OLGA WODO, PH. D.

Materials Design and Innovation Department
Department of Mechanical and Aerospace Engineering
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POSITIONS

University at Buffalo, SUNY, Buffalo, NY, USA
2021-present: Associate Professor, Materials Design and Innovation Department,
2014-2021: Assistant Professor, Materials Design and Innovation Department,
2014-2020: Volunteer Appointment: Mechanical and Aerospace Engineering Department.

Iowa State University, Ames, IA, USA
2009-2014: Postdoctoral Fellow, Mechanical Engineering Department, *Project:* Designing next-generation organic solar cells. *Mentor:* Prof. Baskar Ganapathysubramanian.

Czestochowa University of Technology, Czestochowa, Poland
2003-2008: PhD Research Assistant, Department of Mechanical Engineering and Computer Sciences, *Project*: Modeling of hypoeutectic alloys solidification. *Advisor:* Prof. Norbert Sczygiol.

EDUCATION

2003–2008: PhD in Mechanical Engineering at Czestochowa University of Technology, Czestochowa, Poland. Dissertation title: "Modeling of hypoeutectic alloy solidification."

2003: Mechanical Engineering studies (*Erasmus Programme*) at Universita degli Studi Roma Tre, Italy.

1998–2003: (within top 3%) MSc in Mechanical Engineering at Czestochowa University of Technology, Czestochowa, Poland. Specialization: Computational Mechanics. Thesis: "Modeling of temperature field in welding process – an analytical approach."

RESEARCH INTERESTS

Microstructure informatics, computational materials science, modeling nanomanufacturing, accelerated design of materials, linking process–structure–property, numerical modeling of morphology evolution, scientific computing, high-performance computing and large-scale problems, renewable energy, solar cells, batteries, nanocharacterization of 2D and 3D nanomaterials, computational fluid dynamics, multi-phase flow, micro-fluidics, optimization.

JOURNAL PUBLICATIONS

1. **D. Jivani**, **O. Wodo**, "Skeletal-based microstructure representation and featurization through descriptors", Computational Materials Science, 2022 (submitted).

2. **K. Vaddi**, B. Pokuri, B. Ganapathysubramanian, **O. Wodo**, "Construction and high throughput exploration of phase diagrams of multi-component organic blends", Computational Materials Science, (pre-print).

3. **D. Jivani**, J. Zola, B. Ganapathysubramanian, **O. Wodo**, "GraSPI: graph-based structure property identifier for morphology in organic solar cells", SoftwareX 17, 100969.

4. **H. Liu**, B. Yucel, D. Wheeler, B. Ganapathysubramanian, S.R. Kalidindi, **O. Wodo**, "How important is microstructural feature selection for data-driven structure-property mapping?", MRS Communications, 2022, 12, 95-103.

5. **M. Roy** and **O. Wodo**, "Feature Engineering for Surrogate Models of Consolidation Degree in Additive Manufacturing", Materials, 2021, 14(9), 2239.

6. **D. Jivani**, R. Rai, **O. Wodo**, "Skeletal-based microstructure representation and convolution reconstruction", Computational Materials Science, 2021, 193, 110409.

7. E. Einarsson, **O. Wodo**, P. C. Nalam, S. R. Broderick, K. G. Reyes, E. B. Pitman, K. Rajan: "Data-driven visualization schema of a materials informatics curriculum: Convergence of materials science and information science", MRS Advance, 2020, 5 (7), 293-303.

8. F. Schoeneman, V. Chandola, N. Napp, **O. Wodo**, J. Zola "Learning Manifolds from Dynamic Process Data" MDPI, Algorithms, 2020,Volume 13 (2), 30.

9. **M. Roy**, **O. Wodo**, "Data-driven modeling of thermal history in additive manufacturing", Additive Manufacturing, 2020, Volume 32, 101017.

10. A. Aboulhassan, M. Hadwiger, **O. Wodo**: "Extracting topology, shape and size from heterogenous microstructure", Computational Materials Science, 2020, Volume 173, 15, 109402.

11. M. Aykol, J. Hummelshoj, A. Anapolsky, **O. Wodo**, C. Wolverton, B. Storey, et. al "The Materials Research Platform: Defining the Requirements from User Stories", Matter, 2019, 1 (6), 1433-1438.

12. **K. Vaddi**, **O. Wodo** "Metric Learning for High-Throughput Combinatorial Data Sets", ACS Combinatorial Science, 2019, 21 (11), 726-735.

13. B. Zhang, J. Grant, L. Bruckman, **O. Wodo**, R. Rai, "Degradation Mechanism Detection in Photovoltaics by Fully Convolutional Neural Network", Scientific Reports, 2019, 9 (1), 1-13.

14. **M. Roy**, R. Javari, C. Zhou, **O. Wodo**, P. Rao, "Prediction and Experimental Validation of Part Thermal History in Fused Filament Fabrication Additive Manufacturing Process", ASME Journal of Manufacturing Science and Engineering, 2019, 141 (12).

15. **M. Roy**, **O. Wodo**, "Quality assurance in additive manufacturing of thermoplastic parts: predicting consolidation degree based on thermal profile", International Journal of Rapid Manufacturing, 2019, 8, 4, 285-301.

16. **E. Van**, M. Jones, E. Jankowski, **O. Wodo**: "Using graphs to quantify energetic and structural (dis)order in semicrystalline oligothiophenes thin films", Molecular Systems Design & Engineering, 2018, 3, 853-867.

17. **A. Zebrowski**, P. Du, J. Zola, B. Ganapathysubramanian, **O. Wodo**, "Designing optimal morphologies for efficient organic solar cells", Nature Computational Materials, 2018, 4 (1), 50 (Impact factor 8.9).

18. Negi, V.; **Wodo, O.**; Franeker, J.; Janssen, R.; Bobbert, P., "Simulating Phase Separation during Spin Coating of a Polymer-Fullerene Blend: A Joint Computational and Experimental Investigation", ACS Applied Energy Materials, 2018, 1, 2, 725-735.

19. S. Pfeifer, **O. Wodo**, B. Ganapathysubramanian, "An optimization approach to identify processing pathways for achieving tailored thin film morphologies", Computational Materials Science, 2018, 143, 486-496

20. Pokuri, B.S.S., Sit, J., **Wodo, O.**, Baran, D., Ameri, T., Brabec, C.J., Moule, A.J. and Ganapathysubramanian, B., "Nanoscale Morphology of Doctor Bladed versus Spin-Coated Organic Photovoltaic Films", Advanced Energy Materials, 2017, 7, 1701269 (impact factor 21.9)

21. A. Aboulhassan, R. Sicat, D. Baum, **O. Wodo**, M. Hadwiger, "Comparative Visual Analysis of Structure-Performance Relations in Complex Bulk-Heterojunction Morphologies", IEEE Visualization and Graphics Conference, 2017.

22. R.S. 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 Materials Science, 2017, 129, 220-225

23. 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, 2017, 161, 206-218

24. K. Zhao, **O. Wodo**, et all.: "Dynamically controlled vertical phase separation in small molecule : polymer blend organic thin film transistors" Advanced Functional Materials, 2016, 26, 1737-1746 (impact factor 11.8).

25. Y. Xie, **O. Wodo**, B. Ganapathysubramanian: "A diffuse interface model for incompressible two-phase flow: stabilized finite element method for large density ratios, grid resolution study, and 3D patterned substrate wetting problem", Computer and Fluids Journal, 2016, 141, 223-234.

26. T. Fast, **O. Wodo**, B. Ganapathysubramanian, S. Kalidindi: "Microstructure Taxonomy based on Higher-Order Spatial Correlations and Informatics: Application to Coarsening", Acta Materialia, 2016, 108, 176-185.

27. **O. Wodo**, S. Broderick, K. Rajan "Materials Informatics for Accelerating Discovery of Processing-Microstructure-Property Relationships", MRS Bulletin, August, (2016) invited paper, 41 (08), 603-609.

28. **O. Wodo**, J. Zola, B. Pokuri, P. Du, B. Ganapathysubramanian: "Automated, high throughput exploration of process-structure-property relationships using the MapReduce paradigm", Materials Discovery Journal, 2015, 1, 21-28.

29. 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." Special issue of the Journal Computer Graphics Forum, 2015, 34 (3), 401-410.

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

31. C.-K. Lee, **O. Wodo**, B. Ganapathysubramanian, and C-W Pao: "Electrode Materials, Thermal Annealing Sequences, and Lateral/Vertical Phase Separation of Polymer Solar Cells from Multiscale Molecular Simulations", ACS Applied Materials & Interfaces, 2014, 6 (23), 20612-20624.

32. **O. Wodo** and B. Ganapathysubramanian, "Identifying the mechanisms of phase–separation during solvent-based fabrication of polymer blend thin films", Applied Physics Letters, 2014, 105 (15), 153104.

33. **O. Wodo**, J. Roehling, A. Moule, ang B. Ganapathsubramanian: "Quantifying organic solar cell morphology: A computational study of three-dimensional maps", Energy and Environmental Science, 2013, 6 (10), 3060-3070 (impact factor 30.0).

34. S. Samudrala, **O. Wodo**, S. K. Suram, S. Broderick, K. Rajan, and B. Ganapathysubramanian: "Quantitative Analysis of 3D-Atom Probe Tomograph data using Graph Theory", Computational Materials Science 2013, 77, 335-344.

35. **O. Wodo**, E. Gawronska, and N. Sczygiol: "Modeling of two-stage solidification: Part II Computational verification of the model," *Archives of Foundry Engineering*, 2013, 1, 125–130.

36. **O. Wodo**, E. Gawronska, and N. Sczygiol: "Modeling of two-stage solidification: Part I Model development," *Archives of Foundry Engineerings*, 2012, 4, 151–156.

37. **O. Wodo**, S. Tirthapura, S. Chaudhary, and B. Ganapathysubramanian. "A computational interrogation of bulk heterojunction nanomorphology," *Journal of Applied Physics*, 2012, 12, 06431.

38. **O. Wodo**, S. Tirthapura, S. Chaudhary, and B. Ganapathysubramanian: "A graph based formulation for characterizing morphology with application to Organic Solar Cells," *Organic Electronics* 2012, 13, 1105-1113.

39. **O. Wodo**, and B. Ganapathysubramanian: "Modeling morphology evolution during solvent-based fabrication of organic solar cells," *Computational Materials Science*, 2012, 55, 113-126. (Listed as one of top hottest articles of 2012 for this journal)

40. **O. Wodo**, and 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*, 2011, 230, 6037-6060.

41. **O. Wodo** and N. Sczygiol: "A model for grain growth based on the novel description of dendrite shape," *Archives of Foundry Engineering*, 2007, (7)4, 183–188.

42. **O. Wodo** and N. Sczygiol: "Modeling of equiaxed grain growth in solidification," *Archives of Foundry*, 2004, (4)14, 558–563.

Book Chapters

1. S. Pfeifer, B. Pokuri, **O. Wodo**, B. Ganapathysubramanian, "Stochastic Cahn-Hilliard equations: variational formulation and numerical approaches", in Uncertainty Quantification in Multiscale Materials Modeling, Elsevier., 2020

2. Y. Xie, **O. Wodo**, B. Ganapathysubramanian "A diffuse interface model for incompressible two–phase flow with large density ratios" in "Modeling and Simulation in Science, Engineering and Technology Book Series" Springer (December 2015).

Peer Reviewed Conference Proceedings

1. N. Juneja, J. Zola, V. Chandola and O. Wodo: "Graph-based Strategy for Establishing Morphology Similarity". In 33rd International Conference on Scientific and Statistical Database Management (SSDBM 2021)

2. M. Roy, R. Yavari, C. Zhou, O. Wodo and P. Rao: "Modeling and Experimental Validation of Part-Level Thermal Profile in Fused Filament Fabrication", MSEC 2019, Erie, PA, June, 2019.

3. F. Schoeneman, V. Chandola, N. Napp, **O. Wodo**, J. Zola "Entropy-Isomap: Manifold Learning for High-dimensional Dynamic Processes", 2018 IEEE International Conference on BigData Seattle, (the premier conference on data science, data mining, knowledge discovery, large-scale data analytics, and big data)

4. Parikshit Mehta, Prahalada Rao, Zhenhua Wu, Vukica Jovanovi, **O. Wodo**, Mathew Kuttolamadom: "Smart Manufacturing: State-of-the-art review in context of converntional and modern manufacturing process modeling, monitoring and control", ASME, MSEC, 2018.

5. A. Aboulhassan, R. Sicat, D. Baum, **O. Wodo**, M. Hadwiger, "Comparative Visual Analysis of Structure-Performance Relations in Complex Bulk-Heterojunction Morphologies", IEEE Visualization and Graphics Conference, 2017.

Invited, Keynote and Seminar Talks

1. Facebook webinar: Data Science, Machine Learning, and AI: Applications and Opportunities Webinar Timeline"Microstructure Informatics" October 2021.

2. AFLOW seminar: "Microstructure Informatics" May 2021.

3. MRS Webinar on Machine Learning for Microstructural Data: "Microstructure informatics: expanding descriptors from molecular to microstructural level", 2020, O. Wodo. (Statistics: 763 registered, 489 attended).

4. Invited Talk: "Microstructure Representation for Physically Meaningful Descriptors", MS&T, October 2020.

5. MGI seminar: "Microstructure Informatics–Expanding Descriptors from Molecular to Microstructural Level ", National Institute of Standards and Technology, December 2019.

6. Invited talk: "Microstructure Informatics–Expanding Descriptors from Molecular to Microstructural Level ", MRS Fall Meeting, December 2019.

7. Invited talk: "How do evaporating thin films evolve? Unraveling phase-separating mechanisms during solvent-based fabrication of polymer blends" Spring Meeting of the German Physical Society (March 2019) in Regensburg, Germany.

8. Invited talk "Tools for Automated, High Throughput Exploration of Process-Structure-Property Relationships", MRS Fall Meeting, November, 2018.

9. Seminar: "Quantifying transport characteristics of heterogenous morphologies in organic solar cells", University at Eindhoven, September, 2018.

10. Seminar: "Microstructure design using graphs", February 2018, Case Western Reserve University.

11. Invited talk "Advanced simulations of morphology formation and electronic processes in bulk heterojunction organic solar cells", Vikas Negi, Feilong Liu, Charley Schaeffer, Harm van Eersel, Olga Wodo, Rene Janssen, and Peter Bobbert, Next-gen III: PV Materials, Groningen, 2017.

12. Seminar: "Accelerating discovery of processing pathways for organic thin films", University at Eindhoven, January 2017.

13. Seminar: "Linking fabrication with nanostructure of organic solar cells", Mechanical Engineering Department, Purdue School of Engineering and Technology, IUPUI, 2014.

14. Invited: "Modeling topological effects on multiphase fluids: self-lubricating, self- healing and self-cleaning surfaces", O. Wodo, Y. Xie, B. Ganapathysubramanian, Conference Celebrating the 60th Birthday of Tayfun E. Tezduyar, Tokyo, 2014.

15. Seminar: "Linking fabrication with nanostructure of organic solar cells: Using multiscale modeling for quantitative understanding", Mechanical Engineering Department, Michigan State University, 2014.

16. Seminar: "Linking fabrication with nanostructure of organic solar cells", Mechanical and Aerospace Engineering Department, University of Buffalo SUNY, 2014.

17. Seminar: "From portable electronics to spacecrafts: understanding and tailoring morphology for heterogeneous material systems", Aerospace Engineering Department, Iowa State University, 2014.

18. Invited: "Predictive modeling of multi physics phenomena during fabrication of thin organic films", O. Wodo, B. Ganapathysubramanian, Conference celebrating 70th birthday of Thomas Hughes, San Diego, 2013.

19. Keynote: "Inverse design of morphologies for enhanced performance in organic photovoltaics", O.Wodo, J. Zola, B. Ganapathysubramanian, SES Meeting, Atlanta, 2012.

20. Seminar: "Towards predictive modeling of thin organic electronics: Linking fabrication process with nanostructure," Computational Fluid Mechanics Seminar at Iowa State University, Ames, Iowa, November 2011.

21. Seminar: "Multiscale framework to model morphology evolution for thin organic electronics," Departmental Seminar at Czestochowa University of Technology, Czestochowa, Poland, December 2011.

Selected Conference Proceedings

1. **O. Wodo, H. Liu**, B. Ganapathysubramanian, D. Wheeler, "Automated Microstructural Feature Engineering for Accelerated Materials Discovery", MRS Spring 2021.

2. **K. Vaddi**, B. Pokuri, B. Ganapathysubramanian, **O. Wodo**, "High-Throughput Exploration of Materials-Phase Diagram Maps in Multi-Component", MRS Fall 2020.

3. **O. Wodo**, O. Kennedy, S. Motadaka, B. Glavic, Christopher W. Hong, "Incomplete microstructural-property database to accelerate data consolidation in organic electronics", MRS Fall 2020.

4. **M. Roy**, O. Wodo, "Feature Engineering for Surrogate Models of Consolidation Degree in Additive Manufacturing" MS&T, Pittsburg, October 2020.

5. **D. Jivani**, O. Wodo, "Robust Microstructure Representation", MRS Fall Meeting, Boston, December 2019.

6. **E. Oliverio**, O. Wodo, P, Nalam: "Understanding Mycelium's Structure for Use as a Renewable Air-Filtration Membrane", 2019 Erich Bloch Symposium, Buffalo, June, 2019.

7. **K. Vaddi**, O. Wodo, K. Rajan: "Machine Learning-Based Simulation Tools for Combinatorial Experiments. Metric Learning for High-Throughput Combinatorial Datasets (MLCD)" 2019 Erich Bloch Symposium, Buffalo, June, 2019.

8. **D. Jivani**, R. Rai, O. Wodo: "Robust microstructure representation: Reducing dimensionality of microstructure by few orders of magnitude", 2019 Erich Bloch Symposium, Buffalo, June, 2019.

9. **K. Vaddi**, S. V. Devaguptapu , F. Yao, B. Hayden, K. Rajan, O. Wodo: "Metric learning of composition-response mapping from high throughput experiments to accelerate catalyst discovery for fuel cells and metal air batteries", MRS Spring, Phoenix, April, 2019.

10. **E. Van**, M. Jones, E. Jankowski, O. Wodo: "Using Graphs to Quantify Energetic and Structural (dis)Order in Organic Thin Films", WCCM 2018, July, 2018.

11. D. Jivani, A. Abdoulhassan, M. Hadwiger, R. Rai, O. Wodo: "Microstructure Data Analytics-Robust Skeletal Representation for Microstructure Quantification and Design" , 2018 Erich Bloch Symposium, Buffalo, June, 2018.

12. **M. Roy**, O. Wodo, "Towards design of materials for manufacturing: surrogate models of materials behavior during additive manufacturing", 2018 Erich Bloch Symposium, Buffalo, June, 2018.

13. **K. Vaddi**, S.V. Devaguptapu, T. Zhang, X. Shen, S. Broderick, E.B. Pitman, F. Yao, O. Wodo, K. Rajan: "Data Analytics for Mapping Catalytic Activity From High Throughput Cyclic Voltammetry", 2018 Erich Bloch Symposium, Buffalo, June, 2018.

14. E. Einarsson, **O. Wodo**, P. Nalam, F. Gollier, K. Reyes, S. Broderick, and E. B. Pitman, "A New Paradigm for Materials Science Education: Integrating the Science of Data Into the Science of Materials", 2018 Erich Bloch Symposium, Buffalo, June, 2018

15. **Mriganka Roy**, O. Wodo: "Data driven approach to create a geometry independent surrogate model for thermal history in additive manufacturing", 2017 Solid Freeform Fabrication Symposium, Austin, Tx, 2017.

16. **P. Bhattacharya**, O. Wodo: "Designing morphology evolution pathways in organic thin films", UCCM, July 2017, Montreal, Canada.

17. **E. Van**, O. Wodo: "Discovery of Morphological Features for Next Generation Solar Cells", 2017 Celebration of Student Academic Excellence, Buffalo.

18. **O. Wodo**, J. Zola. B. Pokuri, P. Du and B. Ganapathysubramanian: "Heterogenous morphology by design - quantifying and optimizing morphological features", AIChE 2015, November, Salt Lake City.

19. **O. Wodo**, B. Ganapathysubramanian "Graph Based Technique to Quantify Charge Transport Characteristics of Heterogenous Morphologies", AIChE 2015, November, Salt Lake City.

20. **O. Wodo**, B. Ganapathysubramanian "Modeling topological effects on multi fluid flows: self-healing and superhydrophobic surfaces", USNCCM 2015, San Diego.

21. A. Aboulhassan, **O. Wodo**, B. Ganapathysubramanian, and M. Hadwiger "Intuition-based Visual Modeling of Charges Transport Bottlenecks in Organic Photovoltaic Solar Cells", poster to be presented during SciVis, Paris, November, 2014.

22. **O. Wodo**, and B. Ganapathysubramanian, "Controlling nanomorphology evolution during fabrication of polymer blend thin films", presented during CMM, Poznan, August, 2013.

23. **O. Wodo**, and B. Ganapathysubramanian, "How Do Evaporating Thin Films Evolve: Understanding Phase Separation Modes in Organic Thin Films", presented during12th US National Congress on Computational Mechanics, Raleigh-Durham, North Carolina, July, 2013.

24. **O. Wodo**, and B. Ganapathysubramanian, "Identifying the various mechanisms of phase-separation during solvent-based fabrication of polymer blend thin films", poster presented during MRS Spring, San Francisco, April, 2013.

25. **O. Wodo**, J. Zola H.K. Kodali and B. Ganapathysubramanian, "Injecting computational thinking into design of efficient organic solar cells: Harnessing the cloud." presented during MRS Fall, Boston, 2012.

26. **O. Wodo**, A. Herzing, L. J. Richter, D. DeLongchamp, and B. Ganapathysubramanian, "Computational characterization method for probing 3D morphology of organic solar cells" presented during MRS Fall, Boston, 2012.

27. **O. Wodo**, J. Zola, and B. Ganapathysubramanian, "COMA - cloud open morphology analyzer: quantifying the relative importance of morphological features on organic PV performance", presented during IWCMM, Baltimore, September, 2012.

28. **O. Wodo**, Y. Xie, and B. Ganapathysubramanian: "Predictive modeling of multi physics phenomena during fabrication of organic thin films", presented during WCCM, Brazil, July, 2012.

29. **O. Wodo**. and B. Ganapathysubramanian: "Quantifying transport characteristics of heterogenous morphologies: A graph based formulation", presented during MRS Spring Meeting, San Francisco, April, 2012.

30. **O. Wodo**, and B. Ganapathysubramanian: "Quantifying sensitivity of morphology evolution to solvent effects during fabrication of organic solar cells," presented during MRS Fall Meeting, Boston, Nov, 2011.

31. A. Amassian, **O. Wodo**, B. Yan, K. W. Chou, R. Li, K. Zhao, R. Sougrat, D. Cha, and B. Ganapathysubramanian: "Injecting computation into the investigation of morphological evolution of the bulk heterojunction layer," presented during MRS Fall Meeting, Boston, Nov 2011.

32. **O. Wodo** and B. Ganapathysubramanian: "Computationally efficient modeling of evaporation induced phase separation: addressing challenges related to multiple temporal and spatial scales," presented during 11th US National Congress on Computational Mechanics, Minneapolis, July, 2011.

33. **O. Wodo**, S. Tirthapura, S. Chaudhary and B. Ganapathysubramanian: "Graph and computational homology concepts to streamline process-structure-property relationships: Application to organic thin film devices," presented during 11th US National Congress on Computational Mechanics, Minneapolis, July, 2011.

34. **O. Wodo** and B. Ganapathysubramanian: "In silico modeling of 3D bulk heterojunction in organic solar cells: linking process variables with final morphology" presented at the ASME Applied Mechanics and Materials Conference, McMAT-2011, Chicago, May 30- June1, 2011.

35. **O. Wodo**, R. Jaeger, M. Lamm and B. Ganapathysubramanian "Multiscale Modeling of Fabrication Process of Organic Photovoltaics," presented at the ASME Applied Mechanics and Materials Conference, McMAT-2011, Chicago, May , 2011.

36. **O. Wodo**, S. Tirthapura, S. Chaudhary and B. Ganapathysubramanian: "Morphology descriptors of bulk - heterojunctions in thin film organic solar cells," presented at the 2011 MRS Spring Meeting, San Fransisco, CA, Apr 25-29, 2011.

37. **O. Wodo** and B. Ganapathysubramanian: "Toward predictive modeling of 3D bulk heterojunction in organic solar cells," presented at the 2011 MRS Spring Meeting, San Fransisco, CA, Apr 25-29, 2011.

38. **O. Wodo** and B. Ganapathysubramanian: "Multiscale modeling of fabrication process for organic photovoltaic," presented at the 47th Technical Meeting of Society of Engineering Science, Ames, Oct, 2010.

39. **O. Wodo** and B. Ganapathysubramanian: "Multiscale framework to model morphological evolution during spin-coating of active layer for organic solar cells," presented at 9th World Congress on Computational Mechanics, Sydney, Australia, July, 2010.

40. **O. Wodo** and B. Ganapathysubramanian: "Phase Field modeling approach to morphology evolution during fabrication of Polymer:Fullerene organic solar cells," presented at the 2010 MRS Spring Meeting, San Fransisco, CA, Apr 5-9, 2010.

41. **O. Wodo** and N. Sczygiol: "Modeling of two-stage solidification," In Proc. of PLASTMET '08, 2008.

42. **O. Wodo** and N. Sczygiol: "Modeling of dendritic envelope evolution of hypoeutectic alloys," International Conference on Reliability of Materials and Structures, 2008.

43. **O. Wodo**, N. Sczygiol: "Analysis of temperature gradient influence on the microstructure that forms in the solidification process, modeled with cellular automaton", In Proc. of the 12th Conference on Computer Methods in Materials Science, 239–244 (in polish).

TEACHING EXPERIENCES AT UB

MDI 502: Quantitative Structure Property Relationships in Materials (graduate course)
MDI 506: Kinetics, Microstructure and Defects (graduate course)
MAE 336: Heat Transfer (undergraduate course)
MAE 367: Applied Math for MAE (undergraduate course)

RESEARCH AWARDS

2021:	US Department of Housing and Urban Development: "MySoRe: Mycelium-based Soil Remediation in Buffalo, NY", PI: K. Kordas, coPI: P. Nalam, O. Wodo, E. Frimpong Boamah, A. Falicov, J. Koncikowski, A. Paltseva, $659,499 (10%).
2021:	UB:CMI: "Converging Additive Manufacturing, Materials Informatics, and Nanotechnology for Innovative Water Treatment Technology", N. Aich, C. Zhou, O. Wodo, $50,000 (20%).
2021:	National Science Foundation: NSF 2114595, $516,594, 07/15/2021–06/30/2024; "Atomic Scale to Micro Scale Understanding of Low Temperature Degradation Mechanism in Zirconia-Based Ceramics," PI: B. Mazumder, coPI: O. Wodo (25%)
2020:	UB Community for Health Equity: MySoRe: Mycelium-based soil remediation in the City of Buffalo, PI: O. Wodo (seed proposal).

2019:	UB:CMI: "Harnessing materials informatics to accelerate the development of Restorative Dental Materials", PIs: B. Mazumder, O. Wodo, $50,000 (20%).
2019:	National Science Foundation and Air Force Research Laboratory: NSF 1906344, $428,837 (includes three Supplements: 2020 Data Science Activities, 2021 REU and 2022 INTERN), 08/15/2019–07/31/2022, "QRM: Microstructure manifold analysis using hierarchical set of morphological, topological, and process descriptors", PI: O. Wodo (66%), coPI: J. Zola.
2019:	National Science Foundation: NSF 1910539, $499,814, 05/01/2019–04/30/2022; " OAC Core: Small: Scalable Non-linear Dimensionality Reduction Methods to Accelerate Scientific Discovery," PI: V. Chandola, coPIs: J. Zola, N. Napp, O. Wodo (25%)
2018:	UB:CMI: "Modeling Quantitative Structure-Permeation Relationships for the Development of Mycelium-based Biodegradable Filtration Membranes", P. Nalam, O. Wodo, $40,000.
2017:	UB:SMART: "Si Nancomposite Anode Coated with Lithium-rich Ferroelectric layer for high-performance Lithium-Ion Batteries", F. Yao, Q. Jia, G. Wu, O. Wodo, $35,000.
2017:	Toyota Research Project "Accelerating Materials Design for Energy", PI: K. Rajan $2,400,000.

OTHER AWARDS

2018:	**Academic Leadership of Women in Engineering** travel award, October 2018, Minneapolis, MN.
2017:	**Early Career Teacher of the Year Award**, University at Buffalo, School of Engineering and Applied Sciences.
2017:	**Institute on Teaching and Mentoring**, travel award, October 2017, Atlanta, GA.
2013:	*Journal of Materials Chemistry C, RSC Publishing* **Poster Prize** at International Colloquium on Flexible Electronics, 2013, KAUST.
2012:	MRS Spring Meeting, J Symposium Travel Award, 2012.
2012:	10th World Congress on Computational Mechanics Travel Award, 2012.
2011:	11th U.S. National Congress on Computational Mechanics Travel Award, 2011.
2010:	9th World Congress on Computational Mechanics Travel Award, 2010.
2007-2008:	PhD Research Grant, Polish Ministry of Science and Higher Education, "Modeling of hypoeutectic alloys solidification," May 2007 – November 2008 - analogous to **National Science Foundation Graduate Research Fellowship Award**.
2002:	Best Student Award Mechanical Engineering Department, Czestochowa University of Technology.
1999-2003:	Fellowship best student of the year, Mechanical Engineering Department, Czestochowa University of Technology.

MENTORING AND GRADUATE STUDENT COMMITTEE AT UB

- Current PhD students at MDI: Devyani Jivani (2018-2022), Hao Liu (2021-present), Parth Desai (2021-present).

- Former PhD student at MDI: Kiran Vaddi (2017-2021).

- Former PhD student at MAE: Mriganka Roy (2015-2020).

- MSc students at MDI: Hao Liu (2020), Jareena John (2020), Parth Desai (2020), Zachary Corey (2019), Eric Oliverio (2019), Kiran Vaddi (2018), Devyani Jivani (2018), Thaicia Stona (2018), Cristina Cisneros (2017), Suraj Natarajan (2017)

- MSc students at MAE: Sathish Kasilingam (2015-2017), Prosenjit Bhattacharya (2016-2017)

- undergraduate mentoring at MAE: Yuxi Lin (2014-2016, currently at BYD), Johnathan Boorady (2015-2016), Ellen Van (2016-2017, currently at iiMED), Adrian Zebrowski (2016-2017)

- undergraduate mentoring at CSE: Snigda Motadaka (2020 - 2021), Muhammad Niaz (summer 2021).

- undergraduate mentoring at EE: Alexander Hiller (2017)

- undergraduate mentoring at CBE: Sykhere Brown (2018)

- High school student mentoring "The Somers Science Research" program: Adrianna Tagayun (Summer 2019)

- graduate student committee membership at MDI: Olivia Licata (PhD, 2017-2021), Zachary Corey (PhD, 2018-2021).

- graduate student committee membership at other departments at UB: Luis Segura (PhD, ISE), Guhan Velmurugan (MSc, MAE), Prerna Gera (PhD, MAE, 2017), Pavan Kumar Behara (PhD, CDSE), Viswanath Pasumarthi (PhD, CBE, 2020), Guanglei Zhao (PhD, ISE, 2018).

- external PhD thesis reviewer: Amal Aboulhassan (KAUST, Saudi Arabia, December 2017), Vikas Negi (TUe, Netherlands, September 2018).

- Visiting scholar: Elzbieta Gawronska (Spring 2020).

AWARDS FOR MENTORED STUDENTS

- Devyani Jivani - the finalist of Three minute thesis (3MT) competition at University at Buffalo, March 2021.

- Poster award for Mriganka Roy, 3rd place in MAE Graduate Research Poster Competition, University at Buffalo, February 2020.

- Mentoring experience, MARPG Scholarship from the MidAtlantic Rubber and Plastics Group for graduate student: Eric Oliviero and his project on Mycelium, August 2019.

- Mentoring experience, University at Buffalo, Buffalo, NY, October 2014-2016, Yuxi Lin, undergraduate mentoring: "Inner Life of Organic Solar Cells: Quantifying Morphology", Dean's scholarship winner for 2015 Undergraduate Dean's Research Conference Scholarship, Niagara Falls, NY.

- Mentoring experience, Iowa State University, Ames, Iowa, June-August 2011, *10-week summer REU-project* Iowa State University, Ames, Iowa, : "Exploring the isoperimetric problem: Insights for optimizing solar cells," Ismael Dondasse, Savannah State University/Georgia Tech, second place poster award during "Peach State Louis Stokes Alliance for Minority Participation," 2011.

- Mentoring experience, Iowa State University, Ames, Iowa, June-August 2010, *10-week summer REU-project*: "Analyzing the morphological structure of a polymer photovoltaic cell through computational homology," Kahntinetta Pr'Out, Savannah State University (HBSU), best poster award during "Peach State Louis Stokes Alliance for Minority Participation," 2010 and best poster award during "Emerging Researchers National Conference in STEM 2010".

SERVICE WORK

- *community* Co-chair of annual meeting of the Materials Research Data Alliance (MaRDA), 2022.

- *school: UB* panelist in a Facebook Live Session on "Internship, Research, and Career Opportunities Discussion", February 19, 2019.

- *department: UB* panelist in MDI Erich Bloch Symposium: "Materials for Solar Technology: Data-science for design and discovery acceleration" (2019).

- *university: UB* panelist in New Faculty Brown Bag Luncheon Series: "Elements of a Successful Mentor-Mentee Relationship" (2017).

- *department: MDI*: Faculty Search Committee (2015-2017, 2021-2022), graduate curriculum development (2017-present).

- *department: MAE*: Graduate Committee (2015-2016), pitch elevator judge (2015), MAE Teaching Fellow Program Committee (2015), Faculty Search Committee (2017).

- *community*: symposium organizer: 13th and 14th US National Congress on Computational Mechanics 2015, Computational Methods for Modeling Interfaces with Complex/Evolving Topologies.

- *community*: symposium organizer: 2016, 2017, 2019, 2020 ASME International Manufacturing Science and Engineering Conference, Quality Assurance in Additive Manufacturing: Integrated Sensing, Modeling and Control.

- *K12 education* role: instructor of the teaching module on solar energy, Climate Summit, Buffalo, June, 2018.

PROFESSIONAL ACTIVITIES

- Reviewer for NASA, and NSF.

- Editor of Special Issue on: "Cyber Manufacturing – Emerging Frontiers in Sensing, Modelling and Control" in International Journal of Rapid Manufacturing

- Reviewer for *Materials*, *Chemical Physics Letters*, *Journal of Clean Production*, *ASME Journal of Computing and Information Science in Engineering*, *Computational Materials Science*, *Additive Manufacturing*, *Advanced Engineering Materials*, *Nature Computational Science*, *Acta Materialia*, *Applied Mathematical Modelling*, *Scientific Reports*, *Energy Technology*, *Materials Research Letter*, *ASME Journal of Fluid Engineering*, *Journal of Computational Physics*, *Energy and Environmental Science*, *Journal of Applied Physics*, *Proceedings of the MRS Meeting*, *Integrating Materials and Manufacturing Innovation*, *ACS Nano*, *ACS Omega*, *Journal of Materials Discovery*, *Journal of Computational and Applied Mathematics*, *Journal of Manufacturing Science and Engineering*, *Manufacturing Science and Engineering Conference*.

- Member of Materials Research Society (MRS), American Physical Society (APS), and United States Association of Computational Mechanics (USACM).

- Local organizing committee member for Computer Methods in Mechanics, 2005.