

# JAMES M. CHEN

State University of New York at Buffalo  
Department of Mechanical and Aerospace Engineering  
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## BACKGROUND

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### EDUCATION

The George Washington University Ph.D. in Mechanical and Aerospace Engineering Major: Solid Mechanics (Continuum Physics) Minor: Fluid Mechanics and Applied Mathematics Adviser: Professor James D. Lee and Professor Chunlei Liang Dissertation Title: Micropolar Electromagnetic Fluids: Theory and Simulation	Washington, DC <i>March 2011</i>
National Taiwan University M.S. in Applied Mechanics Adviser: Professor U. Lei and Professor Andrew M. Wo Thesis Title: Experimental Study of Traveling Wave Dielectrophoretic Pump	Taipei, Taiwan <i>June 2007</i>
National Chung-Hsing University B.S. in Mechanical Engineering	Taichung, Taiwan <i>June 2005</i>

## WORK EXPERIENCE (Since 2011)

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- Assistant Professor of Aerospace Engineering, **University at Buffalo** May 2018-Present
- Assistant Professor of Mechanical Engineering, **Kansas State University** August 2015-May 2018
- Graduate Faculty of Materials Sciences and Engineering, **Pennsylvania State University, University Park** May 2013-June 2015
- Affiliated Faculty, Materials Research Institute, **Pennsylvania State University, University Park** October 2012-June 2015
- Assistant Professor of Mechanical Engineering and Materials Science, **Pennsylvania State University, the Altoona college** August 2012-June 2015
- Visiting Assistant Professor of Mechanical Engineering Technology, **Indiana University-Purdue University, Fort Wayne (IPFW)** August 2011-May 2012

## ACADEMIC HONORS & AWARDS

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- Outstanding Young Engineer Award, Wichita Council of Engineering Societies, 2018
- Steve Hsu Keystone Research Faculty Scholar (Endowed Scholarship), 2017-2020
- U.S. Air Force Office of Scientific Research Young Investigator Award, 2017
- Paul H. Cutler Faculty Excellence Endowment in Condense Matter Physics, Eberly College of Science at Penn State, 2014
- Research Collaboration Fellowship Award, Penn State Materials Research Institute (MRI), 2014
- Honorary Fellow, Australian Institute of High Energetic Materials, 2011
- Student Travel Award, 16th US National Congress of Theoretical and Applied Mechanics, 2010
- Student Travel Award, 10th US National Congress of Computational Mechanics, 2009
- Fellowship, The George Washington University, 2008, 2009, 2010

## RESEARCH GRANTS

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### External Grants

- A First-Principles Study of Electro-Mechanical Coupling in Triboelectric Nanogenerators, National Science Foundation, PI, 6/1/2017-5/31/2020, \$400,000 (Co-PI: Dr. Zayd Leseman)
- Kansas State University Planning Grant: I/UCRC for Center for On-the-Move Energy Technology (COMET), National Science Foundation, Co-PI, 3/1/2017-2/28/2018, \$15,000
- A Multiscale Morphing Continuum Analysis on Energy Cascade of Compressible Turbulence, Air Force Office of Scientific Research, PI, 2/15/2017-2/14/2020, \$360,000
- Multiscale Analysis of Vortex Formation behind an Oscillating Cylinder, NASA Pennsylvania Space Grant Consortium, PI, 1/1/2014-5/18/2015, \$7,004

### Internal Grants

- Rational Mechanics of Fluids, K-State Global Campus, PI, 7/1/2016-6/30/2017, \$10,889
- Microstructural Evolution during Visco-Elastic-Plastic Deformation: Phase Field Model, Materials Research Institute, PI, 06/01/2014-08/31/2014, \$10,000
- Experimental Verification and Validation of VIV Wind Energy Harvester, Penn State Altoona Research Development Grant (RDG) and Undergraduate Research Award (URA), PI, 1/1/2014-12/31/2014, \$7,000
- Nonlocal Multiscale Modeling of Dynamic Crack Propagation, Penn State Altoona Undergraduate Research Award (URA), PI, 9/1/2012-8/31/2013, \$2,500
- Multiscale Kinetic Energy Transfer in Boundary Layer Flow, Penn State Altoona Undergraduate Research Award (URA), PI, 9/1/2012-8/31/2013, \$2,500
- Vortex-Induced Vibration (VIV) of Wind Energy Harvesting, Penn State Altoona Undergraduate Research Award (URA), PI, 9/1/2012-8/31/2013, \$2,500
- Design of Vortex-Induced Vibration Wind Energy Harvester, Penn State Altoona Undergraduate Research Award (URA), PI, 1/1/2013-8/31/2013, \$4,000
- Mechanical Design in Vortex-Induced Vibration and Wind Energy, Penn State Altoona Research Development Grant (RDG), PI, 1/1/2013-12/31/2013, \$6,000
- Hydrogen Bonding Interaction between Polysaccharide Lubricant and Phenolic Resin, Penn State Altoona Research Development Grant (RDG), Co-PI (with Dr. Justin Huffman), 1/1/2013-12/31/2013, \$1,200

## PUBLICATIONS(Graduate student contribution in red; Undergraduate student contribution in blue; Postdoctoral researcher contribution in green)

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### BOOK CHAPTERS

1. N. M. Miskovsky, P. H. Cutler, A. Mayer, B. G. Willis, D. T. Zimmerman, G. J. Weisel, **James M. Chen**, T. E. Sullivan, and P. B. Lerner, “The Role of Geometry in Nanoscale Rectennas for Rectification and Energy Conversion” in *Next Generation (Nano) Photonic and Cell Technologies for Solar Energy Conversion IV* (edited by O. V. Sulima and G. Conibeer), SPIE, 2013 (doi: 10.1117/12.2024187).
2. J. D. Lee and **James Chen**, “Sensitivity of Interatomic Potentials in Multiscale Modeling of Fracture” in *Multiscale Modeling of Synthetic and Natural Systems with Self-adaptive Capability* (edited by G. C. Sih and C.-K. Chao), National Taiwan University of Science and Technology Press, 2010
3. **James Chen** and J. D. Lee, “Dynamic Characteristics of Nano/Micro Biosensors” in *Multiscale Modeling of Synthetic and Natural Systems with Self-adaptive Capability* (edited by G. C. Sih and C.-K. Chao), National Taiwan University of Science and Technology Press, 2010
4. J. D. Lee, X. Wang and **James Chen**, “Introduction to Micromorphic Theory” in *Multiscale Modeling of Synthetic and Natural Systems with Self-adaptive Capability* (edited by G. C. Sih and C.-K. Chao), National Taiwan University of Science and Technology Press, 2010

## REFERRED JOURNAL ARTICLES

1. **M. I. Cheikh, L. B. Wonnell, James Chen**, “A Morphing Continuum Analysis of Energy Transfer in Compressible Turbulence,” *Physical Review Fluids*, **3**, 024604, 2018.
2. **James Chen**, “Morphing Continuum Theory for Turbulence: Theory, Computation and Visualization,” *Physical Review E*, **96**, 043108, 2017
3. **James Chen**, “An Advanced Theory for Morphing Continuum with Inner Structures,” *Reports on Mathematical Physics*, **80**, 317-332, 2017
4. **L. B. Wonnell**, and **James Chen**, “Morphing Continuum Description for Boundary Layer Transition and Turbulence,” *Journal of Fluids Engineering*, **139**, 011205, 2017
5. M. Y. Abdollahzadeh Jamalabadi, J. H. Park, M. M. Rashidi, **James M. Chen**, “Effects of Thermal Boundary Conditions on the Joule Heating of Electrolyte in a Microchannel,” *Journal of Hydrodynamics*, **28**, 850-862, 2016.
6. **M. Lopez, James Chen, V. A. Palochko**, “A Multiscale study of the boundary development for microfluidic system,” *Molecular Simulation*, **42**, 1370-1378, 2016.
7. **L. Chen, James Chen**, R. Lebensohn, Y. Ji, T. Heo, S. Bhattacharya, S. Mathaudhu, Z. Liu and L.-Q. Chen, “An integrated FFT-based phase-field and crystal plasticity approach for modeling static recrystallization of 3-D polycrystals,” *Computer Method in Applied Mechanics and Engineering*, **285**, 829-848, 2015
8. **James Chen** and **S. D. Niemkiewicz**, “Multiscale Modeling of Fracture in Barium Titanate: Fracture Toughness Estimation and Modified G-Criterion,” *Journal of Advanced Mathematics and Mechanics (ZAMM)*, **95**, 165-172, 2015
9. E. C. Santos, Abel F. G. Neto, C.A. Manesky, **James Chen**, T. C. Ramalho, A. M.J.C. Neto, “A Molecular Dynamics of Cold Neutral Atoms Captured by Carbon Nanotube under Electric Field and Thermal Effect as a Selective Atoms Sensor,” *Journal of Nanoscience and Nanotechnology*, **15**, 3677-3680, 2015
10. J. C.S. Santos, A. M. J. C. Neto, R. S. Borges, T. C. Ramalho, **James Chen** and N. T. Machado, “Theoretical Thermodynamics Study of PAMAM deposited around a Nanotube as Motor Controlled by Light and under Thermal Effect,” *Journal of Nanoscience and Nanotechnology*, **15**, 2840-2844, 2015
11. B. G. Willis, J. Qi, X. Jiang, **James Chen**, G. J. Wiesel and D. T. Zimmerman, “Selective-Area Atomic Layer Deposition of Copper Nanostructures for Direct Electro-Optical Solar Energy Conversion,” *ECS Transactions*, **64**, 253-263, 2014
12. **L. Chen**, F.F. Fan, H. Liang, **James Chen**, Y.Z. Ji, S. Zhang, T. Zhu, L.Q. Chen, “A phase-field model coupled with large elasto-plastic deformation: application to lithiated silicon electrodes”, *Journal of The Electrochemical Society*, **16**, F3164-F3172, 2014.
13. H.E. Ribeiro, A.M.J.C. Neto, Abel F.G. Neto. A.T. Amador, N.T. Machado and **James Chen**, ”DFT Spectrometry of Phenylamine-functionalized graphene for photocatalytic hydrogen production,” *Renewable Energy and Power Quality Journal (RE&PQJ)*, Paper#548, 2014
14. **James Chen**, J. D. Lee and X. Wang, “Special Issue on Multiscale Modeling and Simulation of Physical Phenomena of Material Systems,” *Journal of Nanomechanics and Micromechanics*, **4**, B2014001, 2014.
15. **James Chen**, “Extension of Nonlinear Onsager Theory of Irreversibility,” *Acta Mechanica*, **224**, 3153-3158, 2013
16. **James Chen**, C. Liang and J. D. Lee, “Numerical Simulation for Unsteady Compressible Micropolar Fluid Flow,” *Computers and Fluids*, **66**, 1-9, 2012
17. **James Chen**, C. Liang and J. D. Lee, “Micropolar Electromagnetic Fluids: Control of Vortex Shedding Using Imposed Transverse Magnetic Field,” *Journal of Advanced Mathematics and Applications*, **1**, 147-157, 2012.
18. **James Chen**, “Micropolar Theory of Flexoelectricity,” *Journal of Advanced Mathematics and Applications*, **1**, 269-274, 2012
19. **James Chen**, “Atomistic Field Theory of Nano Energy Harvesting,” *Journal of Computational and Theoretical Nanoscience*, **8**, 722-728, 2011
20. **James Chen** and J. D. Lee, “The Buckingham Catastrophe in Multiscale Modeling of Fracture,” *International Journal of Theoretical and Applied Multiscale Mechanics*, **2**, 3-11, 2011
21. **James Chen**, C. Laing and J.D. Lee, “Theory and Simulation of Micropolar Fluid Dynamics,” *Journal of Nanoengineering and Nanosystems*, **224**, 31-40, 2011.

22. **James Chen**, J. D. Lee and C. Liang, "Constitutive Equations of Micropolar Electromagnetic Fluids," *Journal of Non-Newtonian Fluid Mechanics*, **166**, 867-874, 2011
23. **James Chen** and J. D. Lee, "Multiscale Modeling of Fracture: Buckingham Catastrophe and Remedy," *International Journal of Terraspace Science and Engineering*, **3**, 177-183, 2011
24. **James Chen** and J. D. Lee, "Atomistic Formulation of Nano-piezoelectrics of Barium Titanate," *Nanoscience and Nanotechnology Letters*, **2**, 26-29, 2010
25. **James Chen** and J. D. Lee, "Atomistic Analysis of Nano/Micro Bio Sensors," *Interaction and Multiscale Mechanics*, **3**, 111-121, 2010
26. **James Chen** and J. D. Lee, "Multiscale Modeling of Fracture of Magnesia: Sensitivity of Interatomic Potential," *Theoretical and Applied Fracture Mechanics*, **53**, 74-79, 2010
27. **James Chen**, X. Wang, H. Wang and J. D. Lee, "Multiscale Modeling of Dynamic Crack Propagation," *Engineering Fracture Mechanics*, **77**, 736-743, 2010
28. U. Lei, C.-W. Huang, **James Chen**, C.-Y. Yang, Y.-J. Lo, A. Wo, C.-F. Chen, and T.-B. Fung, "A traveling wave dielectrophoretic pump for blood delivery," *Lab on a Chip*, **9**, 1349-1356, 2009 (Advanced Article and Cover Story)

#### REFERRED PROCEEDING ARTICLES

29. **M. I. Cheikh**, **E. A. Schinstock**, **G. P. Ferland** and **James Chen**, "A Molecular Dynamics-Based Model for Knudsen Number and Slip Velocity," Proceedings of the ASME 2017 Fluids Engineering Division Summer Meeting, FEDSM2017-69136
30. **L. Wonnell** and **James Chen** (2017), Extension of Morphing Continuum Theory to Numerical Simulations of Transonic Flow over a Bump, AIAA-2017-3461.
31. **M. I. Cheikh** and **James Chen** (2017), A Morphing Continuum Approach to Supersonic Flow over a Compression Ramp, AIAA-2017-3460.
32. **L. Wonnell** and **James Chen** (2016), A Morphing Continuum Approach to Compressible Flows: Shock Wave-Turbulent Boundary Layer Interaction, AIAA-2016-4279.
33. **James Chen** (2016), Advanced Kinetic Theory for Polyatomic Gases at Equilibrium, AIAA 2016-4394.
34. C. Liang, **James Chen**, and J. D. Lee (2012), Spectral Difference Solution of Unsteady 2D Compressible Micropolar Equations on Moving and Deformable Grids, AIAA-2012-294.
35. **James Chen**, and J. D. Lee, "Multiscale Modeling of Fracture of Magnesia with Different Interatomic Potentials" in the *Proceeding 16th US National Congress of Theoretical and Applied Mechanics*

#### PAPERS UNDER REVIEW/UNDER REVISION

36. **M. M. Ahmed** and **James Chen**, "A Morphing Continuum Approach to Hypersonic Flows of Polyatomic Gases," under review
37. T. Yang, M. Wei and **James Chen**, "A Three-Dimensional and Monolithic Immersed Boundary Approach for Fluid-Solid Interaction with Flexible Structures," under review
38. **L. B. Wonnell**, **M. I. Cheikh** and **James Chen**, "A Morphing Continuum Simulation of Transonic Flow over an Axisymmetric Hill," under review
39. **L. B. Wonnell** and **James Chen**, "First-order Approximation to the Boltzmann-Curtiss Equation for Flows with Local Spin," under review
40. **M. I. Cheikh**, M. Wei and **James Chen**, "Energy Routes of Invariant Topology in Isotropic Homogenous Turbulence," under review

#### OTHER REPORTS

1. James Chen, "Micropolar Electromagnetic Fluids: Theory and Simulation", 2011, *PhD Dissertation* at Department of Mechanical and Aerospace Engineering, The George Washington University
2. James Chen, C.-F. Chen, C.-W. Huang, and T.-W. Hsu, "Neural Signal Driven Arm", 2006, *NSC Technical Report* (Advised by Prof. Horn-Sen Tzou, U. of Kentucky)
3. James Ming-Chang Chen, "Experimental Study of Traveling Wave Dielectrophoretic Pump", 2007, *Master Thesis* at Institute of Applied Mechanics, National Taiwan University (in English)

**TALKS (Graduate student contribution in red; Undergraduate student contribution in blue; Postdoctoral researcher contribution in green)**

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**CONFERENCE PRESENTATIONS**

1. **L. B. Wonnell**, **M. I. Cheikh**, and **James Chen**, “Morphing Continuum Theory: A First Order Approximation to the Balance Laws,” 70th APS DFD Meeting, Denver, CO, November 19-21, 2017
2. **M. I. Cheikh**, **L. B. Wonnell**, and **James Chen**, “Energy Cascade Analysis: From Subscale Eddies to Mean Flow,” 70th APS DFD Meeting, Denver, CO, November 19-21, 2017
3. **M. I. Cheikh**, **E. A. Schinstock**, **G. P. Ferland** and **James Chen**, “A Molecular Dynamics-Based Model for Knudsen Number and Slip Velocity,” the ASME 2017 Fluids Engineering Division Summer Meeting, Waikoloa, HI, July 30 - August 3, 2017
4. **L. B. Wonnell** and **James Chen**, “Extension of Morphing Continuum Theory to Numerical Simulations of Transonic Flow over a Bump,” 47th AIAA Fluid Dynamics Conference, Denver, CO, June 5-9, 2017
5. **M. I. Cheikh** and **James Chen**, “A Morphing Continuum Approach to Supersonic Flow over a Compression Ramp,” 47th AIAA Fluid Dynamics Conference, Denver, CO, June 5-9, 2017
6. **L. B. Wonnell** and **James Chen**, “A Morphing Continuum Approach to Compressible Flows: Shock Wave-Turbulent Boundary Layer Interaction,” 46th AIAA Fluid Dynamics Conference, Washington, DC, June 13-17, 2016
7. **James Chen**, “Advanced Kinetic Theory for Polyatomic Gases at Equilibrium,” 46th AIAA Fluid Dynamics Conference, Washington, DC, June 13-17, 2016
8. **James Chen** and **L. B. Wonnell**, “A Multiscale Morphing Continuum Description for Turbulence,” 68th APS DFD Meeting, Boston, MA, November 22-24, 2015
9. **R. A. Wambold**, **James M. Chen**, P. H. Cutler, N. M. Miskovsky, J. Qi, G. J. Weisel, B. G. Willis, D. T. Zimmerman, “Tunable optical extinction of nano-antennas for solar energy conversion from near-infrared to visible,” Proceeding of SPIE Optics + Photonics, San Diego, CA, August 9-13, 2015
10. D. T. Zimmerman, **James Chen**, **R. A. Wambold**, G. J. Wiesel, J. Qi, B. G. Willis, P. H. Cutler, N. M. Miskovski, “Tunable optical extinction of nano-antennas for solar energy conversion from near-infrared to visible,” 2015 MRS Spring Meeting & Exhibit, San Francisco, CA, April 6-10, 2015
11. **M. Lopez**, **James Chen**, “A Multiscale FSI Analysis of Flow past a Cylinder,” 67th APS DFD Meeting, San Francisco, CA, November 23-25, 2014.
12. **M. Lopez**, **James Chen**, “Multiscale analysis for boundary layer development using Micropolar theory,” 10th Differential Equations & Computational Simulations, Mississippi State University, MS, October 23-25, 2014.
13. **R. Wambold**, **James Chen**, **M. Phillips**, **Z. Sinisi**, G. Wiesel, D. Zimmermann, B. Willis, P. Cutler and N. Miskovsky, “Rectenna with broadband from near-infrared to visible,” 2014 Annual Meeting of the Mid-Atlantic Section, State College, PA, October 3-5, 2014.
14. **L. Chen**, **James Chen**, R. A. Lebensohn and L.-Q. Chen, “An Image-driven Phase-field Model Integrating Microstructure Evolution and Crystal Plasticity,” Third International Symposium on Phase-field Method 2014 (PFM2014), State College, PA, August 26-29, 2014.
15. **L. Chen**, **J. Chen** and L.Q. Chen, The role of elasto-plasticity on phase kinetics in lithiated silicon nanowires: phase-field simulation, ECS 225th Meeting Orlando, FL, May 11-15 2014.
16. H.E. Ribeiro, A.M.J.C. Neto, Abel F.G. Neto. A.T. Amador, N.T. Machado and **James Chen**, “DFT Spectrometry of Phenylamine-functionalized graphene for photocatalytic hydrogen production,” International Conference on Renewable Energies and Power Quality (ICREPQ’14), Cordoba, Spain, April 8-10, 2014
17. B.G. Willis, J. Qi, X. Jiang, **James Chen**, Gary Weisel and D. Zimmerman, “Selective-Area Atomic Layer Deposition of Copper Nanostructures for Direct Electro-Optical Solar Energy Conversion,” 2014 ECS and SMEQ Joint International Conference, Cancun, Mexico, October 5-10, 2014.
18. J. Qi, X. Jiang, B.G. Willis, **James M. Chen**, **R. Wambold**, **M.S. Phillips**, **Z.J. Sinisi**, Gary Weisel and D. Zimmerman, “Electro-optic conversion devices fabricated by atomic layer deposition,” 2014 MRS Fall Meeting & Exhibit, Boston, MA, November 30-December 5, 2014.
19. D. Zimmerman, **James Chen**, **M. Phillips**, **D. Rager**, **Z. Sinisi**, **R. Wambold**, G. Weisel, B. Weiss, B. Willis and N. Miskovsky, “Nanoscale rectenna for broadband rectification of light from infrared to visible,” APS March Meeting 2014, Denver CO, March 3-7, 2014.

20. **James Chen**, **Jason R. Norman** and **Caleb J. Fisher** “Design Software for Vortex-Induced Vibration Wind Energy Harvester,” ASME 2013 International Mechanical Engineering Congress & Exposition, San Diego, CA, November 15-21, 2013.
21. N. M. Miskovsky, P. H. Cutler, A. Mayer, B. G. Willis, D. T. Zimmerman, G. J. Weisel, **James M. Chen**, T. E. Sullivan, and P. B. Lerner, “The Role of Geometry in Nanoscale Rectennas for Rectification and Energy Conversion,” Proceeding of SPIE Optics + Photonics, San Diego, CA, August 25-29, 2013.
22. **James Chen** and **Steven D. Niemkiewicz**, “Modified G-Criterion Model: A Multiscale Approach,” 12th U.S. National Congress of Computational Mechanics, Raleigh, NC, July 22-25, 2013.
23. **Steven D. Niemkiewicz** and **James Chen**, “Multiscale Modeling of Fracture in Barium Titanate,” Undergraduate Research at the Capitol, Harrisburg, PA, March 19, 2013 (One of the eight chosen to represent Penn State University for this state-wide event).
24. **James Chen**, “Theory and Modeling of Piezoelectricity in Nanomaterials,” 2nd International Conference on Nanotek and Expo (Nanotek-12), Philadelphia, PA, December 3-5, 2012
25. **James Chen**, “Energy Hidden at the Bottom: Theory and Modeling of Nano-piezoelectricity,” Workshop on Renewable Energy Sources and Nanotechnology (WREN-12), Belem/Pa, Brazil, 2012 (Invited Keynote Speaker, Withdrawl due to visa availability).
26. J. D. Lee, X. Wang, James Chen and J. Li, “Simulation of Thermal-Mechanical-Electromagnetic Coupling Phenomena by Non-equilibrium Molecular Dynamics”, ASME 2011 International Mechanical Engineering Congress & Expositio, Denver, CO, 2011
27. **James Chen** and James D. Lee, “Fundamental Theory and Simulation of Nano Energy Harvesting”, ASME 2011 International Mechanical Engineering Congress & Expositio, Denver, CO, 2011
28. **James Chen**, C. Liang and J. D. Lee, “Spectral Difference Method for Compressible Unsteady Micropolar Fluid Flow”, 11th U.S. National Congress of Computational Mechanics, Minneapolis, MN, 2011
29. **James Chen**, J. D. Lee and C. Liang, “Micropolar Electromagnetic Fluids”, 11th U.S. National Congress of Computational Mechanics, Minneapolis, MN, 2011
30. **James Chen**, and J. D. Lee, “Multiscale Modeling of Fracture of Magnesia with Different Interatomic Potentials”, 16th U.S. National Congress of Theoretical and Applied Mechanics, PA, June 2010
31. J. D. Lee and **James Chen**, “Sensitivity of Interatomic Potentials in Multiscale Modeling of Fracture”, 12th International Congress on Micromechanics (MESOMECHANICS 2010), Taipei, June 2010 (Invited Keynote Lecture)
32. **James Chen** and James D. Lee, “Dynamic Characteristics of Nano/Micro Biosensors”, 12th International Congress on Mesomechanics (MESOMECHANICS 2010), Taipei June 2010
33. J. D. Lee, X. Wang and **James Chen**, “Introduction to Micromorphic Theory”, 12th International Congress on Mesomechanics (MESOMECHANICS 2010), Taipei June 2010
34. **James Chen** and J. D. Lee, “Fundamental Theory of Nanogenerator”, APS April Meeting, Washington DC, 2010
35. **James Chen** and J. D. Lee, “Dynamic Analysis of Biosensors”, APS March Meeting, Portland, OR, 2010 (Accepted)
36. **James Chen**, X. Wang, H. Wang, and J. D. Lee, “A Multiscale modeling of fracture mechanics”, 10th US National Congress of Computational Mechanics, July 2009
37. **James Chen**, X. Wang, H. Wang, and J. D. Lee, “A Multiscale modeling of dynamic crack propagation”, ASCE-ASME-SES joint Conference, June 2009
38. U. Lei, **James Chen**, C.-Y. Yang, Y.-J. Lo, A. Wo, “A traveling wave dielectrophoretic pump for two-phase suspension fluid.”, The first ASME Micro/Nanoscale Heat Transfer International Conference, 2007. (Accepted)

## INVITED TALKS & SEMINAR

1. “A Kinetic Description of Morphing Continuum: The zeroth and first order approximation,” The Institute for Computational Engineering and Sciences at The University of Texas at Austin, March 29, 2018
2. “A Kinetic Description of Morphing Continuum and Its Applications in Fluid Mechanics,” Department of Mechanical and Aerospace Engineering at University at Buffalo, February 19, 2018
3. “A Kinetic Description of Morphing Continuum and Its Applications in Fluid Mechanics,” Department of Mechanical and Aerospace Engineering at Case Western Reserve University, January 29, 2018

4. "So You Think You Know How to Do a Presentation," K-State Global Campus, Have a Byte, September 22, 2017
5. "Research at Multiscale Computational Physics Lab - Advanced Kinetic Theory and Atomistic Electrodynamics," Department of Mathematics at Kansas State University, April 17, 2017
6. "Morphing Continuum Theory for Multiscale Fluid Phenomena: Theory, Computation and Applications," Army Research Lab, August 9, 2016
7. "A Kinetic Description of Morphing Continuum Theory and its Applications," Department of Aerospace Engineering at University of Kansas, March 28, 2016
8. "A Kinetic Description of Morphing Continuum Theory and its Applications," National Institute of Aerospace and NASA Langley, March 8, 2016

## PROFESSIONAL ORGANIZATIONS

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- Founding Member and Technical Committee, ASCE Engineering Mechanics Institute on Nanomechanics and Nanomaterials
- Guest Editor - *ASCE Journal of Nanomechanics and Micromechanics*, 2013
- Editorial Board - *Nanoscience and Nanotechnology*, 2011-Present
- Editorial Board - *Journal of Advanced Mathematics and Applications*, 2012 - Present
- Editorial Board - *Nanomaterials & Nanosciences*, 2013-Present
- Honorary Member, Pi Tau Sigma, International Mechanical Engineering Honor Society, 2010-Present
- Member, American Society of Mechanical Engineering, 2010-Present
- Member, Sigma Xi, The Scientific Research Society 2010-Present
- Member, American Physical Society, 2008-Present
- Member, American Institute of Aeronautics and Astronautics, 2015-Present

## TEACHING EXPERIENCE

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- **Instructor** ME 840 Continuum Mechanics, Spring 2017, Kansas State University
- **Instructor** ME 820 Rational Mechanics of Fluids, Fall 2016, Kansas State University
- **Instructor** ME 400 Computer Applications in Mechanical Engineering, Fall 2015, 2016; Spring 2016, Kansas State University
- **Instructor** CE 360 Fluid Mechanics, Spring 2014, Pennsylvania State University, Altoona college
- **Instructor** IET 216 Production Design Laboratory, Spring 2013, 2014, Pennsylvania State University, Altoona college
- **Instructor** EMET 222 Mechanics for Technology, Fall 2012, 2013, 2014, Pennsylvania State University, Altoona college
- **Instructor** MET 381 Engineering Materials, Spring 2011, Indiana University-Purdue University Fort Wayne
- **Instructor** MET 350 Applied Fluid Mechanics, Spring 2011, Indiana University-Purdue University Fort Wayne
- **Instructor** MET 370 Introduction to Heat Transfer, Spring 2011, Indiana University-Purdue University Fort Wayne
- **Instructor** ET 190 Applied Statics, Fall 2011, Indiana University-Purdue University Fort Wayne
- **Instructor** ME 301 Thermodynamics II, Fall 2011, Indiana University-Purdue University Fort Wayne
- **Instructor** MET 300 Applied Thermodynamics, Fall 2011, Indiana University-Purdue University Fort Wayne
- **Instructor** ApSc 58 Analytical Mechanics II, Fall 2010, The George Washington University
- **Graduate Teaching Assistant.** MAE 245 Robotic System, Professor James D. Lee, Spring 2010, The George Washington University (Graduate Level)
- **Graduate Teaching Assistant.** MAE 221 Fluid Mechanics, Professor Michael W. Plesniak, Fall 2009, The George Washington University (Graduate Level)
- **Substitute Instructor.** MAE 210 Continuum Mechanics, Professor James D. Lee, Fall 2009, The George Washington University (Graduate Level)

- **Substitute Instructor.** MAE 287 Applied Finite Element Method, Professor James D. Lee, Spring 2009, The George Washington University (Graduate Level)
- **Graduate Teaching Assistant.** MAE 134 Vibrations, Professor Pinhas Ben-Tzvi, Spring 2009, The George Washington University
- **Graduate Teaching Assistant.** MAE 257 Vibrations, Professor David Chichka, Fall 2008, The George Washington University (Graduate Level)

## RESEARCH STUDENT SUPERVISION

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### Postdoctoral Researcher

1. Dr. Maurin Lopez (Penn State Altoona), August 2014 - August 2015, Postdoctoral Research at University of Kansas
2. Dr. Lei Chen (Penn State, co-supervise with Dr. Long-Qing Chen), September 2014 - May 2015, Assistant Professor at Mississippi State University

### PhD Students

1. Louis B. Wonnell (ME at K-State), **chair**, Fall 2015 - Spring 2018
2. Mohamad Ibrahim Cheikh (AE at UB), **chair**, Fall 2016 - Present
3. Mohamed M. Ahmed (AE at UB), **chair**, Fall 2017 - Present
4. Khalid M. Abdelaziz (ME at UB), **chair**, Spring 2018 - Present

### MS Students

1. Leidong Xu (ME at K-State), **co-chair** with Dr. J. Roberts, Fall 2017 - Present

### Graduate Student Committee Membership

1. Wei Zhang (K-State), PhD, In Progress
2. Haotian Gao (K-State), PhD, Spring 2018
3. Zidong Yang (GWU), PhD, Fall 2014

### Undergraduate Students

1. Samuel W. Oxandale (K-State), Triboelectric generator, Fall 2017 - Present
2. Michael E. Tiede (K-State), Triboelectric generator, Fall 2017 - Present
3. Connor J. Torrey (K-State), Triboelectric generator, Fall 2017 - Present
4. Nicole E. Johnson (K-State), Aerodynamics of football, Fall 2016 - Spring 2017
5. Andrew T. Walsten (K-State), A numerical investigation of "Flatgate", Spring 2016 - Spring 2017
6. Leidong Xu (K-State), Aerodynamics of football, Fall 2016
7. Grant P. Ferland (K-State), An atomistic relation for Knudsen number and slip velocity, Spring 2016 - Fall 2016
8. Emma A. Schinstock (K-State), An atomistic relation for Knudsen number and slip velocity, Spring 2016 - Fall 2016
9. Vada A. Palochko (Penn State Altoona), Multiscale analysis of boundary layer development in microfluidics, Fall 2014 - Spring 2015
10. Jason E. Norman (Penn State Altoona), Vortex-induced vibration energy harvester, Fall 2012 - Spring 2014
11. Caleb J. Fisher (Penn State Altoona), Vortex-induced vibration energy harvester, Fall 2012- Spring 2014
12. Steve D. Niemkiewicz (Penn State Altoona), An atomistic G-criterion for material failure, Fall 2012 - Spring 2014



## Awards Received by Students and Scholars Supervised

1. Mohammad Ibrahim Cheikh (K-State) - APS DFD Travel Award - 2017
2. Mohammad Ibrahim Cheikh (K-Sate) - Graduate Teaching Assistant of the Year - 2017
3. Grant P. Ferland (K-State) - Most Outstanding Senior Award - 2017
4. Emma A. Schinstock (K-State) - Outstanding Senior Award - 2017
5. Steve D. Niemkiewicz (Penn State Altoona) - Represent Penn State to attend Undergraduate Research at the Capitol, Harrisburg, PA - 2013

## SERVICE

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- Technical Committee - *AIAA Fluid Dynamics, 2018-Present*
- Panelist - *National Defense Science & Engineering Graduate Fellowship, 2014, 2015; National Defense Education Science, Mathematics & Research for Transformation (SMART) Program, 2016*
- Panelist - *National Science Foundation, 2015, 2017*
- Junior Organizer - *AIAA Aviation 2017; AIAA Aviation 2018*
- Judge - Indiana First LEGO League (FLL) Championship Tournament (LEGO Robotics Design Competition)
- Reviewer (Proposals) - *University of Missouri Research Board, 2012; Banff International Research Station, 2016*
- Reviewer (Journals) - *Interaction and Multiscale Mechanics; Journal of Engineering Mathematics; Nanoscience and Nanotechnology Letters; Journal of Computational and Theoretical Nanoscience; Computers and Structures; Thin Solid Film; International Journal of Theoretical and Applied Multiscale Mechanics; Meccanica; Thin-Walled Structures; Journal of Smart and Nano Materials; International Journal of Damage Mechanics*
- Reviewer (Conferences) - *ICTWS 2011; USNCCM-11; USNCCM-12*
- Mini-symposium Organizer - *USNCCM-12; USNCTAM-18*
- Session Chair (Conferences) - *USNCCM-11*

## PROFESSIONAL ACTIVITIES

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- The George Washington University SEAS Ambassador, 2010
- Proofreader: Arthur P. Boresi, Ken P. Chong, James D. Lee, *Elasticity in Engineering Mechanics*, John Wiley and Sons, 3rd edition, 2010