PROMOTION AND TENURE FACULTY VITA
COLLEGE OF ENGINEERING

Date: August 1, 2018

I. CANDIDATE INFORMATION

A. Name: Baskar Ganapathysubramanian

B. Department: Mechanical Engineering
Current Rank: Professor

C. Degrees Held

Cornell University	PhD	Mechanical and Aerospace Engineering	July 2008
Cornell University	M.S	Mechanical and Aerospace Engineering	Nov 2006
Indian Institute of Technology	B.Tech	Mechanical Engineering	June 2003

D. Academic Positions Held

Professor, Mechanical Engineering, ISU	2018 – present
Associate Professor, Mechanical Engineering, ISU	2014 – 2018
Assistant Professor, Mechanical Engineering, ISU	2008 – 2014
Assistant/Associate/Full Professor, ECPE (by courtesy), ISU	2009 – present
Faculty Affiliate, D.O.E Ames Laboratory	2008 – 2012

E. Other Professional Employment
None

F. Honors and Awards

William March Scholar in Mechanical Engineering	ISU, 2008- 2011
NSF CAREER Award	NSF, 2012-2017
ISU Award for Early Achievement in Research	ISU, 2014
Plant Science Institute Faculty Fellow	ISU, 2014
National Academy of Sciences Frontiers participant	Oman, 2014
National Academy of Sciences Frontiers participant	Abu Dhabi, 2016
Merrill retreat invited faculty participant	U Kansas, 2015
Finalist in 19th Robert J Melosh competition	ETH Zurich, 2007
Gordon Research Conference Invited speaker	Lucca, Italy, 2017
Pomerantz Award for outstanding research and teaching, ISU	ISU, 2018-2019

II. RESEARCH / CREATIVE ACTIVITIES

A. Scholarship

Notes

$^{+}$ *Denotes graduate student/post-doc in the Ganapathysubramanian group at ISU.*
* *Denotes undergraduate researcher in the Ganapathysubramanian group at ISU*
^ *Denotes high school researcher in the Ganapathysubramanian group at ISU*
@ Denotes publications after promotion to associate professor in 2014

Corresponding author(s) are underlined
 # Denotes any publication derived from the candidate's thesis/dissertation.
Denotes any publication derived from the candidate's undergraduate work.

1. Articles in Peer-Reviewed Journals – In Print or Accepted

Notes:

- *Total of 91 journal articles, 2151 total citations (1646 since 2013), H-index of 23, i10-index of 45 (collected from Google Scholar as of 10/15/2018)*[1]
- *78 articles are derived from work at ISU and 73 articles have been co-authored with ISU students and post-docs*
- *High impact papers (IF > 10): Nature communications (1), Energy and Environmental Sciences (2), Advanced Energy Materials (1), Trends in Plant Sciences (1), Advanced Functional Materials (1)*

1. @D Stoecklien+, K Owsley, C-Y Wu, D DiCarlo, B Ganapathysubramanian, "*uFlow: Software for rational engineering of secondary flows in inertial microfluidic devices*", ***Microfluidics and Nanofluidics,*** in press (2018)

2. A. K. Singh, B. Ganapathysubramanian, S. Sarkar, A. Singh, "*Deep learning for plant stress phenotyping: trends and future perspectives*". ***Trends in plant science***, 2018.

3. P. Du+, A. Zebrowski, J. Zola, B. Ganapathysubramanian, O. Wodo, 2018. "*Microstructure design using graphs*". ***Nature Computational Materials***, 4(1), p.50.

4. @N Zhou, Z D Siegel, S Zarecor, N Lee+, D A Campbell, C M Andorf, D Nettleton, C J Lawrence-Dill, B Ganapathysubramanian, J W Kelly, I Friedberg, "*Crowdsourcing image analysis for plant phenomics to generate ground truth data for machine learning*", ***PLoS computational biology***, 14(7), p.e1006337, 2018

5. M Garcia, B Ganapathysubramanian, S Pennathur, "*A linearised model for calculating inertial forces on a particle in the presence of a permeate flow*", ***Journal of Fluid Mechanics***, in press (2018)

6. @C-Y Wu, D Stoecklien+, A Kommajosula+, J Lin, K Owsley, B Ganapathysubramanian, D DiCarlo, "*Shaped 3D microcarriers for adherent cell culture and analysis*", ***Nature Microsystems and Nanoengineering***, accepted for publication

7. @ O Siemianowski, K Lind, X Tian, M Cain, S Xu+, B Ganapathysubramanian, L Cademartiri, "*From Petri Dishes to Model Ecosystems*", ***Trends in Plant Sciences***, in press (2018)

[1] https://scholar.google.com/citations?user=R1JIs4cAAAAJ&hl=en

8. A Akintayo+, G L Tylka, A K Singh, B Ganapathysubramanian, A Singh, S Sarkar, "*A deep learning framework to discern and count microscopic nematode eggs*", ***Nature Scientific reports*** 8 (1), 9145, 2018

9. @ K Nagasubramanian+, S Jones, S Sarkar, A. K. Singh, A Singh, B Ganapathysubramanian, "*Hyperspectral band selection using genetic algorithm and support vector machines for early identification of charcoal rot disease in soybean*", ***Plant Methods***, 14(1), 86 (2018)

10. @T. Gao, H. Emadi, H. Saha,, J. Zhang, A. Lofquist+, A. Singh, B. Ganapathysubramanian, S. Sarkar, A. K. Singh, S. Bhattacharya, "*A Novel Multirobot System for Plant Phenotyping. Robotics*", 7(4), p.61, 2018

11. @ BSS Pokuri+, J Sit, O Wodo+, D Baran, T Amrei, CJ Brabec, AJ Moule, B Ganapathysubramanian, "*Nanoscale Morphology of Doctor Bladed vs Spin Coated Organic Photovoltaic Films*", ***Advanced Energy Materials***, in press, (2017)

12. @ O Siemianowski, K Lind, X Tian, M Cain, S Xu+, B Ganapathysubramanian, L Cademartiri, "*HOMEs for Plants and Microbes - A Phenotyping Approach With Quantitative Control Of Signaling Between Organisms And Their Individual Environments*", ***Lab on a Chip***, in press (2018)

13. @ S Ghosal, D Blystone, A. K. Singh, B Ganapathysubramanian, A Singh, S Sarkar, "*Bringing consistency to plant stress phenotyping through an explainable deep machine vision framework*", ***PNAS***, in press (2018)

14. @ A Fontanini+, A Watts, J Kosny, A Fallahi, R Trifu, N Shukla, B Ganapathysubramanian, "*Thermal performance analysis of residential attics containing high performance aerogel-based radiant barriers*", ***Energy and Buildings***, in press (2017)

15. @ RT Hickey, E Jedlick, AE Colbert, ZI Bedolla-Valdez, BSS Pokuri+, B Ganapathysubramanian, DS Ginger, AJ Moule, "*Morphological consequences of ligand exchange in quantum dot-polymer solar cells*", ***Organic Electronics***, in press (2017)

16. @ KG Lore, D Stoecklein+, M Davies*, B Ganapathysubramanian, S. Sarkar, "*A Deep Learning framework for Causal Shape Transformation*" ***IEEE Transactions on Neural Networks and Learning Systems***, in press (2017)

17. @ S Pfeifer+, B Ganapathysubramanian, "*An optimization approach to identify processing pathways for achieving tailored thin film morphologies*", ***Computational Material Science***, in press (2017)

18. @ R Dyja[+], K Van Der Zee, B Ganapathysubramanian, "*Massively Parallel-In-Space-Time, Adaptive Finite Element Framework for Non-Linear Parabolic Equations*", ***SIAM Journal of Scientific Computing***, in press, (2018)

19. @ Q Guo[+], B Ganapathysubramanian, "*Incorporating a stochastic data driven inflow model for uncertainty quantification of wind turbine performance*", ***Wind Energy***, 10.1002/we.2108 (2017)

20. @ HS Naik[+], J Zhang, T Assefa, A Lofquist[+], S Sarkar, D Ackerman[+], A Singh, AK Singh, B Ganapathysubramanian, "*A real-time phenotyping framework for plant stress severity rating in soybean*", ***Plant Methods***, 13(1), 23 (2017)

21. @ M Davies[*], B Ganapathysubramanian, G Balasubramanian, "*Optimizing isotope substitution in graphene for thermal conductivity minimization by genetic algorithm driven molecular simulations*", ***Applied Physics Letters***, 110, (13) 133107 (2017)

22. @ D Stoecklein[+], KG Lore, M Davies[*], S Sarkar, B Ganapathysubramanian, "*Deep Learning for Flow Sculpting: Insights into Efficient Learning using Scientific Simulation Data*", ***Nature Scientific Reports***, 7: 46368 (2017)

23. @ J Zhang, HS Naik[+], T Assefa, S Sarkar, RVC Reddy, A Singh, B Ganapathysubramanian, AK Singh, "*Computer vision and machine learning for robust genome-wide studies*", ***Nature Scientific Reports***, 7: 44048 (2017)

24. @ Q Li, G Hu, Z Jubery[+], B Ganapathysubramanian, "*A Farm-level Precision Land Management Framework Based on Integer Programming*", ***PLoS One***, 12(3), e0174680 (2017)

25. @ D Stoecklein[+], M Davies[*], N Wubshet[*], J Le[^], B Ganapathysubramanian, "*Automated design for microfluid flow sculpting: multi-resolution approaches, efficient encoding, and GPU implementation*", ***Journal of Fluids Engineering***, 139(3), 031402 (2017)

26. @ D Kipp, O Wodo[+], B Ganapathysubramanian, V Ganesan, "*Utilizing morphological correlators for device performance to optimize ternary blend organic solar cells based on block copolymer additives*", ***Solar Energy Materials and Solar Cells***, 161, 206-218 (2017)

27. @ T Jubery[+], J Shook, K Parmley, J Zhang, HS Naik[+], R Higgins, S Sarkar, A Singh, AK Singh, B Ganapathysubramanian, "*Deploying Fourier coefficients to unravel soybean canopy diversity*", ***Frontiers in Plant Sciences***, 7, 2066 (2017)

28. @ RS Gebhardt[+], P Du[+], O Wodo[+], B Ganapathysubramanian, "*A data-driven identification of morphological features influencing the fill factor and efficiency of*

organic photovoltaic devices", ***Computational Material Science***, 129, 220-225 (2017)

29. @ AD Fontanini[+], U Vaidya, A Passalacqua, B Ganapathysubramanian, "*Contaminant transport at large Courant numbers using Markov matrices*", ***Building and Environment***, 112, 1-16 (2017)

30. @ KL Gu, Y Zhou, X Gu, H Yan, Y Diao, T Kurosawa, B Ganapathysubramanian, MF Toney, Z Bao, "*Tuning domain size and crystallinity in isoindigo/PCBM organic solar cells via solution shearing*", ***Organic Electronics***, 40, 79-87 (2017)

31. @ DM Ackerman[+], K Delaney, GH Fredrickson, B Ganapathysubramanian, "*A finite element approach to self-consistent field theory calculations of multiblock polymers*", ***Journal of Computational Physics***, 331, 280–296 (2017)

32. @ AJ Herrema, NM Wiese, CN Darling, B Ganapathysubramanian, A. Krishnamurthy, M-C. Hsu, "*A framework for parametric design optimization using isogeometric analysis*", ***Computer Methods in Applied Mechanics and Engineering***, 216, 944–965 (2017)

33. @ CL Kling, RW Arritt, G Calhoun, D Keiser (and 25 other authors including BG who are acknowledged due to journal restrictions on having only five authors), "*Integrated Assessment Models of the Food, Energy, and Water (FEW) Nexus: A Review and Research Needs"*, ***Annual Review of Resource Economics***, 9, (2017)

34. @ AD Fontanini[+], J Kosny, N Shukla, A Fallahi, B Ganapathysubramanian, "*Development and verification of the Fraunhofer Attic Thermal Model (FATM*)", ***Journal of Building Performance Simulation***, 10(1), 27-90, (2017)

35. @ AD Fontanini[+], KM Pr'Out[+], J Kosny, B Ganapathysubramanian, "*Exploring future climate trends on the thermal performance of attics: Part 1–Standard roofs*", ***Energy and Buildings***, 129, 32-45 (2016)

36. @ KR Lind, N Lee[+], T Sizmur, O Siemianowski, S Van Bruggen, B Ganapathysubramanian, L Cademartiri, "*Plant Growth Environments with Programmable Relative Humidity and Homogeneous Nutrient Availability*", ***PLoS One***, 11(6) (2016)

37. @ AD Fontanini[+], U Vaidya, A Passalacqua, B Ganapathysubramanian, "*Quantifying mechanical ventilation performance: The connection between transport equations and Markov matrices*", ***Building and Environment***, 104, 253-262 (2016)

38. @ BSS Pokuri[+], B Ganapathysubramanian, "*Morphology control in polymer blend fibers—a high throughput computing approach*", ***Modelling and Simulation in Materials Science and Engineering***, 24 (6), 065012 (2016)

39. @ A Singh, B Ganapathysubramanian, AK Singh, S Sarkar, "*Machine Learning for High-Throughput Stress Phenotyping in Plants*", ***Trends in plant science***, 21 (2), 110-124, (2016)

40. @ D Stoecklein[+], CY Wu, D Kim, D Di Carlo, B Ganapathysubramanian, "*Optimization of micropillar sequences for fluid flow sculpting*", ***Physics of Fluids***, 28(1) (2016)

41. @ K Zhao, O Wodo[+], D Ren, HU Khan, MR Niazi, H Hu, M Abdelsamie, R Li, E Li, L Yu, B Yan, MM Payne, J Smith, JE Anthony, TD Anthopoulos, S Thoroddsen, B Ganapathysubramanian, A Amassian, "*Vertical Phase Separation in Small Molecule:Polymer Blend Organic Thin Film Transistors Can Be Dynamically Controlled*", ***Advanced Functional materials***, 26(11), 1737-1746 (2016)

42. @ AD Fontanini[+], U Vaidya, B Ganapathysubramanian, "*A methodology for optimal placement of sensors in enclosed environments: A dynamical systems approach*", ***Building and Environment***, 100, 145-161, (2016)

43. @ Y Xie[+], O Wodo[+], B Ganapathysubramanian, "*Incompressible two-phase flow: Diffuse interface approach for large density ratios, grid resolution study, and 3D patterned substrate wetting problem"*, ***Computers and Fluids***, 141, 223-234 (2016)

44. @ T Fast, O Wodo[+], B Ganapathysubramanian, SR Kalidindi, "*Microstructure Taxonomy based on Spatial Correlations: Application to Microstructure Coarsening*", ***Acta Materialia***, 108, 176-185 (2016)

45. @ AD Fontanini[+], U Vaidya, B Ganapathysubramanian, "*Constructing Markov matrices for real-time transient contaminant transport analysis for indoor environments*", ***Building and Environment***, 94, 68-81 (2015)

46. @ RS Gebhardt[+], P Du[+], A Peer, M Rock, MR Kessler, R Biswas, B. Ganapathysubramanian, S. Chaudhary, "*Utilizing Wide Band Gap, High Dielectric Constant Nanoparticles as Additives in Organic Solar Cells"*, ***The Journal of Physical Chemistry C,*** 119 (42), 23883-23889, (2015)

47. @ A Aboulhassan, D Baum, O Wodo[+], B Ganapathysubramanian, A Amassian, M Hadwiger, "*A Novel Framework for Visual Detection and Exploration of Performance Bottlenecks in Organic Photovoltaic Solar Cell Materials*", ***Computer Graphics Forum,*** 34 (3), 401-410 (2015)

48. @ KG Lore, D Stoecklein[+], M Davies[*], B Ganapathysubramanian, S Sarkar, "*Hierarchical Feature Extraction for Efficient Design of Microfluidic Flow Patterns"*, ***Journal of Machine Learning Research***, 44 (2015)

49. @ O Wodo[+], J Zola, BSS Pokuri[+], P Du[+], B Ganapathysubramanian, "*Automated, high throughput exploration of process–structure–property relationships using the MapReduce paradigm"*, ***Materials Discovery***, 1, 21-28 (2015)

50. @ J Pace, C Gardner, C Romay, B Ganapathsubramanian, T Lübberstedt, "*Genome-wide association analysis of seedling root development in maize (Zea mays L.)*", ***BMC Genetics***, 16 (47) (2015)

51. @ D Kipp, O Wodo[+], B Ganapathysubramanian, V Ganesan, "*Achieving Bicontinuous Microemulsion Like Morphologies in Organic Photovoltaics*", ***ACS Macro Letters***, 4 (2), 266-270 (2015)

52. @ S Samudrala[+], J Zola, S Aluru, B Ganapathysubramanian, "*Parallel Framework for Dimensionality Reduction of Large-scale Datasets*", ***Scientific Programming***, 1 (2015)

53. @ S Samudrala[+], P Balachandran, J Zola, K Rajan, B Ganapathysubramanian. "*A software framework for data dimensionality reduction: application to chemical crystallography*", ***Integrating Materials and Manufacturing Innovation***, 3 (1), 1-20 (2014)

54. @ J Diaz-Montes, Y Xie[+], I Rodero, J Zola, B Ganapathysubramanian, M Parashar, "*Federated Computing for the Masses -- Aggregating Resources to Tackle Large-Scale Engineering Problems*", ***IEEE Computing in Science & Engineering***, 16(4), 62-72 (2014)

55. @ D Stoecklein[+], CY Wu, K Owsley, Y. Xie[+], D Di Carlo, B Ganapathysubramanian, "*Micropillar sequence designs for fundamental inertial flow transformations*", ***Lab on a Chip***, 14 (21), 4197-4204 (2014), selected for issue cover

56. @ O Wodo[+], B Ganapathysubramanian, "*How do evaporating thin films evolve? Unravelling phase-separating mechanisms during solvent-based fabrication of polymer blends*", ***Applied Physics Letters***, 105 (15), 153104 (2014)

57. @ J Pace, N Lee[+], HS Naik[+], B Ganapathysubramanian, T Lübberstedt, "*Analysis of maize (Zea mays L.) seedling roots with the high-throughput image analysis tool ARIA (Automatic Root Image Analysis)*". ***PLOS One***, 9(9), e108255 (2014)

58. @ CK Lee, O Wodo[+], B Ganapathysubramanian, CW Pao, "*Electrode Materials, Thermal Annealing Sequences, and Lateral/Vertical Phase Separation of Polymer Solar Cells from Multiscale Molecular Simulations*", ***ACS Applied Materials and Interfaces***, 6 (23), 20612-20624 (2014)

59. O Wodo[+], JD Roehling, AL Moule, B Ganapathysubramanian, "*Computational characterization of three dimensional maps of organic blends*", ***Energy and Environmental Sciences***, 6 (10), 3060-3070 (2013)

60. S Samudrala[+], O Wodo[+], K Rajan, B Ganapathysubramanian, "*A Graph-Theoretic Approach for Characterization of Precipitates in Alloys from Atom Probe Tomography data"*, ***Computational Material Science***, 77, 335–342 (2013)

61. H Amini, M Masaeli, E Sollier, Y Xie[+], B Ganapathysubramanian, H Stone, D Di Carlo, "*Programming fluid flow using sequenced microstructures"*, ***Nature Communications***, 4, 1826, (2013), doi:10.1038/ncomms2841

62. A Fontanini[+], U Vaidya, B Ganapathysubramanian, "*A stochastic approach to modeling the dynamics of natural ventilation systems*", ***Energy and Buildings***, 63, 87–97 (2013)

63. HK Kodali[+], B Ganapathysubramanian, "*Sensitivity analysis of current generation in organic solar cells—comparing bilayer, sawtooth, and bulk heterojunction morphologies"*, ***Solar energy materials and solar cells***, 111, 66–73 (2013)

64. R Jaeger[+], J Ren, Y Xie[+], M Olsen, S Sundararajan, B Ganapathysubramanian, "*Nanoscale surface roughness affects low Reynolds number flow: Experiments and Modeling"*, ***Applied Physics Letters***, 101 (18), 184102-184102-5 (2012)

65. H Kodali[+], B Ganapathysubramanian, "*A computational framework to investigate charge transport in heterogeneous organic photovoltaic devices"*, ***Computer Methods in Applied Mechanics & Engineering***, 247, 113–129 (2012)

66. Y Zhao, B Ganapathysubramaniam, P Shrotriya, "*Cantilever deflection associated with hybridization of monomolecular DNA film"*, ***Journal of Applied Physics***, 111 074310 (2012)

67. O Wodo[+], S Tirthapura, S Chaudhary, B Ganapathysubramanian, "*Computational Characterization of Bulk Heterojunction Nanomorphology"*, ***Journal of Applied Physics***, 112, 064316 (2012)

68. O Wodo[+], S Tirthapura, S Chaudhary, B Ganapathysubramanian, "*A graph-based formulation for computational characterizing of bulk heterojunction morphology"*, ***Organic Electronics***, 13(6) 1105-1113 (2012)

69. O Wodo[+], B Ganapathysubramanian, "*Modeling morphology evolution during solvent-based fabrication of organic solar cells"*, ***Computational Material Science***, 55 113–126 (2012)

70. KS Nawla, H Kodali[+], B. Ganapathysubramanian, S. Chaudhary, "*Enhanced Charge Separation in Organic Photovoltaic Films Doped with Ferroelectric Dipoles"*, ***Energy and Environmental Science***, 5 7042-7049 (2012)

71. HK Kodali[+], B Ganapathysubramanian, "*Computer simulation of heterogeneous polymer photovoltaic devices"*, ***Modeling and Simulation in Material Science and Engineering***, 20 035015 (2012)

72. S Jape[+], JA Wickert, B Ganapathysubramanian, "*Exploring the effect of stick-slip friction transition across tape-roller interface on the transmission of lateral vibration"*, ***IEEE Transactions on Magnetics,*** 48 1189-1199 (2012)

73. KS Nawla, HK Kodali[+], B Ganapathysubramanian, S Chaudhary, "*Dependence of recombination mechanisms and strength on processing conditions in polymer solar cells"*, ***Applied Physics Letters***, 99, 263301 (2011)

74. A Fontanini[+], M Olsen, B Ganapathysubramanian, "*Thermal comparison between ceiling diffusers and fabric ductwork diffusers for green buildings"*, ***Energy and Buildings***, 43 2973-2987 (2011)

75. O Wodo[+], B Ganapathysubramanian, "*Computationally efficient solution to the Cahn-Hilliard equation: adaptive implicit time schemes, mesh sensitivity analysis and the 3D isoperimetric problem"*, ***Journal of Computational Physics***, 230 6037—6060 (2011)

76. J Ren, B Ganapathysubramanian, S Sundararajan, "*Experimental analysis of the surface roughness evolution of etched glass for micro/nanofluidic devices"*, ***Journal of Micromechanics and Microengineering,*** 21025012 (2011)

77. R Rajaram, U Vaidya, M Fardad, B Ganapathysubramanian, "*Stability in the almost everywhere sense: A linear transfer operator approach"*, ***Journal of Mathematical Analysis and Applications***, 368, 144-156 (2010)

78. B Ganapathysubramanian, "*Using data to account for lack of data: Linking material informatics with stochastic analysis"*, ***Journal of Metals***, 61, 54—59 (2009)

79. B Ganapathysubramanian[#], N Zabaras, "*A stochastic multiscale framework for modeling flow through heterogeneous porous media"*, ***Journal of Computational Physics***, 228, 591—618 (2009)

80. B Ganapathysubramanian[#], N Zabaras, "*Modeling multiscale diffusion processes in random heterogeneous media"*, ***Computer Methods in Applied Mechanics and Engineering***, 197, 3560--3573 (2008)

81. N Zabaras, B Ganapathysubramanian[#], *"A scalable framework for the solution of stochastic inverse problems using a sparse grid collocation approach"*, ***Journal of Computational Physics***, 227, 4697-4735 (2008)

82. B Ganapathysubramanian[#], N Zabaras, *"A non-linear dimension reduction methodology for generating data-driven stochastic input models"*, ***Journal of Computational Physics***, 227, 6612-6637 (2008)

83. B Ganapathysubramanian[#], N Zabaras, *"A seamless approach towards stochastic modeling: Sparse grid collocation and data driven input models"*, ***Finite Elements in Analysis and Design***, invited paper for the 19th Melosh Competition, 44, 298-320 (2008)

84. B Ganapathysubramanian[#], N Zabaras, *"Modeling diffusion in random heterogeneous media: Data-driven models, stochastic collocation and the variational multi-scale method"*, ***Journal of Computational Physics***, 226, 326-353 (2007)

85. B Ganapathysubramanian[#], N Zabaras, *"Sparse grid collocation methods for stochastic natural convection problems"*, ***Journal of Computational Physics***, 225, 652-685 (2007)

86. N Zabaras, B Ganapathysubramanian[#], L Tan, *"Modeling dendritic solidification with melt convection using the extended finite element method (XFEM) and level set methods"*, ***Journal of Computational Physics***, 218, 200-227 (2006)

87. CS Sunder, B Ganapathysubramanian (G Baskar)[##], V Babu, D Strenski, *"Detailed Performance Analysis of the Interpolation Supplemented Lattice Boltzman Method on the Cray T3E and Cray X1"*, ***International Journal of High Performance Computing Applications***, 20, 557-570 (2006)

88. B Ganapathysubramanian[#], N Zabaras, *"On the control of solidification of conducting materials using magnetic fields and magnetic field gradients"*, ***International Journal of Heat and Mass Transfer***, 48, 4174-4189 (2005)

89. B Ganapathysubramanian[#], N Zabaras, *"Control of solidification of nonconducting materials using tailored magnetic fields"*, ***Journal of Crystal Growth***, 276, 299-316 (2005)

90. B Ganapathysubramanian[#], N Zabaras, *"Using magnetic field gradients to control the directional solidification of alloys and the growth of single crystals"*, ***Journal of Crystal Growth***, 270, 255-272 (2004)

91. CS Sunder, B Ganapathysubramanian (G Baskar)[##], V Babu, D Strenski, *"Parallel Performance of the Interpolation Supplemented Lattice Boltzman Method"*, ***Lecture Notes in Computer Science***, 2913, 428-437 (2003)

2. Articles in Peer-Reviewed Journals – In Review

1. @ P Du[+], R Gebhardt[+], O Wodo[+], B Ganapathysubramanian, "*Is an inter-digitated morphology ideal for organic solar cells?*"", ***Physical Review Letters***, submitted

2. @ D Stoecklien[+], M Davies*, J de Rutte, C-Y Wu, M Khanwale+, J Trujillo*, D Di Carlo, B Ganapathysubramanian, "*FlowSculpt: software for efficient design of inertial flow sculpting devices*", ***Lab on a chip***, submitted

3. Books Authored or Co-Authored
None

4. Books Edited or Co-Edited
None

5. Book Chapters

1. @ KG Lore, D Stoecklien[+], M Davies[*], B Ganapathysubramanian, S Sarkar, "*Deep Learning for Engineering Big Data analytics*", Big Data Analytics: Tools and Technology for Effective Planning, editors A. Somani, GC Deka, CRC Press, Taylor & Francis, 2017

2. @ Y Xie[+], O Wodo[+], and B Ganapathysubramanian, "*A diffuse interface model for incompressible two-phase flow with large density ratios*", ***Fluid Structure Interaction, Modeling and Simulation*** in Science, Engineering and Technology Book Series, editors, Yuri Bazilevs and Kenji Takizawa, 2016

3. @ B Ganapathysubramanian, "*Revolutionizing science through simulation: A junior researcher's perspective on research challenges in uncertain times*", Merrill Advanced Studies Center series on "***Planning for Future Research in Public Universities in Uncertain Times***", 2015

4. S Samudrala[+], K Rajan, B Ganapathysubramanian, "*Data dimensionality reduction in Material Science*", in "***Informatics for Materials Science and Engineering***" edited by K. Rajan, Elsevier, 2013

6. Formally Invited Lectures and Presentations

Notes:

- *Divided into two subsections – invited talks at institutions, invited talks at workshops/conferences.*
- *60 invited lectures and conference presentations. 27 presentations since the last promotion to tenured Associate Professor in 2014.*
- *12 of the presentations were delivered overseas*

Invited Lectures at Institutions

1. "*Plant Phenotyping: Integrating Machine Learning, Crowd sourcing, and high performance computing"*, Math ML seminar, Michigan State University, September 2018

2. "*Continuum modeling of process-structure-property in organic electronics*", Academia Sinica, Taipei, Taiwan, Sept 2017

3. "*Plant Phenotyping: Integrating Machine Learning, Crowd sourcing, and high performance computing"*, Phenomics Phridays, Iowa State University, June 2017

4. "*Plant Phenotyping: Integrating Machine Learning, Crowd sourcing, and high performance computing"*, Department of Plant Pathology and Microbiology, Iowa State University, August 2017

5. "*Plant Phenotyping: Integrating Machine Learning, Crowd sourcing, and high performance computing"*, Annual Board Meeting of the Plant Science Institute, Iowa State University, March 2017

6. "*Integrated Computational- and Data-science for plant breeding*", R.F. Baker Center for Plant Breeding, Iowa State University, Nov 2016

7. "*Computational workflows for automated phenotyping of row crops*", Pepsi Co, Minneapolis, Sept 2016.

8. "*Phase field methods and graph techniques for exploring process-structure-property relationships in organic electronics*", MSE department, Iowa State University, April 2016

9. "*Computational Workflows to Enable Large-Scale, Field-Based Phenotyping"*, Annual Board Meeting of the Plant Science Institute, Iowa State University, April 2016

10. "*Phase field methods and graph techniques for exploring process-structure-property relationships in organic electronics*", Notre Dame U, Feb 2015

11. "*Phase field methods and graph techniques for exploring process-structure-property relationships in organic electronics*", University of Michigan, Sept 2015

12. "*Phase field methods and graph techniques for exploring process-structure-property relationships in organic electronics*", Stanford, Dec 2015

13. "*Computational tools for predictive phenomics*", ICRISAT, Hyderabad, India, Jan 2015

14. "*Phase field methods and graph techniques for exploring process-structure-property relationships in organic electronics*", TIFR, Hyderabad, India, Jan 2015

15. "*CFD for the Harran house*", College of Engineering, Harran University, Turkey, March 2014

16. "*Graph techniques for the analysis of nanomorphologies*", U C Santa Barbara, July 2014

17. "*Phase field methods and graph techniques for exploring process-structure-property relationships in organic electronics*", U Nottingham, Nov 2014

18. "*Computational tools for predictive phenomics*", Agronomy, ISU, Oct 2014

19. *"Revolutionizing science through simulation: A junior researcher's perspective on research challenges in uncertain times"*, Merrill Advanced Studies Center series on "Planning for Future Research in Public Universities in Uncertain Times", 2013

20. "*Computationally exploring process, nanostructure and property relationships in organic solar cells*", OPV symposium, KAUST, Nov 2013

21. "*Computationally exploring process, nanostructure and property relationships in organic solar cells*", Applied Mathematics, University of California, Santa Barbara, June 2013

22. "*Computation transport mechanics*", Structural Engineering, UC San Diego, April 2012

23. "*Computationally exploring process, nanostructure and property relationships in organic solar cells*", Polymer Sciences Group, NIST, Sept 2012

24. "*Computationally exploring process, nanostructure and property relationships in organic solar cells*", Material Science Department, *KAUST*, Oct 2012

25. "*Computationally exploring process, nanostructure and property relationships in organic solar cells*", School of Polymer Science and Engineering, *University of Akron*, Jan 2012

26. "*Computationally exploring process, nanostructure and property relationships in organic solar cells*", Mechanical Engineering, *University of Pittsburg*, Apr 2012

27. "*Computationally exploring process, nanostructure and property relationships in organic solar cells*", Electronics Materials Group, National Institute of Standards and Technology, Oct 2011

28. "*New ways to look at old data: Constructing low-dimensional stochastic wind models from meteorology data*", Mechanical Engineering, *University of Iowa*, Oct 2011

29. "*New ways to look at old data: Constructing low-dimensional stochastic wind models from meteorology data*", Wind Energy Institute, *Iowa State University*, Oct 2011

30. "*Towards predictive modeling of thin film organic photovoltaic devices: Linking fabrication process, nanostructure and property*", Mechanical and Aerospace Engineering, *Rutgers University*, Oct 2011

31. "*A predictive modeling framework for morphology evolution in thin film organic photovoltaic cells*", Material Science and Engineering, *Stanford University*, May 2011

32. "*A predictive modeling framework for morphology evolution in thin film organic photovoltaic cells*", Mechanical and Aerospace Engineering, *UC San Diego*, May 2011

33. "*Flow through heterogeneous porous media: A stochastic variational multiscale framework*", Mechanical and Industrial Engineering, *University of Iowa*, April 2009

34. "*Flow through heterogeneous porous media: A stochastic variational multiscale framework*", Mathematics, *Iowa State University*, October 2009

35. "*Flow through heterogeneous porous media: A stochastic variational multiscale framework*", MIT MMEC Seminar, *MIT*, March 2008

36. "*Flow through heterogeneous porous media: A stochastic variational multiscale framework*", MEAM, *University of Pennsylvania*, Feb 2008

37. "*Flow through heterogeneous porous media: A stochastic variational multiscale framework*", Mechanical Engineering, *UC Santa Barbara*, March 2008

38. "*Flow through heterogeneous porous media: A stochastic variational multiscale framework*", Mechanical Engineering, *Iowa State University*, April 2008

39. "*Sparse grid collocation strategies for high dimensional stochastic differential equations*", MEAM, *University of Pennsylvania*, April 2008

40. "*A scalable framework for the solution of stochastic inverse problems using a sparse grid collocation approach*", Aero-Astro Department, *MIT*, March 2008

41. "*Computational strategies for constructing stochastic reduced order models*", Civil and Environmental Engineering, *Cornell University*, Nov 2007.

42. "*Computational control of directional solidification*", Cornell Electron Devices Society, *Cornell University,* Sept 2007

43. "*Modeling diffusion in random heterogeneous media: Data-driven models, stochastic collocation and the variational multi-scale method*", Institute of Mechanical Systems, *ETH Zurich*, April 2007

Invited and Keynote Presentations at Conferences

1. "*Image based plant phenotyping: Integrating Machine Learning, Crowdsourcing and High Throughput Computing*", Systems Biology Workshop, AgriBio, Centre for AgriBioscience, La Trobe University, Melbourne, Victoria, Australia, May 2017

2. "*Inertial fluid flow sculpting: computational methods and applications*", Physics & Chemistry of Microfluidics, Gordon Research Conference, Tuscany, Italy, June 2017

3. "*High throughput plant phenotyping in the field: Machine learning enabled by data from crowdsourcing*", Challenges and Opportunities in Plant Science Data Management - an International Workshop, Plant and Animal Genome, San Diego, Jan 2017

4. "*Workflows for trait extraction from digital data: Integrating machine learning, crowdsourcing and high throughput computing*", Phenome 2017, Tuscan, Feb 2017

5. "*Process-Structure-Property exploration using model- and data- reduction*", ICAM Energy Transport Workshop, U C Boulder, Dec 2015

6. "*Computational Science as an enabler for sustainable FEW Systems*", Workshop on Coupling Economic Models with Agronomic, Hydrologic, and Bioenergy Models for Sustainable Food, Energy, and Water Systems, Iowa State University, October 2015

7. *"Computationally exploring process-structure-property relationships in organic thin films*", Multiscale Simulations of Organic Electronic Materials, Telluride Science Research Center, July 2015

8. "*Predictive modeling of multi physics phenomena during fabrication of thin organic films*", Advances in computational fluid structure interaction and flow simulation, Tokyo, March 2014

9. "*Modeling roll-to-roll fabrication of thin film electronics: Fluid-mechanics and morphology evolution*", Advances in computational fluid structure interaction and flow simulation, Tokyo, March 2014

10. "*Data and model reduction for exploring process-structure-property relationships in organic electronics*", Information Science for Materials Discovery and Design, Center for Nonlinear Studies (CNLS) at Los Alamos National Laboratory (LANL), Feb 2014

11. "*Computationally exploring structure property relations in organic electronics*", Invited talk in the symposium "Grand Challenges in Organic Electronics", MRS, San Francesco, Spring 2014

12. "*Scalable solutions to the Excitonic-Drift-Diffusion equations*", Invited talk in the symposium "Charge transport in Organic Electronics", SIAM (Society of Industrial and Applied Mathematics) Conference on PDE, Lake Buena Vista, FL, Dec 2013.

13. "*Inverse design of morphologies for enhanced performance in organic photovoltaics*", Keynote talk in the symposium "Inverse Methods in Materials Design" at the 49th SES (Society of Engineering Sciences) Annual Meeting, Oct 2012

14. "*A predictive modeling framework for morphology evolution in thin film organic photovoltaic cells*", Keynote symposium plenary speaker in the symposium "Computational & Experimental Studies of Thin Film Growth: An Atomistic View" International Conference on Metallurgical Coatings and Thin Films (ICMCTF 2010), San Diego, CA, May 2011

15. "*Computational Strategies for UQ: Fault Tolerant Collocation and Input Model Generation*", Invited presentation at the symposium "Numerical Methods for Stochastic Computation and Uncertainty Quantification" at CSE11, *SIAM Conference on Computational Science and Engineering*, Reno, NV, March 2011

16. "*A Sparse Grid Collocation Approach to Solving Stochastic Inverse Problems*", Invited presentation at the symposium "Data Assimilation and Statistical Inverse Problems" at CSE09, *SIAM Conference on Computational Science and Engineering*, Miami, FL, March 2009

17. "*A stochastic multiscale framework for modeling flow through random heterogeneous porous media*", Invited presentation at the symposium "Stochastic Material Models" at *10th U.S. National Congress on Computational Mechanics (USNCCMX)*, Columbus, OH, July 2009

7. Contributed Lectures and Presentations

Notes:

- *Total of 109 technical conference presentations since 2008*

- *Only those 36 presentations since the last promotion to tenured Associate Professor in 2014 are listed below. Full list is available at https://www.me.iastate.edu/bglab/publications/conference-publications/*

1. BSS Pokuri[+], B Ganapathysubramanian, "Multiscale information fusion via Bayesian statistics", MRS Fall meeting, Boston, 2017

2. BSS Pokuri[+], B Ganapathysubramanian, "*Morphology control in Polymer Blend Fibers—A High Throughput Computing Approach*", Materials Research Society Fall Meeting, Boston, Dec 2016

3. DM Ackerman[+], K Delaney, GH Fredrickson, B Ganapathysubramanian, "*Finite Element Framework for Self Consistent Field Studies of Semi Flexible Diblock Polymer Chains*", Materials Research Society Fall Meeting, Boston, Dec 2016

4. J Green[*], DM Ackerman[+], B Ganapathysubramanian, "*Exploration of Confined Polymer Microstructures Using a High Throughput Computational Platform*", Materials Research Society Fall Meeting, Boston, Dec 2016

5. J Trujillo[*], BSS Pokuri[+], B Ganapathysubramanian, "*Computational Modelling of Solvent Annealing of Polymer Thin Films*", Materials Research Society Fall Meeting, Boston, Dec 2016

6. KA O'Hara, BSS Pokuri[+], CJ Takacs, P Beaujuge, B Ganapathysubramanian, ML Chabinyc, "*Quantitative, Automated Framework to Analyze High Resolution TEM Images of Semiconducting Polymer Thin Films*", Materials Research Society Fall Meeting, Boston, Dec 2016

7. B. Ganapathysubramanian, "*Enhancing Sustainability through Simulation: Green Buildings and Nanostructured Solar Cells*", NAS Arab American Frontiers in Engineering, Science and Medicine, Abu Dhabi, UAE, November 2016

8. D Ackerman[+], B Ganapathysubramanian, "*Morphology of diblock copolymers under confinement*", American Physical Society March Meeting, Portland, March 2016

9. A Kommajosula[+], S Xu[+], CY Wu, D Di Carlo, B Ganapathysubramanian, "*A Quasi Dynamic Approach to modelling Hydrodynamic Focusing*", American Physical Society Division of Fluid Dynamics Meeting, Portland, March 2016

10. KG Lore, D Stoecklein[+], M Davies[*], B Ganapathysubramanian, S Sarkar, "*Hierarchical Feature Extraction for Efficient Design of Microfluidic Flow Patterns*", NIPS, Montreal, Dec 2015

11. O Wodo[+], Baskar Ganapathysubramanian, "*Modeling Topological Effects on Multi-Phase Fluids: Self-Lubricating, Self-Healing and Self-Cleaning Surfaces*", USNCCM, July 2015

12. B Ganapathysubramanian, O Wodo[+], "*Organic Thin Films: Evaporation, Phase-Separation and Substrate-Patterning Using Diffuse Interface Models*", USNCCM, July 2015

13. S Xu[+], C Wang, M-C Hsu, B Ganapathysubramanian, "*A Variational Multiscale Framework for Buoyancy Driven Natural Convection*", USNCCM, July 2015

14. J Mineroff[+], C Wang, B Ganapathysubramanian, M-C Hsu, "*Optimization of the Parametric Design of a Bioprosthetic Heart Valve Based on Isogeometric Analysis*", USNCCM, July 2015
15. S. Pfeifer[+], V. Calo, B. Ganapathysubramanian, "*Quantifying the Effects of Noise on Spinodal Decomposition: Massively Parallel Framework and a Variational Multiscale Treatment*", USNCCM, San Diego, July 2015

16. O Wodo[+], B Ganapathysubramanian, "*Graph Based Technique to Quantify Charge Transport Characteristics of Heterogeneous Morphologies*", AICHE Annual meeting, Nov 2015

17. O Wodo[+], B Ganapathysubramanian, "*Heterogeneous Morphology By Design - Harnessing Cloud to Quantify and Optimize Morphology*", AICHE Annual meeting, Nov 2015

18. O Wodo[+], B Ganapathysubramanian, "*Using graphs to interrogate the atomic structure of polymer blends*", American Physical Society, March 2015

19. S Pfeifer[+], B Ganapathysubramanian, "*Quantifying the Effects of Noise on Diffuse Interface Models: Cahn-Hilliard-Cook equations*", American Physical Society, March 2015

20. D Ackerman[+], B Ganapathysubramanian, "*Parallel framework for wormlike chains using self-consistent field theory*", American Physical Society, March 2015

21. O Wodo[+], J Zola, B Ganapathysubramanian, "*Morphology optimization for enhanced performance in organic photovoltaics*", American Physical Society, March 2015

22. D Kipp, O Wodo[+], B Ganapathysubramanian, V Ganesan, "*Polymer/solvent bicontinuous microemulsions for use as organic solar cell active layers*", American Physical Society, March 2015

23. D Stoecklein[+], B Ganapathysubramanian, CY Wu, D Di Carlo, "*Micropillar sequence design for inertial fluid flow sculpting*", American Physical Society, March 2015

24. BSS Pokuri[+], B Ganapathysubramanian, "*Tailoring the morphology of polymer blend particles: 3D simulations and linear stability analysis*", American Physical Society, March 2015

25. 8 B Ganapathysubramanian, "*Enhancing sustainability through simulations, Drought tolerant crops, Green buildings and clean energy*", Arab American Frontiers of Science, Engineering and Medicine, Oman, Nov 2014

26. D Ackerman[+], Baskar Ganapathysubramanian, "*A massively parallel space-time formulation for SCFT*", APS March Meeting, Denver, March 2014

27. B Ganapathysubramanian, "*Interplay Between Phase Separation and Crystallization During Solvent-Based Fabrication of Thin Organic Films*", in the symposium "Computationally Enabled Discoveries in Synthesis, Structure and Properties of Nanoscale Materials", MRS Spring 2014, San Francisco, March 2014

28. B Ganapathysubramanian, "*Computationally exploring structure property relations in organic electronics*", Invited talk in the symposium "Grand Challenges in Organic Electronics", MRS Spring 2014, San Francesco, March 2014

29. O Wodo[+], B Ganapathysubramanian, "*Using map-reduce formalism to explore process-structure-property relationships in organic electronics*", Information Science for Materials Discovery and Design, Center for Nonlinear Studies (CNLS) at Los Alamos National Laboratory (LANL), Feb 2014

30. 3 B Ganapathysubramanian, "*Data and model reduction for exploring process-structure-property relationships in organic electronics*", Information Science for Materials Discovery and Design, Center for Nonlinear Studies (CNLS) at Los Alamos National Laboratory (LANL), Feb 2014

31. B Ganapathysubramanian, Y Xie[+], O Wodo[+], "*Modeling roll-to-roll fabrication of thin film electronics: Fluid-mechanics and morphology evolution*", Advances in computational fluid structure interaction and flow simulation, Tokyo, March 2014

32. O Wodo[+], B Ganapathysubramanian, "*Predictive modeling of multi physics phenomena during fabrication of thin organic films*", Advances in computational fluid structure interaction and flow simulation, Tokyo, March 2014

8. Peer-Reviewed Conference Proceedings, Bulletins, or Reports – In Print/Accepted

1. H Sharma[+], AD Fontanini[+], U Vaidya, B Ganapathysubramanian, "*Transfer Operator Based Approach for Optimal Sensor Placement Under Uncertain Operating Conditions*", ***Building Simulations*** 2017, San Francisco, Aug 2017

2. S Ghosal, D Blystone, A K Singh, B Ganapathysubramanian, A Singh, S Sarkar, "*Interpretable Deep Learning applied to Plant Stress Phenotyping*", NIPS Symposium on Interpretability, Long Beach, Dec 2017

3. K Nagasubramaniam, S Jones, A K Singh, A Singh, B Ganapathysubramanian, S Sarkar, "*Explaining hyperspectral imaging based plant disease identification: 3D CNN and saliency maps*", NIPS workshop on interpretable ML, Long Beach, Dec 2017

4. U Passe, M Deza[+], B Ganapathysubramanian, S He, K Vansice, S Xu[+], "*An integrated experimental-computational investigation of connected spaces as natural ventilation typologies*", ***Simulation for Architecture and Urban Design (SimAUD),*** London, May 2016

5. S Ghanimeh, D Stoecklein[+], B Ganapathysubramanian, "*Energy Efficient Design of Low-Solids Anaerobic Digesters with Pillar-Aided Mixing*", ***Air and Waste Management Association***'s (A&WMA) 109th Annual Conference & Exhibition, New Orleans, June 2016

6. N Lee[+], Y-S Chung, S Srinivasan, P Schnable, B Ganapathysubramanian, "*Fast, automated identification of tassels: Bag-of-features, graph algorithms and high throughput computing*", Workshop on Data Science for Food Energy and Water at the 22th ACM conference on ***Knowledge Discovery and Data Mining*** (KDD), San Francisco, Aug 2016

7. A Akintayo[+], N Lee[+], M Mullaney, C Marett, A Singh, A Singh, G Tylka, B Ganapathysubramanian, S Sarkar, "*An end-to-end convolutional selective autoencoder approach to Soybean Cyst Nematode eggs detection*", Workshop on Data Science for Food Energy and Water at the 22th ACM conference on ***Knowledge Discovery and Data Mining*** (KDD), San Francisco, Aug 2016

8. V Chawla[+], HS Naik, A Akintayo, D Hayes, P Schnable, B Ganapathysubramanian, S. Sarkar, "*A Bayesian Network approach to County-Level Corn Yield Prediction using historical data and expert knowledge*", Workshop on Data Science for Food Energy and Water at the 22th ACM conference on ***Knowledge Discovery and Data Mining*** (KDD), San Francisco, Aug 2016

9. M Deza[+], B Ganapathysubramanian, S He, U Passe, "*High Fidelity CFD Modeling of Natural Ventilation in a Solar House*", ***ASME Proceedings on Heat Transfer***, from ASME 2015 International Mechanical Engineering Congress and Exposition, San Antonio, Nov 2015

10. U Passe, B Ganapathysubramanian, B Yesilata, "*The Harran Houses as a case study for solar assisted passive ventilation and cooling*", ***Turkish Solar Energy conference*** SolarTR 2014. Izmir Turkey, Nov 2014

11. A Fontanini[+], A Passalaqua, U Vaidya, B Ganapathysubramanian, "*Large scale CFD analysis of large green buildings*", ***ASHRAE winter meeting***, Jan 2014

12. J Diaz, Y Xie[+], J Zola, B Ganapthysubramanian, M Parashar, "*Federated Computing for the Masses – Aggregating Resources to Tackle Large-scale Engineering Problems*", presented at the ***SuperComputing-13*** conference, Nov 2013

13. S Sundararajan, T J Heindel, B Ganapathysubramanian, S Subramaniam, "*WiME: a departmental effort to improve recruitment, retention and engagement of women students in mechanical engineering*", ***ASEE Annual conference and exposition***, June 2012

14. D Busch[+], J Ren, Q Zou, B Ganapathysubramanian, "*Rapid Online Quantification of Tip-Sample Interaction for High-Speed Dynamic-Mode Atomic Force Microscope Imaging*", presented at the ***2011 American Control Conference***, San Francisco, June 2011

15. K Wang, U Vaidya, B Ganapathysubramanian and H Hu, "*Experimental Data Analysis of the Vortex Structures in the Wakes of Flapping Wings*", AIAA-2010-5078, ***28th AIAA Applied Aerodynamics Conference***, Chicago, Illinois, USA, July 2010
16. U Vaidya, B Ganapathysubramanian, A Raghunathan, "*Transfer operator method for control in fluid flows*", presented at the ***Joint 48th IEEE Conference on Decision and Control and 28th Chinese Control Conference***, Shanghai, P.R. China, Dec 2009

17. N Zabaras, X Ma and B Ganapathysubramanian[#], "*Non-linear data driven model reduction techniques for stochastic PDE systems*", Plenary lecture presented at the 6th ***GRACM International Congress on Computational Mechanics*** Thessaloniki, Greece, June 2008 (invited talk)

18. N Zabaras, B Ganapathysubramanian[#], "*Melt flow control using magnetic fields and magnetic field gradients*", invited presentation at the symposium on `Computational electro-magneto-fluid-dynamics' (G. Dulikravich, organizer), ***Sixth World Congress on Computational Mechanics*** (WCCM VI) in conjunction with the Second Asian-Pacific Congress on Computational Mechanics (APCOM'04), Beijing, China, September 2004 (invited talk)

19. CS Sunder, B Ganapathysubramanian[##], V Babu, D Strenski, "*Parallel performance of the interpolation supplemented lattice Boltzmann method*", ***HiPC International conference on high-performance computing***, 2003

9. Other Conference Proceedings, Bulletins, or Reports – In Print or Accepted

1. J Diaz-Montes, M Parashar, I Rodero, J Zola, B Ganapathysubramanian, Y Xie[+], "*CometCloud: Using a Federated HPC-Cloud to Understand Fluid Flow in Microchannels*", ***HPC in the Cloud***, published May 22, 2013

2. J Diaz-Montes, M Parashar, I Rodero, J Zola, B Ganapathysubramanian, Y Xie+, "*Understanding Fluid Flow in Microchannels*", ***Digital Manufacturing Report***, published May 22, 2013

10. Other Scholarly Contributions
None

B. Patents, Disclosures, and Technology Transfer

Disclosure ISURF 04511: Deep learning based automated Soybean Cyst Nematode (SCN) egg counting system, Filed June 9, 2016

C. Funded Grants and Contracts

Investigators:	Baskar Ganapathysubramanian
Title:	***Collaborative Research: Solution Processing of Organic Semiconductors: A Coupled Atomistic-Continuum Framework***
Agency:	NSF-CBET
Dates:	Sept 2016-Sept 2019
Total amount:	$ 207,232
Amount allocated:	$ 207,232
Role:	PI, overall supervision of project

Investigators:	Arun Somani, Baskar Ganapathysubramanian and others
Title:	***MRI: Acquisition of HPC Machine: Computing for Sustainability***
Agency:	NSF
Dates:	Dec 17 - Dec 19
Total amount:	$ 700,000
Role:	Co-PI

Investigators:	Soumik Sarkar, Arti Singh, Asheesh Singh, Baskar Ganapathysubramanian
Title:	***A multi-scale data assimilation framework for layered sensing and hierarchical control of disease spread in field crops***
Agency:	USDA NIFA
Dates:	Jan 2017-Dec 2019
Total amount:	$ 920,000
Amount allocated:	$300,000
Role:	Co-PI, lead of image processing and computing

Investigators:	Sourabh Bhattacharya, Soumik Sarkar, Arti Singh, Asheesh Singh, Baskar Ganapathysubramanian
Title:	***Saliency-driven Robotic Network for Spatio-temporal Plant Phenotyping***
Agency:	USDA NIFA

Dates: Dec 2016-Dec 2019
Total amount: $ 820,000
Amount allocated: $ 210,000
Role: Co-PI, lead of image processing and computing

Investigators: Arti Singh, Asheesh Singh, Soumik Sarkar, Baskar Ganapathysubramanian
Title: ***Using Engineering Tools to Identify and Quantify biotic and abiotic stress in soybean for customable agriculture production***
Agency: Iowa Soybean Association
Dates: Sept 2015-Sept 2018 (yearly contract)
Total amount: $ 159,064
Amount allocated: $ 105,000
Role: Co-PI, lead on creating engineering tools

Investigators: Baskar Ganapathysubramanian
Title: ***CAREER: A Predictive Modeling Framework for Exploring Process-Structure-Property Relationships in Organic Solar Cells***
Agency: NSF-CMMI
Dates: Sept 2012-Sept 2017
Total amount: $ 400,000
Amount allocated: $ 400,000
Role: PI, overall supervision of project

Investigators: Baskar Ganapathysubramanian
Title: ***Predicting Nanoscale Morphology in Solution-Processed Organic Solar Cell,***
Agency: KAUST (King Abdullah University of Science and Technology)
Dates: Oct 2012-Oct 2015
Total amount: $ 417,809
Amount allocated: $ 417,809
Role: PI (ISU), overall supervision of computational aspects of project

Investigators: Baskar Ganapathysubramanian
Title: ***Collaborative Research: CDS&E: Sculpting fluid flow using a programmed sequence of micro-pillars***
Agency: NSF-CBET
Dates: Sept 2013-Sept 2017
Total amount: $ 255,836
Amount allocated: $ 255,836
Role: PI, overall supervision of project

Investigators: Baskar Ganapathysubramanian
Title: ***Full scale 3D CFD analysis of double paned windows: effect of flexure on R values (PI)***
Agency: Pella Corporation/IPRT

Dates: Jan 2013-Feb 2014
Total amount: $ 55,000
Amount allocated: $ 55,000
Role: PI, overall supervision of project

Investigators: Baskar Ganapathysubramanian, Theodore Heindel, Thomas Lubberstedt
Title: ***3D imaging and physics-based modeling for optimized root characteristics (PI)***
Agency: Plant Science Institute Innovative Research grant
Dates: July 2013-June 2015
Total amount: $ 118,000
Amount allocated: $ 70,000
Role: PI, overall supervision of project

Investigators: Ulrike Passe , Baskar Ganapathysubramanian, Krishna Rajan, Umesh Vaidya
Title: ***EAGER: Multi-scale material and dynamic thermo-fluid computational models and controls for sustainable buildings using efficient energy harvesting materials***
Agency: NSF
Dates: Oct 2013-Oct 2014
Total amount: $ 50,000
Amount allocated: $ 40,000
Role: Co-PI, overall supervision of computational aspect of project

Investigators: Srinivas Aluru, Krishna Rajan, Baskar Ganapathysubramanian
Title: ***AF: Small: Parallel Methods for Large, Atomic-scale Quantitative Analysis of Materials***
Agency: NSF-CCF
Dates: July 2009-June 2012
Total amount: $ 497,784
Amount allocated: $ 250,000
Role: Co-PI, Develop scalable data dimensionality framework, application to materials data

Investigators: Krishna Rajan, Baskar Ganapathysubramanian, Srinivas Aluru
Title: ***CDI-Type II: Dimensionality-Reduction and Reconstruction Tools for Atom Probe Tomography***
Agency: NSF-PHY
Dates: Sept 2009-Aug 2013
Total amount: $ 952,884
Amount allocated: $ 400,000
Role: Co-PI, Develop scalable methods for materials data analysis.

Investigators: Baskar Ganapathysubramanian, Michael Olsen

Title: ***Enhancing green building efficiency through fabric ducting (PI)***
Agency: DuctSox Corporation/IPRT
Dates: Dec 2011-March 2013
Total amount: $ 57,590
Amount allocated: $ 57,590
Role: PI, overall supervision of project

Investigators: Michael Olsen, Baskar Ganapathysubramanian
Title: ***Increasing Building Energy Efficiency by Using Fabric Ducting***
Agency: DuctSox Corporation/IPRT
Dates: Nov 2009-May 2011
Total amount: $ 41,578
Amount allocated: $ 20,000
Role: Co-PI, CFD analysis of ductwork in buildings

Investigators: Sumit Chaudhary, Baskar Ganapathysubramanian
Title: ***Processing conformal polymer photovoltaic thin films on textured topographies for photonic management***
Agency: NSF-CBET
Dates: Sept 2012-Sept 2015
Total amount: $ 399,484
Amount allocated: $ 200,000
Role: Co-PI, computational modeling of fabrication process

Investigators: Danial Attinger, Theodore Heindel, Baskar Ganapathysubramanian, Thomas Lubberstedt, Larry Halverson
Title: ***Computationally Engineered Plant Institute,***
Agency: ISU Presidential Initiative for Interdisciplinary Research
Dates: July 2013-June 2014
Total amount: $ 100,000
Amount allocated: $ 20,000
Role: Co-PI, computational modeling of nutrient uptake and root architecture

Investigators: Ganesh Balasubramanian, Co-PI: Baskar Ganapathysubramanian
Title: ***Collaborative Research: CDS&E: Genetic algorithm driven hybrid computational/experimental engineering of defects in designer materials,***
Agency: NSF
Dates: Sept 2014 - Sept 2017
Total amount: $ 308,091
Amount allocated: $ 150,000
Role: Co-PI, computational modeling and optimization

Investigators: Baskar Ganapathysubramanian
Title: ***Collaborative Research: Chemical Control of Polymer/PbS Blends for PV Applications,***

Agency: NSF
Dates: Oct 2014 - Oct 2017
Total amount: $ 103,296
Amount allocated: $ 103,296
Role: PI, computational modeling and optimization

Investigators: Baskar Ganapathysubramanian
Title: ***Collaborative Research: DMREF: Controlling Hierarchical Nanostructures in Conjugated Polymers,***
Agency: NSF
Dates: Oct 2014 - Oct 2018
Total amount: $ 430,125
Amount allocated: $ 430,125
Role: PI, computational modeling and optimization

Investigators: Baskar Ganapathysubramanian
Title: ***Updating the Fraunhofer Attic Simulator,***
Agency: Fraunhofer Center for Sustainable Energy Systems
Dates: June 2014 - March 2015
Total amount: $ 24,947
Amount allocated: $ 24,947
Role: PI, computational modeling and optimization

Investigators: Baskar Ganapathysubramanian, Ulrike Passe
Title: ***Sustainable Smart buildings: Integrating Design, Adaptive Controls and Predective Design,***
Agency: Iowa Energy Center
Dates: June 2014 - May 2015
Total amount: $ 79, 591
Amount allocated: $ 60,000
Role: PI, computational modeling and optimization

Investigators: Baskar Ganapathysubramanian
Title: Plant Science Institute Fellow ***: Computational Sciences as an enabler for predictive phenomics***
Agency: Plant Science Institute
Dates: June 2015 - May 2018
Total amount: $ 600,000
Amount allocated: $ 600,000
Role: PI, computational modeling and optimization

Investigators: Carolyn-Lawrence Dill, Asheesh Singh, Baskar Ganapathysubramanian, and 17 other faculty
Title: ISU PIIR***: Big Data in Digital Agriculture***
Agency: Iowa State Office of President
Dates: July 2015 - June 2018

Total amount: $ 750,000
Amount allocated: $ 105,000
Role: Co-PI, lead of one of the sub-teams

Investigators: Baskar Ganapathysubramanian
Title: ***Investigating morphology evolution in thin-film polymer blends***
Agency: NSF XSEDE
Dates: Dec 2014 - Dec 2015
Total amount: $177,494 (this is the dollar equivalent of the resource award)
Amount allocated: $177,494
Role: PI, computational modeling and optimization

Investigators: Baskar Ganapathysubramanian
Title: ***Investigating morphology evolution in thin-film polymer blends***
Agency: NSF XSEDE
Dates: March 2016 - March 2017
Total amount: $ 134,437 (this is the dollar equivalent of the resource award)
Amount allocated: $134,437
Role: PI, computational modeling and optimization

Investigators: Baskar Ganapathysubramanian
Title: ***Investigating morphology evolution in thin-film polymer blends***
Agency: NSF XSEDE
Dates: March 2017 - March 2018
Total amount: $ 62,694 (this is the dollar equivalent of the resource award)
Amount allocated: $62,694
Role: PI, computational modeling and optimization

D. Pending Grants and Contracts

Investigators: Baskar Ganapathysubramanian.
Title: ***SPX: Collaborative Research: Mesh-Free Finite Elements: New abstractions for Extreme Scale Simulations***
Agency: NSF
Dates: Aug 18 - Aug 22
Total amount: $ 311,578
Role: PI from ISU

Investigators: Baskar Ganapathysubramanian.
Title: ***CDS&E: A modular, scalable computational framework for modeling multi-block semi-flexible polymer structures***
Agency: NSF
Dates: Aug 18 - Aug 21
Total amount: $ 486,000
Role: PI

Investigators: Pat Schnable, Dan Nettleton, Baskar Ganapathysubramanian,
Title: ***RESEARCH-PGR: Integrative analyses of maize shoot patterning across multiple scales***
Agency: NSF
Dates: Aug 18 - Aug 23
Total amount: $ 5,250,000
Role: Co-PI

Investigators: Baskar Ganapathysubramanian.
Title: ***Collaborative Research: Probabilistic Graph Based Design of Tailored Heterogeneous Microstructures***
Agency: NSF
Dates: Aug 18 - Aug 21
Total amount: $ 210,000
Role: PI from ISU

Investigators: Baskar Ganapathysubramanian and others
Title: ***Spokes: MEDIUM: MIDWEST: Collaborative: Creating a BigData ecosystem for plant disease detection: Data collection, curation and learning from data***
Agency: NSF
Dates: Aug 18 - Aug 21
Total amount: $ 1995,771
Role: PI

E. Grants and Contracts Submitted but Declined (submitted in the last three years)

Investigators: D Attinger and others
Title: ***INFEWS/T3: A rational approach to optimize land and water use, by multiscale optimization of maize agriculture, from plant phenotypes to international agriculture policies,***
Agency: NSF
Total amount: $ 3,000,000

Investigators: U Passe and others
Title: ***INFEWS/T1: Integrative Modeling of Human-Food-Energy-Water-Systems (FEWS) Interactions to Design Efficient, Equitable Urban Landscapes policies,***
Agency: NSF
Total amount: $ 3,000,000

Investigators: S Sarkar and others
Title: ***BIGDATA: Expert-guided learning from massive computational data for microstructure sensitive soft-matter design,***
Agency: NSF
Total amount: $ 1,000,000

Investigators: D Attinger and others
Title: ***DMREF: Collaborative Research: Bringing rational feedback in the synthesis and design of optimal surfaces for phase change applications in energy and sustainability***
Agency: NSF
Total amount: $ 1,000,000

III. TEACHING / EDUCATION ACTIVITIES

A. Instruction for ISU

Year	Class	Credits	# students	# TA	Instructor effectiveness	Department Average
S 2009	ME 475: Modeling & Simulation	3	13	0	**4.63**	3.83
S 2010	ME 436: Heat Transfer	4	118	4	**4.15**	3.97
S 2011	ME 436: Heat Transfer	4	112	4	**3.82**	3.84
S 2011	ME 475: Modeling & Simulation	3	17	0	**4.08**	3.84
F 2011	ME 538: Advanced Fluid Flow	3	25	0	**4.82**	3.82
S 2012	ME 436: Heat Transfer	4	121	4	**4.10**	3.73
F 2012	ME 538: Advanced Fluid Flow	3	21	0	**4.5**	3.93
S 2013	ME 160: Introduction to ME	3	44	0	**4.13**	3.74
S 2013	ME 475: Modeling & Simulation	3	12	0	**4.57**	3.74
S 2014	ME 160: Introduction to ME	3	44	0	**4.09**	3.86
S 2014	ME 475: Modeling & Simulation	3	18	0	**4.7**	3.86
S 2015	ME 160: Introduction to ME	3	18	0	**4.82**	3.87
S 2015	ME 475: Modeling & Simulation	3	26	0	**4.6**	3.87
F 2016	ME 160: Introduction to ME	3	37	0.5	**3.62**	3.92
S 2017	ME 475: Modeling & Simulation	3	26	0	**4.6**	3.92
S 2018	ME 475: Modeling & Simulation	3	20	0	**4.91**	4.04
S 2018	ME 160: Introduction to ME	3	34	0.5	**4.2**	4.04

B. Curriculum Development Activity for ISU

ME 475, Modeling and Simulation, 2011: Developed curriculum for this senior level elective course. This course was not offered for several years prior to Baskar reoffering this course.

ME 436, Heat Transfer (Lab), 2010: Awarded a departmental curriculum development grant to incorporate CFD aspects to two labs in the ME 436 Heat Transfer lab

ME 585x, Fundamentals of Predictive Plant Phenomics, 2016: Developed a module on Image processing for this overview course.

C. Service as Major Professor on Graduate Student Committees

Notes:

- *Served/Serving as Major professor on 41 graduate student committees (28 Doctoral, 13 Master of Science)*

	Name	Level	Date	Status
STUDENTS GRADUATED				
1	Hari Krishna Kodali,	PhD	Nov 08 – July 13	CD-Adapco
2	Quing Guo (co-advised by Jonathan Wickert)	PhD	Nov 09 – May 13	Avalion Wind Energy
3	Sai Kiranmayee Samudrala	PhD	Sept 08 – May 13	Delta Airlines
4	Robert Jaeger	MS	Aug 10 – Aug 12	MathWorks
5	David Busch	MS	Aug 09 – Nov 11	Faculty, Iowa Central Community College
6	Sameer Jape (co-advised by Jonathan Wickert)	MS	May 09 – May 11	PhD @ Texas A&M
7	Yu Xie	PhD	Aug 09 – Dec 14	Microsoft
8	Lucas Mutti	MS	Jan 12- Aug 14	Transsolar
9	Anthony Fontanini	PhD	Dec 09 – June 16	Fraunhofer CSE
10	Kahnietta O'Prout	MS	Aug 12- June 16	US Dept of Energy
11	Hiep Tran	MS	Aug 14 – Dec 16	Turner Construction
12	Nigel Lee	MS	Jan 15- Dec 16	DecisionPX, LLC
13	Hsiang Naik	MS	Jan 15 – Aug 16	Trakomatic
14	Ryan Gebhart (co-advised by Sumit Chaudhary)	PhD	May 12-Dec 16	Post-doc ISU MSE
15	Vikas Chawla (co-advised by Soumik Sarkar)	MS	May 15-Dec 16	unknown
16	Minhua Long (co-advised by Ross Morrow)	PhD	Aug 14-Jan 16	Post-doc, Stanford University
17	Saisree Parvathaneni	MS	Jan 13-May 14	unknown
18	Dan Stocklein	PhD	Aug 2013- July 17	Post-doc UCLA
19	Spencer Pfiefer	PhD	Dec 2011-Nov 17	unknown
20	Adedotun Akintiyo (co-advised by Soumik Sarkar)	PhD	Aug 2014-Nov 17	Scientist, Intel Corp
21	Songzhe Xu	PhD	Aug 2012-Aug 18	Post-doc UIUC
22	Joshua Mineroff (co-advised by Adarsh Krishnamurthy)	PhD	Dec 2015-Aug 18	unknown

23	Balaji Pokuri	PhD	Aug 2014-Aug 18	Post-doc ISU
24	Alec Lofquist	MS	Aug 2016-Aug 18	Software developer
STUDENTS CURRENTLY ADVISING				
26	Travis Ramsey	PhD	Aug 2013- present	Passed PhD qualifier
27	Himanshu Sharma	PhD	Aug 2015-present	Passed PhD Prelim
28	Aditya Kommasojula	PhD	Aug 2015-present	-
29	Ramin Nozuri	PhD	Aug 2015-present	-
30	Vahid Mirnezami	PhD	Aug 2015-present	-
31	Makrand Khanwale	PhD	Aug 2016-present	-
32	Sungu Kim (co-advised by Robbyn Anand)	PhD	Dec 2016-present	-
33	Therin Young	PhD	Aug 2016-present	-
34	Koushik Nagasubramanian	PhD	Aug 2016-present	-
35	Badrinath Balasubramaniam	MS	Jan 2017-present	-
36	Ali Rabbeh	PhD	June 2017-present	-
37	Truong Tran	PhD	Aug 2017-present	-
38	Biswajit Khara	PhD	Aug 2017-present	-
39	Bhoshun Gao	PhD	Aug 2017-present	-
40	Shivaranjani Deverakonda (co-advised with Shotriya)	PhD	Jan 2016-present	-
41	Sourabh Kumar	PhD	Aug 2018-present	-

D. Service on other Graduate Student Committees

Notes:

- *Served on 62 graduate student committees since 2008 as minor representative (MR) and committee member (CM)*

#	Name	Level, year	Major	Major Professor	Role
	GRADUATED PhD				
1	Abhinav Sarje	PhD 2010	E CPE	Srinivas Aluru	CM
2	Bo Kong	PhD 2011	M E	Michael Olsen	CM
3	Mingmei Wang	PhD 2011	C B E	Mark Kushner	CM
4	Lei Zhang	PhD 2011	M E	Song-Charng Kong	CM
5	Amit Diwadkar	PhD 2012	E CPE	Umesh Vaidya	CM
6	Norman Keller	PhD 2012	M E	Ted Heindel	CM
7	Jing Ren	PhD 2013	M E	Sriram Sundararajan	CM
8	Kamran Samani	PhD 2013	M E	Valery Levitas	CM
9	Mahdi Javanbakht	PhD 2013	M E	Valery Levitas	CM
10	Le Chen	PhD 2013	M E	Erin Macdonald	CM
11	Sambarta Dasgupta	PhD 2013	E CPE	Umesh Vaidya	CM
12	Kaustubh Kaluskar	PhD 2013	M S E	Krishna Rajan	CM

13	Hamed Attariani	PhD 2014	M E	Valery Levitas	CM
14	Sujith Sukumaran	PhD 2014	M E	Song-Charng Kong	CM
15	Ahmet Ozbay	PhD 2014	AER E	Hui Hu	CM
16	Xiaofei Hu	PhD 2014	C B E	Rodney Fox	CM
17	David Asjes	PhD 2015	M E	Atul Kelkar	CM
18	Zhuoru Wu	PhD 2015	M E	Pranav Shotriya	CM
19	Kasra Momeni	PhD 2015	AER E	Valery Levitas	CM
20	Arunabha Roy	PhD 2015	AER E	Valery Levitas	CM
21	Biao Feng	PhD 2015	AER E	Valery Levitas	CM
22	Mohammad Mehrabadi	PhD 2016	M E	Shankar Subramaniam	CM
23	Zhenping Liu	PhD 2016	M E	Michael Olsen	CM
24	Yong-Seok Hwang	PhD 2016	AER E	Valery Levitas	CM
25	Avinaash Murali	PhD 2016	AER E	Ganesh Rajagopalan	CM
26	Aaron Rosenberg	PhD 2016	WESEP	Anupam Sharma	CM
27	Bharat Agrawal	PhD 2017	AER E	Anupam Sharma	CM
28	Chloe Dedic	PhD 2017	M E	Michael James	MR
29	Chenglong Wang	PhD 2017	M E	Ming-Chen Hsu	CM
30	Qi Li	PhD 2017	IMSE	Guiping Hu	CM
31	Stephanie Oyola-Reynoso	PhD 2017	M S E	Martin Thuo	CM
32	Harishchandra Jadhav	PhD 2017	A B E	Steve Hoff	CM
33	Minh Tran	PhD 2017	M E	Sonal Padalkar	CM
34	Ehsan Madadi-Kandjani	PhD 2017	M E	Alberto Passalacqua	CM
	CURRENT PhD				
35	Eric Anderson	PhD	M E	Atul Kelkar	CM
36	Pavithra Premaratne	PhD	AER E	Hui Hu	CM
37	Emmanuel Hitimana	PhD	M E	Michael Olsen	CM
38	Zehui Jiang	PhD	ECONA	Dermot Hayes	CM
39	Fei Xu	PhD	M E	Ming-Chen Hsu	CM
40	Subhrajit Sinha	PhD	E CPE	Umesh Vaidya	CM
41	Cheng-Hao Wu	PhD	M E	Ming-Chen Hsu	CM
42	Austin Herrema	PhD	M E	Ming-Chen Hsu	CM
43	Zhe Ning	PhD	AER E	Hui Hu	CM
44	Benhour Amirian	PhD	AER E	Valery Levitas	CM
45	Seyyed Esfahani-Rashidi	PhD	AER E	Valery Levitas	CM
46	Arian Jafari	PhD	M E	Adarsh Krishnamurthy	CM
47	Jeffery Heylmun	PhD	ME	Alberto Passalacqua	CM
48	Ian Braun	PhD	BCB	Carolyn Dill	CM
49	Katerina Holan	PhD	Plant Biology	Steve Whitham	CM
50	Kevin Falk	PhD	Plant Breedin	Asheesh Singh	CM
51	Onur Bingol	PhD	ME	Adarsh Krishnamurthy	CM
52	Manjil Ray	PhD	ME	Alberto Passalacqua	CM
53	Andrew Martin	PhD	MSE	Martin THuo	CM
	GRADUATED MS				
54	Rebecca Keck	MS 2010	ECPE	Umesh Vaidya	CM

55	Kai Wang	MS 2010	ECPE	Umesh Vaidya	CM
56	Mohammad Aslani	MS 2013	ME	William Morrow	CM
57	David Poetting	MS 2013	ME	William Morrow	CM
58	Zhong HU	MS 2013	ECPE	Tim Bigelow	CM
59	Kin Gwn Lore	MS 2016	ME	Soumik Sarkar	CM
60	Sarah Jones	MS	Agron	Arti Singh	CM
61	Sambuddha Ghosal	MS	ME	Soumik Sarkar	CM
	CURRENT MS				
62	Nelson Wiese	MS	ME	Ming-chen Hsu	CM

E. Supervision of Post-Doctoral Students and Professional Staff

Notes:

- *Mentored 6 post-doctoral associates since 2008. 3 have taken up faculty positions (2 TT, 1 NTE).*

1. Olga Wodo PhD (Czestochowa University of Technology, Poland, 2008), *Predictive morphology modeling of organic thin film solar cells using the stochastic Cahn-Hilliard equation*, Sep 2009-Sept 2014, ***Faculty at U Buffalo.***

2. Mirka Deza, PhD (Virginia Tech, 2012), *Using high-performance computing and CFD for the analysis of green buildings*, Aug 2012-Dec 2015, ***Lecturer at ISU***

3. Robert Deya, PhD (Czestochowa University of Technology, Poland, 2010), *Error oriented parallel adaptive 3D mesh algorithms for the Cahn-Hilliard equation*, Jan 2013-July 2014, ***Faculty at Czestochowa University of Technology, Poland.***

4. David Ackerman, PhD (Iowa State, 2013), *Computational framework for modeling rod-coil block co-polymers*, July 2013-present

5. Talukder Jubery, PhD (U Washington, 2011), *Computationally engineered plants*, Sept 2013-present

6. Pengfei Du, PhD (U of Iowa, 2013), *Phase field modeling of polymer crystallization*, Sept 2013-2018, Faculty in Qingdao University of Technology

F. Supervision of Undergraduate Research and Independent Study

Notes:

- *Total of 37 undergraduate students have worked in research group since 2008*
- *8 female students and 14 students from underrepresented groups (URM)*
- *7 have continued for graduate studies in the Ganapathysubramanian group, and 3 have pursued PhD in STEM fields elsewhere*
- *Undergraduate research assistants were employed in the research group as hourly employees or as REU students for 10 week research activities*

#	Name	School	Year	Project Title
1	Robert Jaeger	ISU, ***continued for MS in my group***	2010	Flow simulations on rough microchannels
2	Kahntinetta Pr'Out	University of Georgia, ***continued for MS in my group***	2010	Computational homology analysis of bulkheterojunction structures
3	Blair Knutson	Dordt College	2010	Process modeling of organic solar cells
4	Ismael Dondase	Georgia Tech/Savannah State University	2011	Graph analysis of BHJ morphologies
5	Douglas Grosser	UC San Diego	2011	Structure property relationships in organic solar cells
6	Keith Nehring	ISU/Central College	2011	Structure property relationshi in organic solar cells
7	Spencer Pfiefer	ISU, ***continued for PhD in my group***	2011	Modeling morphology evolution of organic solar cells
8	Cheong Yeong	ISU	2011	Flow physics in natural ventilation
9	Nan Zhang	ISU	2011	Computational Fluid Dynamics
10	Shane Gerkin	ISU	2011-2012	Material property estimation of polymers using the group contribution method
11	Shaun VanWeelden	ISU	2012	Graph methods for morphology characterization
12	Savannah Dipplitto	Yakima County CC, WA	2012	Exploring the effect of nanocrystal distribution on photovoltaic performance
13	Mark Summe	Franciscan University	2012 2013	Process-Structure exploration in organic solar cells
14	Idaliz Ortiz Martinez	UPR Mayaguez	2012	Morphology control via substrate patterning
15	Pedro Cruz	ISU	2013	Fluid flow sculpting using sequenced microstructures
16	Jennifer Nixon	ISU	2013	Effect of Substrate patterning on morphology evolution
17	Nigel Lee	ISU, ***continued for MS in my group***	2013, 2014	Graph approaches for trait extraction of maize roots
18	Hsiang Naik	ISU, ***continued for MS in my group***	2013, 2014	Graph approaches for trait extraction of maize roots

19	Pradumnay Ramesh	ISU	2013, 2014	Sensitivity analysis of the Cahn-Hilliard equation
20	Michael Davis	ISU	2014	Coupling a genetic algorithm with molecular dynamics simulations
21	Eric Wirth	ISU	2014	Energy modeling of Attics
22	Laura Michelson	ISU	2015	Energy modeling of Attics
23	Alec Lofquist	ISU, ***continued for MEng in my group***	2014-2015	Software development and documentation of a Finite Element software framework
24	Rebecca Wong	Grinnell College	2014	Quantifying effect of surface patterns on morphology
25	Katherine Abrams	Grinnell College	2014	Characterizing the modes of inertial microfluid deformation
26	Shawn Castilliano	ISU	2015-2016	Modeling morphology evolution of organic solar cell
27	Vaughn Dorsey	ISU	2015-2016-2017	Graphical User Interface for Graph based analysis platform
28	Nadab Wubshet	Oberlien college, Sioux Falls	2015	Optimization of pillar programming
29	Jonathan Green	ISU	2016	Self-consistent field theory simulations under confined geometries
30	Matthew Fulford	ISU	2016	Runtime optimization of a micropillar sequence design framework
31	Jesse Trujillo	ISU	2016	Modeling solvent annealing during polymer thin film fabrication
32	Tanner Holte	ISU	2017	Self-Consistent Field Theory Simulations
33	Joe Van Treek	ISU	2017	Automatic mesh generation for quasi-static flow simulations
34	Tess Coulson	ISU	2017	Microfluidic pillar programming
35	Adam Valdez	UT San Antonio	2017	Machine learning for process-structure optimization
36	Zachary Kauffman	ISU	2018	Meshing for CFD
37	Alvin Allen	Rose Hulman	2018	Computational shape design o microfluidic particles

G. Non-ISU Instruction (e.g. Short Courses, Workshops, Training)
None

H. Other Teaching Contributions

The following high school students participated in research activities in the Ganapathysubramanian group:

- Triet Ly, North High School, Des Moines, 2016
- Jonathan Le, Hoover High School, Des Moines, 2015
- Julia Meyer, Ames High School, 2014

The following high school teacher participated in research activities in the Ganapathysubramanian group:

- Marc Pedersen, West Des Moines Valley High School, 2016

IV. EXTENSION/PROFESSIONAL PRACTICE ACTIVITIES

A. Editorial Service for Journals
None

B. Offices Held in Professional Societies

- Workshop organizer: First International Workshop on Machine Learning for Cyber-Agricultural Systems, Bombay, India, Oct 24-26, 2018
- Allocations committee chair, Great Lakes Consortium for Petascale computing, 2014-2017
- Workshop organizer: World congress on computational mechanics, 2018, NYC
- Workshop committee member: Data Science for Food Energy and Water at the 22th ACM conference on Knowledge Discovery and Data Mining (KDD), San Francisco, Aug 2016
- Workshop organizer, Phenotypic prediction: Image acquisition and analysis, ISU, Feb 2016
- Session Chair, ASME-MECMAT, 2015.
- Mini-symposium organizer: World congress on computational mechanics, 2012, Sao Paolo, Brazil
- Mini-symposium organizer: International workshop on computational mechanics of materials, Baltimore, 2012
- Technical Program Chair for 47th Annual Technical Meeting of Society of Engineering Science at Ames, Iowa October 2010

- Journal reviewer (review ~ 20 manuscripts per year) for
  - Energy and Buildings
  - Buildings and Environment
  - SIAM Journal of Scientific Computing
  - Computer Methods in Applied Mechanics and Engineering
  - Journal of Computational Physics
  - Small
  - Physics of Fluids
  - Organic Electronics
  - Finite Element in Analysis and Design
  - International Journal of Numerical Methods in Engineering
  - International Journal of Heat and Mass Transfer
  - CMC: Computers, Materials, & Continua

C. Grant Review Panels

- Great Lakes Consortium for Petascale Computation: BlueWaters allocations committee 2012-2013, Committee Chair 2014-2015, 2015-2016
- NSF Panel review: DMREF, CyberSEES
- DOE Panel Review: Extreme scale uncertainty quantification, June 2013
- DOE Graduate Fellowship panel review: Feb-March 2012
- University of Houston: Internal grant review, Dec 2011

D. Government, Educational, or Corporate Advisory Committees

- Great Lakes Consortium for Petascale Computation: Member, Aug 2009 – present. This is a collaborative forum (universities in the mid-west) to facilitate the widespread and effective use of petascale computing
- Invited panelist in “Multi-Scale Modeling Planning Workshop” for the Air Force Office of Sponsored Research (AFOSR) to better define and prioritize the scientific challenges that must be addressed to have the desired maximum impact on the structural prognosis needs of the US Air Force, Wright-Patterson AFB, Dayton OH, Dec 9-10 2009.
- Invited participant in “NSF / ONR Workshop on Key Scientific and Technological Issues for Development of Next Generation Organic Solar Cells” to better define and prioritize the scientific and technological challenges that must be addressed to improve the impact and utility of plastic solar cells, Washington DC, June 25-26 2012

- Invited participant in "NSF OCI CyberBridges workshop" 2012, 2013 and 2016 whose aim is to "Develop the Next Generation of Cyberinfrastructure Faculty for Computational and Data-enabled Science and Engineering"
- Invited participant in "Interdisciplinary Frontiers of Designing Engineering Material Systems", July 2016
- Participant in the "Indo-US Workshop on Organic Solar Cells', June 25,25 2013, NREL, Golden, Co.

E. Public Service Activities

- Presented a public lecture on "Crowd-Sourcing design of micro-fluidic devices" at the monthly "Knowledge on Tap" lecture series in Ames, July 2016.
- Presented a workshop on fluid flow to middle school students, April 2015
- Presented to US Representative David Young about computational workflows for automated phenotyping, Jan 2016
- Presented to US Representative Steve King about computational workflows for automated phenotyping, June 2016
- Gave a series of 3 interactive 2 hour workshops on STEM activities ('functivities with math, physics and chemistry') for elementary school kids in Ames, Feb-April, 2015
- Mentored 3 high school students over 10 week summer projects.

F. Other Extension/Professional Practice Activities

- Work with plant breeders at ISU to deploy automated phenotyping approaches for soybean germplasm development.
- Organized a Data Carpentry workshop, Feb 2016 in Ames.

V. INSTITUTIONAL SERVICE ACTIVITIES

A. University-Level Service

- University Awards Committee: AY 2012-2013
- University HPC Steering Committee: AY 2013-current, current: Chair of the committee
- University new faculty orientation panelist: Aug 2010, 2011, 2012

B. College-Level Service

- COE Research grants Committee: AY 2013-current
- ME Chair search committee: AY 2011-2012

- Aero faculty search committee: AY 2013-2014
- COE Presidential Initiative search committee: AY 2014

C. Department-Level Service

- Department Seminar Series: AY 2009-2014
- Faculty coordinator: Women in ME program: AY 2010-2014
- ME UG Education committee: Ay 2008-2011
- ME Faculty search committee: AY 2008-09, 2010-11, 2012-13, 2013-14, 2014-2015, 2015-2016
- ME Course Development Committee: AY 2010-11
- ME Curriculum committee: AY 2017
- ME faculty mentor: AY 2014-2017