

CHANGHOON LEE

Professor

Department of Computational Science and Engineering & Department of Mechanical Engineering
Yonsei University, Seoul, Korea

Office Address:
Yonsei University
Department of Computational Science & Engineering
50 Yonsei-ro, Seodaemun-gu
Seoul, 120-749
Korea

Phone/Fax/Email:
Office: 82-2-2123-2846, 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
Dissertation: Basic Instabilities and Transition to Chaos in a Rapidly Rotating Annulus on the β -plane
- 1987 MS in Mechanical Engineering, Seoul National University
- 1985 BS in Mechanical Engineering, Seoul National University

PROFESSIONAL EXPERIENCES

- 2011–2015 Chair
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

- 2015 Faculty Award of Outstanding Accomplishment (Education), Yonsei University
- 2014 Award of Outstanding Contribution, The Korean Society of Mechanical Engineers
- 2013 Faculty Award of Outstanding Accomplishment (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 –
2. Organizing Committee Member, International Symposium on Fluid Machinery and Fluid Engineering, 2016 –
3. Advisory Board Member, The Symposium on Turbulence and Shear Flow Phenomena, 2011 –
4. Vice-Chair (Chair Elect), Division of Fluids Engineering, The Korean Society of Mechanical Engineers, 2014 –
5. Vice-Chair, The Korean Society for Computational Sciences and Engineering, 2010 –
6. Editor, *Journal of Computational Science*, 2014 –
7. Editor-in-Chief, *Journal of the KSME*, 2011 – 2014
8. Associate Editor, *Journal of Computational Fluids Engineering*, 2011 –
9. Associate Editor, *Transaction of the Korean Society of Mechanical Engineers*, 2009 – 2012
10. Fellow, The Korean Society of Mechanical Engineers, 2010 –
11. Director of Academic Research, The Korean Society of Mechanical Engineers, 2010 – 2011
12. Organizing Committee Member, International Conference on Multiphase Flow, 2011 – 2013
13. Organizing Committee Member, ASME-JSME-KSME Joint Fluids Engineering Conference 2011, July, 2011
14. Organizing Committee Member, The 8th Korea-Japan Thermal and Fluids Engineering Conference, March, 2012
15. Organizing Committee Member, The 6th National Congress on Fluids Engineering, Busan, Aug., 2010

16. Advisory Board Member/Local Executive Committee Member, The 6th Symposium on Turbulence and Shear Flow Phenomena, Seoul, June, 2009
17. Organizing Committee Member, The 7th Korea-Japan Thermal and Fluids Engineering Conference, Sapporo, Oct., 2008
18. Organizing Committee Member, The 5th International Conference on Computational Fluid Dynamics, Seoul, July, 2008
19. Program Manager of Undergraduate Program, School of Mechanical Engineering, Yonsei University, 2007 – 2009
20. Organizing Committee Member, International Conference on Parallel Computational Fluid Dynamics 2006, Busan, 2006
21. Organizing Committee Member, The 3rd National Congress on Fluids Engineering, Jeju, Aug., 2004

RESEARCH INTERESTS

Turbulence: Fundamentals of Turbulence, Lagrangian Nature of Turbulence, Particle-Turbulence Interaction
 Computational Fluid Dynamics: Numerical Algorithm, Schemes, Immersed/Virtual Boundary Method
 Environmental Applications: Air Pollution Modeling, Stochastic Process, LES of Atmospheric Flows

JOURNAL PUBLICATIONS (International, SCI)

1. Hyunwook Park, Xiaomin Pan, Changhoon Lee & Jung-Il Choi, “A pre-conditioned implicit direct forcing based immersed boundary method for incompressible viscous flows,” accepted in *Journal of Computational Physics*, 2016
2. Xiaomin Pan, Kyoungyoun Kim, Changhoon Lee & Jung-Il Choi, “A decoupled monolithic projection method for natural convection problems,” accepted in *Journal of Computational Physics*, 2016
3. Xiaomin Pan, Kyoungyoun Kim, Changhoon Lee & Jung-Il Choi, “Analysis of velocity-components decouple projection method for the incompressible Navier-Stokes equation,” accepted in *Computers and Mathematics with Applications*, 2016
4. 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,” accepted in *Journal of the Taiwan Institute of Chemical Engineers*, 2016
5. Jung-Il Choi, Yongnam Park, Ohjoon Kwon & Changhoon Lee, “Interparticle collision mechanism in turbulence,” *Physical Review E*, Vol. 93, 013112, 2016
6. 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
7. Itzhak Fouxon, Yongnam Park, Roei Harduf & Changhoon Lee, “Inhomogeneous distribution of water droplets in cloud turbulence,” *Physical Review E*, Vol. 92, 033001, 2015

8. Sangro Park & Changhoon Lee, "Analysis of coherent structures in Rayleigh-Bénard convection," *Journal of Turbulence*, Vol. 16, pp. 1162-1178, 2015
9. 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
10. 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
11. Junghoon Lee & Changhoon Lee, "Modification of particle-laden near-wall turbulence: Effect of Stokes number," *Physics of Fluids*, Vol. 27, 023303, 2015
12. 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
13. 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
14. Yongnam Park & Changhoon Lee, "Gravity-driven clustering of inertial particles in turbulence," *Physical Review E (Rapid Communication)*, Vol. 89, 061004(R), 2014
15. 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, 2014
16. 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
17. S. 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
18. 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
19. 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
20. Noreen Sher Akbar, S. 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
21. Noreen Sher Akbar, S. 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
22. S. 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
23. 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

24. S. 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
25. S. 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
26. Abouelmagd H. Abdelsamie & Changhoon Lee, "Decaying versus stationary turbulence in particle-laden isotropic turbulence: Turbulence modulation mechanism," *Physics of Fluids*, Vol. 24, 015106, 2012
27. S. 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
28. Noreen Sher Akbar, S. 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
29. 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
30. Sohail Nadeem & Changhoon Lee, "Boundary layer flow of nano fluid over an exponentially stretching surface," *Nanoscale Research Letters*, Vol. 7, p. 94, 2012
31. S. 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
32. 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
33. 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*, 2011
34. 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
35. 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
36. 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
37. 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
38. 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

39. 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
40. 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
41. Jaedal Jung, Kyongmin Yeo & Changhoon Lee, "Behavior of heavy particles in isotropic turbulence," *Physical Review E*, Vol. 77, 016307, 2008
42. 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
43. Sangbong Lee & Changhoon Lee, "Intermittency of acceleration in isotropic turbulence," *Physical Review E*, Vol. 71, 056310, 2005
44. Jung-Il Choi, Kyongmin Yeo & Changhoon Lee, "Lagrangian statistics in turbulent channel flow," *Physics of Fluids*, Vol. 16, pp. 779-793, 2004
45. Changhoon Lee, Kyongmin Yeo & Jung-il Choi, "Intermittent nature of acceleration in near-wall turbulence," *Physical Review Letters*, Vol. 92, art. no. 144502, 2004
46. Andrew M. Reynolds, Kyongmin Yeo & Changhoon Lee, "On the anisotropy of accelerations in turbulent flows," *Physical Review E*, Vol. 70, art. no. 017302, 2004
47. Changhoon Lee, "Stability characteristics of the virtual boundary method in three-dimensional applications," *Journal of Computational Physics*, Vol. 184, pp. 559-591, 2003
48. Changhoon Lee & Youngchwa Seo, "A New Compact Spectral Scheme for Turbulence Simulations," *Journal of Computational Physics*, Vol. 183, pp. 438-469, 2002
49. Changhoon Lee, & John Kim, "Control of viscous sublayer for drag reduction," *Physics of Fluids*, Vol. 14, No. 7, pp. 2523-2529, 2002
50. Changhoon Lee, "Large-eddy simulation of rough-wall turbulent boundary layers," *AIAA Journal*, Vol. 40, No 10, 2002
51. 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
52. 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
53. 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
54. 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
55. Philip S. Marcus, T. Kundu & Changhoon Lee, "Vortex dynamics and zonal flows," *Physics of Plasmas*, Vol. 7, No. 5, pp. 1630-1640, 2000
56. 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

57. 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
58. 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
59. 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
60. 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. Seungho Song, Changhoon Lee & Jung-II Choi, "Numerical simulation of initial fireball after nuclear explosion," *Journal of Computational Fluids Engineering*, Vol. 19, pp. 45-51, 2014
2. Hyunwook Park, Changhoon Lee & Jung-II Choi, "An immersed boundary method for low Reynolds number flows," *Journal of Computational Fluids Engineering*, Vol. 18, pp. 34-41, 2013
3. 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
4. Hyunwook Park, Changhoon Lee & Jung-II 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
5. 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
6. 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
7. 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
8. 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
9. Jung-II 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
10. Jung-II 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
11. Byunggu Kim & Changhoon Lee, "Numerical study of shear-enhanced turbulent dispersion," *Transactions B of KSME*, Vol. 25, pp. 944-951, 2001
12. Changhoon Lee & Shinhyung Kang, "Viscous flows through screens normal to the uniform stream," *KSME Journal*, Vol. 3, pp. 146-152, 1989
13. 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. 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
2. 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
3. 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
4. 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
5. 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
6. 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
7. Hyunwook Park, Changhoon Lee & Jung-Il 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
8. Seungho Song, Jung-Il 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
9. Yongnam Park & Changhoon Lee, "Segregation of heavy particles by gravitational force," *66th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2013
10. 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
11. 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
12. Hyun Wook Park, Kiyoun Moon, Randall McDermott, Ezgi Oztekin, Changhoon Lee & Jung-Il 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
13. 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
14. 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
15. 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
16. 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

17. 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
18. 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
19. 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
20. 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
21. 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
22. 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
23. 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
24. 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
25. 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
26. 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
27. 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
28. 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
29. 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
30. 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
31. Yeontaek Choi & Changhoon Lee, "Helicity in isotropic turbulence," *59th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2006
32. 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
33. 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

34. 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
35. Changhoon Lee, "Acceleration, enstrophy and dissipation in isotropic turbulence," *58th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2005
36. Jaedal Jung & Changhoon Lee, "Dispersion of heavy particles in isotropic turbulence," *58th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2005
37. 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
38. 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
39. 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
40. 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
41. 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
42. 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
43. Changhoon Lee, "Direct numerical simulation of rough-wall channel flows," *55th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2002
44. Changhoon Lee & John Kim, "Manipulation of viscous sublayer for drag reduction," *53rd Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 2000
45. 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
46. 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
47. 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
48. 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
49. 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
50. 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
51. 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

52. 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
53. 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
54. Philip Marcus & Changhoon Lee, "Formation of large-scale zonal flows from small-scale forcings on a β -plane," *48th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 1995
55. 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
56. Philip Marcus & Changhoon Lee, "Vortices, Rossby Waves, and Jets," *47th Annual Meeting of the American Physical Society Division of Fluid Dynamics*, 1994
57. 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, "Numerical Study of Particle-Turbulence Interactions," *A3 Foresight Program "Workshop on Vortex Dynamics and Turbulence"*, 2016
2. Changhoon Lee, "Direct Simulation of Sedimenting Droplets in the Air," *2014 KIAPS International Symposium*, 2014
3. Changhoon Lee, Yongnam Park & Itzhak Fouxon, "Direct Numerical Simulation of Droplets Sedimenting in Cloud Turbulence," *The 10th Asian Computational Fluid Dynamics Conference*, 2014
4. 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
5. Changhoon Lee, "Numerical Simulation of Particle-Laden Turbulence," Seoul National University, Department of Mechanical Engineering, 2014
6. Changhoon Lee, "Vortices and particles in turbulent flows," *International Conference on Boundary and Interior Layers*, 2012
7. Changhoon Lee, "Turbulence and Its Numerical Simulation," Choongang University, Department of Mathematics, 2012
8. 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
9. Changhoon Lee, "Numerical Study of Particle-Turbulence Interactions," *The Korean Society of Industrial and Applied Mathematics Meeting*, 2010
10. Changhoon Lee, "Understanding Turbulence Using Direct Numerical Simulation," *Korean Mathematical Society-American Mathematical Society Joint Conference*, 2009

11. Changhoon Lee, "Urban Dispersion Prediction Model of Chemical and Biological Weapon," *Korean Society of Chemical, Biological and Radiological Defense Symposium*, 2009
12. Changhoon Lee, "ABEEK Program of Yonsei University Mechanical Engineering," *Korean Society of Mechanical Engineers Spring Conference*, 2009
13. Changhoon Lee, "DNS Study of Particle-laden Turbulence," *Korean Society of Mechanical Engineers Spring Conference*, 2008
14. Changhoon Lee, "Numerical Simulation of Turbulent Flows," Hanyang University, Department of Mechanical Engineering, 2004
15. Changhoon Lee, "Turbulence and Zonal Flow," Pohang Institute of Science and Technology, Department of Physics, 2004
16. Changhoon Lee, "A New Compact Spectral Scheme for Turbulence Simulations," Koea Advanced Institute of Science and Technology, Department of Mechanical Engineering, 2002
17. Changhoon Lee, "Zonal Flow Dynamics," Soongsil University, Department of Physics, 2001
18. Changhoon Lee, "Dispersion Model of Chemical and Biological Weapon in Urban Area," *Korean Society of Chemical, Biological and Radiological Defense Symposium*, 2001

INTERNATIONAL CONFERENCE

1. Sangro Park & Changhoon Lee, "Vortical structures and particles in Rayleigh-Bénard convection," *Ninth International Symposium on Turbulence and Shear Flow Phenomena*, 2015
2. 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
3. Junghoon Lee & Changhoon Lee, "Lagrangian statistics of inertial particles in near-wall turbulence," *Ninth International Symposium on Turbulence and Shear Flow Phenomena*, 2015
4. 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
5. 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
6. 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
7. Battsetseg Gereltbyamba & Changhoon Lee, "Behavior of inertial particles in the natural convection flow," *ASME-JSME-KSME Joint Fluids Engineering Conference 2015*, 2015
8. 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
9. Juwon Jang & Changhoon Lee, "Particle motion in the quiescent fluid and turbulent channel flow," *ASME-JSME-KSME Joint Fluids Engineering Conference 2015*, 2015

10. Kiyoung Moon & Changhoon Lee, "Large eddy simulation of stably stratified turbulent channel flow," *ASME-JSME-KSME Joint Fluids Engineering Conference 2015*, 2015
11. Seulgi Lee & Changhoon Lee, "Clustering of particles in homogeneous shear turbulence," *ASME-JSME-KSME Joint Fluids Engineering Conference 2015*, 2015
12. Junghoon Lee & Changhoon Lee, "Effect of gravity on particle behavior in horizontal turbulent channel flow," *ASME-JSME-KSME Joint Fluids Engineering Conference 2015*, 2015
13. Hyunwoo Chi & Changhoon Lee, "Numerical investigation of vortex motion using vortex filament method," *ASME-JSME-KSME Joint Fluids Engineering Conference 2015*, 2015
14. 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
15. Changhoon Lee, Yongnam Park & Itzhak Fouxon, "Direct Simulation of Sedimenting Droplets in the Air," *1st Joint Conference of A3 Foresight Program*, 2014
16. Seulgi Lee & Changhoon Lee, "DNS of homogeneous shear turbulent flow with suspended particles," *2014 International Aerosol Conference*, 2014
17. 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
18. Yongnam Park & Changhoon Lee, "Immersed boundary method for small-size particles in isotropic turbulence," *2014 International Aerosol Conference*, 2014
19. 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
20. Battsetseg Gerelbyamba & Changhoon Lee, "Numerical simulation of natural convection in a cubic cavity," *International Congress of Women Mathematicians*, 2014
21. Junghoon Lee & Changhoon Lee, "Particle-turbulence interaction in near-wall turbulence," *Eighth International Symposium on Turbulence and Shear Flow Phenomena*, 2013
22. Abouelmagd Abdelsamie & Changhoon Lee, "Stationary and decaying turbulence modulation by finite-size fully resolved particles," *International Conference on Multiphase Flow*, 2013
23. Junghoon Lee & Changhoon Lee, "Particle-turbulence interaction in near-wall turbulence," *International Conference on Multiphase Flow*, 2013
24. Yongnam Park & Changhoon Lee, "Effect of gravity on the dispersion of heavy particles," *International Conference on Multiphase Flow*, 2013
25. Jung-Il Choi, Changhoon Lee & Jack Edwards, "Particle Re-suspension due to Human Walking," *The 8th KSME-JSME Thermal and Fluids Engineering*, 2012
26. Junghoon Lee & Changhoon Lee, "Acceleration modification of near-wall turbulence by heavy particles," *The 8th KSME-JSME Thermal and Fluids Engineering*, 2012
27. Kiyoung Moon, Jung-Il 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

28. 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
29. 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
30. Yongnam Park & Changhoon Lee, "Effect of gravity on the dispersion of heavy particles," *The 8th KSME-JSME Thermal and Fluids Engineering*, 2012
31. 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
32. Yongnam Park, Yeontaek Choi & Changhoon Lee, "Geometric nature of particle trajectories in isotropic turbulence," *Seventh International Symposium on Turbulence and Shear Flow Phenomena*, 2011
33. Youngho Suh & Changhoon Lee, "Numerical study on deformation behavior of a fluid particle under shear flow," *ASME-JSME-KSME Joint Fluids Engineering Conference*, 2011
34. Kiyoungh 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
35. Yeontaek Choi, Yongnam Park & Changhoon Lee, "A role of helicity in turbulent diffusion," *Sixth international symposium on Turbulence and Shear Flow Phenomena*, 2009
36. 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
37. 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
38. 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
39. 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
40. Byunggu Kim & Changhoon Lee, "Modification of near-wall turbulence by stable stratification," *Parallel Computational Fluid Dynamics*, 2006
41. 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
42. Byunggu Kim & Changhoon Lee, "Modification of near-wall turbulent characteristics under stable stratification," *The Sixth KSME-JSME Thermal and Fluids Engineering Conference*, 2005
43. Kyoungmin Yeo & Changhoon Lee, "Acceleration statistics in turbulent channel flow," *The Fifth Asian Computational Fluid Dynamics Conference*, 2003
44. 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
45. 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