

# Chang Kyoung Choi, Ph. D.

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## HIGHLIGHTED AREAS

1. Engineering Education
2. Microscopic Optical Visualization
3. Micro-/nano-scale Heat and Mass Transfer / Energy / Phase Changes
4. Opto-electric Biosensing / Cartilage Tissues Regeneration
5. Alternative Proteins
6. New Course Development
  - Intermediate Fluid Mechanics and Heat Transfer
  - Microfluidics: Electrokinetics
  - Advanced Engineering Mathematics
  - Nanotechnology
  - Introductory Thermodynamics
  - Fluid Mechanics
  - Professional Presentation
  - Thin Film Stability & Optical Imaging

## EDUCATION / PROFESSIONAL PREPARATION

- 1/2008 – 12/2008 Post-doctoral Research Associate in Biosciences Division in Oak Ridge National Laboratory, Oak Ridge, TN
- Conducted research in the area of synthetic biology (cell mimics) and nanofabrication;
  - Advisor: Dr. Mitchel John Doktycz
- 8/2007 – 1/2008 Joint Post-doc fellow in Micro/Nano-scale Fluidics and Energy Transport Laboratory, Tissue Engineering Laboratory, & Environmental Carcinogenesis Laboratory, the University of Tennessee, Knoxville, TN
- Conducted research in the area of microfluidics, opto-electric cellular sensing, & molecular biology (cancer chemoprevention, molecular carcinogenesis).
  - Advisors: Drs. English, Baek, & Kihm
- 8/2004 – 8/2007 The University of Tennessee, Knoxville, TN
- Ph.D. in the Department of Mechanical, Aerospace, and Biomedical Engineering
  - *Dissertation*: Development of an Integrated Opto-Electric Biosensor to Dynamically Examine Cytometric Proliferation and Cytotoxicity
  - Advisors: Dr. Kenneth Kihm & Dr. Anthony English
- 8/2002 – 7/2004 Texas A&M University, College Station, TX

- Ph.D. candidate was in the Department of Mechanical Engineering
- *Concentration:* Microfluidics: Confocal-PIV, Free and hindered Brownian motion, & Microscopic visualization
- Advisor: Dr. Kenneth Kihm

3/1999 – 2/2001 Chungang University, Seoul, Korea

- MS in the Department of Mechanical Engineering
- Fluidics/Heat Transfer
- *Thesis Title:* The Performance Analysis of the Plume Abatement NWD Cooling Tower
- Advisor: Dr. Y.K. Choi

3/1992 – 2/1999 Chungang University, Seoul, Korea

- BS in the Department of Mechanical Engineering
- Graduated with *Summa Cum Laude* in the College of Engineering (1/445)

## APPOINTMENTS / PROFESSIONAL EXPERIENCE

- 4/2015 – present **Associate Professor**, Mechanical Aerospace Engineering, Michigan Technological University, Houghton, MI
- 8/2024 – present **Assistant Director of Undergraduate Studies**, MAE, Michigan Technological University, Houghton, MI
- 9/2023 – present Appointed as the 21<sup>st</sup> term **overseas advisory committee member** for Democratic Peaceful Unification.
- 9/2021 – 12/2023 **Brain Pool Research fellow**, Chung-Ang University, Seoul, Korea
- 1/2021 – 8/2021 **Director**, Multiscale Technologies Institute
- 11/2019 – present **ASME/ABET Mechanical Engineering Program Evaluator (PEV)**
- 2/2019 – 3/2023 **CTO**, CellMEAT, Korea
- 5/2016 – present **Adjunct Associate Professor**, Biomedical Engineering, Michigan Tech.
- 5/2017 – 12/2017 **Brain Pool Research Fellow**, Mechanical Engineering, Korea University
- 1/2009 – 4/2015 **Assistant Professor**, Mechanical Engineering-Engineering Mechanics, Michigan Technological University, Houghton, MI
- 5/2013 – 5/2016 **Adjunct Assistant Professor**, Biomedical Engineering, Michigan Tech.
- 1/2013 – present **Chair** (2013~2018)/**Co-Chair** (2018~Present) of K-22 Visualization Technical Committee, American Society of Mechanical Engineering – Heat Transfer Division (ASME-HTD)
- 4/2013 – 3/2014 Professor (**International Scholar**), Kyung Hee University, Korea
- 9/2011 – 9/2013 **Associate member** of the *Center for Diagnostic Nanosystems* at Marshall University, WV
- 8/2004 – 7/2007 Graduate Research Assistant at the department of Mechanical, Aerospace, and Biomedical Engineering, University of Tennessee, Knoxville, TN
- 8/2002 – 7/2004 Graduate Research Assistant at the department of Mechanical Engineering, Texas A&M University, College Station, TX
- 9/2001 – 7/2002 Lecturer, Anyang University, Anyang, Korea

3/2002 – 7/2002	Research Assistant at the Micro Thermal System Research Center [MTSRC], Seoul National University, Seoul, Korea
3/1999 – 7/2002	Research Assistant, Chungang University, Seoul, Korea
9/1999 – 2/2002	Teaching Assistant, Chungang University, Seoul, Korea

## PUBLICATIONS

### 1. Peer-reviewed Journal Publications (98 Published & Accepted, 3 Under Review):

1. X. Zhu, J. Lee, K. Kim, C.K. Choi, and SH Lee, Optimizing Liquid Hydrogen Storage Tank Insulation: A CFD Analysis of Vapor-Cooled Shield Dimensions and Vacuum Levels, *International Communications in Heat and Mass Transfer* (Under review)
2. W. Hwang, H. Lee, J. Jin, C.K. Choi, and SH Lee, Enhanced Insights into Paired Droplet Evaporation Dynamics on Heated Substrates: Unveiling the Role of Convection and Diffusion *International Communications in Heat and Mass Transfer*, 157, 107740, 2024 (September)
3. J. Jin, H. Lee, C.K. Choi, and SH Lee, Modulating Evaporation Dynamics in Multiple Droplet System: The Role of Pacemaker Droplets, *International Communications in Heat and Mass Transfer* (Under review)
4. H. Wang, H. Lee, J. Jin, C.K. Choi, L. Li, W. Li, and SH Lee Design optimization for a high-performance surface plasmon resonance device for effective measurement of thin liquid film thickness, *Journal of Mechanical Science and Technology* (Under review)
5. W. Hwang, H. Lee, J. Jin, H Ryou, C.K. Choi, and SH Lee, Computational design of a smoke detector with high sensitivity considering three-dimensional flow characteristics, *Case Studies in Thermal Engineering*, 53, 103896, 2024 (January)
6. K. Bellur, E. Medici, J. Hermanson, C.K. Choi, J. Allen, Modeling liquid-vapor phase change experiments: cryogenic hydrogen and methane, *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 675, 131932, 2023 (October)
7. H. Lee, C.K. Choi, SH Lee, Surface plasmon resonance imaging for analyzing the local variation of evaporation flux of multiple binary mixture droplets, *International Communications in Heat and Mass Transfer*, Vol.146, pp. 106906 2023 (July) [Corresponding author]
8. S. Yeom, K. Jang, H. Lee, C.K. Choi, SH Lee, Selective evaporation and contact line motions of evaporating ethylene glycol–water mixture droplets, *Applied Thermal Engineering*, 232, 121040, 2023 (September) [Corresponding author]
9. K. Jang, S. Yeom, H. Lee, C.K. Choi, SH Lee, Volatility effect on internal flow and contact line behavior during evaporation of binary mixture droplets, *International Journal of Heat and Mass Transfer*, 207, 124009, 2023 (June) [Corresponding author]
10. H. Lee, C.K. Choi, SH Lee, Vapor-shielding effect and evaporation characteristics of multiple droplets, *International Communications in Heat and Mass Transfer*, 144, 106789, 2023 (May) [Corresponding author]

11. J. Jin, S. Yeom, H. Lee, C.K. Choi, S. Lee, The effect of nozzle spacing on the electric field and fiber size distribution in a multi-nozzle electrospinning system, *Journal of Applied Polymer Science*, e53764, 2023 (Feb.) [*Corresponding author*]
12. K. Bellur, E. Medici, D. Hussey, D. Jacobson, J. LaManna, J. Leao, J. Scherschligt, J. Hermanson, C.K. Choi, J. Allen, Data from cryo-neutron phase change experiments with LH2 and LCH4, *Date in Brief*, 43, 108474, 2022
13. H. Lee, C.K. Choi, SH Lee, Local Heating Effect on Thermal Marangoni Flow and Heat Transfer Characteristics of an Evaporating Droplet, *International Journal of Heat and Mass Transfer*, 195, 123206, 2022 (Oct.)
14. K. Bellur, E. Medici, D. Hussey, D. Jacobson, J. LaManna, J. Leao, J. Scherschligt, J. Hermanson, C.K. Choi, J. Allen, Results from neutron imaging phase change experiments with LH2 and LCH4, *Cryogenics*, 125, 103517, 2022 (July)
15. C. Jeong, H. Lee, C.K. Choi, SH Lee, Review of the binary mixture droplet evaporation studies, *Journal of Mechanical Engineering Science and Technology*, 35 (12), 5259~5272, 2021 [*Corresponding author*]
16. S.B. Ahangar, K. Lee, C.K. Choi, Dropwise Condensation Mechanism on Smooth Hydrophilic Surfaces, *Applied Sciences*, 11, 9184, 2021 [*Corresponding author*]
17. J. Moon, C.K. Choi, SH Lee, Local evaporation flux of evaporating droplet on heated aluminum surfaces, *Case Studies in Thermal Engineering*, 26, 2021 (Aug.) [*Corresponding author*]
18. C. Jeong, H. Lee, C.K. Choi, SH Lee, Selective evaporation characteristics of volatile binary mixture droplets using surface plasmon resonance imaging, *International Journal of Heat and Mass Transfer*, 178, 121584, 2021 [*Corresponding author*]
19. H. Lee, C. Jeong, D. Kim, C.K. Choi, SH Lee, Solid-liquid interface temperature measurements of evaporating droplet using thermoresponsive polymer aqueous solution, *Applied Science*, 11(8), 3379, 2021 (April) [*Corresponding author*]
20. J. Moon, S. Lee, C.K. Choi, SH Lee, Dynamic Characteristics of Droplet Impingement on Microscale Hole-Patterned Surface with Anodization, *International Communications in Heat and Mass Transfer*, 124, 2021 (May) [*Corresponding author*]
21. C. Jeong, H. Lee, D. Kim, S. Ahangar, C.K. Choi, SH Lee, Quantitative analysis of contact line behaviors of evaporating binary mixture droplets using Surface Plasmon Resonance imaging, *International Journal of Heat and Mass Transfer*, 165, 120690, 2021 [*Corresponding author*]
22. S.B. Ahangar, C. Jeong, F. Long, J.S. Allen, S.H. Lee, C.K. Choi, The effect of absorbed volatile organic compounds on an ultrathin water film measurement, *Applied Sciences*, 10(17), 5981, 2020 [*Corresponding author*]
23. D. Kim, C. Jeong, S.H. Lee, C.K. Choi, SH Lee, Modeling of the finite boundary limit of evaporation flux in the contact line region using the surface plasmon resonance imaging, *International Communication on Heat & Mass Transfer*, 116, 2020 (July) [*Corresponding author*]
24. S.B. Ahangar, J.S. Allen, S.H. Lee, C.K. Choi, Surface Plasmon Resonance Imaging: A Technique to Reveal the Dropwise Condensation Mechanism, *Journal of Heat Transfer*, 142(3), 2020 (March) [*Corresponding author*]

25. K. Bellur, E. F. Médiçi, C. K. Choi, J. Hermanson, and J. S. Allen. Multi-scale approach to model steady meniscus evaporation in a wetting fluid, *Physical Review Fluids*, 5, 024001, 2020 (Feb)
26. S. Ahangar, V. Konduru, J. Allen, N. Miljkovic, S.H. Lee, C.K. Choi, Development of Automated Angle-Scanning, High-speed Surface Plasmon Resonance Imaging and SPRi Visualization for the Study of Dropwise Condensation, *Experiments in Fluids*, 61(1), doi:10.1007/s00348-019-2844-9, 2020 [*Corresponding author*]
27. S. B. Ahangar, K. Bellur, E. F. Médiçi, K. Tajiri, J. S. Allen, and C. K. Choi, Optical Properties and Swelling of Thin Film Perfluorinated Sulfonic-Acid Ionomer, *ECSTransactions*, 92(8), 197~204, 2019 [*Corresponding author*]
28. D. Sharma, W. Jia, F. Long, S. Pati, Q. Chen, Y. Qyang, B. Lee, C.K. Choi, F. Zhao, Polydopamine and collagen coated micro-grated polydimethylsiloxane for human mesenchymal stem cell culture, *Bioactive Materials*, 4, 142~150, 2019 (December)
29. D.H. Shin, D. Kim, C.K. Choi, S.H. Lee, Quantitative measurements of nanoparticle layer thicknesses near the contact line region after droplet drying-out, *Journal of Mechanical Science and Technology*, 33 (2), 967~971, 2019 (February) [*Corresponding author*]
30. S. Kim, R. Xu, W. Lee, C.K. Choi, Y.T. Kang, CO<sub>2</sub> absorption performance enhancement by dodecane nanoemulsion absorbents, *Journal of CO<sub>2</sub> Utilization*, 30, 18~27, 2019 (January)
31. S. Ahangar, Y. Tabe, Y.T. Kang, S.H. Lee, C.K. Choi, Surface Plasmon Resonance Imaging of Drop Coalescence at High-temporal Resolution, *Journal of Flow Visualization and Image Processing*, 25(issue 3~4), 191~205, 2018 [*Corresponding author*]
32. N. Mohammadi, D. Fadda, C.K. Choi, J. Lee, S.M. You, Effects of Surface Wettability on Pool Boiling of Water Using Super-Polished Silicon Surfaces, *International Journal of Heat and Mass Transfer*, 127 (Part B), 1128~1137, 2018 (December)
33. J. Moon, C.K. Choi, J. Allen, S.H. Lee, Observation of a Mixed Regime for an Impinging Droplet on a Sessile Droplet, *International Journal of Heat and Mass Transfer*, 127 (Part C), 130~135, 2018 (December) [*Corresponding author*]
34. J. Moon, S. Lee, C.K. Choi, S.H. Lee, Modeling of Evaporation Rates of Liquid Droplets on Anodized Heated Surfaces, *International Communications in Heat and Mass Transfer*, 98, 209~215, 2018 (November) [*Corresponding author*]
35. S. Wang, P.G Shankles, S.T. Retterer, YT Kang, C.K. Choi, A Very Low-Cost, Labor-Efficient, and Simple Method to Block scattered Ultraviolet light in PDMS microfluidic devices by inserting aluminum foil strips, *Journal of Thermal Science and Engineering Applications*, 11(1), 014501, 2018 (October) [*Corresponding author*]
36. C. Jeong, D. Shin, V. Konduru, J. Allen, S.H. Lee, C.K. Choi, Quantitative Measurements of Nanoscale Thin Frost Layers Using Surface Plasmon Resonance Imaging, *International Journal of Heat and Mass Transfer*, 124, 83~89, 2018 (September) [*Corresponding author*]

37. B. Shon, C. Jung, O. Kwon, C.K. Choi, Y.T. Kang, Characteristics on condensation heat transfer and pressure drop for a Low GWP refrigerant in brazed plate heat exchanger, *International Journal of Heat and Mass Transfer*, 122, 1272~1282, 2018 (July)
38. S. Kim, M. Jeong, J.W. Lee, S.Y. Kim, C.K. Choi, Y.T. Kang, Development of nanoemulsion CO<sub>2</sub> absorbents for mass transfer performance enhancement, *International Communications in Heat and Mass Transfer*, 94 24~31, 2018 (May)
39. K. Bellur, E. F. Médici, J. Hermanson, C. K. Choi, and J. S. Allen. Determining solid-fluid interface temperature distribution during phase change of cryogenic propellants using transient thermal modeling, *Cryogenics*, 91, 103~111, 2018 (April)
40. K. Bellur, D. Hussey, D. Jacobson, J. Lamana, E. Medici, J. Hermanson, J. Allen, C.K. Choi, Neutron attenuation analysis of cryogenic propellants, *Journal of Heat Transfer*, 140(3), 030904, 2018 (March) [*Corresponding author*]
41. S. Wang, A. Bruning, O. Jeon, F. Long, E. Alsberg, C.K. Choi, An *in-situ* photocrosslinking microfluidic technique to generate non-spherical, cytocompatible, degradable, monodisperse alginate microgels for chondrocyte encapsulation, *Biomicrofluidics*, 12 (1), 014106, 2018 (January) [*Corresponding author*]
42. F. Long, C.K. Choi, Electron Mobility across Grain Boundaries in Graphene Synthesized using Chemical Vapor Deposition process, *Journal of Heat Transfer*, 139 (8), 080901, 2017 (August) [*Corresponding author*]
43. K. Bellur, V. Konduru, E. Medici, D. Hussey, D. Jacobson, J. Allen, J. Lamanna, C.K. Choi, Visualization of the Evaporative/Condensation Phenomena in Cryogenic Propellants, *Journal of Flow Visualization and Image Processing*, 23 (1-2): 137~156 (2016) [*Corresponding author*]
44. F. Long, C.K. Choi, Atomic Force Microscopy (AFM) as a Powerful Tool to Study Temperature-dependent Polymer Film Formation, *Journal of Heat Transfer*, 139 (2), 020904, 2017 (Feb) [*Corresponding author*]
45. CH Jeong, S.H. Lee, DH Shin, V. Konduru, J. Allen, C.K. Choi, High-speed SPR Visualization of Frost Propagation Inside of Subcooled Water Droplet, *Journal of Heat Transfer*, 139 (2), 020905, 2017 (Feb) [*Corresponding author*]
46. D.H. Shin, J. Allen, S.H. Lee, C.K. Choi, Observations of internal flow and interface evolution in an evaporating nanofluid sessile droplet in the presence of an entrapped air bubble, *Scientific Reports*, 6, Article #: 32767, 2016 [*Corresponding author*]
47. V. Konduru, D.H. Shin, J. Allen, S.H. Lee, YK Choi, S Cheon, K. Kihm, C.K. Choi, High-speed Surface Plasmon Resonance (SPR) Reflectance Imaging of Drop Coalescence during Condensation and Evaporation, *Journal of Heat Transfer*, 138 (8), 080903, 2016 (August) [*Corresponding author*]
48. V. Konduru, K. Bellur, E. Medici, J. Allen, C.K. Choi, D. Hussey, D. Jacobson, J. Leao, J. McQuillen, J. Hermanson, Examining Liquid Hydrogen Wettability using Neutron Imaging, *Journal of Heat Transfer*, 138 (8), 080901, 2016 (August) [*Corresponding author*]
49. D.H. Shin, M. Mamun, J. Almonte, C. Margraves, S.H. Lee, YT Kang, C.K. Choi, Non-Invasive Method to Predict Viscosity and Size using Total Internal Reflection

- Fluorescence Microscopy (TIRFM) Imaging, *Microfluidics and Nanofluidics*, 20:45, 2016 (March) [Corresponding author]
50. K. Bellur, E.F. Medici, M. Kulshreshtha, V. Konduru, D. Tyrewala, A. Tamilarasan, J. McQuillen, J. Leao, D.S. Hussey, D.L. Jacobson, J. Scherschligt, J.C. Hermanson, C.K. Choi, J. Allen, A New Experiment for Determining Evaporation and Condensation Coefficients of Cryogenic Propellants, *Cryogenics*, 74, 131~137, 2016 (March)
  51. S. Wang, O. Jeon, P. G. Shankles, Y. Liu, E. Alsberg, S. T. Retterer, B.P. Lee, C.K. Choi, *In-situ* photopolymerization of monodisperse and discoid oxidized methacrylated alginate microgels in a microfluidic channel, *Biomicrofluidics*, 10, 011101, 2016 (February) [Corresponding author]
  52. K. Bellur, V. Konduru, M. Kulshreshtha, D. Tyrewala, E. Medici, J. Allen, C.K. Choi, D. Hussey, D. Jacobson, J. Leao, J. McQuillen, J. Hermanson, A. Tamilarasan, Contact Angle Measurement of Liquid Hydrogen (LH<sub>2</sub>) in Stainless Steel and Aluminum Cells, *Journal of Heat Transfer*, 138(2), 020904, 2016 (February) [Corresponding author]
  53. C.H. Jeong, J.B. Lee, S.H. Lee, J. Lee, S.M. You, C.K. Choi, Frosting Characteristics on Hydrophilic and Superhydrophobic Copper Surfaces, *Journal of Heat Transfer*, 138(2), 020913, 2016 (February) [Corresponding author]
  54. J. Moon, C.K. Choi, J. Allen, S.H. Lee, A Rebounding Droplet Impacting on a Static Droplet, *Journal of Heat Transfer*, 137, 080909, 2015 (August) [Corresponding author]
  55. K. Bellur, E. Medici, J. Allen, C.K. Choi, J. Hermanson, A. Tamilarasan, D. Hussey, D. Jacobson, J. Leao, J. McQuillen, Neutron Radiography of Condensation and Evaporation of Hydrogen in a Cryogenic Condition, *Journal of Heat Transfer*, 137, 080901, 2015 (August) [Corresponding author]
  56. J. Lee, J. Moon, M. Cho, S.H. Lee, C.K. Choi, Characteristics of Droplet Growth Behavior on Hydrophobic Micro-textured Surfaces, *Journal of Heat Transfer*, 137, 080906, 2015 (August) [Corresponding author]
  57. DH Shin, S.H. Lee, J. Allen, C.K. Choi, Visualization of an evaporating thin layer during THE evaporation of A nanofluid droplet, *Langmuir*, 31, 1237-1241, 2015 (February), [Corresponding author]
  58. DH Shin, J. Allen, C.K. Choi, YT Kang, S.H. Lee, Fringe Pattern Visualization along the Contact Line during Nanofluid Drop Evaporation, *Journal of Heat Transfer*, 136, 080913, 2014 (August), [Corresponding author]
  59. T. Shokuhfar, A. Hamlekhan, J.Y. Chang, C.K. Choi, C. Sukotjo, C. Friedrich, Biophysical Evaluation of Cells on Nanotubular Surfaces: The Effects of Atomic Ordering and Chemistry, *International Journal of Nanomedicine*, 9 (1), 3737-3748, 2014 (August)
  60. JB Lee, JW Lee, S.H. Lee, YT Kang, C.K. Choi, Dependency of Condensation Forms on Wettability, *Journal of Heat Transfer*, 136, 080911, 2014 (August), [Corresponding author]
  61. JY Jung, YT Kang, C.K. Choi, Detection & Collection of Bacteria in an Evaporating Sessile Droplet, *Journal of Heat Transfer*, 136, 080902, 2014 (August), [Corresponding author]

62. J. Chang, S. Wang, J. Allen, S.H. Lee, ST Chang, YK Choi, C. Friedrich, C.K. Choi, A Novel Dynamic Cell Culture System using Electro-Osmosis Diode pumping, *Biomicrofluidics*, 8, 044116, 2014, [Corresponding author]
63. HR Gwon, ST Chang, C.K. Choi, JY Jung, JM Kim, S.H. Lee, Development of a New Contactless Dielectrophoresis System for Active Particle Manipulation using Movable Liquid Electrode, *Electrophoresis*, 35(14), 2014-2021, 2014 (July), [Corresponding author]
64. DH Shin, C.K. Choi, YT Kang, S.H. Lee, Local aggregation characteristics of a nanofluid droplet during evaporation, *International Journal of Heat and mass Transfer*, 72, 336-344, 2014 (May)
65. M. Ha, J. Lee, C.K. Choi, J. Kim, Y. Choi, Understanding the Structure of Table-Type Dolmens Using Numerical Analysis, *Journal of Mechanical Science and Technology*, 28 (5), 1789-1795, 2014 (May)
66. I Pineda, C.K. Choi, YT Kang, CO<sub>2</sub> gas absorption by CH<sub>3</sub>OH based nanofluid in an annular contractor at low rotational speeds, *International Journal of Greenhouse Gas Control*, 23, 105-112, 2014 (April)
67. C.K. Choi, J. Liggett, R. Donnell, K. Kihm, J. Kim, A. Noegel, S. Baek, Nonsteroidal anti-inflammatory drugs suppress structural protein Nesprin-2 expression in colorectal cancer cells, *Biochimica et Biophysica Acta*, 1840 (1), 322-31, 2014 (January),
68. A. Kumar, H. Takatsuki, C.K. Choi, A Sen, E. Blough, Glucose Driven Catalytic Nanomotor to Create Motion at Micro Scale, *Journal of Biotech Research*, 5, 35-39, 2013 (October)
69. L. Chevres, DH Shin, J. Hernandez, C.K. Choi, J. Allen, S.H. Lee, Fringe Pattern Visualization of Contact Lines during evaporation of nanofluid droplets, *Journal of Heat Transfer*, 135(8), 080912, 2013 (August), [Corresponding author]
70. J. Moon, DH Shin, S.H. Lee, C.K. Choi, Dynamics of a Non-newtonian Droplet Impact on a Micro-Textured Surface, *Journal of Heat Transfer*, 134, 080905, 2012 (August), [Corresponding author]
71. P. Siuti, S. Retterer, C.K. Choi, M. Doktycz, Enzyme Reactions in Nanoporous, Picoliter Volume Containers, *Analytical Chemistry*, 84 (2), 1092-1097, 2012 (January)
72. C. Margraves, K. Kihm, S. Yoon, C.K. Choi, S. Lee, J. Liggett, S. Baek, Simultaneous Measurements of Cytoplasmic Viscosity and Intracellular Vesicle Sizes for Live Human Brain Cancer Cells, *Biotechnology and bioengineering* Vol. 108 (10), 2504-2508, 2011 (October), [Corresponding author]
73. J. B. Lee, S.H. Lee, C.K. Choi, Dynamic spreading of a droplet impinging on micro-textured surfaces, *Journal of Heat Transfer* Vol. 133 (8), 080905, 2011(August), [Corresponding author]
74. J. Chang, B. Plunger, J. Kim, C.K. Choi, Biological Temperature Sensing of Focal Contacts, *Journal of Heat Transfer* Vol. 133 (8), 080907, 2011(August), [Corresponding author]



75. D. Shin, T. Shokuhfar, C.K. Choi, S.H. Lee, C. Friedrich, Wettability changes of TiO<sub>2</sub> nanotube Surfaces, *Nanotechnology* Vol. 22, 315704, 2011(August), [Corresponding author]
76. G. Park, T. Masi, C.K. Choi, H. Kim, J. Becker, T. Sparer, Chapter 26 - Screening for Novel Constitutively Active CXCR2 Mutants and Their Cellular Effects, *Methods in Enzymology*, Vol. 485, 481-497, 2010 (December)
77. D. Shin, S.H. Lee, and C.K. Choi, S. Retterer, Evaporation Characteristics of Sessile Droplets on Nano-patterned Hydrophobic Surfaces, *Journal of Heat Transfer* Vol. 132 (8), 800905-1, 2010 (August), [Corresponding author]
78. C.K. Choi, J. Fowlkes, S. Retterer, P. Situ, S. Iyer, M. Doktycz, Surface Charge- and Space-dependent Transport of Proteins in Crowded Environments of Nanotailored Posts, *ACS Nano* Vol. 4(6), 3345-3355, 2010 (June)
79. S. Retterer, P. Siuti, C.K. Choi, M. Doktycz, Development and Fabrication of Nanoporous Silicon-based Bioreactors within a Microfluidic Chip, *Lab-on-a-Chip*, Vol.10, 1174-1181, 2010 (May)
80. D. Shin, S.H. Lee, C.K. Choi, S. Retterer, The Evaporation and Wetting Dynamics of Sessile Water Droplets on Submicron-scale Patterned Silicon Hydrophobic Surfaces, *Journal of Micromechanics & Microengineering* 20, 055021, 2010 (May), [Corresponding author]
81. P. Patel, C. K. Choi, D. Meng, Superhydrophilic surfaces for antifogging and antifouling microfluidic device, *Journal of Laboratory Automation*, Vol. 15 (2), 114-119, 2010 (April)
82. C. K. Choi, M. Sukhthankar, C. Kim, S. Lee, A. English, K. Kihm, S. J. Baek, Cell adhesion property affected by cyclooxygenase and lipoxygenase: Opto-electric approach, *Biochemical and Biophysical Research Communications*, Vol.391, 1385-1389, 2010 (January)
83. M. Sukhthankar, C. K. Choi, A. English, J. Kim, S. Baek, A potential proliferative gene, NUDT6, is down-regulated by green tea catechins at the posttranscriptional level, *the Journal of Nutritional Biochemistry*, Vol.21, 98-106, 2010 (February)
84. B. Green, R. Steward, I. Kim, C. K. Choi, P. Liaw, K. Kihm, Y. Yokoyama, In situ observation of pitting corrosion of the Zr<sub>50</sub>Cu<sub>40</sub>Al<sub>10</sub> bulk metallic glass, *Intermetallics*, Vol. 17, 568 -571, 2009
85. G. Park, C. K. Choi, A. English, T. Sparer, Electrical impedance measurements predict cellular transformation, *Cell Biology International*, Vol. 33, Issue 3, 429-433, 2009
86. S. Lee, J. Bahn, C.K. Choi, N. Whitlock, A. English, S. Safe, S. Baek, ESE-1/EGR-1 Pathway Plays a Role in Tolfenamic Acid-induced Apoptosis in Colorectal Cancer Cells, *Molecular Cancer Therapeutics*, Vol. 7, 3739-3750, 2008
87. C. K. Choi, C. H. Margraves, K. D. Kihm, and A.E. English, Multicontrast Microscopy Technique to Dynamically Fingerprint Live-cell Focal Contacts during Exposure and Replacement of a Cytotoxic Medium, *Journal of Biomedical Optics*, Vol. 13, Issue 5, 054069, 2008 [selected for the November 1, 2008 issue (Vol. 16, Issue: 9) of Virtual Journal of Biological Physics Research.]

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43. S. Ahangar, CK Choi, “Surface Plasmon Resonance Imaging: A Technique to Reveal the Mechanism of Dropwise Condensation”, 6<sup>th</sup> Micro/Nanoscale Heat & Mass Transfer International Conference, Dalian, China, July 8~10, 2019. (Abstract & Presentation)
44. CK Choi, “A Student-centered Learning Approach based on Peer Presentations”, 2019 UPTLC, Michigan Technological University, Houghton, MI, May 9~10, 2019 (Abstract, Proposal, & Poster Presentation)
45. S. Ahangar, S. Lee, C.K. Choi, “High-speed Surface Plasmon Resonance (SPR) Imaging on Phase Changes,” 4<sup>th</sup> Thermal & Fluids Engineering Conference, Las Vegas, NV, USA, April 14~17, 2019
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50. D. S Hussey, K. Bellur, E. F. Médici, C. K. Choi, J. Hermanson, D. Jacobson, J. LaManna and J. S. Allen, “Determining the evaporation and condensation coefficients of cryogenic propellants”, 11th World Conference on Neutron Radiography, Sydney, Australia, September 3 - 7, 2018. (Poster Presentation)
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90. J. Allen, C.K. Choi, J. Hermanson, E. Medici, J. McQuillen, M. Kassemi, J. Moder, A New Experiment for Determining Evaporative and Condensation Coefficients of Cryogenic Propellants, Space Cryogenics Workshop, Phoenix, Arizona, June 24~26, 2015
91. JH Moon, C.K. Choi, SH. Lee, Deformation and Rebound Behaviors of an Impinging Droplet on a Static Droplet on a Solid Surface, ASME-ATI-UIT 2015 Conference on Thermal Energy Systems, Napoli, Italy, May 17~20, 2015
92. J. S. Allen, C.K. Choi, E. F. Médici, K. Bellur, “A new experiment for determining evaporation and condensation coefficients of cryogenic propellants”, NASA Glenn Workshop on Accommodation coefficients, Cleveland, OH, November 20, 2014. (Oral presentation)
93. C.K. Choi, J. Allen, E. Medici, K. Bellur, J. Hermanson, A. Tamilarasan, D. Hussey, D. Jacobson, J. Leo, J. McQuillen, Neutron Bidography of Condensation and Evaporation of Hydrogen in a Cryogenic Condition, ASME-IMECE 2014, Montreal, ON, Canada, November 14~20, 2014 (Abstract, Poster, & Oral presentation)
94. D.H. Shin, M. Mamun, J. Almonte, C. Margraves, SH Lee, C.K. Choi, An Automatic Particle Tracking Method to Estimate Fluid Viscosity and Size of Nanoparticles Using Total Internal Reflection Fluorescence Microscopy, ASME-IMECE 2014, Montreal, ON, Canada, November 14~20, 2014 (Abstract & Oral presentation)
95. JB Lee, C.K. Choi, M. Cho, S. Lee, Dropwise Condensation on Superhydrophobic Micro-textured Surface, ASME-IMECE 2014, Montreal, ON, Canada, November 14~20, 2014 (Abstract & Poster presentation)

96. J. Moon, *C.K. Choi*, S. Lee, Inconsistent Phenomena between Rebound and Coalescence after a Drop-let Impact on a Static Droplet Deposited on a Solid Surface, ASME-IMECE 2014, Montreal, ON, Canada, November 14~20, 2014 (Abstract & Poster presentation)
97. J. Chang, S. Wang, *C.K. Choi*, Identification of Stemness of Mesenchymal Stem Cells by Using an Opto-electric Cellular Sensing System, US-Korea Conference 2014 (UKC2014), San Francisco, CA, August 6~9, 2014
98. *C.K. Choi*, How to meet industry demands: What Curriculum for Mechanical Engineering Should be needed?, KSME-ED 2014, Seoul, Korea, June 26~27, 2014 (Abstract & Oral presentation)
99. *C.K. Choi*, K. Kihm, Photogallery: Heat and Mass Transfer Visualization, AIAA/ASME Joint Thermophysics & Heat Transfer Conference, Atlanta, GA, June 16~20, 2014 (Oral Presentation)
100. J. Jung, Y.T. Kang, *C.K. Choi*, Bacteria Collection using PS Microspheres in an Evaporating Sessile Droplet, ASME-IMECE 2013, Sandi ago, CA, November 15~21, 2013 (Abstract & Poster presentation)
101. D.H. Shin, S.H. Lee, J. Allen, *C.K. Choi*, A Reverse Flow in a Nanofluid Droplet due to an Encapsulated Bubble, ASME-IMECE 2013, Sandi ago, CA, November 15~21, 2013 (Abstract & Poster presentation)
102. J.B. Lee, J.W. Lee, S.H. Lee, Y.T. Kang, *C.K. Choi*, Condensation From on Vertical Copper Plates with Different Contact Angles, ASME-IMECE 2013, Sandi ago, CA, November 15~21, 2013 (Abstract & Poster presentation)
103. D.H. Shin, S.H. Lee, J. Allen, *C.K. Choi*, Visualization of Contact Lines of Evaporating Nanofluids Droplets Using the Surface Plasma Resonance (SPR) Imaging, ASME 2013 Summer Heat Transfer Conference, Minneapolis, MN, July 14~19, 2013 (Abstract & Poster presentation)
104. D.H. Shin, J. Hernandez, S.H. Lee, J. Allen, *C.K. Choi*, Wettability changes and fringe patterns of contact lines due to the local aggregation effect of nanofluid droplets during evaporation, 8<sup>th</sup> International Conference on Multiphase Flow (ICMF), Jeju, Korea, May 26~31, 2013
105. L. Chevres, D.H. Shin, J. Hernandez, S.H. Lee, J. Allen, *C.K. Choi*, Fringe Pattern Visualization of Contact Lines, Summer Heat Transfer Conference, Puerto Rico, USA, July 8~12, 2012 (Poster & Oral presentation)
106. T. Shokuhfar, C. Friedrich, *C.K. Choi*, Titania Nanotubes for Growth Improvement of Biological Cells, Materials Research Society (MRS) 2012 Spring Meeting & Exhibit, Marquis – San Francisco, CA, April 9 ~ 13, 2012 (Abstract & Presentation)
107. T. Shokuhfar, *C.K. Choi*, C. Friedrich, Morphological Evaluation of Osteoblast-TiO<sub>2</sub> Nanotube Interfaces, TMS 141<sup>th</sup> Annual Meeting & Exhibition, Orlando, Florida, March 11 ~ 15, 2012 (Abstract & Presentation)
108. J. Moon, D.H. Shin, S.H. Lee, *C.K. Choi*, Non-Newtonian Droplet Impingement, American Society of Mechanical Engineering (ASME)-International Mechanical Engineering Congress & Exhibition (IMECE), Denver, Colorado, Nov. 11 ~ Nov. 11, 2011. (Poster presentation)

109. T. Shokuhfar, T. Daunais, R. Tewari, X. Zhong, W. Slough, W. Douglas, E. Blough, A. Kumar, R. Pandey, P. Bergstrom, C.K. Choi, S. Nalabothu, C. Friedrich, MicroRNA Nanosensor System for Early Detection of Disease in Humans, Lab-on-a-chip World Congress 2011, South San Francisco, CA, USA, September 29-30, 2011.
110. T. Shokuhfar, O. Mills, J.Y. Chang, C.K. Choi, C. Friedrich, Morphological Evaluation of (MC3T3) Cell Interaction on TiO<sub>2</sub> Nanotubes, *MRS*, Nov 30-Dec 2, 2010, Boston, MA.
111. J. Chang, B. Plunger, C.K. Choi, Microfluidic Galvanotaxis System to Examine Cell Migration's Ionic Dependence, ASME-JSME-KSME Joint Fluids Engineering Conference 2011, Hamamatsu, Japan, July 24-29.
112. K. Walczak, T. Shokuhfar, C.K. Choi, C. Friedrich, Bioinspired Sollar-Cell Based on Titanium Nanotubes with Bacteriorhodopsin, *27th Army Science Conference*, Orlando, FL, Nov 29-Dec 2, 2010.
113. C.K. Choi, K. Kihm, Opto-electric biosensor using Indium Tin Oxide electrodes, American Society of Mechanical Engineering (ASME)-International Mechanical Engineering Congress & Exhibition (IMECE), Vancouver, Canada, Nov. 12 ~ Nov. 18, 2010. (Abstract & Oral presentation)
114. J. Lee, S. Lee, C.K. Choi, Dynamic Spreading of a Droplet Impinging on Micro-Textured Surfaces, American Society of Mechanical Engineering (ASME)-International Mechanical Engineering Congress & Exhibition (IMECE), Vancouver, Canada, Nov. 12 ~ Nov. 18, 2010. (Poster presentation)
115. J. Chang, B. Plunger, C.K. Choi, Temperature effect on cell adhesion, American Society of Mechanical Engineering (ASME)-International Mechanical Engineering Congress & Exhibition (IMECE), Vancouver, Canada, Nov. 12 ~ Nov. 18, 2010. (Poster presentation)
116. T. Shokuhfar, C.K. Choi, C. Friedrich, Hydrophilic Nanotube Coating of Ti Implant Materials for Potential Rapid Bone Regeneration, Proceedings of BioMed2010, 5th Frontiers in Biomedical Devices Conference, Newport Beach, California, USA, September 20-21, 2010
117. D. Shin, S. Lee, C.K. Choi, Evaporation Characteristics of Sessile Water Droplet on Submicron-scale Patterned Silicon Hydrophobic Surfaces, Korean Society of Mechanical Engineering (KSME) – Thermal Engineering Division, Chonbuk, Korea, May 13 ~ 14, 2010
118. D. Shin, S. Lee, and C.K. Choi, Evaporation Characteristics of Sessile Droplets on Nano-patterned Hydrophobic Surfaces, American Society of Mechanical Engineering (ASME)-International Mechanical Engineering Congress & Exhibition (IMECE), Lake Buena Vista, Florida, USA, Nov. 13 ~ 19, 2009. (Poster presentation)
119. P. Siuti, C. K. Choi, J. D. Fowlkes, M. J. Doktycz, S. T. Retterer, Nano Enabled Synthetic Biology: Nanoporous Picoliter Volume Containers for Studying Biochemical Reactions, First Annual ORNL Biomedical Science & Engineering Conference (BSEC): Exploring the Intersections of Interdisciplinary Biomedical Research, Oak Ridge, TN, USA, March 18 ~ 19, 2009.

120. J. Liggett, C.K. Choi, R. Donnell, A. English, K. Kihm, S. Baek, Expression of NUANCE, a potential novel oncogene, is inhibited by nonsteroidal anti-inflammatory drugs (NSAIDs) in human colorectal cancer cells, FASEB Experimental Biology 2008, San Diego, California, April 5-9, 2008
121. S. Lee, N. Whitlock, C.K. Choi, A. English, S. Safe, and S. Baek, Tolfenamic Acid Increases EGR-1 Expression through a PKC/ERK Dependent Pathway in Human Colorectal Cancer Cells, FASEB Experimental Biology 2008, San Diego, California, April 5-9, 2008
122. C.K. Choi, C. Margraves, A. English, and K. D. Kihm, Opto-electric Biosensor To Examine In Vitro Toxicity Stimuli To Endothelial Cell Motility And Morphology, ASME 2007 Summer Biomedical Conference, Keystone, Colorado, June 20-24, 2007 (Abstract & Oral presentation)
123. C. Margraves, C.K. Choi, A. English, K. D. Kihm, Seungho Lee, & Seung J. Baek, Quantitative Imaging of Nanoparticles and intracellular trafficking of vesicles using Total Internal Reflection Fluorescence Microscopy, ASME 2007 Summer Biomedical Conference, Keystone, Colorado, June 20-24, 2007 (Poster presentation)
124. C.K. Choi, C. Margraves, and K. D. Kihm, Variabilities Affecting Near-Wall Diffusion of Nanoparticles Using 3D-TIRFM (Total Internal Reflection Fluorescence Microscopy), 6<sup>th</sup> International Symposium on Particle Image Velocimetry, Pasadena, California, September 21-23, 2005
125. J. S. Park, C.K. Choi, K. D. Kihm, Nano-PTV Using Cofocal Microscopy, Proceedings of 2004 ASME Heat Transfer/Fluids Engineering Summer Conference, Paper No. HT-FED2004-56653, July 2004
126. J. S. Park, C. K. Choi and K. D. Kihm, Nanoparticle Tracking Using CLSM (Confocal Laser Scanning Microscopy) & OSSM (Optical Serial Sectioning Microscopy) Imaging, 8<sup>th</sup> Heat Transfer Photogallery, International Mechanical Engineering Congress and Exhibition (IMECE), Washington, D.C., November 16-21, 2003 (Poster presentation)
127. J.S. Park, C. K. Choi and K. D. Kihm, Optically-Sectioned Micro PIV Measurement Using Confocal Laser Scanning Microscopy (CLSM), 7<sup>th</sup> Heat Transfer Photogallery, International Mechanical Engineering Congress and Exhibition (IMECE), New Orleans, Louisiana, November 17-22, 2002 [Best Poster Selection]

#### 4. Patents & Technology Disclosures

- J. S. Allen, C.K. Choi, E. F. Medici, D. S. Hussey, D. Jacobson, J. Leao, J. B. McQuilen, "Technique for Neutron Imaging of Condensation and Evaporation of Hydrogen in a Cryogenic Condition," NASA Disclosure of Invention and New Technology, August 2015
- C.K. Choi, S. Wang, "Encapsulating chondrocyte subpopulations in oxidized methacrylated alginate microgels to regenerate pericellular matrix," Michigan Tech Disclosure of Innovation and Industry Engagement, Nov. 2015

#### 5. Book Chapter

1. B. Plunger, T. Sparer, C.K. Choi, “Electrical Cell-Substrate Impedance Sensing for Measuring Cellular Transformation, Invasion, Migration, and Anticancer Compound Screening”, for the series of 'Cancer Metastasis-Biology and Treatment', Vol. 17, Springer (Sept. 2012)
2. C.K. Choi, G. Park, T. Sparer, “Micro-impedance measurement for cellular transformation and cancer treatment”, Biosensors and Molecular Technologies for Cancer Diagnostics, Avraham Herold and Keith E . Rasooly, Taylor & Francis 2012, Pages 609–628 Print ISBN: 978-1-4398-4165-5 (May, 2012)

## 6. Other Publications & Selected Press Media Coverage

1. N. Miljkovic, C.K. Choi, Konrad Rykaczewski, Heat Transfer Photogallery, *Journal of Heat Transfer*, Vol. 142, 030301, 2020
2. N. Miljkovic, C.K. Choi, Heat Transfer Photogallery, *Journal of Heat Transfer*, Vol. 141, 100301, 2019
3. C.K. Choi, N. Miljkovic, Heat Transfer Photogallery, *Journal of Heat Transfer*, Vol. 140, 080301, 2018
4. C.K. Choi, N. Miljkovic, Heat Transfer Photogallery, *Journal of Heat Transfer*, Vol. 140, 030301, 2018
5. C.K. Choi, K. Kihm, D. Pratt, Heat Transfer Photogallery, *Journal of Heat Transfer*, Vol. 139, 080301, 2017
6. C.K. Choi, K. Kihm, D. Pratt, Heat Transfer Photogallery, *Journal of Heat Transfer*, Vol. 139, 020301, 2017
7. C.K. Choi, K. Kihm, D. Pratt, Heat Transfer Photogallery, *Journal of Heat Transfer*, Vol. 138, 020301, 2016
8. C.K. Choi, K. Kihm, D. Pratt, Call for Photographs, *Journal of Heat Transfer*, Vol. 138, 028001, 2016
9. J. Allen, C.K. Choi, E. Medici, D. Hussey, D. Jacobson, J. Leao, J. McQuillen, Technique for Neutron Imaging of Condensation and Evaporation of Hydrogen in a Cryogenic Condition, Disclosure of Invention and New Technology to National Aeronautics and Space Administration, October 2015
10. C.K. Choi, K. Kihm, D. Pratt, Call for Photographs, *Journal of Heat Transfer*, Vol. 137, 088001, 2015
11. K. Kihm, C.K. Choi, D. Pratt, Heat Transfer Photogallery, *Journal of Heat Transfer*, Vol. 137, 080301, 2015
12. 2015 Heat Transfer Division (HTD) Newsletter covers activities of K-22 Visualization of Heat and Mass Transfer, chaired by C.K. Choi, June, 2015
13. K. Kihm, C.K. Choi, Heat Transfer Photogallery, *Journal of Heat Transfer*, Vol. 137, 020301, 2015

14. C.K. Choi, K. Kihm, D. Pratt, Call for Photographs, *Journal of Heat Transfer*, Vol. 137, 028002, 2015
15. 2014 Heat Transfer Division (HTD) Newsletter covers activities of K-22 Visualization of Heat and Mass Transfer, chaired by C.K. Choi, June, 2014
16. Michigan Tech News entitled “Seeing is Believing about in-vitro cell culture platform and opto-electric cellular sensing”, December 4, 2014
17. K. Kihm, C.K. Choi, D. Pratt, Heat Transfer Gallery, *Journal of Heat Transfer*, Vol. 136, 080301, 2014
18. C.K. Choi, “Vision for Cellular Researchers” in 2013-2014 ME-EM Annual Report
19. C.K. Choi, K. Kihm, Call for Photographs, *Journal of Heat Transfer*, Vol. 135, 080913, 2013
20. K. Kihm, C.K. Choi, Heat Transfer Gallery, *Journal of Heat Transfer*, Vol. 135, 080901, 2013
21. Television interview with WLUC TV-6, 6pm News, September 30 about “Award of NASA Grant: Space Technology Research Opportunities-Early Stage Innovations”, 2013
22. K. Kihm, C.K. Choi, Photogallery Heat and Mass Transfer Visualization, *Journal of Heat Transfer* Vol. 134, 088001, 2012
23. K. Kihm, C.K. Choi, Photogallery: Introduction, *Journal of Heat Transfer* Vol. 134, 080902, 2012
24. K. Kihm, C.K. Choi, Heat Transfer Gallery, *Journal of Heat Transfer* Vol. 133, 080901, 2011
25. C.K. Choi, [Top world research lab] Micro/Nano-Scale Fluidics and Energy Transport (MINSFET) Laboratory, *KSME Journal* 44:8, 2004 (Aug.) 21~23

## PROFESSIONAL SOCIETY SERVICE

### 1. Councilor

- **Technical Group H (Mechanical Engineering) Councilor**, *Korean-American Scientists and Engineers Association (KSEA)*. (06/2017~05/2020)

### 2. Editor

- **Associate Editor/Editorial Board**, *Journal of Mechanical Science & Technology Advances* (Since 2018)
- **Associate (Lead) Editor/Editorial Board**, *Journal of Flow Visualization and Image Processing* (Since 2016)
- **Guest editor**, *Journal of Heat Transfer- Photogallery* (2010~2020): K-22 Heat Transfer Visualization Committee traditionally sponsors Heat Transfer Photogallery Sessions in

Summer Heat Transfer Conference (SHTC) and ASME-International Mechanical Engineering Congress & Exhibition (IMECE) every year. Poster entries presented in both conferences are identified for publication in August issue of “Journal of Heat Transfer (JHT)” every year through the peer-reviewed evaluation process. Since 2015, special issues of Photogallery in Journal of Heat Transfer are increased to two (2), February and August issues each year. Photogallery entries presented in the conferences during summer are reviewed and published in the February issue and those in the IMECE conference are published in the August issue.

### **3. Journal Reviews**

- Langmuir (2008)
- Journal of Micromechanics & Microengineering (since 2008)
- Experiments in Fluids (Since 2009)
- Experimental Thermal and Fluid Science (2010)
- Transactions of the ASME-Journal of heat transfer (2011)
- Optics and Lasers in Engineering (2011)
- Nanotechnology (since 2011)
- Journal of Physics D: Applied Physics (Since 2011)
- Biofabrication (since 2011)
- American Society of Mechanical Engineering-Journal of Fluid Engineering (2011)
- Measurement Science and Technology (since 2012)
- Lab-on-a-chip (since 2013)
- American Society of Mechanical Engineering-Journal of Thermal Science and Engineering Applications (since 2013)
- International Journal of Heat and Mass Transfer (Since 2014)
- Biomedical Materials (Since 2015)
- Micromachines (Since 2015)
- The Korean Society of Automotive Engineers (Since 2014)
- Journal of Mechanical Science and Technology Advances (Since 2018)
- Nano (Since 2018)

### **4. Book Reviews:**

- Review for Book Proposal of “Droplet Wetting & Evaporation”, Elsevier, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB (2013)
- Review for “*Fundamentals of Thermodynamics*, 8e by Borgnakke and Sonntag”, Wiley (2014)

### **5. Proposals Reviewed:**



- Invited to review a scientific research proposal, entitled “Studies on the microscale flow in colloidal dispersions” submitted to the **Austrian Science Fund (FWF)**, Aug. 2009.
- Facility and Technology User proposal reviewer of “**Center for Nanophase Material Science (CNMS)**”, Oak Ridge National Laboratory (ORNL): Biannually since 2010.
- **NSF** -Drug Delivery SBIR/STTR Phase I Panel (02/07/2012, Arlington, VA)
- **NSF** Electronic Proposal Review (Chemical Structure, Dynamics and Mechanisms (CSDM) program in the Chemistry division): April 25, 2012
- **NASA** Postdoctoral Program (NPP): November 2016
- **NSF EBMS ERI Review: January, 2024**

## 6. Conference Organizer

- Program Co-Chair of the Mechanical, Aerospace, and Naval Engineering (MAN) Symposium, 2020 US-Korea Conference (Virtual, Dec. 14 ~ 17, 2020)
- Topic Organizer of Heat & Mass Transport Photogallery, 2019 ASME-IMECE (Salt Lake City, Utah, Nov. 8~14, 2019)
- Program Chair of the Mechanical, Aerospace, and Naval Engineering (MAN) Symposium, 2019 US-Korea Conference (Chicago, IL, Aug. 14 ~ 17, 2019)
- Track Organizer of Visualization of Heat Transfer, ASME 2019 SHTC (Bellevue, WA, July 14 ~ 17, 2019)
- Track Organizer of Heat & Mass Transfer Photogallery, 6<sup>th</sup> Micro/Nanoscale Heat & Mass Transfer International Conference (Dalian, China, July 8 ~ 10, 2019)
- Co-organizer of 1<sup>st</sup> Multi-Scale Heat Transfer Workshop (November 14-16, 2018, Dallas, TX, USA)
- Session Chair of the Mechanical, Aerospace, and Naval Engineering (MAN) Symposium, 2018 US-Korea Conference (Queens, NY, Aug. 1 ~ 4, 2018)
- Symposium Chair (& Session Chair) of Mechanical, Aerospace, and Naval Engineering (MAN), 2017 US-Korea Conference (Washington D.C., Aug. 9 ~ 12, 2017)
- Track Organizer (& Session Chair) of Heat Transfer Visualization, 2017 ASME-SHTC (Bellevue, Washington, July 9 ~ 12, 2017)
- Topic Organizer (& Session Chair) of Photogallery for Heat & Mass Transfer, 2016 ASME-IMECE (Phoenix, AZ, Nov. 11 ~ 17, 2016)
- Track Organizer (& Session Chair) of Heat Transfer Visualization, 2016 ASME-SHTC (Washington, DC, July 10 ~ 14, 2016)
- **Executive General Secretary**, 17<sup>th</sup> International Symposium of Flow Visualization (ISFV17), Tennessee, 2016

- Session Chair of Nanofluids, 2015 the 1<sup>st</sup> Pacific Rim Thermal Engineering Conference (Waikoloa, Hawaii, March 13~17)
- Topic Organizer (& Session Chair) of Photogallery for Heat & Mass Transfer, 2015 ASME-IMECE (Houston, TX, November 15~21, 2015)
- Session Chair & co-chair of Heat Transfer Photogallery, 2015 ASTFE (New York, NY, August 9~12, 2015)
- Topic Organizer (& Session Chair) of Heat & Mass Transfer Photogallery, 2014 ASME-IMECE (Montreal, Canada, November 14~20, 2014)
- Session Chair of Dual-use Technology in Engineering Education, KSME-Education 2014 (Seoul, Korea, June 26~27)
- Track Organizer of Photogallery Heat & Mass Transfer Visualization in AIAA/ASME Thermophysics & Heat Transfer Conference (Atlanta, GA, June 16~20, 2014)
- Topic Organizer & Session Chair of “Heat Transfer Photogallery (9-19)”, 2013 ASME-IMECE (San Diego, CA, Nov., 2013)
- Track Chair of “Visualization of Heat Transfer” in 2013 ASME Summer Heat Transfer Conference (Minneapolis, MN, July 14-19, 2013)
- Session Co-Organizer of “*Heat Transfer Photo-gallery*” in ASME-IMECE (Houston, TX, Nov. 9-15, 2012)
- Co-Organizer of the track of “*Visualization of Heat transfer (TRACK 14)*” in 2012 ASME Summer Heat Transfer Conference (Puerto Rico, USA, July 8-12, 2012)
- Session Co-Organizer of “*Heat Transfer Photo-gallery (24-7)*” in ASME-IMECE (Denver, CO, Nov. 11-17, 2011)
- Session Co-Organizer of “*Heat Transfer Photo-gallery (21-3-1)*” in ASME-IMECE (Vancouver, BC, Nov. 12-18, 2010)
- Session Co-Organizer of “*Heat Transfer Photo-gallery*” in ASME-IMECE (Lake Buena Vista, FL, Nov. 13-19, 2009)

## **7. Membership and Scientific Committee**

- American Society for Engineering Education (2019 ~ Present)
- K-22 Technical Committee Co-Chair, ASME-Heat Transfer Division (2018~ Present)
- Members of the Michigan Tech Academy of Teaching Excellence (2016 ~)
- Transforming Engineering Culture to Advance Inclusion and Diversity (TECAID) member (Aug. 2015 ~ Aug. 2018)
- American Society of Thermal and Fluids Engineers (ASTFE) (2014~2017)

- Korean-American Scientists and Engineers Association (KSEA) Member (2014~Present)
- K-22 Technical Committee Chair, ASME-Heat Transfer Division (2013~ 2018)
- Scientific Committee Member, International Conference on Heat Transfer and Fluid Flow. (2013 ~ 2020)
- Associate member of the *Center for Diagnostic Nanosystems* at Marshall University (2011~ 2013)
- K-22 visualization committee of the ASME's Heat Transfer Division (2009~ 2020)
- Proposal Review Committee of Center for Nanophase Material Science (CNMS), Oak Ridge National Laboratory (ORNL) (2009~Present)
- ASME member (2002~Present)

## **AWARDS, HONORS, & RECOGNITION**

1. Brain Pool fellowship by the Korean Federation of Science & Technology Societies (September 2021)
2. Best Paper Award in the program of the Mechanical, Aerospace, and Naval Engineering (MAN), 2020 US-Korea Conference (Virtual, Dec. 14 ~ 17, 2020)
3. JMST Best Paper Award 2019, Journal of Mechanical Science and Technology, December 2020.
4. ASME/ABET Mechanical Engineering Program Evaluator candidate, November 2019
5. Selected as one of top 11 excellence in Brain Pool Fellowship Achievement, October 2019
6. Provost's List for Excellent Student Evaluation for Spring 2019, Top 10% instructors among over 858 evaluated sections/instructors university-wide, Michigan Tech University, May 20, 2019
7. Featured in the Michigan Tech College of Engineering publication, Engineering Research 2017 (December 2017)
8. Brain Pool fellowship by the Korean Federation of Science & Technology Societies (March 2017)
9. Nominated in *Who's Who in America* (Oct. 2016)
10. Recipient of the 2016 Michigan Tech Distinguished Teaching Award in the Associate Professor or Professor category (April 29, 2016)
11. Women in Engineering ProActive Network President's award for outstanding accomplishments by the Mechanical Engineering departments involved in the NSF-funded project, Transforming Engineering Culture to Advance Inclusion and Diversity (TECAID). Involved universities are Michigan Tech, University of Oklahoma, Oregon State University, Perdue University, & Texas Tech University. (July 14, 2016)

12. Provost's List for Excellent Student Evaluation for Spring 2016, Top 10% instructors among over 1200 evaluated sections/instructors university-wide, Michigan Tech University, May 14, 2016
13. Inducted into the Michigan Tech Academy of Teaching Excellence (March 29, 2016)
14. Finalists for Michigan Tech's 2016 Distinguished Teaching Award in the Professor /Associate Professor category, Spring 2016
15. Provost's List for Excellent Student Evaluation for Fall 2015, Top 10% instructors among over 1200 evaluated sections/instructors university-wide, Michigan Tech University, Feb. 1, 2016
16. Awarded NIST Center for Neutron Research (NCNR) User Proposal Approval to access to Neutron Imaging Facility, Sept. 17, 2015 (Title: Determination of evaporation/condensation coefficients for methane in a cryogenic condition using neutron imaging)
17. Provost's List for Excellent Student Evaluation for Fall 2014, Top 10% instructors among over 1200 evaluated sections/instructors university-wide, Michigan Tech University, Feb. 1, 2015
18. Nominated as Symposium Executive General Secretary for 17<sup>th</sup> International Symposium for Flow Visualization (ISFV17, 2016), 2014
19. Awarded NIST Center for Neutron Research (NCNR) User Proposal Approval to access to Neutron Imaging Facility, May 2, 2014
20. Center for Nanophase Material Science (CNMS) User Proposal Award (CNMS2014-R19), Feb., 28, 2014
21. Michigan Tech. Research Excellence Fund (REF)-Research Seeding Grant Award, May 1, 2013
22. Nominated as finalists in the Outstanding Graduate Faculty Mentor Award by Graduate Student Government (GSG) of Michigan Tech., 2013
23. Distinguished Lecture Series sponsored by Sustainable Futures Institute, Chemical Engineering, MTU, 2011
24. Awarded Michigan Tech. Research Excellence Fund (REF), April 8, 2010
25. Center for Nanophase Material Science (CNMS) User Proposal Award (CNMS2010-007), November 22, 2009
26. Associate member in the Center for Diagnostic Nanosystems at Marshall University, 2009
27. Awarded Michigan Tech. Research Excellence Fund (REF), April 22, 2009
28. Outstanding Student in the College of Engineering, University of Tennessee, 2007

29. Korean Honor Scholarship from the Embassy of the Republic of Korea in the USA, September 8, 2006
30. Subject of “microscale optical imaging” as a 3-page article in KSME journal, 2004
31. Presentation was awarded by peer-reviewed selection committee of Experiments in Fluids, 6<sup>th</sup> *International Symposium on Particle Image Velocimetry*, Pasadena, California, September 21-23, 2005
32. Poster was awarded by peer-reviewed selection committee of Journal of Heat Transfer, IMECE, Washington, D.C., November 16-21, 2003
33. Best Poster Award, IMECE, New Orleans, Louisiana, November 17-22, 2002
34. Honorary Certificate from the President of Chungang University: [*Magna Cum Laude* in the College (1/445)], Feb., 26, 1999
35. Scholarship from Chungang University (1992/03, 1995/09, 1996/03, 1996/09, 1998/03, 2000/03, & 2000/09)
36. Received an Honorary Certificate from the Commander of the Army Corps (1993/12)
37. First Prize in an Intramural Oratorical Contest held in the Korean Army Corps (1993/06)

## **SERVICE ON CAMPUS**

1. Assessment Committee (2024~)
2. Assistant Dean Search Committee (2018~2019)
3. Faculty Hiring Search Committee (2018~2019)
4. Alternate MEEM Senate (2018~2021)
5. Faculty Development Committee (2016~2017)
6. Korean Student Association (KSA) Faculty Adviser (2009~2017)
7. Winnikow Fellowship Committee (Energy-Thermo-Fluids Area) (2010 ~ 2012)
8. Department Social Committee Member (2009 ~ present)
9. MEEM Graduate Student Seminar Committee: (2009 ~ 2011)
10. Departmental Faculty Hiring Committee (F2011, F2015~S2016)
11. The United Way Campus Campaign Solicitator in ME-EM (2011 ~ 2014)
12. Interview committee of the “Leading Scholar Award” finalists (F2011, S2024)
13. Course Coordinator of Thermodynamics (MEEM 2200): 2011 ~ 2021
14. Served as faculty tour guide for Preview Day (2011, 2012, & 2013)

## **INVITED TALKS**

1. Human-Animal Interface: Cultivated Meat as Alternative Proteins, Chung-Ang University, Invited by Prof. Lee, June 12 2024
2. 4<sup>th</sup> Industry Revolution, Chung-Ang University, Invited by Prof. Lee, June 12 2024
3. Cellular Agriculture: a safe and sustainable protein alternative at the human-animal interface, Kyungpook National University, Invited by Prof. Sohn, May 7, 2024
4. Bio-applications using Microfluidics and Optics, Hyupsung University, Invited by Prof. Han, December 14, 2023
5. International Research Network to Construct a Virtual Laboratory between Chung-Ang University and University of Utah, University of Utah, Invited by Prof. Park, August 8~12, 2023
6. Cultured Meat: Alternative Proteins, Pukyong National University, Invited by Prof. Kim, May 17, 2023
7. Cultured Meat: A Safe and Sustainable Protein Alternative at a Human-animal Interface, Gyeongsang National University, Invited by Prof. Yu, May 3, 2023
8. Visualization in Thermal and Fluidic Applications, Pukyong National University, Invited by Prof. Yoo, August 22~23, 2022
9. Cultured Meat: A Safe and Sustainable Protein Alternative at a Human-animal Interface, Gyeongsang National University, Invited by Prof. Kim, June 10, 2022
10. Cultured Meat: A Safe and Sustainable Protein Alternative at a Human-animal Interface, Seoul National University, Invited by Prof. Baek, June 2, 2022
11. Build-up of International Research Network between Chung-Ang University and Northwestern University, Northwestern University, Invited by Kenneth Parki, May 9~11, 2022
12. Assertion Evidence Approach: Professional Presentation, Chung-Ang University, Invited by Prof. Lee, November 30, 2021
13. Cultured Meat: A Safe and Sustainable Protein Alternative at a Human-animal Interface, Pohang University of Science and Technology, Invited by Prof. Park, October 18, 2021
14. Phase Changes and Heat Transfer in Heat-pipes, Aju University, Invited by Prof. Lee, October 14, 2021
15. Micro/Nanoscale Visualization Techniques and their Applications (8 lectures), Korea University, Invited by Prof. Kang, July 15 ~ July 24, 2019
16. Phase Changes using Surface Plasmon Resonance (SPR) Imaging, **Keynote** in 18<sup>th</sup> International Symposium on Flow Visualization, Zurich, Switzerland, June 26~29, 2018
17. Surface Plasmon Resonance (SPR) Imaging: Frost, Condensation, and Evaporation, Kyounghee University, Korea, Invited by Prof. Nam, September 11, 2017
18. “Introduction of “ $\mu$ -EOS Microscopic Visualization”: Focus on Surface Plasmon Resonance (SPR) Imaging in the Contact Line Region, KAIST, Korea, Invited by Prof. Lee, Aug. 25, 2017
19. “Introduction of the Microscale Electrical & Optical Sensing Laboratory: Focus on Phase Change Observations by Surface Plasmon Resonance (SPR) Imaging, International

- Distinguished Scholar Invitation Seminar in Pusan National University, Pusan, Korea,  
Invited by KC Kim, July 4, 2016
20. “Visualization on heat and mass transfers”, Multiscale Thermal Engineering Laboratory  
in Chung-Ang University, Seoul, Korea, Invited by Drs, Lee and Kim, Nov. 25, 2015
  21. “Evaporation and condensation of hydrogen and methane in a cryogenic condition”,  
Workshop on Advanced Thermal Engineering, KSME, Korea, November 26, 2015
  22. “Examination of drop evaporation and condensation by using surface plasmon resonance  
(SPR)”, Graduate seminar in Chung-Ang University, Seoul, Korea, Nov. 27, 2015
  23. “Evaporation and condensation of cryogenic liquid propellants”, KSEA-Northwest  
Regional Conference, Idaho Water Center, Boise, ID, Oct. 10-11, 2015
  24. “Low Volume Flow Rate Controls by Using a Diode Pump”, Korea University, Seoul,  
Korea, Invited by YT Kang, July 4, 2014
  25. “Flow Measurement Techniques by Using Diode Pumping”, 2<sup>nd</sup> International Symposium  
on Advanced Thermal/Fluid Engineering, Chung-Ang University, Seoul, Korea, July 3,  
2014
  26. “Diode Pumping: An Extremely Low Volume Flow Rate Microfluidic Platform”, Korea  
Institute of Machinery and Materials (KIMM), Daejeon, Korea, Invited by JH Lee, July  
2, 2014
  27. “Seeing Proteins, Cells, Particles, & Droplets”, Korea Institute of Science & Technology  
(KIST), Seoul, Korea, Invited by Dr. Lee, Aug 9, 2013
  28. “Dynamics of Water Droplets”, Seoul National University, Seoul, Korea, Invited by Dr.  
Kihm, August 5, 2013
  29. “Microscale Electrical & Optical Lab”, KyngHee University, Yongin, Kyounggi, Invited  
by College of Engineering, July 11 2013
  30. “Introduction to Bio-fluids and Application”, International Symposium on Advanced  
Thermal/Fluid Engineering, CAU, Seoul, Korea, June 8 2013
  31. “Biosensors: Proteins, DNA’s, Enzymes, & Cells”, Korea Institute of Ocean Science &  
Technology (KIOST), Daejon, Korea, Invited by Dr. Jung, June 3, 2013
  32. “Dynamics of Water Droplets”, Syracuse University, Syracuse, NY, invited by Dr.  
Shalabh Maroo, October 25-26, 2012
  33. “Simultaneous Optical and Electrical Cellular Sensing”, University of Wisconsin-  
Madison, Madison, Wisconsin, invited by Dr. Brenda Ogle, April 4-5, 2012
  34. “Sub-micron Post Arrays and Pico-liter Nanoporous Containers”, University of  
Maryland, College Park, Maryland, invited by Dr. BT Han, Feb.8 2012

35. "Cellular Temperature Sensing", International Workshop (or Colloquium) on Multiscale Fluids Engineering hosted by Sogang University - Engineering Research Center (ERC), Seoul, Korea, 11/23/11
36. "Development of Nanoporous Silicon Bioreactors within a Microfluidic Platform", International Seminar on Advanced Thermal/Fluid Engineering hosted by CAU BK21, Seoul, Korea 11/20/11 ~ 11/22/11
37. "Diode pumping system in the *in-vitro* cell culture platform", Chungang University, Seoul, Korea, invited by Profs S.H. Lee, 5/17~20/2011
38. "Surface Dynamics: Hydro-, Cellular-, & Electro-Dynamics", Chemical Engineering, MTU, invited by Dr. A. Minerick, April 15 2011
39. "Cell mimics: Engineering World of Synthetic Biology", Seoul National University, Seoul, Korea, invited by K. Kihm, 7/1~2/2010
40. "Dynamic microfluidic cell culture platform", Chungang University, Seoul, Korea, invited by Profs S.H. Lee and JM Kim, 6/28~30/2010.
41. "Opto-electric Biosensors using Indium Tin Oxide" Chungang University, Seoul, Korea, invited by Profs Han and Chang, 10/07~08/2009.
42. "Opto-electric Biosensors using Indium Tin Oxide" Oak Ridge National Laboratory, Oak Ridge, TN, invited by Dr. M. Doktycz, 09/21~24/2009.
43. "Cellular Sensing and Cell adhesion," University of Tennessee, Knoxville, TN, invited by Prof. Tim Sparer, 06/18/2009.
44. "New history in MTU: Live cellular sensing," Chung-Ang University, Seoul, Korea, invited by Prof. Young-ki Choi & Hong-sun Ryu, 06/02/2009 & 06/04/2009.
45. "Simultaneous optical and electrical cellular sensing," The Kyoungbook National University, Daegu, Korea, invited by Prof. ChangHyun Sohn, 05/29/2009.
46. "Micro/Nano-scale electrical and optical sensing," The University of Suwon, Suwon, Korea, invited by Prof. Byoungchul Chun, 05/27/2009.
47. "New history in MTU: Micro-fluidics," Kyounghee University, Suwon, Korea, invited by Prof. Yong-Tae Kang, 05/27/2009.
48. "Cell mimics & Microfluidics," Chung-Ang University, Seoul, Korea, invited by Prof. Seunghyuk Lee, 05/26/2009.
49. "Simultaneous Opto-electric Cellular Sensing"; Chung-Ang University, Seoul, Korea, invited by Professor Seunghyuk Lee, 10/2007.
50. "Integrated dynamic Optical Imaging System"; Seoul National University, Seoul, Korea, invited by Professor Junsik Lee as a BK21 invited speaker, 10/2007.



51. "Microfluidic optical imaging and dynamic live cell detection"; Oak Ridge National Laboratory, invited by Dr. Mitch Doktycz, 5/2007.
52. "High Speed Confocal Laser Scanning Microscopy"; Chung-Ang University, Seoul, Korea, invited by Professors Young Ki Choi & Seunghyuk Lee, 05/2005.

## **GRADUATE & POSTDOCTORAL ADVISORS**

**Postdoc:** Drs. Doktycz (ORNL), Kihm, English, & Baek (UT)

**Graduate:** Drs. Kihm & English (UT, Ph.D), Dr. Lee (SNU, Post-Master), Dr. Choi (CAU, Master of Science)