



## CHANGHOON LEE

Professor

Department of Mechanical Engineering & School of Mathematics and Computing  
Yonsei University, Seoul, Korea

Office Address:

Yonsei University  
Department of Mechanical Engineering  
50 Yonsei-ro, Seodaemun-gu  
Seoul, 03722  
Korea

Phone/Fax/Email:

Office: 82-2-2123-6131  
Cell: 82-10-3355-2603  
Fax: 82-2-312-2159  
Email: clee@yonsei.ac.kr  
Homepage: euler.yonsei.ac.kr

### EDUCATIONAL BACKGROUND

- 1993 Ph.D. in Mechanical Engineering, University of California at Berkeley *Advisor: Prof. Philip S. Marcus*
- 1987 MS in Mechanical Engineering, Seoul National University
- 1985 BS in Mechanical Engineering, Seoul National University

## PROFESSIONAL EXPERIENCES

2017–2019 Head, Department of Computational Science & Engineering, Yonsei University  
2011–2015 Head, Department of Computational Science & Engineering, Yonsei University  
2009 – Pres. Professor, Department of Computational Science & Engineering, Yonsei University  
2000 – Pres. Associate Professor, Professor, Department of Mechanical Engineering, Yonsei University  
1997 – 2000 Assistant Professor, Department of Mechanical Engineering, The University of Seoul  
1994 – 1997 Postdoctoral Researcher, Department of Mechanical and Aerospace Engineering, UCLA  
1993 – 1994 Postdoctoral Researcher, Department of Mechanical Engineering, University of California at Berkeley

## AWARDS & HONORS

2020 Faculty Award of Outstanding Achievement (Research), Yonsei University  
2019 Faculty Award of Outstanding Achievement (Research), Yonsei University  
2018 Faculty Award of Best Educator, Yonsei University  
2016 NCFE Academic Award, National Congress on Fluids Engineering  
2015 Faculty Award of Outstanding Achievement (Education), Yonsei University  
2014 Award of Outstanding Contribution, The Korean Society of Mechanical Engineers  
2013 Faculty Award of Outstanding Achievement (Education), Yonsei University  
2008 Outstanding Teacher Award, Yonsei University  
2007 Namheon Academic Award, The Korean Society of Mechanical Engineers  
2005 Best Scientific Paper Award, The Korean Federation of Science and Technology Societies  
1988 National Fellowship for Study Abroad, Ministry of Education, Korea  
1985 Graduated with *Magna cum Laude*, Seoul National University

## PROFESSIONAL MEMBERSHIP

1991 – Pres. Member, The American Physical Society  
1997 – Pres. Member, The Korean Society of Mechanical Engineers  
2004 – Pres. Member, The Korean Society of Atmospheric Environment  
2003 – Pres. Member, The Korean Society of Engineering Education

## PROFESSIONAL ACTIVITIES

1. Editorial Board Member, *Physical Review Fluids*, 2016 – present
2. Editor, *Journal of Computational Science*, 2014 – present
3. Associate Editor, *Journal of Computational Fluids Engineering*, 2011 – present
4. Vice-Chair, The Korean Society for Computational Sciences and Engineering, 2010 – present
5. Advisory Board Member, The Symposium on Turbulence and Shear Flow Phenomena, 2011 – present
6. Chair, Division of Fluids Engineering, The Korean Society of Mechanical Engineers, 2017
7. Track Organizer, ASME-JSME-KSME Joint Fluids Engineering Conference 2019, 2019
8. International Advisory Committee member, The 9th Korea-Japan Thermal and Fluids Engineering Conference, 2016 – 2017

9. Organizing Committee Member, International Symposium on Fluid Machinery and Fluid Engineering, 2016
10. Editor-in-Chief, *Journal of the KSME*, 2011 – 2014
11. Associate Editor, *Transaction of the Korean Society of Mechanical Engineers*, 2009 – 2012
12. Fellow, The Korean Society of Mechanical Engineers, 2010 – present
13. Director of Academic Research, The Korean Society of Mechanical Engineers, 2010 – 2011
14. Organizing Committee Member, International Conference on Multiphase Flow, 2011 – 2013
15. Organizing Committee Member, ASME-JSME-KSME Joint Fluids Engineering Conference 2011, July, 2011
16. Organizing Committee Member, The 8th Korea-Japan Thermal and Fluids Engineering Conference, March, 2012
17. Organizing Committee Member, The 6th National Congress on Fluids Engineering, Busan, Aug., 2010
18. Advisory Board Member/Local Executive Committee Member, The 6th Symposium on Turbulence and Shear Flow Phenomena, Seoul, June, 2009
19. Organizing Committee Member, The 7th Korea-Japan Thermal and Fluids Engineering Conference, Sapporo, Oct., 2008
20. Organizing Committee Member, The 5th International Conference on Computational Fluid Dynamics, Seoul, July, 2008
21. Program Manager of Undergraduate Program, School of Mechanical Engineering, Yonsei University, 2007 – 2009
22. Organizing Committee Member, International Conference on Parallel Computational Fluid Dynamics 2006, Busan, 2006

## RESEARCH INTERESTS

Turbulence: Fundamentals of turbulence, Lagrangian turbulence, Particle-laden turbulence, Bubble-laden turbulence, Turbulent convection, Polymer-laden turbulence, Machine learning of turbulence

Computational Fluid Dynamics: Numerical algorithm, Schemes, Immersed boundary method, GPU parallelization

Environmental Applications: Air pollution modeling, Stochastic process, Large eddy simulation of atmospheric flows

## JOURNAL PUBLICATIONS (International, SCI)

1. Gihun Shim, Jongsu Kim & Changhoon Lee, "Path instability of a no-slip spheroidal bubble in isotropic turbulence," *Physical Review Fluids*, Vol. 6, 073603, 2021
2. Hyeon Shim & Changhoon Lee, "Two-way interaction between isotropic turbulence and dispersed bubbles," *Journal of Mechanical Science and Technology*, Vol. 35, pp. 1527-1537, 2021
3. Hyojin Kim, Junhyuk Kim, Sungjin Won & Changhoon Lee, "Unsupervised deep learning for super-resolution reconstruction of turbulence," *Journal of Fluid Mechanics*, Vol. 910, A29, 2021
4. Seulgi Lee & Changhoon Lee, "Behavior of settling particles in homogeneous shear turbulence," *Physical Review Fluids*, Vol. 5, 104306, 2020
5. Gihun Shim, Hyeongjun Park, Seulgi Lee & Changhoon Lee, "Behavior of microbubbles in homogeneous stratified turbulence," *Physical Review Fluids*, Vol. 5, 074302, 2020
6. Itzhak Fouxon & Changhoon Lee, "Large deviations, singularity, and lognormality of energy dissipation in turbulence," *Physical Review E (Rapid Communications)*, Vol. 101, 061101(R), 2020
7. Sungjin Won & Changhoon Lee, "Simulation of the mushroom cloud generated from a high-energy explosion using large-eddy simulation," *Journal of Mechanical Science and Technology*, Vol. 34(6), pp. 2443-2453, 2020
8. Hyunwook Park, Geunwoo Oh, Tae Seon Park, Changhoon Lee & Jung-Il Choi, "An immersed boundary formulation incorporating a two-layer wall model approach for RANS simulations with complex geometry," *Computers and Fluids*, Vol. 205, 104551, 2020
9. Jin-Tae Kim, Jaewook Nam, Shikun Shen, Changhoon Lee & Leonardo P. Chamorro, "On the dynamics of air bubbles in Rayleigh-Bénard convection," *Journal of Fluid Mechanics*, Vol. 891, A7, 2020
10. Junhyuk Kim & Changhoon Lee, "Deep unsupervised learning of turbulence for inflow generation at various Reynolds numbers," *Journal of Computational Physics*, Vol. 406, 109216, 2020.
11. Junhyuk Kim & Changhoon Lee, "Prediction of turbulent heat transfer using convolutional neural networks," *Journal of Fluid Mechanics*, Vol. 882, A18, 2020
12. Hojun Lee, Itzhak Fouxon & Changhoon Lee, "Sedimentation of a small sphere in stratified fluid," *Physical Review Fluids*, Vol. 4, 104101, 2019
13. Junghoon Lee & Changhoon Lee, "The effect of wall-normal gravity on particle-laden near-wall turbulence," *Journal of Fluid Mechanics*, Vol. 873, pp. 475-507, 2019
14. Battsetseg Gereltbyamba & Changhoon Lee, "Flow modification by inertial particles in a differentially heated cubic cavity," *International Journal of Heat and Fluid Flow*, Vol. 79, 108445, 2019
15. Itzhak Fouxon, Gihun Shim, Seulgi Lee & Changhoon Lee, "Multifractality of fine bubbles in turbulence due to lift," *Physical Review Fluids*, Vol. 3, 124305, 2018
16. Juwon Jang & Changhoon Lee, "Modification of turbulence and stratification of stably stratified turbulent channel flows by finite-size particles," *Physical Review Fluids*, Vol. 3, 124309, 2018
17. Xiaomin Pan, Changhoon Lee & Jung-Il Choi, "Efficient monolithic projection method for time-dependent conjugate heat transfer problems," *Journal of Computational Physics*, Vol. 369, pp. 191-208, 2018

18. Battsetseg Gereltbyamba & Changhoon Lee, "Behavior of settling inertial particles in a differentially heated cubic cavity at moderate Rayleigh number," *Journal of Mechanical Science and Technology*, Vol. 32, pp. 3169-3182, 2018
19. Juwon Jang & Changhoon Lee, "An immersed boundary method for nonuniform grids," *Journal of Computational Physics*, Vol. 341, pp. 1-12, 2017
20. Hojun Lee & Changhoon Lee, "Drag and torque acting on a sphere rotating in the streamwise direction for the Reynolds number range of  $0.02 < Re < 200$ ," *Journal of Mechanical Science and Technology*, Vol. 31, pp. 5285-5289, 2017
21. Xiaomin Pan, Kyoungyoun Kim, Changhoon Lee & Jung-Il Choi, "Fully decoupled monolithic projection method for natural convection problems," *Journal of Computational Physics*, Vol. 334, pp. 582-606, 2017
22. Sajjad-ur-Rehman, Rizwan-ul-Haq & Changhoon Lee, "Numerical study of non-Newtonian uid ow over an exponentially stretching surface: an optimal HAM validation," *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, Vol. 39, pp. 1589-1596, 2017
23. Seungho Song, Yibao Li, Changhoon Lee & Jung-Il Choi, "Effect of surface conditions on blast wave propagation," *Journal of Mechanical Science and Technology*, Vol. 30, pp. 3907-3915, 2016
24. Hyunwook Park, Xiaomin Pan, Changhoon Lee & Jung-Il Choi, "A pre-conditioned implicit direct forcing based immersed boundary method for incompressible viscous flows," *Journal of Computational Physics*, Vol. 314, pp. 774-799, 2016
25. Xiaomin Pan, Kyoungyoun Kim, Changhoon Lee & Jung-Il Choi, "A decoupled monolithic projection method for natural convection problems," *Journal of Computational Physics*, Vol. 314, pp. 160-166, 2016
26. Xiaomin Pan, Kyoungyoun Kim, Changhoon Lee & Jung-Il Choi, "Analysis of velocity-components decouple projection method for the incompressible Navier-Stokes equation," *Computers and Mathematics with Applications*, Vol. 71, pp. 1722-1743, 2016
27. Rizwan Ul Haq, Sajjad ur-Rehman & Changhoon Lee, "Entropy generation analysis of non-Newtonian nanofluid with zero normal flux of nanoparticles at the stretching surface," *Journal of the Taiwan Institute of Chemical Engineers*, Vol. 63, pp. 226-235, 2016
28. Jung-Il Choi, Yongnam Park, Ohjoon Kwon & Changhoon Lee, "Interparticle collision mechanism in turbulence," *Physical Review E*, Vol. 93, 013112, 2016
29. Sajjad ur-Rehman, Sohail Nadeem & Changhoon Lee, "Series solution of magnetohydrodynamic boundary layer flow over bidirectional exponentially stretching surfaces," *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, Vol. 38, pp. 443-453, 2016
30. Itzhak Fouxon, Yongnam Park, Roei Harduf & Changhoon Lee, "Inhomogeneous distribution of water droplets in cloud turbulence," *Physical Review E*, Vol. 92, 033001, 2015
31. Sangro Park & Changhoon Lee, "Analysis of coherent structures in Rayleigh-Bénard convection," *Journal of Turbulence*, Vol. 16, pp. 1162-1178, 2015
32. Sangro Park, Younghoon Jung & Changhoon Lee, "Numerical simulation of mixed convection in vertical concentric cylinders," *Journal of Mechanical Science and Technology*, Vol. 29, pp. 4745-4755, 2015

33. Sohail Nadeem, Rizwan Ul Haq & Changhoon Lee, "MHD boundary layer flow over an unsteady shrinking sheet: analytical and numerical approach," *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, Vol. 37, pp. 1339-1349, 2015
34. Junghoon Lee & Changhoon Lee, "Modification of particle-laden near-wall turbulence: Effect of Stokes number," *Physics of Fluids*, Vol. 27, 023303, 2015
35. Hea Eun Lee & Changhoon Lee, "Behavior of particles in turbulence over a wavy boundary," *International Journal of Multiphase Flow*, Vol. 67, pp. 118-131, 2014
36. Sohail Nadeem, M. A. Sadiq, Jung-il Choi & Changhoon Lee, "Exponentially stagnation point flow of non-Newtonian nanofluid over an exponentially stretching surface," *International Journal of Nonlinear Science and Numerical Simulation*, Vol. 15(3-4), pp. 171-180, 2014
37. Yongnam Park & Changhoon Lee, "Gravity-driven clustering of inertial particles in turbulence," *Physical Review E (Rapid Communication)*, Vol. 89, 061004(R), 2014
38. Kiyoun Moon, Jeong-Min Hwang, Byung-Gu Kim, Changhoon Lee & Jung-il Choi, "Large-eddy simulation of turbulent flow and dispersion over a complex urban street canyon," *Environmental Fluid Mechanics*, Vol. 14, pp. 1381-1403, 2014
39. Sohail Nadeem, Rizwan Ul Haq, Noreen Sher Akbar, Changhoon Lee & Zafat Hayat Khan, "Numerical study of boundary layer flow and heat transfer of Oldroyd-B nanofluid towards a stretching sheet," *PLOS ONE*, Vol. 8, e69811, 2013
40. Sohail Nadeem, Sadaf Ashiq, Noreen S. Akbar & Changhoon Lee, "Peristaltic flow of hyperbolic tangent fluid in a diverging tube with heat and mass transfer," *Journal of Energy Engineering*, Vol. 139, pp. 124-135, 2013
41. Noreen Sher Akbar, Sohail. Nadeem & Changhoon Lee, "Characteristics of Jeffrey fluid model for peristaltic flow of chyme in small intestine with magnetic field," *Results in Physics*, Vol. 3, pp. 152-160, 2013
42. Noreen Sher Akbar, Sohail. Nadeem, Changhoon Lee, Zafar Hayat Khan & Rizwan Ul Haq, "Numerical study of Williamson nano fluid flow in an asymmetric channel," *Results in Physics*, Vol. 3, pp. 161-166, 2013
43. Youngho Suh & Changhoon Lee, "A numerical method for the calculation of drag and lift of a deformable droplet in shear flow," *Journal of Computational Physics*, Vol. 241, pp. 35-57, 2013
44. Abouelmagd H. Abdelsamie & Changhoon Lee, "Decaying versus stationary turbulence in particle-laden isotropic turbulence: Heavy particle statistics modifications," *Physics of Fluids*, Vol. 25, 033303, 2013
45. Noreen Sher Akbar, Sohail Nadeem & Changhoon Lee, "Biomechanical analysis of Eyring Prandtl fluid model for blood flow in stenosed arteries," *International Journal of Nonlinear Science and Numerical Simulation*, Vol. 14, pp. 345-353, 2013
46. Noreen Sher Akbar, Sohail Nadeem, Changhoon Lee & Zafar Hayat Khan, "Numerical simulation of nanoparticle fraction for the peristaltic flow of a six constant Jeffrey's fluid model," *Current Nanoscience*, Vol. 9, pp. 798-803, 2013
47. Sohail Nadeem, S. T. Hussain & Changhoon Lee, "Flow of a Williamson fluid over a stretching sheet," *Brazilian Journal of Chemical Engineering*, Vol. 30, pp. 619-625, 2013
48. Changhoon Lee, Yongnam Park & Jaedal Jung, "Source of acceleration intermittency in isotropic turbulence," *Journal of Mechanical Science and Technology*, Vol. 26, pp. 3843-3847, 2012

49. Sohail Nadeem, Ul Haq. Rizwan & Changhoon Lee, "MHD flow of a Casson fluid over an exponentially shrinking sheet," *Scientia Iranica*, Vol. 19(6), pp. 1550-1553, 2012
50. Sohail Nadeem, Abdul Rehman, Changhoon Lee & Jinho Lee, "Boundary layer flow of second grade fluid in a cylinder with heat transfer," *Mathematical Problems in Engineering*, Vol. 2012, 640289, 2012
51. Abouelmagd H. Abdelsamie & Changhoon Lee, "Decaying versus stationary turbulence in particle-laden isotropic turbulence: Turbulence modulation mechanism," *Physics of Fluids*, Vol. 24, 015106, 2012
52. Sohail Nadeem, Noreen Sher Akbar, M. Y. Malik & Changhoon Lee, "Peristaltic flow of a Jeffrey-six constant fluid in a uniform inclined tube," *International Journal for Numerical Methods in Fluids*, Vol. 69, pp. 1550-1565, 2012
53. Noreen Sher Akbar, Sohail Nadeem & Changhoon Lee, "Influence of heat transfer and chemical reaction on Williamson fluid model for blood flow through a tapered artery with a stenosis," *Asian Journal of Chemistry*, Vol. 24, pp. 2433-2441, 2012
54. K. Vajravelu, S. Sreenadh, K. Rajanikanth & Changhoon Lee, "Peristaltic transport of a Williamson fluid in asymmetric channels with permeable walls," *Nonlinear Analysis: Real World Applications*, Vol. 13, pp. 2804-2822, 2012
55. Sohail Nadeem & Changhoon Lee, "Boundary layer flow of nano fluid over an exponentially stretching surface," *Nanoscale Research Letters*, Vol. 7, p. 94, 2012
56. Sohail Nadeem, Abdul Rehman, K. Vajravelu, Jinho Lee & Changhoon Lee, "Axisymmetric Stagnation Flow of a Micropolar Nanofluid in a moving cylinder," *Mathematical Problems in Engineering*, Vol. 2012, 378259, 2012
57. Byung-Gu Kim, Changhoon Lee, Seokjun Joo, Ki-Cheol Ryu, Seogchel Kim, Donghyun You, & Woo-Sup Shim, "Estimation of roughness parameters within urban-like obstacle arrays," *Boundary-Layer Meteorology*, Vol. 139, pp. 457-485, 2011
58. Dong-Hyun Kim, Won-Eui Hong, Jae-Sang Ro, Seong Hyuk Lee, Changhoon Lee, & Seungho Park, "In-situ observation of phase transformation in amorphous silicon during Joule-heating induced crystallization process," *Thin Solid Films*, Vol. 519, pp. 5515-5522, 2011
59. K. Vajravelu, K.V. Prasad, Jinho Lee, Changhoon Lee, I. Pop, & Robert A. Van Gorder, "Convective heat transfer in the flow of viscous Ag-water and Cu-water nanofluids over a stretching surface," *International Journal of Thermal Sciences*, Vol. 50, pp. 843-851, 2011
60. Kyongmin Yeo, Byung-gu Kim & Changhoon Lee, "On the near-wall characteristics of acceleration in turbulence," *Journal of Fluid Mechanics*, Vol. 659, pp. 405-419, 2010
61. Yeontaek Choi, Yongnam Park & Changhoon Lee, "Helicity and geometric nature of particle trajectories in homogeneous isotropic turbulence," *International Journal of Heat and Fluid Flow*, Vol. 31, pp. 482-487, 2010
62. Byung-gu Kim, Jong Soo Kim & Changhoon Lee, "Lagrangian stochastic model for buoyant gas dispersion in a simple geometric chamber," *Journal of Loss Prevention in the Process Industries*, Vol. 22, pp. 995-1002, 2009
63. Yeontaek Choi, Byung-gu Kim & Changhoon Lee, "Alignment of velocity and vorticity and the intermittent distribution of helicity in isotropic turbulence," *Physical Review E*, Vol. 80, 017301, 2009

64. Kyongmin Yeo, Byung-gu Kim & Changhoon Lee, "Eulerian and Lagrangian statistics in stably stratified turbulent channel flows," *Journal of Turbulence*, Vol. 10, No. 17, pp. 1-26, 2009
65. Changhoon Lee, Taegee Min & John Kim, "Stability of a channel flow subject to wall blowing and suction in the form of a traveling wave," *Physics of Fluids*, Vol. 20, 1015313, 2008
66. Jaedal Jung, Kyongmin Yeo & Changhoon Lee, "Behavior of heavy particles in isotropic turbulence," *Physical Review E*, Vol. 77, 016307, 2008
67. Changhoon Lee, Byung-gu Kim & Seokryul Ko, "A new Lagrangian stochastic model for the gravity-slumping/spreading motion of a dense gas," *Atmospheric Environment*, Vol. 41, pp. 7874-7886, 2007
68. Sangbong Lee & Changhoon Lee, "Intermittency of acceleration in isotropic turbulence," *Physical Review E*, Vol. 71, 056310, 2005
69. Jung-Il Choi, Kyongmin Yeo & Changhoon Lee, "Lagrangian statistics in turbulent channel flow," *Physics of Fluids*, Vol. 16, pp. 779-793, 2004
70. Changhoon Lee, Kyongmin Yeo & Jung-il Choi, "Intermittent nature of acceleration in near-wall turbulence," *Physical Review Letters*, Vol. 92, art. no. 144502, 2004
71. Andrew M. Reynolds, Kyongmin Yeo & Changhoon Lee, "On the anisotropy of accelerations in turbulent flows," *Physical Review E*, Vol. 70, art. no. 017302, 2004
72. Changhoon Lee, "Stability characteristics of the virtual boundary method in three-dimensional applications," *Journal of Computational Physics*, Vol. 184, pp. 559-591, 2003
73. Changhoon Lee & Youngchwa Seo, "A New Compact Spectral Scheme for Turbulence Simulations," *Journal of Computational Physics*, Vol. 183, pp. 438-469, 2002
74. Changhoon Lee, & John Kim, "Control of viscous sublayer for drag reduction," *Physics of Fluids*, Vol. 14, No. 7, pp. 2523-2529, 2002
75. Changhoon Lee, "Large-eddy simulation of rough-wall turbulent boundary layers," *AIAA Journal*, Vol. 40, No 10, 2002
76. Changhoon Lee, Byung-gu Kim & Namhyun Kim, "A Lagrangian stochastic model for turbulent dispersion," *KSME International Journal*, Vol. 15, No. 12, pp. 1683-1690, 2001
77. Changhoon Lee, Namhyun Kim & John Kim, "Application of the Goore Scheme to turbulence control for drag reduction (I) - Improvement of the Goore Scheme," *KSME International Journal*, Vol. 15, No. 12, pp. 1572-1579, 2001
78. Changhoon Lee & John Kim, "Application of the Goore Scheme to turbulence control for drag reduction (II) - Application to turbulence control," *KSME International Journal*, Vol. 15, No. 12, pp. 1572-1579, 2001
79. Timothy W. Berger, John Kim, Changhoon Lee & Junwoo Lim, "Turbulent boundary layer control utilizing the Lorentz force," *Physics of Fluids*, Vol. 12, No. 3, pp. 631-649, 2000
80. Philip S. Marcus, T. Kundu & Changhoon Lee, "Vortex dynamics and zonal flows," *Physics of Plasmas*, Vol. 7, No. 5, pp. 1630-1640, 2000
81. Changhoon Lee, Byung-gu Kim & Namhyun Kim, "A simple Lagrangian pdf model for wall-bounded turbulent flows," *KSME International Journal*, Vol. 14, No. 8, pp. 900-911, 2000



82. Philip S. Marcus & Changhoon Lee, "A model for eastward and westward jets in laboratory experiments and planetary atmospheres," *Physics of Fluids*, Vol. 10, No. 6, pp. 1474-1489, 1998
83. Changhoon Lee, John Kim & Haecheon Choi, "Suboptimal control of turbulent channel flow for drag reduction," *Journal of Fluid Mechanics*, Vol. 358, pp. 245-258, 1998
84. Changhoon Lee, John Kim, David Babcock & Rodney Goodman, "Application of neural networks to turbulence control for drag reduction," *Physics of Fluids*, Vol. 9, No. 6, pp. 1740-1747, 1997
85. Philip S. Marcus & Changhoon Lee, "Jupiter's Great Red Spot and zonal winds as a self-consistent, one-layer, quasigeostrophic flow," *Chaos*, Vol. 4, pp. 269-286, 1994

## JOURNAL PUBLICATIONS (Domestic, in Korean)

1. Donghwi Kim & Changhoon Lee, "Direct numerical simulation of two-way interaction between inertial particles and stratified turbulence," *Journal of Computational Fluids Engineering*, Vol. 25, pp. 1-12, 2020
2. Gihun Shim, Seulgi Lee & Changhoon Lee, "Behavior of microbubbles in isotropic turbulence," *Journal of Computational Fluids Engineering*, Vol. 21, pp. 46-53, 2016
3. Seungho Song, Changhoon Lee & Jung-Il Choi, "Numerical simulation of initial fireball after nuclear explosion," *Journal of Computational Fluids Engineering*, Vol. 19, pp. 45-51, 2014
4. Hyunwook Park, Changhoon Lee & Jung-Il Choi, "An immersed boundary method for low Reynolds number flows," *Journal of Computational Fluids Engineering*, Vol. 18, pp. 34-41, 2013
5. Yoonhong Min, Sungwon Kang, Namkeun Huh, Changhoon Lee & Jungtaek Park, "Performance assessment of the RANS turbulence models in prediction of aerodynamic noise," *Journal of Computational Fluids Engineering*, Vol. 17, pp. 81-86, 2012
6. Hyunwook Park, Changhoon Lee & Jung-Il Choi, "Effect of wall proximity on drag and lift forces on a circular cylinder," *Journal of Computational Fluids Engineering*, Vol. 17, pp. 68-74, 2012
7. Yongnam Park & Changhoon Lee, "Modification of particle dispersion in isotropic turbulence by free rotation of particle," *Transactions B of KSME*, Vol. 34, pp. 665-670, 2010
8. Changhoon Lee, Jaedal Jung & Sunggi Cho, "Behavior of a heavy particle in the shear flow near a flat wall," *Transactions B of KSME*, Vol. 30, pp. 806-817, 2006
9. Changhoon Lee & Byunggu Kim, "Lagrangian dispersion model for dense gas in neutral atmospheric boundary layer," *Journal of the Korean Society for Atmospheric Environment*, Vol. 21, 2005
10. Byunggu Kim & Changhoon Lee, "Particle dispersion and effect of spin in the turbulent boundary layer flow," *Transactions B of KSME*, Vol. 28, pp. 89-98, 2004
11. Jung-Il Choi, Kyongmin Yeo & Changhoon Lee, "Lagrangian investigation of turbulent channel flow (I) - An assessment of particle tracking algorithms," *Transactions B of KSME*, Vol. 27, pp. 859-866, 2003
12. Jung-Il Choi, Kyongmin Yeo & Changhoon Lee, "Lagrangian investigation of turbulent channel flow (II) - Analysis of Lagrangian statistics," *Transactions B of KSME*, Vol. 27, pp. 867-876, 2003
13. Jaeho Choi & Changhoon Lee, "Numerical study of shear-enhanced turbulent dispersion," *Transactions B of KSME*, Vol. 25, pp. 944-951, 2001
14. Shin-Hyoung Kang, Ho-Sung Lee, Woo-Pyung Jeon & Changhoon Lee, "Viscous flows through screens normal to the uniform stream," *KSME Journal*, Vol. 3, pp. 146-152, 1989
15. Changhoon Lee & Shinhyung Kang, "Numerical calculation of flow and heat transfer in an axisymmetric reciprocating engine at its suction and compression stages," *Transactions of KSME*, Vol. 11, pp. 395-408, 1987

## APS DFD ANNUAL MEETING ABSTRACTS

1. Hyojin Kim, Junhyuk Kim, Sungjin Won & Changhoon Lee, “Super-resolution reconstruction of turbulence using unsupervised deep learning,” *73rd Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2020
2. Junhyuk Kim, Hyojin Kim & Changhoon Lee, “Modeling wall-shear stress of turbulent flows through deep reinforcement learning,” *73rd Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2020
3. Hojun Lee & Changhoon Lee, “Behavior of settling ellipsoidal microparticles in homogeneous isotropic turbulence,” *73rd Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2020
4. Seulgi Lee & Changhoon Lee, “Numerical investigation of finite-time singularity in particle-laden turbulence,” *73rd Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2020
5. Woongki Kang & Changhoon Lee, “Symmetry-breaking transition in natural convection flow between parallel vertical walls maintained at different temperature,” *73rd Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2020
6. Gihun Shim & Changhoon Lee, “Path instability of a spheroidal bubble in weak turbulence,” *73rd Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2020
7. Junghoon Lee & Changhoon Lee, “On the physical mechanism of the two-way interaction between polymers and near-wall turbulence,” *72nd Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2019
8. Junhyuk Kim & Changhoon Lee, “Turbulence inflow generation using generative adversarial network,” *72nd Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2019
9. Seulgi Lee & Changhoon Lee, “Behavior of heavy particles in shear turbulence under gravity,” *71st Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2018
10. Juwon Jang & Changhoon Lee, “The interaction between the finite-size particles and stably stratified turbulent channel flow,” *71st Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2018
11. Junhyuk Kim & Changhoon Lee, “Deep learning of turbulent heat transfer in channel flow,” *71st Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2018
12. Junghoon Lee & Changhoon Lee, “Effect of gravitational settling of small heavy particles on two-way interactions in near-wall turbulence,” *70th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2017
13. Hojun Lee & Changhoon Lee, “A numerical study of flow around a sedimenting particle in a linearly stratified fluid at small Reynolds numbers,” *70th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2017
14. Junghoon Lee & Changhoon Lee, “Modification of particle-laden horizontal channel turbulence,” *69th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2016
15. Changhoon Lee & Sangro Park, “Cell structures caused by settling particles in turbulent Rayleigh-Bénard convection,” *69th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2016

16. Juwon Jang & Changhoon Lee, "An immersed boundary method for nonuniform Cartesian grids," *69th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2016
17. Junghoon Lee & Changhoon Lee, "Near-wall turbulence modification by small, heavy particles in a horizontal channel flow," *68th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2015
18. Sangro Park & Changhoon Lee, "Motions of particles falling under gravity in a weakly turbulent Rayleigh-Bénard convection," *68th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2015
19. Junghoon Lee & Changhoon Lee, "Lagrangian statistics of inertial particles in near-wall turbulence," *67th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2014
20. Sangro Park & Changhoon Lee, "Analysis of vortical structures in turbulent natural convection," *67th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2014
21. Yongnam Park & Changhoon Lee, "Effect of gravity on the finite-size particle within spectral resolution," *67th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2014
22. Junghoon Lee & Changhoon Lee, "Effects of small particles on coherent structures in particle-laden near-wall turbulence," *66th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2013
23. Hyunwook Park, Changhoon Lee & Jung-II Choi, "An implicit immersed boundary method for low Reynolds number incompressible flows," *66th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2013
24. Seungho Song, Jung-II Choi, Yibao Li & Changhoon Lee, "Numerical simulations of blast/shock wave propagations after nuclear explosion," *66th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2013
25. Yongnam Park & Changhoon Lee, "Segregation of heavy particles by gravitational force," *66th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2013
26. Hea Eun Lee & Changhoon Lee, "Behavior of particles in turbulence over a wavy wall," *65th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2012
27. Junghoon Lee & Changhoon Lee, "Four-way coupling simulation of particle-laden turbulent channel flow," *65th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2012
28. Hyunwook Park, Kiyoung Moon, Randall McDermott, Ezgi Oztekin, Changhoon Lee & Jung-II Choi, "Near-wall modeling for large eddy simulation of convective heat transfer in turbulent boundary layers," *65th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2012
29. Sangro Park & Changhoon Lee, "A new explicit projection method for incompressible flows," *65th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2012
30. Yongnam Park & Changhoon Lee, "Effect of gravity on the preferential concentration of heavy particles," *65th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2012
31. Sangro Park & Changhoon Lee, "A new fully explicit algorithm for incompressible flows," *64th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2011
32. Junghoon Lee & Changhoon Lee, "Acceleration modification of near-wall turbulence by heavy particles," *64th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2011

33. Yongnam Park & Changhoon Lee, "Effect of gravity on the dispersion of heavy particles," *64th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2011
34. Abouelmagd Abdelsamie & Changhoon Lee, "Physical perspectives on the investigation of two-way interaction in particle-laden isotropic turbulence," *64th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2011
35. Youngho Suh & Changhoon Lee, "A new method for calculation of acting forces on a deformable droplet in shear flow," *64th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2011
36. Jungmin Hwang, Byunggu Kim & Changhoon Lee, "Large-eddy simulation of turbulent flows in an urban street canyon," *63rd Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2010
37. Junghoon Lee & Changhoon Lee, "Behavior of heavy particles in turbulent channel flow," *63rd Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2010
38. Yongnam Park, Yeontaek Choi & Changhoon Lee, "Geometric nature of particle trajectory in isotropic turbulence," *63rd Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2010
39. Ohjoon Kwon, & Changhoon Lee, "Effect of inter-particle collision in particle-laden homogeneous isotropic turbulence," *63rd Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2010
40. Youngho Suh, & Changhoon Lee, "Effects of deformation on drag and lift forces acting on a droplet in a shear Flow," *63rd Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2010
41. Byunggu Kim, & Changhoon Lee, "Large-eddy simulation of urban boundary layer flow over complex topologies," *62nd Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2009
42. Yongnam Park, & Changhoon Lee, "Decomposition of fluid acceleration by rotational and irrotational motion in isotropic turbulence," *62nd Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2009
43. Youngho Suh, & Changhoon Lee, "Calculation of drag and lift for a deformable droplet in a shear flow," *62nd Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2009
44. Yongnam Park, & Changhoon Lee, "On the modification of particle dispersion in isotropic turbulence by free rotation of particle," *61st Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2008
45. Sungki Cho, & Changhoon Lee, "Behavior of small heavy particles in isotropic turbulence in the presence of gravity," *61st Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2008
46. Changhoon Lee, Taeki Min & John Kim, "Stability of a channel flow subject to blowing and suction in the form of a traveling wave," *60th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2007
47. Yeontaek Choi & Changhoon Lee, "Helicity in isotropic turbulence," *59th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2006
48. Byunggu Kim & Changhoon Lee, "Direct numerical simulations of stably stratified turbulent boundary layers at high Re," *59th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2006
49. Yeontaek Choi & Changhoon Lee, "Numerical verification of the possibility of application of Clebsch transformation to the non-canonical turbulence," *58th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2005

50. Byunggu Kim & Changhoon Lee, "Turbulence suppression in a stably stratified boundary layer," *58th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2005
51. Changhoon Lee, "Acceleration, enstrophy and dissipation in isotropic turbulence," *58th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2005
52. Jaedal Jung & Changhoon Lee, "Dispersion of heavy particles in isotropic turbulence," *58th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2005
53. Kyungmin Yeo & Changhoon Lee, "On the modification of near-wall structures in stably stratified turbulence," *57th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2004
54. Byunggu Kim & Changhoon Lee, "A Lagrangian dense gas dispersion model for planetary boundary layer," *57th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2004
55. Kyungmin Yeo & Changhoon Lee, "On the anisotropy of Lagrangian acceleration in turbulence," *56th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2003
56. Andrew M. Reynolds, Kyungmin Yeo & Changhoon Lee, "On the accelerations in inhomogeneous turbulence," *56th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2003
57. Byunggu Kim & Changhoon Lee, "On the uniqueness of Lagrangian stochastic model in self-similar boundary layer," *56th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2003
58. Jung-Il Choi, Kyongmin Yeo & Changhoon Lee, "Fluid particle dispersion in turbulent channel flow," *55th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2002
59. Changhoon Lee, "Direct numerical simulation of rough-wall channel flows," *55th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2002
60. Changhoon Lee & John Kim, "Manipulation of viscous sublayer for drag reduction," *53rd Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2000
61. Youngchwa Seo & Changhoon Lee, "A new compact spectral scheme for turbulence simulations," *53rd Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2000
62. Changhoon Lee & John Kim, "Turbulent Boundary Layer Control Using the Goore Scheme," *51st Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 1998
63. Timothy Berger, Junwoo Lim, John Kim, Changhoon Lee & Haecheon Choi, "Turbulent Boundary Layer Control via the Lorentz Force," *50th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 1997
64. Changhoon Lee, John Kim & Haecheon Choi, "Feedback Control of Turbulent Boundary Layers for Drag Reduction," *50th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 1997
65. Philip Marcus & Changhoon Lee, "Creation of Jovian Zonal Winds by Forcing and Dissipation," *49th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 1996
66. Changhoon Lee, John Kim, David Babcock & Rodney Goodman, "Application of Neural Network to Turbulence Control," *49th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 1996
67. John Kim, Changhoon Lee, Timothy Berger, Junwoo Lim & Haecheon Choi, "Turbulence Control Using Electro-Magnetic Forces," *49th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 1996

68. John Kim, Changhoon Lee, Timothy Berger, Junwoo Lim & Haecheon Choi, "Effects of Electro-Magnetic Force on Near-Wall Turbulence," *48th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 1995
69. Changhoon Lee, John Kim, David Babcock & Rodney Goodman, "Application of Neural Network to Turbulence Control," *48th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 1995
70. Philip Marcus & Changhoon Lee, "Formation of large-scale zonal flows from small-scale forcings on a  $\beta$ -plane," *48th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 1995
71. Philip Marcus & Changhoon Lee, "Formation of Asymmetric Jets in a Rotating Flow," *47th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 1994
72. Philip Marcus & Changhoon Lee, "Vortices, Rossby Waves, and Jets," *47th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 1994
73. Changhoon Lee & Philip Marcus, "Onset of Chaos in a Rapidly Rotating Tank," *44th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 1991

## INVITED TALKS

1. Changhoon Lee, "Finite-time blowup in particle-laden turbulence," *Samsung Annual Forum 2020*, KAST, online, 2020
2. Changhoon Lee, "Deep learning of turbulence," *11th National Congress on Fluids Engineering*, Jeju, Korea, 2020
3. Changhoon Lee, "Finite-time blowup in particle-laden turbulence," *The 24th Frontier Scientists Workshop*, online, 2020
4. Changhoon Lee, "Unsupervised deep learning of turbulence," Seoul National University, Department of Mechanical Engineering, 2020
5. Changhoon Lee, "Deep learning of turbulence," *Korean Association for Particle and Aerosol Research 2019 Conference*, Yongpyung, Korea, 2019
6. Changhoon Lee, "Numerical study of particle-laden turbulence," *Emerging Technologies in Mechanical Engineering 2018*, Jeju, Korea, 2018
7. Changhoon Lee, "Direct numerical simulations of particle-turbulence interactions," *Tenth International Symposium on Turbulence and Shear Flow Phenomena*, Chicago, USA, 2017
8. Changhoon Lee, "Understanding turbulence through direct numerical simulation of particle-laden turbulence," *The 7th International Symposium on Fluid Machinery and Fluids Engineering*, Jeju, Korea, 2016
9. Changhoon Lee, "Numerical Study of Particle-Turbulence Interactions," *A3 Foresight Program "Workshop on Vortex Dynamics and Turbulence"*, 2016
10. Changhoon Lee, "Direct Simulation of Sedimenting Droplets in the Air," *2014 KIAPS International Symposium*, 2014
11. Changhoon Lee, Yongnam Park & Itzhak Fouxon, "Direct Numerical Simulation of Droplets Sedimenting in Cloud Turbulence," *The 10th Asian Computational Fluid Dynamics Conference*, 2014
12. Changhoon Lee, Yongnam Park & Itzhak Fouxon, "Effect of gravity on the interaction between turbulence and particles," *2014 Summer School and International Symposium on Fundamental Issues of Multiphase Flows*, 2014
13. Changhoon Lee, "Numerical Simulation of Particle-Laden Turbulence," Seoul National University, Department of Mechanical Engineering, 2014
14. Changhoon Lee, "Vortices and particles in turbulent flows," *International Conference on Boundary and Interior Layers*, 2012
15. Changhoon Lee, "Turbulence and Its Numerical Simulation," Choongang University, Department of Mathematics, 2012
16. Changhoon Lee & Junghoon Lee, "Near-wall characteristics of inertial particles suspended in vertical turbulent channel flow," *The Asian Symposium on Computational Heat Transfer and Fluid Flow*, 2011
17. Changhoon Lee, "Numerical Study of Particle-Turbulence Interactions," *The Korean Society of Industrial and Applied Mathematics Meeting*, 2010



18. Changhoon Lee, "Understanding Turbulence Using Direct Numerical Simulation," *Korean Mathematical Society-American Mathematical Society Joint Conference*, 2009
19. Changhoon Lee, "Urban Dispersion Prediction Model of Chemical and Biological Weapon," *Korean Society of Chemical, Biological and Radiological Defense Symposium*, 2009
20. Changhoon Lee, "ABEEK Program of Yonsei University Mechanical Engineering," *Korean Society of Mechanical Engineers Spring Conference*, 2009
21. Changhoon Lee, "DNS Study of Particle-laden Turbulence," *Korean Society of Mechanical Engineers Spring Conference*, 2008
22. Changhoon Lee, "Numerical Simulation of Turbulent Flows," Hanyang University, Department of Mechanical Engineering, 2004
23. Changhoon Lee, "Turbulence and Zonal Flow," Pohang Institute of Science and Technology, Department of Physics, 2004
24. Changhoon Lee, "A New Compact Spectral Scheme for Turbulence Simulations," Korea Advanced Institute of Science and Technology, Department of Mechanical Engineering, 2002
25. Changhoon Lee, "Zonal Flow Dynamics," Soongsil University, Department of Physics, 2001
26. Changhoon Lee, "Dispersion Model of Chemical and Biological Weapon in Urban Area," *Korean Society of Chemical, Biological and Radiological Defense Symposium*, 2001

## INTERNATIONAL CONFERENCE (other than APS)

1. Junhyuk Kim & Changhoon Lee, "Unsupervised learning for turbulent inflow generation," *ASME-JSME-KSME Joint Fluids Engineering Conference 2019*, San Francisco, USA, 2019
2. Junghoon Lee & Changhoon Lee, "Direct numerical simulation of Brownian polymers in near-wall turbulence," *Eleventh International Symposium on Turbulence and Shear Flow Phenomena*, Southampton, UK, 2019
3. Hyunwook Park, Jung-Il Choi, Tae Sun Park & Changhoon Lee, "An immersed boundary formulation with two layer based turbulent wall model for RANS simulation," *The 4th International Conference on Computational Design in Engineering*, Seoul, Korea, 2018
4. Sungjin Won & Changhoon Lee, "Numerical investigation of stably stratified turbulent channel flow using large eddy simulation," *The Ninth JSME-KSME Thermal and Fluids Engineering Conference*, Okinawa, Japan, 2017
5. Juwon Jang & Changhoon Lee, "Immersed boundary method for finite-size particle-laden channel flow with heat transfer," *The Ninth JSME-KSME Thermal and Fluids Engineering Conference*, Okinawa, Japan, 2017
6. Hojun Lee & Changhoon Lee, "Numerical simulation of stratified flow past a sphere," *International Conference on Computational Heat, Mass and Momentum Transfer*, Seoul, Korea, 2017
7. Hyeongjun Park & Changhoon Lee, "Modification of turbulence in stably stratified temperature distribution," *International Conference on Computational Heat, Mass and Momentum Transfer*, Seoul, Korea, 2017
8. Hyunwook Park, Jung-Il Choi, Changhoon Lee & Tae Seon Park, "An Immersed boundary formulation in a RANS closure for simulating turbulent flow and heat transfer," *The 7th International Symposium on Fluid Machinery and Fluids Engineering*, 2016
9. Myeongheum Kwon & Changhoon Lee, "Effect of particles on critical Rayleigh number in particle-Laden Rayleigh-Bénard convection," *The 7th International Symposium on Fluid Machinery and Fluids Engineering*, 2016
10. Gihun Shim, Seulgi Lee & Changhoon Lee, "Clustering of micro bubbles in isotropic turbulence," *The 7th International Symposium on Fluid Machinery and Fluids Engineering*, 2016
11. Sangro Park & Changhoon Lee, "Vortical structures and particles in Rayleigh-Bénard convection," *Ninth International Symposium on Turbulence and Shear Flow Phenomena*, 2015
12. Hyunwook Park, Changhoon Lee & Jung-Il Choi, "Implicit direct forcing for low Reynolds number flow," *Ninth International Symposium on Turbulence and Shear Flow Phenomena*, 2015
13. Junghoon Lee & Changhoon Lee, "Lagrangian statistics of inertial particles in near-wall turbulence," *Ninth International Symposium on Turbulence and Shear Flow Phenomena*, 2015
14. Xiaomin Pan, Changhoon Lee, Kyoungyoun Kim & Jung-Il Choi, "Stability of temporal accuracy of semi-implicit projection methods for the time-dependent incompressible Navier-Stokes equation," *The 8th International Congress on Industrial and Applied Mathematics*, 2015
15. Sangro Park & Changhoon Lee, "Interaction between solid particles and fine-scale motion in Rayleigh-Bénard convection," *ASME-JSME-KSME Joint Fluids Engineering Conference 2015*, 2015

16. Hojun Lee, Yongnam Park & Changhoon Lee, "Effect of gravity on the finite-size particles in isotropic turbulence," *ASME-JSME-KSME Joint Fluids Engineering Conference 2015*, 2015
17. Battsetseg Gereltbyamba & Changhoon Lee, "Behavior of inertial particles in the natural convection flow," *ASME-JSME-KSME Joint Fluids Engineering Conference 2015*, 2015
18. Xiaomin Pan, Changhoon Lee, Kyoungyoun Kim & Jung-Il Choi, "A semi-implicit fully decoupled method for time-dependent natural convection flows in enclosures," *ASME-JSME-KSME Joint Fluids Engineering Conference 2015*, 2015
19. Juwon Jang & Changhoon Lee, "Particle motion in the quiescent fluid and turbulent channel flow," *ASME-JSME-KSME Joint Fluids Engineering Conference 2015*, 2015
20. Kiyoun Moon & Changhoon Lee, "Large eddy simulation of stably stratified turbulent channel flow," *ASME-JSME-KSME Joint Fluids Engineering Conference 2015*, 2015
21. Seulgi Lee & Changhoon Lee, "Clustering of particles in homogeneous shear turbulence," *ASME-JSME-KSME Joint Fluids Engineering Conference 2015*, 2015
22. Junghoon Lee & Changhoon Lee, "Effect of gravity on particle behavior in horizontal turbulent channel flow," *ASME-JSME-KSME Joint Fluids Engineering Conference 2015*, 2015
23. Hyunwoo Chi & Changhoon Lee, "Numerical investigation of vortex motion using vortex filament method," *ASME-JSME-KSME Joint Fluids Engineering Conference 2015*, 2015
24. Seungho Song, Changhoon Lee & Jung-Il Choi, "The effect of surface obstacles on blast wave propagation," *ASME-JSME-KSME Joint Fluids Engineering Conference 2015*, 2015
25. Changhoon Lee, Yongnam Park & Itzhak Fouxon, "Direct Simulation of Sedimenting Droplets in the Air," *1st Joint Conference of A3 Foresight Program*, 2014
26. Seulgi Lee & Changhoon Lee, "DNS of homogeneous shear turbulent flow with suspended particles," *2014 International Aerosol Conference*, 2014
27. Juwon Jang & Changhoon Lee, "Direct numerical simulation of a finite particle motion in quiescent channel with the virtual boundary method," *2014 International Aerosol Conference*, 2014
28. Yongnam Park & Changhoon Lee, "Immersed boundary method for small-size particles in isotropic turbulence," *2014 International Aerosol Conference*, 2014
29. Xiaomin Pan, Changhoon Lee, Kyoungyoun Kim & Jung-Il Choi, "Analysis of a second-order accurate projection methods for the incompressible Navier-Stokes equations," *International Congress of Women Mathematicians*, 2014
30. Battsetseg Gereltbyamba & Changhoon Lee, "Numerical simulation of natural convection in a cubic cavity," *International Congress of Women Mathematicians*, 2014
31. Junghoon Lee & Changhoon Lee, "Particle-turbulence interaction in near-wall turbulence," *Eighth International Symposium on Turbulence and Shear Flow Phenomena*, 2013
32. Abouelmagd Abdelsamie & Changhoon Lee, "Stationary and decaying turbulence modulation by finite-size fully resolved particles," *International Conference on Multiphase Flow*, 2013

33. Junghoon Lee & Changhoon Lee, "Particle-turbulence interaction in near-wall turbulence," *International Conference on Multiphase Flow*, 2013
34. Yongnam Park & Changhoon Lee, "Effect of gravity on the dispersion of heavy particles," *International Conference on Multiphase Flow*, 2013
35. Jung-II Choi, Changhoon Lee & Jack Edwards, "Particle Re-suspension due to Human Walking," *The 8th KSME-JSME Thermal and Fluids Engineering*, 2012
36. Junghoon Lee & Changhoon Lee, "Acceleration modification of near-wall turbulence by heavy particles," *The 8th KSME-JSME Thermal and Fluids Engineering*, 2012
37. Kiyoun Moon, Jung-II Choi, Woopyung Jeon & Changhoon Lee, "Large eddy simulation of turbulent flow over urban like obstacle using immersed boundary method," *The 8th KSME-JSME Thermal and Fluids Engineering*, 2012
38. Hyunwook Park, Changhoon Lee & Jung-II Choi, "Effect of wall proximity on drag and lift forces on a circular cylinder," *The 8th KSME-JSME Thermal and Fluids Engineering*, 2012
39. Sangro Park & Changhoon Lee, "A new projection method with no iteration for Poisson equation for incompressible flows," *The 8th KSME-JSME Thermal and Fluids Engineering*, 2012
40. Yongnam Park & Changhoon Lee, "Effect of gravity on the dispersion of heavy particles," *The 8th KSME-JSME Thermal and Fluids Engineering*, 2012
41. Youngho Suh & Changhoon Lee, "Calculation of drag and lift acting on a deformable droplet in a shear flow," *The 8th KSME-JSME Thermal and Fluids Engineering*, 2012
42. Yongnam Park, Yeontaek Choi & Changhoon Lee, "Geometric nature of particle trajectories in isotropic turbulence," *Seventh International Symposium on Turbulence and Shear Flow Phenomena*, 2011
43. Youngho Suh & Changhoon Lee, "Numerical study on deformation behavior of a fluid particle under shear flow," *ASME-JSME-KSME Joint Fluids Engineering Conference*, 2011
44. Kiyoun Moon, Byunggu Kim & Changhoon Lee, "Large-eddy simulation of turbulent flows in an urban street canyon," *"Air Quality Modeling in Asia 2011" International Conference & Training*, 2011
45. Yeontaek Choi, Yongnam Park & Changhoon Lee, "A role of helicity in turbulent diffusion," *Sixth International Symposium on Turbulence and Shear Flow Phenomena*, 2009
46. Yongnam Park & Changhoon Lee, "Effect of lift force on the motion of heavy particles in isotropic turbulence," *The Seventh JSME-KSME Thermal and Fluids Engineering Conference*, 2008
47. Yeontaek Choi, Byunggu Kim & Changhoon Lee, "Intermittency of helicity and connection with the highly rotational structures in isotropic turbulence," *Fifth International Conference on Computational Fluid Dynamics*, 2008
48. Byunggu Kim, Jongsu Kim & Changhoon Lee, "Lagrangian stochastic model for buoyant gas dispersion in a simple geometric chamber," *World Conference of Safety of Oil and Gas Industry*, 2007
49. Hyo-il Jung & Changhoon Lee, "Computer simulation of magnetic labeled apoptotic cell separation in microfluidic system," *Gordon Research Conference on MEMS Technology and Biomedical Applications*, 2006

50. Byunggu Kim & Changhoon Lee, "Modification of near-wall turbulence by stable stratification," *Parallel Computational Fluid Dynamics*, 2006
51. Byunggu Kim & Changhoon Lee, "A Lagrangian particle model for heavy gas dispersion in the atmospheric boundary layer," *The Sixth KSME-JSME Thermal and Fluids Engineering Conference*, 2005
52. Byunggu Kim & Changhoon Lee, "Modification of near-wall turbulent characteristics under stable stratification," *The Sixth KSME-JSME Thermal and Fluids Engineering Conference*, 2005
53. Kyoungmin Yeo & Changhoon Lee, "Acceleration statistics in turbulent channel flow," *The Fifth Asian Computational Fluid Dynamics Conference*, 2003
54. Byunggu Kim & Changhoon Lee, "Motion of a heavy particle in the shear flow near a flat wall," *The Fifth Asian Computational Fluid Dynamics Conference*, 2003
55. Byunggu Kim & Changhoon Lee, "Lagrangian dispersion model based on elliptic relaxation in the atmospheric boundary layer," *Third International Symposium on Turbulence and Shear Flow Phenomena*, 2003

## **DOMESTIC CONFERENCE (in Korean)**

About 120 conference papers