

Biographical Sketch – Jihong Ma

Education and Training:

Oak Ridge National Laboratory	Postdoc	2019-present	Soft Matter Simulation
University of Minnesota – Twin Cities	Postdoc	2017-2019	Topological Metamaterials
University of Minnesota – Twin Cities	Ph.D.	2012-2017	Mechanical Engineering
Xi'an Jiaotong University, China	B.Eng.	2008-2012	Engineering Mechanics

Professional Experience:

2020-present	Assistant Professor, Department of Mechanical Engineering, University of Vermont
2019-present	Postdoctoral Associate, Center for Nanophase Materials Sciences, Oak Ridge National Laboratory <i>Molecular dynamics simulations of polymer dynamics and electrolytes</i>
2017-2019	Postdoctoral Associate, Department of Civil, Environmental and Geo- Engineering, University of Minnesota – Twin Cities <i>Development of theoretical and computational tools for design and analysis of topological metamaterials</i> <i>Experimental characterization of phonon wave propagation in complex material specimens</i>
2012-2017	Research Assistant, Department of Mechanical Engineering, University of Minnesota – Twin Cities <i>Enhancement of energy transport efficiency by designing atomistic studies of heat transport in screw-dislocated nanowires and nanotubes</i> <i>Fundamental physical understanding of energy transport in high-performance materials such as carbon nanotubes and graphene with theoretical analysis and molecular dynamics simulations</i> <i>Design of practical ways to protect against thermal impact and mechanical loading with ultra-high-temperature ceramic coating materials via molecular dynamics simulations</i>

Publications:

1. Zhou, D.; **Ma, J.**; Sun, K.; Gonella, S.; Mao, X., Switchable phonon diodes using nonlinear topological Maxwell lattices, *Physical Review B* **2020**, *101*, 104106
2. **Ma, J.**; Sun, K.; Gonella, S., Valley-Hall In-Plane Edge States as Building Blocks for Elastodynamic Logic Circuits. *Physical Review Applied* **2019**, *12*, 004015.
3. **Ma, J.**; Zhou, D.; Sun, K.; Mao, X.; Gonella S., Influence of hinge stiffness on the asymmetric wave transport in topological lattices: a parametric study, *Health Monitoring of Structural and Biological Systems XIII* **2019**, 10972, 17
4. **Ma, J.**; Zhou, D.; Sun, K.; Mao, X.; Gonella, S., Edge modes and asymmetric wave transport in topological lattices: Experimental characterization at finite frequencies. *Physical Review Letters* **2018**, *121*, 094301.
5. Xu, H.; **Ma, J.**; Dumitrică, T., Smooth Sliding and Superlubricity in the Nanofriction of Collapsed Carbon Nanotubes. *Carbon* **2018**, *134*, 531-535.
6. **Ma, J.***; Dumitrică, T., Nano-scale Heat Transfer in Nanomaterials, *Springer Briefs in Applied Sciences and Technology* **2018**, DOI: 10.1007/978-3-319-73882-6, ISBN 978-3-319-73881-9
7. **Ma, J.**; Xu, H.; Dumitrică, T., Collapsed Carbon Nanotubes as Building Blocks for High-Performance Thermal Materials. *Physical Review Materials* **2017**, *1*, 056001.
8. **Ma, J.**; Dasmahapatra, A.; Kroll, P.; Meletis, E.; Dumitrică, T., Compositional and Structural Atomistic Study of the Amorphous Si-B-N Networks of Interest for High-Performance Coatings. *Journal of Physical Chemistry C* **2016**, *120*, 24346-24353.
9. **Ma, J.**; Ni, Y.; Dumitrică, T., Nanowires with Dislocations for Ultralow Lattice Thermal Conductivity. *Physical Chemistry Chemical Physics* **2016**, *18*, 9888-9892.

10. Wang, C.; Liu, Y.; **Ma, J.**; Dumitrică, T.; Wade, M. K.; Tan, H., Buckling behavior of carbon nanotubes under bending: From ripple to kink. *Carbon* **2016**, *102*, 224-235.
11. **Ma, J.**; Ni, Y.; Volz, S.; Dumitrică, T., Thermal Transport in Single-Walled Carbon Nanotubes under Pure Bending. *Physical Review Applied* **2015**, *3*, 024014.
12. **Ma, J.**; Ni, Y.; Dumitrică, T., Thermal conductivity and phonon scattering in severely bent carbon nanotubes and bi-layer graphene. *Materials Today: Proceedings* **2015**, *2.6*, 3819-3823.
13. Xiong, S.; **Ma, J.**; Volz, S.; Dumitrică, T., Thermally-Active Screw Dislocations in Si Nanowires and Nanotubes. *Small* **2014**, *10*, 17561760.

Selected Synergistic/Leadership Activities:

- Symposium Organizer for topic *Advances in Polymer Modeling and Simulations*, Society for Engineering Science (2020)
- Conference Chair for session *Electrical Polarization and Polymer Physics*, APS March Meeting (2020) (Conference canceled due to COVID-19)
- Best Paper Award Review Panel for ASME - *Adaptive Structures & Material Systems* (2019)
- Reviewer for ASME Journal of *Vibration and Acoustics*, *Scientific Reports*, and the *Journal of Nano Research*
- Graduate Liaison and Women Coordinator of the College of Science and Engineering, University of Minnesota (2016-2017)

Honors and Awards:

- APS Division of Materials Physics Post-doctoral Travel Award (2020)
Awarded by the American Physical Society Division of Materials Physics; USA
- APS Division of Computational Physics Travel Award (2020)
Awarded by the American Physical Society Division of Computational Physics; USA
- Albert Swanson Memorial Fellowship Award (2016–2017)
The highest-achieving student in Mechanical Engineering; University of Minnesota
- 2017 Minnesota Supercomputing Institute Poster Finalist (2017)
Awarded by the Minnesota Supercomputing Institute, University of Minnesota
- APS Division of Materials Physics Ovshinsky Student Travel Honorable Mention Award (2016)
Awarded by the American Physical Society Division of Materials Physics; USA
- Mechanical Engineering Graduate Teaching Fellowship (2015-2016)
The highest-achieving student in both teaching and research in Mechanical Engineering; University of Minnesota
- Mechanical Engineering Department Fellowship (2012-2013)
High-ranking Ph.D. Applicant in Mechanical Engineering; University of Minnesota
- Mathematical Contest in Modeling Honorable Mention Award (2012)
Awarded by the Consortium for Mathematics and Its Applications; USA
- The Interdisciplinary Contest in Modeling Honorable Mention Award (2011)
Awarded by the Consortium for Mathematics and Its Applications; USA
- Siyuan Scholarship (2009-2011)
Top undergraduate student at Xi'an Jiaotong University; China