
| **Agency:** Ministry of Education, Science and Technology | **Amount:** $ 600,000 |

| **Project title:** Next Generation Biodiesel Production from Waste Cooking Oil using Supercritical Fluid·Catalyst Fusion Technology | |
|---|---|
| **Role:** Principal Investigator | **Period:** 2009.6-2014.5 |
| **Agency:** Ministry of Environment | **Amount:** $ 1,250,000 |
| **Participation Companies:** Inwoo Cooperation (Korea) | |

| **Project title:** Green Production of Nanosize Lithium Secondary Battery Active Materials for PHEV Applications using Supercritical Fluids | |
|---|---|
| **Role:** Principal Investigator | **Period:** 2009.6-2012.5 |
| **Agency:** Ministry of Knowledge Economy | **Amount:** $ 1,200,000 |
| **Participation Companies:** CM Partner (Korea) | |

| **Project title:** Filter Media Application Technology for Pollutant Control based on Nano Technology | |
|---|---|
| **Role:** Investigator (PI: Dr. Jung JS) | **Period:** 2009.6-2011.3 |
| **Agency:** Ministry of Environment | **Amount:** $ 1,600,000 |

| **Project title:** Fabrication of Highly Efficient Quantum Dot Sensitized Solar Cell using Supercritical Fluid Coating | |
|---|---|
| **Role:** Principal Investigator | **Period:** 2010.3-2012.2 |
| **Agency:** KIST | **Amount:** $ 200,000 |

| **Project title:** Development of Semiconductor Cleaning using Supercritical Fluid Drying Process | |
|---|---|
| **Role:** Principal Investigator | **Period:** 2010.10-2011.9 |
| **Agency:** SEMES (Industry funding) | **Amount:** $ 300,000 |

| **Project title:** One-pot Synthesis and Surface Modification of Nanoparticle using Supercritical Fluids for Highly Dispersed Nanofluid Preparation | |
|---|---|
| **Role:** Principal Investigator | **Period:** 2008.6-2011.5 |
| **Agency:** Ministry of Education, Science and Technology | **Amount:** $ 300,000 |

| **Project title:** Development of fundamental technologies for converting solar energy to hydrogen | |
|---|---|
| **Role:** Investigator (PI: Dr. Kim HG) | **Period:** 2008.12-2011.12 |
| **Agency:** Korea Research Council of Fundamental Science and Technology | **Amount:** $ 2,900,000 |

| **Project title:** Cyclo Olefin Polymer Synthesis for Optical Applications | |
|---|---|
| **Role:** Investigator (PI: Dr. Lee HJ) | **Period:** 2007.10-2010.9 |
| **Agency:** Ministry of Knowledge Economy | **Amount:** $ 750,000 |
| **Participation Companies:** Kolon Industries (Korea) | |

| **Project title:** Development of Recycle Technology of PCBs containing Insulation Oil by Supercritical Hydrogenation | |
|---|---|
| **Role:** Investigator (PI: Dr. Kim JD) | **Period:** 2007.4-2009.3 |
| **Agency:** Ministry of Environment | **Amount:** $ 600,000 |
| **Participation Companies:** Hanchang (Korea) | |

| **Project title:** Extraction of Bioacitive Components from Natural Plants using Supercritical Fluid Extraction | |
|---|---|
| **Role:** Investigator (PI: Dr. Kim JD) | **Period:** 2006.7-2007.6 |
| **Agency:** Dexa Medica (Indonesia) (Industry funding) | **Amount:** $ 120,000 |