

# CURRICULUM VITAE

## SASIDHAR KONDARAJU

Assistant Professor, School of Mechanical Sciences  
Indian Institute of Technology Bhubaneswar,  
Samantapuri, Bhubaneswar 751013, India

Telephone: 91 0674306392  
e-mail: [sasidhar@iitbbs.ac.in](mailto:sasidhar@iitbbs.ac.in)

### **Educational Qualifications:**

B.E. (2003) Mechanical Engineering, Osmania University, India  
M.S. (2006) Mechanical Engineering, Wayne State University, USA  
Ph.D. (2009) Mechanical Engineering, Wayne State University, USA

### **Professional Experience:**

INSPIRE Faculty (2013/1 – Present), Indian Institute of Technology Delhi, India  
Research Professor (2011/1 – 2012/9), Yonsei University, Korea  
Post Doctoral Fellow (2009/9 – 2010/10), University of Arizona, USA

### **Research Experience:**

*Assistant Professor, Indian Institute of Technology Bhubaneswar, February 2016 – Present*

Droplet interfacial science, Microfluidics, Surface wettability, Droplet condensation

*INSPIRE Faculty, Indian Institute of Technology Delhi, January 2013 – January 2016*

Studies the problems involved in condensation phase change heat transfer, liquid droplet suspensions, hemodynamics and droplet wetting. Performs lattice Boltzmann and finite difference simulations to understand the above mentioned problems.

*Research Professor, Yonsei University, Korea, January 2011 – September 2012*

Involved in Brain Korea Research, BKR-21. Study of rheological behavior of emulsions using lattice Boltzmann simulations. Study of droplet dynamics on wetting surfaces.

*Research Associate, University of Arizona, September 2009 – November 2010*

Direct numerical simulations using finite volume approach for analysis of flow over wind turbine blades. Investigation of flow separation over wind turbine blades and study the effect of plasma actuator, vortex jet generators and fluidic actuators for flow control over wind turbine airfoils.

*Research assistant, Wayne State University, August 2004 – August 2009*

Development of multiphase direct numerical simulation model. Study of thermophysical properties of nanofluids. Study of effect of solid particle suspensions of turbulent characteristics of isotropic turbulent flows.

### **Teaching Experience:**

*INSPIRE Faculty, Indian Institute of Technology Delhi, January 2013 – January 2016*, Thermal Science Laboratory, Applied Mathematics of Thermal Engineers, Multiphase Flows, Scaling Analysis and Self-Similarity Solutions, Micro/Nanoscale Heat Transfer  
*Research Professor, Yonsei University, January 2011 – September 2012*, Assisted in teaching Numerical Methods, Lattice Boltzmann Modeling, Computational Bio-Physics.

## Research Grants:

Title: *Study of wetting and de-wetting phenomenon for fog-water harvesting*, 2013 – 2018,

Sponsor: Department of Science and Technology (DST), India

Role: Principal Investigator

Period: January 2013 - December 2017

Title: *Engineering of Droplet Manipulation in Tertiary Microfluidic Channels*

Sponsor: AOARD (Asian Office of Aerospace Research and Development), USA

Role: Co-Principal Investigator

Period: July 2015 – June 2016

## Publications:

### *Peer-Reviewed Journal Publication*

1. A. Yagub, H. Farhat, S. Kondaraju, and T. Singh, A lattice-Boltzmann model for substrates with regularly structured surface roughness, *Journal Comp. Physics*, 2015, 301: 402-414.  
<http://www.sciencedirect.com/science/article/pii/S0021999115005689>
2. S. Choi, S. Kondaraju, and J. S. Lee, Study for optical manipulation of a surfactant-covered droplet using lattice Boltzmann method, *Biomicrofluidics*, 2014, 8: 024104  
<http://scitation.aip.org/content/aip/journal/bmf/8/2/10.1063/1.4868368>
3. J. Y. Moon, S. Kondaraju, and J. S. Lee, Lattice-Boltzmann immersed boundary approach for vesicle navigation in microfluidic channel networks, *Microfluidics Nanofluidics*, 2014, 7: 1061-1070.  
<http://link.springer.com/article/10.1007%2Fs10404-014-1393-z>
4. H. M. Yoon, Y. Jung, S. C. Jun, S. Kondaraju, and J. S. Lee, Molecular dynamics simulations of nanoscale and sub-nanoscale friction behavior between grapheme and a silicon tip: analysis of tip apex motion, *Nanoscale*, 2015, 7: 6295-6303.  
<http://pubs.rsc.org/en/Content/ArticleLanding/2015/NR/c4nr07445a#!divAbstract>
5. H. M. Yoon, S. Kondaraju, and J. S. Lee, Molecular dynamics simulations of the friction experienced by grapheme flakes in rotational motion, *Tribology International*, 2014, 70: 170-178.  
<http://www.sciencedirect.com/science/article/pii/S0301679X1300340X>
6. H. Farhat, S. Kondaraju, Sang-Kwon Na and J. S. Lee, Effect of hydrodynamic and fluid-solid interaction forces on the shape and stability of a droplet sedimenting on a horizontal wall, *PRE*, 2013, 88: 013013.  
<http://journals.aps.org/pre/abstract/10.1103/PhysRevE.88.013013>
7. S. Kondaraju, H. Farhat, and J. S. Lee, Study of Aggregational Characteristics of Emulsions on their Rheological Properties using the Lattice Boltzmann Approach, *Soft Matter*, 2012, 8: 1374-1384.  
<http://pubs.rsc.org/en/content/articlehtml/2012/sm/c1sm06193c>

8. S. Kondaraju, and J. S. Lee, Two-Phase Numerical Model for Thermal conductivity and Convective Heat Transfer in Nanofluids, *Nanoscale Research Letters*, 2011, 6: 239-245.  
<http://link.springer.com/article/10.1186/1556-276X-6-239>
9. S. Kondaraju, E. K. Jin, and J. S. Lee, Effect of the multi-sized nanoparticle distribution on the thermal conductivity of nanofluids, *Microfluidics Nanofluidics*, 2011, 10:133-144.  
<http://link.springer.com/article/10.1007/s10404-010-0653-9>
10. S. Kondaraju, E. K. Jin, and J. S. Lee, Investigation of turbulent nanofluids using discrete particle modeling, *Phys. Rev. E*, 2010, 81: 016304.  
<http://journals.aps.org/pre/abstract/10.1103/PhysRevE.81.016304>
11. S. Kondaraju, E. K. Jin, and J. S. Lee, Direct numerical simulation of thermal conductivity of nanofluids: The effect of temperature two-way coupling and coagulation of particles, *Int. J. Heat Mass Transfer*, 2010, 53: 862-869.  
<http://www.sciencedirect.com/science/article/pii/S0017931009006383>
12. S. Kondaraju, M. Choi, X. Xu, and J. S. Lee, Direct Numerical Simulation of Modulation of Isotropic Turbulence by Poly-Dispersed Particles, *Int. J. Num. Methods in Fluids*, 2012, 69:1237-1248.  
<http://onlinelibrary.wiley.com/doi/10.1002/fld.2634/full>
13. S. Kondaraju, X. Xu, and J. S. Lee, Direct Numerical Simulation of Preferential Particle Concentration in Decaying Turbulence under the Influence of Magnetic Field, *Int. J. Num. Methods in Fluids*, 2010, 63:1233-1240.  
<http://onlinelibrary.wiley.com/doi/10.1002/fld.2128/abstract>
14. S. Kondaraju and J. S. Lee, Hybrid Turbulence Simulation of Spray impingement Cooling: The Effect of Vortex Motion on Turbulent Heat Flux, *Int. J. Num. Methods in Fluids*, 2009, 59: 657-676.  
<http://onlinelibrary.wiley.com/doi/10.1002/fld.1828/abstract>
15. S. Kondaraju and J. S. Lee, Hybrid Turbulence Modeling of Liquid Spray Impingement on a Heated Wall with Arbitrary Lagrangian Eulerian Method, *Num. Heat Transfer Part A: Applications*, 2007, 52: 1059-1079.  
<http://www.tandfonline.com/doi/abs/10.1080/10407780701451457#.VgzT5JfvmXc>

### Proceedings Papers

1. N. Pawar, and S. Kondaraju, Effect of surface wettability on dropwise condensation using lattice Boltzmann method, January 3-6, 2016, 5<sup>th</sup> Micro/Nanoscale Heat and Mass Transfer International Conference, Biopolis, Singapore.
2. N. Pawar, and S. Kondaraju, Microdroplet growth during condensation on mixed-wettability surfaces, The 23<sup>rd</sup> National Heat and Mass Transfer Conference and 1<sup>st</sup> International ISHMT-ASFTE Heat and Mass Transfer Conference, December 17-20, 2015, Thiruvananthapuram, Kerala.

3. *S. Kondaraju, H. Farhat, and J. S. Lee*, Lattice Boltzmann modeling for simulation of surfactant covered droplets in microchannels, June 12-14, 2012, International Conference on Numerical Methods in Multiphase Flows, Penn State University, University Park, Pennsylvania.
4. *S. Kondaraju, H. Farhat, J. S. Lee*, “Study of aggregational characteristics of emulsions on their rheological properties using the lattice Boltzmann approach”, 86<sup>th</sup> ACS Colloid & Surface Science Symposium, June 10-13, 2012, Johns Hopkins University, Baltimore, Maryland.
5. *J. H. Kim, J. S. Lee, S. Choi, S. Kondaraju, J. S. Lee*, “Cooling performance of 3 dimensional non-Newtonian flow in micro-channel using lattice Boltzmann method”, The 8<sup>th</sup> KSME-ASME Thermal and Fluids Engineering Conference, March 18-21, 2012, Seoul, South Korea.
6. *A. Gross, S. Kondaraju, and H. Fasel*, “Numerical Investigation of Separation Control for Wind Turbine Airfoil”, ASME 2010 4<sup>th</sup> International Conference on Energy Sustainability, May 17–22, 2010, Phoenix, Arizona
7. *S. Kondaraju and J. S. Lee*, “Two-way coupling effects of single and multiple clouds of particles”, Proc. UKC Conf., Aug. 14-17, 2008, San Diego, USA.
8. *S. Kondaraju and J. S. Lee*, “Effect of the particles on the turbulence modulation of the flow field”, Proc. 5<sup>th</sup> Int. Conf. on Comp. Fluid Dynamics, July 7-11, 2008, Seoul, Korea.
9. *S. Kondaraju, Y. H. Kim and J. S. Lee*, “Numerical simulation of spray impingement heat transfer on a flat plate”, Proc. 18<sup>th</sup> Int. Sym. on Transport Phenomena, Aug. 27-30, 2007, Daejeon, Korea.
10. *S. Kondaraju, X. Xu and J. S. Lee*, “Numerical simulations of particle dispersion in isotropic turbulence using object oriented programming”, Proc. UKC Conf., Aug. 9-11, 2007, Washington DC, USA.
11. *S. Kondaraju, Y. H. Kim and J. S. Lee*, “Behavior of fluid structure for the jet impingement on a flat plate”, Proc. 44<sup>th</sup> AIAA Aerospace Sciences Meeting and Exhibit, Jan. 11-14, 2006, Reno, NV, USA.

#### **Published Books**

1. *H. Farhat, J. S. Lee, and S. Kondaraju*, Accelerated lattice Boltzmann model for colloidal suspensions, Springer, New York, 2014.