

WEI GAO

Update Date	January, 2020	
Contact Information	Mechanical Engineering One UTSA Circle San Antonio, TX 78249	Cell Phone: 949-228-6671 E-mail: wei.gao@utsa.edu Research Website: www.gao-group.org
Employments	The University of Texas at San Antonio, San Antonio, Texas <i>Assistant Professor</i> , Department of Mechanical Engineering	2016/8-present
	Northwestern University, Evanston, Illinois <i>Postdoctoral Fellow</i> , Department of Mechanical Engineering	2014/8-2016/7
	Hyundai-Enova Innovative Tech Center, Torrance, California <i>Mechanical Engineer</i>	2007/8-2009/5
Education	The University of Texas at Austin, Texas <i>Ph.D.</i> , Engineering Mechanics	2009/8-2014/7
	University of California, Irvine, California <i>M.S.</i> , Mechanical Engineering	2006/9-2007/7
	Tsinghua University, Beijing, China <i>M.S.</i> , Solid Mechanics	2003/9-2006/7
	Sichuan University, Chengdu, China <i>B.S.</i> , Engineering Mechanics	1999/9-2003/7
Awards & Honors	CAREER Award, National Science Foundation	2021
	GREAT Award, UT San Antonio	2017
	Max L. Williams Endowed Graduate Fellowship, UT Austin	2013
	NSF CMMI Fellowship for Workshop on Multiscale Modeling	2010
	Graduate Fellowship, UC Irvine	2006
	Excellent Thesis Award, Sichuan University	2003
	Graduate with 1 st rank in the department, Sichuan University	2003
	First Class Scholarship, Sichuan University	2001-2003
Teaching	Undergraduate Course <ul style="list-style-type: none">• Mechanics of Solids (2016F, 2017S, 2020S)<ul style="list-style-type: none">– Averaged evaluation: 4.0/5• Machine Element Design (2017F, 2018S, 2018F, 2019F, 2020F)<ul style="list-style-type: none">– Averaged evaluation: 4.1/5	

Graduate Course

- Computational Materials (2019S)
 - Evaluation: 5/5, self-developed new course

Mentor Undergraduate Senior Design Team

- Lead a team to design soft robotic solar tracking device 2019
- Lead a team to design roof-mounted solar tracking device 2020

Mentoring

- **PhD Students:** Arman Ghasemi (2016 -), Daniela Posso (2020 -), Daniel O. Millan (2020 -)
- **MS Students:** Joel Gomez (2019-), Colton Kubena (2019-), Rohan Nagarkar (2019-), Alberto Samaniego (2020 -), Sagar Pate (2018 - 2020), Heber Martinez Barron (2017-2019), Riccardo Manno (2017-2018).
- **Undergraduate Students:** Veronica Salazar (2019 -), Mohammed Ahmed (2020-), Logan Heck (2020 -), Danny Perez (2018-2019), Carlos Quesada (2018-2019), Sarah Robinson (2017-2018), Wyatt Evans (2017-2018)

Academic Service

- Guest-editor of JOM, The Journal of The Minerals, Metals & Materials Society (TMS) on the topic of “*Nanomechanics of Low-dimensional Materials*” (2019-2020).
- Topic organizer on “*Multifunctional Nanomaterials*” in American Society of Mechanical Engineer (2017-2020).
- Symposium organizer of “*Mechanics of 2D materials*” in Society of Engineering Science Conference (2016)
- Member of SES, ASME, MRS, TMS and USACM
- NSF panelist
- Reviewer for *Nature Communication*, *Nano Letters*, *ACS Nano*, *J. of Mechanics and Physics of Solids*, *J. App. Mechanics*, *Extreme Mechanics Lett.*, *Nanotechnology*, *J. Phy. D: App. Phy.*, *International J. of Solids and Structures*, *Composite Materials*.

Funding

1. National Science Foundation, **PI**, “*CAREER: Atomistic Investigation of Phase Transition in Nanostructured Silicon – Towards Convergent Understanding with Mechanics-Informed Machine Learning Potential*”, \$500,723 (9/1/2021 - 8/31/2026, CMMI-2046218).
2. National Science Foundation, **PI**, “*Stress modulated phase transition in 2D TMDC materials*”, \$326,162 (9/1/2019 - 8/31/2022, CMMI-1930783).
3. National Institute of Health, **Co-PI**, “*Proteoglycans and age-related deterioration of bone toughness*”, \$2,334,480 (7/1/2019 - 6/30/2024, R01AR076190-01, PI: Xiaodu Wang, UTSA).

4. National Science Foundation, **Co-PI**, “*EAGER: Developing and bio-Inspired assembly of highly scalable electromagnetic soft actuators for active elbow brace*”, \$189,918 (8/1/2018 - 6/30/2021, CBET-1840834, PI: Amir Jafari, UTSA).
5. CPS Energy Corporation, **PI**, “*Development of Autonomous Soft Robotic Solar Tracking System for Building-Integrated Photovoltaic Applications*”, \$231,000 (9/1/2019 - 8/31/2021, Co-PI: Yongcan Cao, UTSA).
6. UTSA VPR Office, **Co-PI**, “*Transdisciplinary Investigation of Electromechanical Coupling-driven Properties of New 2D Materials*”, \$20,000 (9/1/2019 - 8/31/2020, PI: Ethan C. Ahn, UTSA).
7. UTSA VPR Office, **PI**, “*GREAT: Advanced Materials based on Two-dimensional Building Blocks - Computational Design based on Chemistry and Topology*”, \$20,000 (9/1/2017 - 8/31/2018).

Publication (1200+ citations from [Google Scholar](#))

After joining UTSA:

1. A. Ghasemi, W. Gao, A Method to Apply Piola-Kirchhoff Stress in Molecular Statics Simulation, under review, 2020.
2. A. Ghasemi, W. Gao, Atomistic Mechanism of Stress Modulated Phase Transition in Monolayer MoTe₂, *Extreme Mechanics Letters*, 40, 100946, 2020.
3. A. Ghasemi, W. Gao, A Method to Predict Energy Barriers in Stress Modulated Solid-solid Phase Transitions, *Journal of the Mechanics and Physics of Solids*, 137, 103857, 2020.
4. A. Ghasemi, P. Xiao, W. Gao, Nudged elastic band method for solid-solid transition under finite deformation, *The Journal of Chemical Physics*, 151, 054110, 2019.
5. R. Manno, W. Gao, I. Benedetti, Engineering the crack path in lattice cellular materials through bio-inspired micro-structural alterations, *Extreme Mechanics Letters*, 26, 817, 2019.
6. N. Ebrahimi, S. Nugroho, A. F. Taha, N. Gatsis, W. Gao, A. Jafari, Dynamic actuator selection and robust state-feedback control of networked soft actuators. *IEEE International Conference on Robotics and Automation (ICRA)* 2857-2864, 2018
7. C. Wu, T. Taghvaei, C. Wei, A. Ghasemi, G. Chen, N. Leventis, W. Gao, Multi-scale progressive failure mechanism and mechanical properties of nanofibrous polyurea aerogels, *Soft Matter*, 14, 7801-7808, 2018. (Featured on the cover)
8. R. Crespo, W. Gao, L. Mao, M. Roenbeck, H. Nguyen, J. Paci, J. Huang, S. Nguyen, H. Espinosa, The role of water in mediating interfacial adhesion and shear strength in graphene oxide, *ACS Nano*, 12 (6), 60896099, 2018.
9. I. Benedetti, H. Nguyen, R. Soler-Crespo, W. Gao, L. Mao, A. Ghasemi, J. Wen, S. Nguyen, H. Espinosa, Formulation and Validation of a Reduced Order Model of 2D Materials Exhibiting a Two-Phase Microstructure as Applied to Graphene Oxide, *Journal of the Mechanics and Physics of Solids*, 112, 66-88, 2018.
10. I. Benedetti, R. Crespo, A. Pedivellano, W. Gao, H. Espinosa, A continuum damage model for functionalized graphene membranes based on atomistic simulations, *Key Engineering Materials*, 754, 173-176, 2017.

11. P. Wang, W. Gao, J. Wilkerson, K. Liechti, R. Huang, Cavitation of water by volume controlled stretching, *Extreme Mechanics Letters*, 59, 2017.
12. Z. Meng, R. Crespo, W. Xia, W. Gao, L. Ruiz, H. Espinosa and S. Keten, A coarse-grained model for the mechanical behavior of graphene oxide, *Carbon*, 117, 476-487, 2017.
13. R. Yang[‡], A. Zaheri[‡], W. Gao[‡], C. Hayashi and H D. Espinosa, AFM Identification of Beetles Exocuticle Bouligand Structure and Nanofiber Anisotropic Elastic Properties, *Advanced Functional Materials*, 1603993, 2017. (Featured on the cover and reported by Science Newslines and Science Daily)
14. R. Crespo[‡], W. Gao[‡], P. Xiao, X. Wei, J. Paci, G. Henkelman, H. Espinosa. Engineering the Mechanical Properties of Monolayer Graphene Oxide at the Atomic Level, *Journal of Physical Chemistry Letters*, 7, 2702-2707, 2016.
15. P. Wang, W. Gao and R. Huang. Entropic Effects of Thermal Rippling on van der Waals Interactions between Monolayer Graphene and a Rigid Substrate, *Journal of Applied Physics*, 119, 074305, 2016.

Before joining UTSA:

16. R. Ramachandramoorthy[‡], W. Gao[‡], R. Bernal and H. Espinosa. High Strain Rate Tensile Testing of Silver Nanowire - Rate Dependent Brittle-to-ductile Transition. *Nano Letters*, 16, 1, 2016.
17. W. Gao, K.M. Liechti and R. Huang. Wet adhesion of Graphene, *Extreme Mechanics Letters*, 3, 130-140, 2015.
18. W. Gao, R. Huang. Thermomechanics of monolayer graphene: rippling, thermal expansion and elasticity. *Journal of Mechanics and Physics of Solids*, 66, 42-58, 2014.
19. W. Gao, P. Xiao, G. Henkelman, K.M. Liechti, R. Huang. Interfacial adhesion between graphene and silicon dioxide substrate by density functional theory with van der Waals corrections. *J. Phys. D: Appl. Phys.* 47, 255301, 2014.
20. Z. Cao, P. Wang, W. Gao, L. Tao, J. W. Suk, R. S. Ruoff, D. Akinwande, R. Huang, K. M. Liechti. A Blister test for interfacial adhesion of large-scale transferred graphene. *Carbon*, 68, 390-400, 2014.
21. P. Wang, W. Gao, Z. Cao, K.M. Liechti, R. Huang. Numerical analysis of circular graphene bubbles. *Journal of Applied Mechanics*, 80, 040905, 2013.
22. K. Yue, W. Gao, R. Huang, K.M. Liechti. Analytical methods for the mechanics of graphene bubbles. *Journal of Applied Physics*, 112, 083512, 2012.
23. W. Gao, R. Huang. Effect of surface roughness on adhesion of graphene membranes. *Journal of Physics D: Applied Physics*, 44, 452001, 2011.
24. Q. Lu, W. Gao, R. Huang. Atomistic simulation and continuum modeling of graphene nanoribbons under uniaxial tension. *Modelling and simulation in materials science and engineering*, 19, 054006, 2011.
25. G. Wang, X. Feng, T. Wang, W. Gao. Surface effects on the near-tip stresses for mode-I and mode-III cracks. *Journal of Applied Mechanics*, 75, 011001, 2008.
26. G. Huang, W. Gao, S. Yu. Model for the adsorption-induced change in resonance frequency of a cantilever. *Applied physics letters*, 89(4), 043506, 2006.
27. W. Gao, S. Yu, G. Huang. Finite element characterization of the size-dependent mechanical behavior in nanosystems. *Nanotechnology*, 17, 1118, 2006.