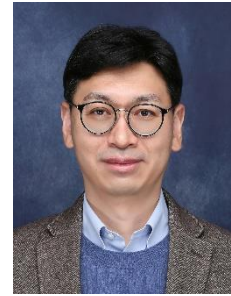


Youngsoo Joung, Ph.D.

ACE Inventor Inc., CEO & Founder
Cheongpa-ro 47-gil 100, Yongsan-gu,
Renaissance Plaza 310D
Seoul, Republic of Korea, 04310
Mobile: +82-10-3520-5862
Office: +82-2-2077-7872
Email: ysjoung@aceivt.com
Web: www.aceivt.com



에이스인벤터
ACE Inventor Inc.



▪ EDUCATION

- June 2014* **Massachusetts Institute of Technology, Cambridge, USA**
Ph.D. in Mechanical Engineering,
Advisor: Prof. Cullen R. Buie
Thesis: “Electric Field Based Fabrication Methods for Multi-scale Structured Surfaces”
- Feb. 2006* **Seoul National University, Seoul, South Korea**
M.S. in Mechanical & Aerospace Engineering,
Advisor: Prof. Yoon Young Kim
Thesis: “Local-Mode-Free Topology Optimization Formulation for Vibrating Structures with Element Connectivity Parameterization Method”
- Feb. 2004* **Yonsei University, Seoul, South Korea**
B.S. in Mechanical Engineering,
Advisor: Prof. Yong Hoon Jang
Thesis: “Thermoelastic Instability in Functionally Graded Materials”
Outstanding Scholastic Achievement Award

▪ RESEARCH & WORK EXPERIENCE

- Nov. 2022–present* **ACE Inventor Inc.**
CEO & Founder
Sookmyung Women’s University, Seoul, Republic of Korea
Department of Mechanical Systems Engineering
- Feb. 2022–present* **Associate Professor**
Mar. 2017–Feb. 2022 **Assistant Professor**
Feb. 2019–Jan. 2021 **Department Chairperson and Head**
- Nov. 2022–present* **ACE Inventor Inc., Republic of Korea**
CEO & Founder
- July 2015–Feb. 2017* **Massachusetts Institute of Technology, Cambridge, USA**
Department of Civil & Environmental Engineering
Fluid Dynamics of Disease Transmission Group, Principal Investigator: Prof. Lydia Bourouiba
Postdoctoral Fellow
Research topics
Disease Transmission by Droplets
- Sept. 2009–July 2015* **Massachusetts Institute of Technology, Cambridge, USA**
Department of Mechanical Engineering
Laboratory of Energy and Microsystems Innovation, Advisor: Prof. Cullen R. Buie
Research Assistant (Sept. 2009–June 2015)
Postdoctoral Associate and Instructor of Thermal-Fluids Engineering
(June 2014–July 2015)
Research topics
Fabrication Methods for Multi-scale Structured Surfaces
Liquid Transport and Droplet Dynamics on Porous Media
Pathogen Transfer by Aerosol
- Feb. 2006–July 2009* **Samsung Advanced Institute of Technology (SAIT), Yong-In, Republic of Korea**
Energy Group, Director: Dr. Hyuk Chang

Research Staff

Projects

Direct Methanol Fuel Cells for Portable Devices

Feb. 2004–Feb.2006

Multi Scale Design Center, Seoul National University, Seoul, Republic of Korea

Research Assistant, Advisor: Prof. Yoon Young Kim

Research topics

Computer Simulation Based Design Optimization

▪ PUBLICATIONS

Peer-Reviewed Papers

1. Hyunji Myung, **Young Soo Jung**, "Contribution of Particulates to Airborne Disease Transmission: A review," submitted.
2. Yu Jeong Kim and **Young Soo Jung**, "Enhancing Ion Transfer Efficiency of Copper Nanoparticles with Hydrogel Composite Layers for Antibacterial and Antifungal Surfaces," under review.
3. Sunbeen Choi, Seungyeon Lee, Jeeyoon Kim, Dogyeong Kim, Hyunji Myung, **Young Soo Jung**, "Biocompatible Geobacter-Hydrogel-MCNT Composite Electrodes for Highly Efficient and Durable Microbial Fuel Cells," in revision.
4. Subin Han, Hyunji Myung, **Young Soo Jung**, "The Effect of Particulate Matter on Bacterial Lifespan in Droplet Nucleus" under review.
5. Dogyeong Kim, **Young Soo Jung**, "Sodium alginate based artificial biofilms polymerized by electrophoretic deposition for microbial hydrogen generation," *International Journal of Biological Macromolecules*, Volume 248, 2023, 125887, ISSN 0141-8130, <https://doi.org/10.1016/j.ijbiomac.2023.125887>. (8.2 Impact Factor) [\[Link\]](#)
6. Youngri Ryu, Soonjong Roh, **Young Soo Jung**, "Assessing the cytotoxicity of aerosolized carbon black and benzo[a]pyrene with controlled physical and chemical properties on human lung epithelial cells," *Sci Rep* 13, 9358 (2023). (4.997 Impact Factor) [\[Link\]](#)
7. Soonjong Roh, Youngri Ryu, **Young Soo Jung**, "The Effect of PhIP Precursors on the Generation of Particulate Matter in Cooking Oil Fumes at High Cooking Temperatures and the Inflammation Response in Human Lung Cells," *Journal of Hazardous Materials*, Volume 441, 5 January 2023, 129792. (14.224 Impact Factor). [\[Link\]](#)
8. Subin Han, Seunghyeon Lee, **Young Soo Jung**, "Long-term effect of nanobubbles generated by turbulent flow through diamond-pattern notches on liquid properties," *Results in Engineering*, Volume 14, June 2022, 100375. (5.0 Impact Factor) [\[Link\]](#)
9. Jeeyoon Kim, Hyunjung Lee, **Young Soo Jung**, "Antibacterial Fabric with Contradictory Functions of Water Repellency and Absorbency Realized by Electrophoretic Deposition of Hydrophobic SiO₂ and Hydrophilic ZnO Nanoparticles," *Progress in Organic Coatings*, Volume 161, December 2021, 106455. (6.206 Impact Factor) [\[Link\]](#)
10. Jeeyoon Kim, Seunghyeon Lee, **Young Soo Jung**, "Schlieren Imaging for the Visualisation of Particles Entrapped in Bubble Films," *Journal of Colloid & Interface Science*, Volume 570, 15 June 2020, Pages 52-60. (9.965 Impact Factor) [\[Link\]](#)
11. **Young Soo Jung**, "A Mean-Density Model of Ionic Surfactants for the Dispersion of Carbon Nanotubes in Aqueous Solutions," *Applied Surface Science*, Volume 439, 2018, Pages 1133-1142. (7.392 Impact Factor) [\[Link\]](#)
12. **Young Soo Jung**, Eric Bailey, Robert B. Ramirez, and Cullen R. Buie, "Conductive Hydrogel Films Produced by Freestanding Electrophoretic Deposition and Polymerization at the Interface of Immiscible Liquids," *Composites Science and Technology*, Volume 153, 2017, Pages 128-135. (9.879 Impact Factor) [\[Link\]](#)
13. **Young Soo Jung**, Zhifei Ge and Cullen R. Buie, "Bioaerosol Generation by Raindrops on Soil," *Nature Communications* 8, 14668 (2017). (17.694 Impact Factor) [\[Link\]](#)

Media release in US

MIT News: "A light rain can spread soil bacteria far and wide, study finds" (Featured article) [\[Link\]](#)

Nature Asia: "Environment: Rainfall can mobilise microbes" [\[Link\]](#)

New Scientist: "Raindrops make soil bacteria take off and fly through air" [\[Link\]](#)

Media release in Korea

KBS News 9: "Soil Bacteria Transferred by Raindrop Impact" [\[Link\]](#)

14. **Young Soo Jung**, Cullen R. Buie, "Antiwetting Fabric Produced by a Combination of Layer-by-Layer Assembly and Electrophoretic Deposition of Hydrophobic Nanoparticles," *ACS Applied Materials & Interfaces*, 2015, 7 (36), pp 20100–20110. (10.383 Impact Factor) [\[Link\]](#)
15. Jessamine A. Quijano, **Young Soo Jung**, Nichola Kinsinger, Xinglin Lu, Cullen R. Buie, Sharon L. Walker, "Antimicrobial Behavior of Novel Surfaces Generated by Electrophoretic Deposition and Breakdown Anodization," *Colloids and Surfaces B: Biointerfaces*, Vol.134, pp. 204–212, 2015. (5.999 Impact Factor) [\[Link\]](#)
16. **Young Soo Jung**, Cullen R. Buie, "Aerosol Generation by Raindrop Impact on Soil," *Nature Communications* 6, 6083, 2015. (17.694 Impact Factor) [\[Link\]](#)

Media release in USA

The New York Times: "How the Smell of Rain Bubbles From the Ground" [\[Link\]](#)

The Washington Post: “Slow-mo Video of Raindrops Reveals How Rain Gets Its Distinctive Smell” [\[Link\]](#)

BBC: “How the Smell of Rain Happens” [\[Link\]](#)

The Huffington Post: “Crazy Slo-Mo Video Explains Why Rain Has That Distinctive Smell” [\[Link\]](#)

USA Today: “Study Answers Why It Smells So Good After It Rains” [\[Link\]](#)

ABC News: “Slow-Mo Video Uncovers Why It Smells Good After It Rains” [\[Link\]](#)

Media release in Korea

Chosun Ilbo: “Aerosol from Raindrops: The Secret of Fresh Fragrance of Spring” [\[Link\]](#)

Hankyoreh Science-On: “Petrichor Transferred by Aerosol Droplets Generated by Raindrops on Soils” [\[Link\]](#)

YTN Science: “Aerosol Generated by Raindrops: the Secret of Spring Fragrance” [\[Link\]](#)

MBC News Desk: “The Secret of Strong Earth Fragrance from Spring Rain” [\[Link\]](#)

17. **Young Soo Joung**, Bruno Michel Figliuzzi, Cullen R. Buie, “Design of Capillary Flows with Functionally Graded Porous Titanium Oxide Films Controlled by Anodization Instability,” *Journal of Colloid and Interface Science*, Vol. 423, pp. 143–150, 2014. (9.965 Impact Factor) [\[Link\]](#)

Note: Spotlited on the Interpore Newsletters of the International Society for Porous Media [\[Link\]](#)

18. **Young Soo Joung**, Cullen R. Buie, “Scaling Laws for Drop Impingement on Porous Films and Papers,” *Physical Review E*, 89, 013015 (2014). (2.529 Impact Factor) [\[Link\]](#)

Note: Best Poster Award from the *5th International Conference on Porous Media & Annual Meeting*, 05/2013 [\[Link\]](#)

19. Kuang-Han Chu, **Young Soo Joung**, Ryan Enright, Cullen R. Buie and Evelyn N. Wang, “Hierarchical Surfaces for Critical Heat Flux Enhancement,” *Applied Physics Letters*, 102, 151602 (2013). (3.791 Impact Factor) [\[Link\]](#)
20. **Young Soo Joung**, Cullen R. Buie, “A Hybrid Method Employing Breakdown Anodization and Electrophoretic Deposition for Superhydrophilic Surfaces,” *Journal of Physical Chemistry B*, 2013, 117 (6), pp. 1714-1723. (3.72 Impact Factor) [\[Link\]](#)
21. **Young Soo Joung**, Cullen R. Buie, “Hybrid Electrophoretic Deposition with Anodization Process for Superhydrophilic Surfaces to Enhance Critical Heat Flux,” *Key Engineering Materials*, Vol. 507 (2012) pp. 9-13. [\[Link\]](#)
22. **Young Soo Joung**, Cullen R. Buie, “Electrophoretic Deposition of Unstable Colloidal Suspensions for Superhydrophobic Surfaces,” *Langmuir*, 2011. 27(7): pp. 4156-4163. (4.46 Impact Factor) [\[Link\]](#)
23. Gil Ho Yoon, **Young Soo Joung**, Yoon Young Kim, “Optimal Layout Design of Three-Dimensional Geometrical Nonlinear Structures Using the Element Connectivity Parameterization Method,” *International Journal for Numerical Methods in Engineering*, Vol.69 (10), pp.1278–1304, 2007. (2.06 Impact Factor) [\[Link\]](#)
24. **Young Soo Joung**, Gil Ho Yoon, Yoon Young Kim, “Topology Optimization using the Element Connectivity Parameterization Method in Three Dimensional Design Domain,” *Trans. of KSME(A)*, Vol. 29, No. 7, pp. 990–997, 2005. [\[Link\]](#)

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25. Subin Han, Hyunji Myung, **Young Soo Joung**, “Effect of Physical Properties of Saliva Residue on Pro-longation of Microbial Survival,” 12th National Congress on Fluids Engineering, *Chang-won*, 06/2022.
26. Subin Han, Seunghyeon Lee, **Young Soo Joung**, “Investigation of Bacteria Bubbles using Schlieren Imaging to Reveal the Effect of Bacteria Wettability on Bacterial Enrichment in Bubble Films,” 2021 *Conference of Korean Association for Particle and Aerosol Research*, *Yong Pyong*, 06/2021.
27. Younglee Ryu, Sunjong Noh, Youjung Kim, **Young Soo Joung**, “Effect of Particulate Matter on Bacterial Survival in Human Respiratory Droplets,” 2021 *Conference of Korean Association for Particle and Aerosol Research*, *Yong Pyong*, 06/2021.
28. Sunjong Noh, Younglee Ryu, Dokyung Kim, **Young Soo Joung**, “Effects of Cooking Oil Fumes(COFs) Generated at Different Temperatures on the Inflammation of Human Lung Cells,” 2021 *Conference of Korean Association for Particle and Aerosol Research*, *Yong Pyong*, 06/2021.
29. Sunjong Noh, Younglee Ryu, Dokyung Kim, **Young Soo Joung**, “Effects of Cooking Oil Fumes(COFs) Generated at Different Temperatures on the Inflammation of Human Lung Cells,” 2021 *Conference of Korean Association for Particle and Aerosol Research*, *Yong Pyong*, 06/2021.
30. Sunjong Noh, Hyunji Myung, Seungjun Kim, **Young Soo Joung**, “Inflammatory Response in Lungs Caused by Particulate Matter Produced from Carbon Black and Benzo[a]pyrene,” 2020 *Conference of Korean Association for Particle and Aerosol Research*, *Yong Pyong*, 06/2020.
31. Hyunji Myung, Subin Han, and **Young Soo Joung**, “Impact of Particulate Matter on airborne bacterial viability,” 2019 *Conference of Korean Association for Particle and Aerosol Research*, *Yong Pyong*, 06/2019.
32. Jiyun Kim, Hyunjung Lee, and **Young Soo Joung**, “Antifouling Fabric Resisting Bacterial Droplets,” 2019 *Conference of Korean Association for Particle and Aerosol Research*, *Yong Pyong*, 06/2019.
33. **Young Soo Joung**, Yoon Young Kim, “The Topology Design Optimization of Cooling Fins Using the Internal Element Connectivity Parameterization Method,” *Proceedings of the Fall Conference of KSME*, Nov. 2005. [\[Link\]](#)
34. **Young Soo Joung**, Gil Ho Yoon, Yoon Young Kim, “Lumped Mass Modeling for Local-Mode-Suppressed Element Connectivity Parameterized Topology Optimization of Vibrating Structures,” *Proceedings of the 6th World Congress on Structural and Multidisciplinary Optimization*, 2005. [\[Link\]](#)
35. Gil Ho Yoon, **Young Soo Joung**, Yoon Young Kim, “Optimal Layout Design Using the Element Connectivity

Parameterization Method: Application to Geometrical Nonlinear Structures,” *Proceedings of the 6th World Congress on Structural and Multidisciplinary Optimization*, 2005. [\[Link\]](#)

36. **Young Soo Joung**, Gil Ho Yoon, Yoon Young Kim, “Local Vibration Mode Free Topology Optimization Formulation for Vibrating Structures with Self-Weight Consideration,” *Proceedings of the Spring Conference of KSME*, May 2005. [\[Link\]](#)

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1. **Young Soo Joung**, Jeeyoon Kim, Hyun Young Lee, Gahee Yoo, “Dye-sensitized Solar Cell Comprising Hydrogel Electrolyte and Method for Manufacturing the Same,” **10-2020-0023515**, 2020-02-26.
2. **Young Soo Joung**, Gahee Yoo, “Electrolyte of Dye-sensitized Solar Cell and Method for Manufacturing the Same,” **10-2020-0023515**, (2020-02-26)
3. **Young Soo Joung**, Han Su Bin, Hyunjung Lee, Seunghyun Lee, Seungyeon Lee, “Wearable Air Purifier,” **10-2020-0022126**, (2020-02-24).
4. **Young Soo Joung**, Jeeyoon Kim, Seungyeon Lee, and Hyunju Myung, “High-efficiency microbial fuel cell using conductive hydrogel,” **10-2019-0043922**, (2019-04-15).
5. **Young Soo Joung**, Myung Hyunj, and Han Su Bin, “Dry powder storage using a porous structure of bacteria-nanoparticles,” **10-2019-0057031**, (2019-05-15).
6. **Young Soo Joung**, Jeeyoon Kim, Hyunjung Lee, and Yeonha Cho “Preparation method and Device for functional materials,” **10-2019-0030763**, (2019-03-18).
7. **Young Soo Joung**, Jeeyoon Kim, and Seunghyun Lee, “Development of real-time detection methods using bubbles for pathogenic microbes in water, 10-2019-0020701, (2019-02-21).
8. **Young Soo Joung**, Myung Hyunj, “Aerosol generation technique using porous surface,” **10-2019-0054459**, (2019-05-09).
9. **Young Soo Joung**, Jeeyoon Kim, Seungyeon Lee, and Hyunji Myung, “Functional hydrogel molding method using electrophoresis,” **10-2019-0033049**, (2019-03-22).
10. **Young Soo Joung**, Cullen R. Buie, “Electrophoretic-Deposited Surfaces,” **US Patent: US9096942**, (2015-08-04). [\[Link\]](#)
11. **Young Soo Joung**, Hye-jung Cho, Sang-Ho Yoon, "Fuel cell system having fuel circulation structure, method of operating the same, and electronic apparatus including the fuel cell system," **US Patent: US8993196**, (2015-03-31). [\[Link\]](#)
Note: **Strategic Patent Designation from Fuel Cell Group of SAIT.**
12. Seong Kee Yoon, **Young Soo Joung**, Jung Kurn Park, Hye Jung Cho, In Seob Song, “Fuel Cell System,” **US Patent: US8735008**, (2014-05-27). [\[Link\]](#)
13. **Young Soo Joung**, Hye Jung Cho, “Recycler for Direct Methanol Fuel Cell and Method of Operating the Same,” **US Patent: US8722261**, 2014-05-13. [\[Link\]](#)
Note: **Strategic Patent Designation from Fuel Cell Group of SAIT.**
14. Hye Jung Cho, **Young Soo Joung**, Hyuk Chang, “Power Unit and Cartridge, and Fuel Cell System Comprising Power Unit and Cartridge,” **US Patent: US8722282**, (2014-05-13). [\[Link\]](#)
Note: **Registered in Standards - IEC TC 105 WG#10**; International Electrochemical Commission (IEC), Technical Committee No.105 (TC105) – Fuel cell Technologies, Working Group #10, Portable Fuel Cell Appliance – Interchangeability.
15. Jae Yong Lee, Hye Jung Cho, Young-Jae Kim, Hu Lei, **Young Soo Joung**, “Fuel Battery System and Fuel Battery Operation Method,” **US Patent: US8691455**, (2014-04-08). [\[Link\]](#)
16. Seong Kee Yoon, **Young Soo Joung**, Jung Kurn Park, Hye Jung Cho, In Seob Song, “Fuel Cell System,” **US Patent: US8481221**, (2013-07-09). [\[Link\]](#)
17. **Young Soo Joung**, Young Sung Na, Hye Jung Cho, “Direct Methanol Fuel Cell System,” **US Patent: US8470487**, (2013-06-25). [\[Link\]](#)
18. **Young Soo Joung**, Hye Jung Cho, Jung Kurn Park, In Seob Song, Seong Kee Yoon, “Fuel Cell System and Recovery Unit for Fuel Cell System,” **China Patent: CN101807706**, (2013-04-17). [\[Link\]](#)
19. Young Seung Na, In Seob Song, **Young Soo Joung**, Mi Jeong Song, Hye Jung Cho, “Fuel Cell System: A New Fuel Management System,” **China Patent: CN101853957**, (2013-02-20). [\[Link\]](#)
20. Hye Jung Cho, Young Jae Kim, **Young Soo Joung**, Jae Yong Lee, “Fuel Cell Cartridge Having Residual Fuel Measuring Unit and Method of Measuring Residual Fuel of Fuel Cell System Having the Same,” **US Patent: US8349487**, (2013-01-08). [\[Link\]](#)
21. Hu Lei, Young Jae Kim, Hye Jung Cho, Jae Yong Lee, **Young Soo Joung**, “Hybrid Voltage Supply Apparatus, Method of Controlling the Same, and Electronic System Employing the Same as Power Supply,” **US Patent: US8153313**, (2012-04-10). [\[Link\]](#)
22. Young Jae Kim, Lee Jae Yong, Jin Ho Kim, Hye Jung Cho, Hu Lei, **Young Soo Joung**, “Fuel Cell System and Method of Operating the Same,” **China Patent: CN101165958**, (2011-12-07). [\[Link\]](#)
23. **Young Soo Joung**, Hye Jung Cho, Jae Yong Lee, Young Jae Kim, “Fuel Cell System Having Pressurizing System,” **US Patent #: US8012649**, (2011-09-06). [\[Link\]](#)

24. **Young Soo Joung**, Hye Jung Cho, Hu Lei, Jae Yong Lee, Young Jae Kim, Jin Ho Kim, "Fuel Cell System and Method of Operating the Same," US 20080311440 A1, 12/2008. [\[Link\]](#)
25. Ji Rae Kim, Young Jae Kim, Jin Ho Kim, **Young Soo Joung**, "Fuel Cell System Capable of Supplying Power of Various Levels and Method of Operating the Same," US 2009/0042073 A1, 07/2008. [\[Link\]](#)

▪ PRESENTATIONS

1. Subin Han, Hyunji Myung, **Young Soo Joung**, "Effect of Physical Properties of Saliva Residue on Pro-longation of Microbial Survival," 12th National Congress on Fluids Engineering, *Chang-won*, 06/2022.
2. Subin Han, Seunghyeon Lee, **Young Soo Joung**, "Investigation of Bacteria Bubbles using Schlieren Imaging to Reveal the Effect of Bacteria Wettability on Bacterial Enrichment in Bubble Films," 2021 *Conference of Korean Association for Particle and Aerosol Research, Yong Pyong*, 06/2021.
3. Younglee Ryu, Sunjong Noh, Youjung Kim, **Young Soo Joung**, "Effect of Particulate Matter on Bacterial Survival in Human Respiratory Droplets," 2021 *Conference of Korean Association for Particle and Aerosol Research, Yong Pyong*, 06/2021.
4. Sunjong Noh, Younglee Ryu, Dokyung Kim, **Young Soo Joung**, "Effects of Cooking Oil Fumes(COFs) Generated at Different Temperatures on the Inflammation of Human Lung Cells," 2021 *Conference of Korean Association for Particle and Aerosol Research, Yong Pyong*, 06/2021.
5. **Young Soo Joung**, "New understanding of Bioaerosol Generation, Transmission, and Control with New Approaches Based on Mechanical Engineering," 11th National Congress on Fluids Engineering, *Jeju island*, 08/2020.
6. Sunjong Noh, Hyunji Myung, Seungjun Kim, **Young Soo Joung**, "Inflammatory Response in Lungs Caused by Particulate Matter Produced from Carbon Black and Benzo[a]pyrene," 2020 *Conference of Korean Association for Particle and Aerosol Research, Yong Pyong*, 06/2020.
7. Hyunji Myung, Subin Han, and **Young Soo Joung**, "Impact of Particulate Matter on airborne bacterial viability," 2019 *Conference of Korean Association for Particle and Aerosol Research, Yong Pyong*, 06/2019.
8. Jiyun Kim, Hyunjung Lee, and **Young Soo Joung**, "Antifouling Fabric Resisting Bacterial Droplets," 2019 *Conference of Korean Association for Particle and Aerosol Research, Yong Pyong*, 06/2019.
9. **Young Soo Joung**, "Bacterial Viability in Residues Formed by Droplet Evaporation," *Educational Seminar for Bio-Pathogenic Fine Particulate Matters, Yonsei University*, 04/2019.
10. **Young Soo Joung**, "Electrophoretic Deposition for the Development of Bio-compatible Hydrogel-CNT Composites," 2019 *Spring Conference of Korean Chemical Society, Suwon*, 04/2019.
11. **Young Soo Joung**, "Methods for the Reduction of Pressure Drop in Pipe Flows," *Korea Energy Congress Spring Conference, Jeju Island*, 04/2018.
12. **Young Soo Joung**, "Bioaerosol: Generation, Transmission, Viability, and Control," *Yonsei University*, 12/2017.
13. **Young Soo Joung**, "New Understandings of Transferring Microbes through Bioaerosols from Soil and Water, and Assessments for the Prevention of Agricultural Blights Based on It," *KIST in Gangneung*, 12/2017.
14. **Young Soo Joung**, "Bioaerosol Technologies of Anti-bacterial for Plant Factories," Symposium for the technologies of City Farm, 1/2017.
15. **Young Soo Joung**, Zhifei Ge, Cullen R. Buie, "Drop Impingement Induced Dispersal of Microorganisms and Contaminants Within Porous Media," *the 67th Annual Meeting of the APS Division of Fluid Dynamics*, 11/2014. [\[Link\]](#)
16. **Young Soo Joung**, Jeffrey Moran, Andrew Jones, Eric Bailey and Cullen R. Buie, "A Microfluidic Platform for Interfacial Electrophoretic Deposition," *the 67th Annual Meeting of the APS Division of Fluid Dynamics*, 11/2014. [\[Link\]](#)
17. **Young Soo Joung**, Robert Butler Ramirez, and Cullen R. Buie, "Conductive Hydrogel Produced by Electrophoretic Deposition at the Interface of Two Immiscible Liquids," *American Institute of Chemical Engineers Annual Meeting*, 11/2014. [\[Link\]](#)
18. **Young Soo Joung**, "Electrophoretic Deposition and Breakdown Anodization for Multi-scale Structured Surfaces," North Carolina State University, 03/2014. [\[Link\]](#)
19. **Young Soo Joung**, Robert Ramirez, Cullen R. Buie, "Conductive Hydrogel Produced by Electrophoretic Deposition at the Interface of Two Immiscible Liquids," ASME 2014 3rd Global Congress on NanoEngineering for Medicine and Biology, 02/2014. [\[Link\]](#)
20. **Young Soo Joung**, Bruno Michel Figliuzzi, Cullen R. Buie, "Design of Capillary Flows with Spatially Graded Porous Films," *the 66th Annual Meeting of the APS Division of Fluid Dynamics*, 11/2013. [\[Link\]](#)
21. **Young Soo Joung**, Cullen R. Buie, "Sparkling Droplets: Aerosol Dispersion Resulting from Drop Impingement on Porous Surfaces," *the 66th Annual Meeting of the APS Division of Fluid Dynamics*, 11/2013. [\[Link\]](#)
22. **Young Soo Joung**, Cullen R. Buie, "Electrophoretic Deposition of Polymerically Stabilized Silica Nanoparticles for Anti-wetting Fabrics," *the 224th ECS meeting*, 10/2013. [\[Link\]](#)
23. **Young Soo Joung**, Cullen R. Buie, "The Role of Surfactants for Dispersion of Carbon Nanotubes in Aqueous Solutions," *the 224th ECS meeting*, 10/2013. [\[Link\]](#)
24. **Young Soo Joung**, Cullen R. Buie, "Electro-fabrication Methods for Multi-scale Structured Surfaces," Material Processing Center and Center for Materials Science and Engineering, MIT, 06/2013.

25. **Young Soo Jung**, Cullen R. Buie, “Functionally Structured Porous Films by Anodization Instability for Capillary Flow Design,” *the 5th International Conference on Porous Media & Annual Meeting*, 05/2013. [\[Link\]](#)
26. **Young Soo Jung**, Cullen R. Buie, “Hybrid Electrophoretic Deposition with Anodization Process for Superhydrophilic Surfaces to Enhance Critical Heat Flux,” *2011 Electrophoretic Deposition conference*, 10/2011. [\[Link\]](#)
27. **Young Soo Jung**, Cullen R. Buie, “Electrophoretic Deposition,” Electrochemical Energy Laboratory, MIT, 08/2011.
28. **Young Soo Jung**, Cullen R. Buie, “Electrophoretic Deposition for Superhydrophobic Surfaces,” Micro and Nano seminar, MIT, 03/2011.
29. **Young Soo Jung**, Young Sung Na, Hye Jung Cho, “Development of a Novel Fuel Delivery System for Direct Methanol Fuel Cell Systems, 2008 Samsung TRIZ conference, 11/2008.
30. **Young Soo Jung**, “Topology Design Optimization for Multiphysics Systems,” Samsung Advanced Institute of Technology, 10/2005.
31. **Young Soo Jung**, Gil Ho Yoon, Yoon Young Kim, “Lumped Mass Modeling for Local-Mode-Suppressed Element Connectivity Parameterized Topology Optimization of Vibrating Structures,” *6th World Congress on Structural and Multidisciplinary Optimization*, 06/2005. [\[Link\]](#)
32. **Young Soo Jung**, Gil Ho Yoon, Yoon Young Kim, “Local Vibration Mode Free Topology Optimization Formulation for Vibrating Structures with Self-Weight Consideration,” *Spring Conference Of KSME*, 05/2005.

▪ POSTERS

1. Subin Han, Hyunji Myung, **Young Soo Jung**, “Evaluation of Survival Rates of Pathogenic Bacteria in Various Porous Structures of Particulate Matter,” 62nd Annual Meeting & ToxExpo, Nashville, TN, March 19-23, 2023.
2. **Young Soo Jung**, Cullen R. Buie, “Porous Titania Thin Film Microfluidic Devices for Medical Diagnostics,” MicroTAS, 10/2014.
3. Jessamine A. Quijano, **Young Soo Jung**, Cullen R. Buie, and Sharon L. Walker, “Antimicrobial Behavior of Novel Surfaces Generated by Electrophoretic Deposition and Breakdown Anodization,” *2013 Colloid and Surface Science Symposium*, 06/2013. [\[Link\]](#)
4. **Young Soo Jung**, Cullen R. Buie, “Dynamic Behaviors of Droplets on Highly Wettable Porous Films,” *5th International Conference on Porous Media & Annual Meeting*, 05/2013.
Note: Best Poster Award [\[Link\]](#)
5. **Young Soo Jung**, Cullen R. Buie, “Surface Wettability Alterations by the electrophoretic deposition method,” *MIT material day*, 10/2011.
6. Cullen R. Buie, **Young Soo Jung**, Timothy Palmer, “Electrophoretic Deposition of Superhydrophobic Surface Coatings,” *the 2010 NSF Minority Faculty Development Workshop Collaborative Research Poster Competition*, 03/2010.
Note: Best Poster Award
7. **Young Soo Jung**, Yoon Young Kim, “The Topology Design Optimization of Cooling Fins Using the Internal Element Connectivity Parameterization Method,” *Fall Conference Of KSME*, 11/2005.

▪ PROPOSAL WRITING & PROJECT EXPERIENCES

2023-2024	Ministry of Science and ICT Title: “Artificial Biofilms for Hydrogel Generation” PI: Youngsoo Jung ; Status: Funded (2023-2024)
2023-2024	Ministry of Science and ICT Title: “Copper-infused Hydrogel Patch for Wound Healing” PI: Youngsoo Jung ; Status: Funded (2023-2024)
2023-2024	Ministry of Science and ICT Title: “Psychological Analysis and Management Service Based on Picture Diaries of the Developmental Disorders and the Elderly with Dementia using Artificial Intelligence” PI: Youngsoo Jung ; Status: Funded (2023-2024)
2023-2024	Ministry of SMEs and Startups Title: “Transparent and Flexible Hydrogel Solar Cells for Building-Integrated Photovoltaic and Agricultural Solar Films” PI: Youngsoo Jung ; Status: Funded (2023-2024)
2022-2023	Ministry of SMEs and Startups Title: “Transparent and Flexible Solar Cells Produced by Electrophoretic Deposition of nanoparticle and Hydrogel Electrolyte Film for Building-Integrated Photovoltaic and Agricultural Solar Films” PI: Youngsoo Jung ; Status: Funded (2022-2023)
2021-2023	Ministry of Agriculture, Food and Rural Affairs

- 2021-2022 Title: "Development and Demonstration of nano-coating-based high-efficiency cooling and CO₂ complex supply technology"
PI: Youngsoo Joung; Status: Funded (2021-2023)
Ministry of Science and ICT
- 2021-2022 Title: "Cosmetic Ingredient Analysis Service using Deep-learning OCR"
PI: Youngsoo Joung; Status: Funded (2021-2022)
Ministry of Science and ICT
- 2020 Title: "Customized Nutrition Management Service Application"
PI: Youngsoo Joung; Status: Funded (2020)
Korea Advanced Institute of Science and Technology
- 2020-2021 Title: "Development of Human Droplet Generators"
PI: Youngsoo Joung; Status: Funded (2020)
Korea Technology & Information Promotion Agency for SMEs
- 2020 Title: "Development of flexible and transparent solar cells with durability and beauty for BIPV"
PI: Youngsoo Joung; Status: Funded (2020-2021)
Ministry of Science and ICT
- 2020-2022 Title: "Functional Hydrogel LED mask using Electrophoretic Deposition"
PI: Youngsoo Joung; Status: Funded (2020)
Ministry of Science and ICT.
- 2020 Title: "Development of Commercialization Technologies of (1) Highly-Reliable (2) Colored and Translucent (3) Large-area (4) Flexible Solar Cells Based on Hydrogel Electrolyte Films with Electrodes Prepared by Electrophoretic Deposition for Smart Net-zero Energy Buildings"
PI: Youngsoo Joung; Status: Funded (2020-2022)
Seoil Casting Co., Ltd.
- 2019-2021 Title: "Development of Theoretical Models of Super-nozzles for the Systematic Design and Verification of the Functions"
PI: Youngsoo Joung; Status: Funded (2020)
Ministry of SMEs and Startups
- 2019 Title: "Development of Electrophoretic Deposition Systems for Multi-functional Filters"
PI: Youngsoo Joung; Status: Funded (2019-2021)
Korea Institute of Energy Research
- 2019 Title: "Development of Multi-functional Surfaces of Antibacterial and CO₂ Conversion for the Thermal and Environment Control Units for Smart Farms"
PI: Youngsoo Joung; Status: Funded (2019)
Ministry of SMEs and Startups
- 2019 Title: "Development of Electrophoretic Deposition Systems for the Production of Multi-Functional Large Area Filters for Air Conditioning Modules of Closed Type Smart Farm"
PI: Youngsoo Joung; Status: Funded (2019)
Sung-won IND
- 2019 Title: "Development of Multi-Functional Photocatalytic Surfaces of heat exchangers for Thermal Environment Control of Smart Farm"
PI: Youngsoo Joung; Status: Funded (2019)
Korean Foundation for the Advancement of Science and Creativity
- 2019 Title: "Study on the Effect of Environmental Conditions on the Viability of Bacteria in Bioaerosol"
PI: Youngsoo Joung; Status: Funded (2019)
Ministry of Science and ICT
- 2019 Title: "Healthy hydrogel food using Electrophoretic Deposition"
PI: Youngsoo Joung; Status: Funded (2019)
Ministry of Science and ICT
- 2019 Title: "A System for Detecting Underwater Bacteria in Real-time Using Bubbles"
PI: Youngsoo Joung; Status: Funded (2019)
Sookmyung Women's University
- 2019 Title: "Development of Anti-wetting and Anti-bacterial Fabrics Using Electrophoretic Deposition"
PI: Youngsoo Joung; Status: Funded (2019)
National Institute of Horticultural and Herbal Science
- 2018 Title: "Development of Fine Powder from Pear Juice"
PI: Youngsoo Joung; Status: Funded (2019)
Sung-won IND
- 2018 Title: "Development of Anti-freezing Cooling Fins for Efficiency Enhancement of Energy Recovery Heat Exchanger"
PI: Youngsoo Joung; Status: Funded (2018)
Korea Institute of Science and Technology

- 2018
 Title: “Development of Anti-microbial Fabric for Smart Farm Using Electrophoretic Deposition”
PI: Youngsoo Joung; Status: Funded (2018)
Korea Institute of Science and Technology
- 2018–2022
 Title: “Development of Evaluation Methods and Systems for Heat Exchangers using Condensation”
PI: Youngsoo Joung; Status: Funded (2018)
National Research Foundation of Korea
- 2017–2018
 Title: “Real-time Detection of Aerosolized Pathogenic Microbes and Development of Prediction Models and Systems for the Infectivity”
PI: Youngsoo Joung; Status: Funded (2018-2022)
Korea Institute of Energy Research
- Spring, 2017
 Title: “Development of Fabrication Methods and Evaluation Technologies for the Inner Surfaces of Pipes to Enhance the Efficiency of Circulating Water for the District Heating and Cooling”
PI: Youngsoo Joung; Status: Funded (2017-2018)
Korea Institute of Energy Research
- 2014, 2015, 2016
 Title: “Development of Fabrication Methods for the Inner Surfaces of Pipes to Enhance the Efficiency of Circulating Water for the District Heating and Cooling”
PI: Youngsoo Joung; Status: Funded (2017)
Chevron Energy Technology Company
- 2012
 Title: (a) “Electrophoretic Deposition of Nanoscale Surface Coatings for Enhanced Droplet Coalescence” (2015-2016), (b) “Development of High Durability Surface Coatings for Oil/Water Separation Applications” (2015-2016), and (c) “Surface Coatings for Enhancing Coalescence of Water Droplets in Oil Emulsions” (2014-2015)
 Contributed significantly: organization of the project directions and plans, writing the draft
 PI: Cullen R. Buie; Status: Funded/Active (2014-2016)
MIT Lincoln Laboratory
- 2010, 2011, 2012
 Title: “Electrophoretic Infiltration of Superwicks for Remote Chemical Sampling”
 Contributed extensively: proof of concept, providing preliminary data
 PI: Cullen R. Buie, Rod Kunz; Status: Funded (2012-2013)
Battelle Memorial Institute
- 2010, 2011, 2012
 Title: “Electrophoretic Deposition of Nanoporous Films for Superhydrophobic Surfaces”
 Contributed significantly: proof of concept, providing preliminary data, writing the draft
 PI: Cullen R. Buie; Status: Funded (2010 – 2013)

▪ AWARDS & HONORS

- June 2022
Best Paper Award
from 12th National Congress on Fluids Engineering
- Feb. 2020
Excellence Teaching Award
from Sookmyung Women’s University
- June 2019
Best Paper Award
from Korean Association for Particle and Aerosol Research
- May 2013
Best Poster Award
from 5th International Conference on Porous Media & Annual Meeting
- Mar. 2013
Sontheimer Award
from the Mechanical Engineering Department of MIT
- May 2012
Outstanding Environmental Health and Safety Representative Award
from the Environment Health and Safety Department of MIT
- Sept. 2010
Best Poster Award
from the National Science Foundation
- Sept. 2008
Strategic Patent Designation
from Fuel Cell Group of SAIT
- Sept. 2007
Strategic Patent Designation
from Fuel Cell Group of SAIT
- Mar. 2006
New Employee Award in Samsung
from Samsung Human Resources Development Center
- Feb. 2004
Outstanding Graduate Award
by Dean of the Mechanical Engineering Department of Yonsei University
- Feb. 2003
High Honors Student
from Yonsei University

Aug. 2002

High Honors Student
from Yonsei University

▪ **LICENSES**

Feb. 1999

Vehicle Overhaul Mechanic, License #99402022919C
From Human Resources Development Service of Korea

Apr. 1999

Vehicle Maintenance Mechanic, License #99403021386Y
From Human Resources Development Service of Korea