

## EDUCATION

- Ph.D. in Engineering Mechanics** 09/01/2016 – 05/23/2020  
Department of Engineering Mechanics, The University of Texas at Austin (UT Austin), Austin, United States
- M.S. in Solid Mechanics** 09/01/2013 – 06/01/2016  
Institute of Mechanics, University of Chinese Academy of Sciences (UCAS), Beijing, China
- B.S. in Theoretical and Applied Mechanics** 08/15/2009 – 06/01/2013  
Department of Modern Mechanics, University of Science and Technology of China (USTC), Hefei, China

## RESEARCH EXPERIENCE

- Postdoctoral research associate** 09/21/2020 – 03/12/2022  
University of Oxford, Oxford, United Kingdom  
Research topic: *Van der Waals wetting and dewetting* (with Prof. [Dominic Vella](#))  
Sponsored by Marie Skłodowska-Curie individual fellowship.
- Research assistant** 09/01/2016 – 05/20/2020  
UT Austin, Austin, United States  
Research topic: *Out-of-plane deformations of 2D materials* (with Prof. [Nanshu Lu](#))
- Research assistant** 09/01/2013 – 06/01/2016  
Institute of Mechanics, CAS, Beijing, China  
Research topic: *Shear of graphene-based interfaces* (with Prof. [Yueguang Wei](#))
- Joint research assistant** 07/01/2012 – 06/01/2016  
National Center for Nanoscience and Technology (NCNST), CAS, Beijing, China  
Research topic: *Fabrications and characterizations of graphene films and sponges* (with Prof. [Zhong Zhang](#))

## RESEARCH INTERESTS

My research experiences have allowed me to acquire knowledge in a number of general areas in mechanics and materials. The associated keywords may include thin film mechanics, surface phenomena, interface mechanics, 2D materials, strain-coupled physics, and nanocarbon-based composites. Most of my published works have been concerned with the mechanics of thin solids and liquids, particularly focusing on elasticity metrology, elastocapillarity, wrinkling instability, adhesion, and friction. In general, I am interested in understanding various aspects of how slender solids deform when interacting with other objects, including liquids, rigid and deformable substrates.

## TALKS

### Invited talks

1. Z. Dai. "[Slippery problems for 2D materials](#)", North meets South colloquium, Mathematical Institute, Oxford. Oct. 2020
2. Z. Dai. "[Mechanics of Atomically Thin Films – 2D Materials](#)", Dalian University of Technology, Dalian. Jan. 2019

### Conference talks

1. Z. Dai, D. Vella. "[Statics and dynamics of droplets on lubricant infused surfaces](#)", APS March Meeting 2022 (Video presentation)
2. Z. Dai, N. Lu. "[Radial Buckle Delamination around 2D Material Tents](#)", Chinese Congress of Theoretical and Applied Mechanics (CCTAM), Hangzhou, Aug. 2019
3. Z. Dai, N. Lu, R. Huang, L. Liu, Z. Zhang. "[Characterizing the interfacial behavior of 2D materials](#)", CCTAM, Hangzhou, Aug. 2019

4. Z. Dai, N. Lu, R. Huang, L. Liu, Z. Zhang. "On the interaction between elasticity and interface energy of 2D materials", CCTAM, Hangzhou, Aug. 2019
5. Z. Dai, G. Wang, N. Lu, R. Huang, L. Liu, Z. Zhang. "Characterizing the Interfacial Behavior of Graphene", CHINANANO 2019, Beijing, Aug. 2019
6. Z. Dai, N. Lu, R. Huang, L. Liu, Z. Zhang. "On the interaction between elasticity and interface energy of 2D materials", CHINANANO 2019, Beijing, Aug. 2019
7. Z. Dai. "Trade-off between Boron Doping and Stiffness, Strength and Damage Tolerance of Graphene", ASME's International Mechanical Engineering Congress and Exposition (IMECE 2018), Pittsburgh, PA. Nov. 2018
8. Z. Dai, N. Lu. "Understanding the Bending Behaviors of Multilayer 2D Materials", ASME's International Mechanical Engineering Congress and Exposition (IMECE 2018), Pittsburgh, PA. Nov. 2018
9. Z. Dai. "Strain Engineering of 2D Materials: The Essential Role of Interface", ASME's International Mechanical Engineering Congress and Exposition (IMECE 2018), Pittsburgh, PA. Nov. 2018
10. Z. Dai, D. Sanchez, N. Lu. "Mechanics of Nanobubbles and Nanotents Formed by Two-Dimensional Materials", 18th U.S. National Congress of Theoretical and Applied Mechanics (USNC/TAM), Chicago, IL. June 2018.
11. Z. Dai, D. Sanchez, P. Wang, R. Huang, N. Lu. "Experimental Measurements and Mechanics Modeling of Liquid-filled Blisters Covered by 2D Materials", 54th Annual Technical Meeting of the Society of Engineering Science (SES), Boston, MA. July 2017.
12. Z. Dai, L. Liu, Z. Zhang, Y. Wei. "Macroscopic Assemblies of Carbon Nanomaterials: interfaces and structures", Annual academic report of State Key Laboratory of Nonlinear Mechanics, Beijing, Dec. 2015.
13. Z. Dai, G. Wang, L. Liu, Y. Wei, Z. Zhang. "Graphene-polymer interfaces under shear", The Chinese Congress on Theoretical and Applied Mechanics, Shanghai, Aug. 2015.
14. Z. Dai, L. Liu, Z. Zhang. "Biomimetic Structures and Properties of Macroscopic Assemblies of Carbon Nanomaterials", NNCST, Beijing, Jan. 2015.
15. Z. Dai, L. Liu, Z. Zhang. "Creep of Multi-Walled Carbon Nanotubes-Polycarbonate Nanocomposite Fibers at High Temperature", Symposium on Mechanics of Composites, Chongqing, May 2013.

## PATENTS

1. Z. Dai, L. Liu, Z. Zhang. *Fabrication of Multi-Functional Sponge with Negative Poisson Ratio*. Chinese Patent Application No. 201510455941.9.  
<https://patents.google.com/patent/CN105001622A/zh>
2. G. Wang, Z. Dai, L. Liu, Z. Zhang. *A Method for Detecting the Interlayer Shear Force in 2D Materials*. Chinese Patent Application No. 201710237043.5.  
<https://patents.google.com/patent/CN106932379B/zh>
3. J. Xiao, G. Wang, Z. Dai, L. Liu, Z. Zhang. *A Method for Detecting the Bending Rigidity of 2D Materials*. Chinese Patent Application No. 201810677431.X.  
<https://patents.google.com/patent/CN108871961A/zh>

## PEER REVIEW

I have refereed articles for a number of journals/conferences<sup>1</sup>, including:

2D Materials; ACS Applied Electronic Materials; Applied Materials Today, ASME's IMECE (×5); Communications in Theoretical Physics; Composites Science and Technology; Computational Materials Science; Engineering Science and Technology, an International Journal; European Polymer Journal (×2); International Journal of Mechanical Sciences (×14); International Journal of Smart and Nano Materials; International Journal of Solids and Structures (×2); Journal of Applied Physics (×2); Journal of Industrial and Engineering Chemistry (×2); Journal of Intelligent Material Systems and Structures; Journal of Physics Communications; Materials Letters (×6); Materials Research Bulletin (×3); Materials Research Express (×2); Measurement; Nano Express; Nano Letters; Nanotechnology (×3); Nature Communications (×2); Physica E (×2); Sensors and Actuators: A (×2); Scientific Reports; Synthetic Metals (×2).

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<sup>1</sup> Try my [Publons](#) profile for more details.

I have been awarded *Outstanding Reviewer* by the journal IJSS and *Trusted Reviewer* by the publisher Institute of Physics.

## TEACHING

I developed my teaching experience by doing teaching assistance at UT Austin for

Mechanics of Solids (Spring 2017 – Spring 2019))  
Statics (Fall 2016)

## FUNDING

### Marie Skłodowska-Curie Individual Fellowship

09/21/2020 – 09/20/2022

Role: principal investigator (PI); Value: €224,933.76

Project title: *Liquids Under Confinement In 2D-MATERials (LUCiD-Mater)*

Description: Granted by the European Commission; Aiming to develop mathematical models for the dynamics of thin solid-liquid film interactions.

## AWARDS

I am grateful for the generous financial support from many organizations, including:

2020	Marie Skłodowska-Curie Individual Fellowship, European Commission	€224,933
2019	University Graduate Continuing Fellowship, UT Austin	\$30,000
2019	Outstanding self-financed students abroad, China Scholarship Council	\$6,000
2019	Eric Baker Becker III Memorial Graduate Scholarship, UT Austin	\$2,500
2018	Warren A. and Alice L. Meyer Endowed Scholarship in Engineering, UT Austin	\$2,500
2018	Student Travel Award for attending IMECE, Haythornthwaite Foundation	\$1,000
2017	Global Research Fellowship, UT Austin	\$5,000
2017	Warren A. and Alice L. Meyer Endowed Scholarship in Engineering, UT Austin	\$3,500
2016	Yung-Huai Kuo Endowed Scholarship in Mechanics, CAS	¥3,000
2016	Presidential scholarship of the Chinese Academy of Sciences, CAS	¥5,000
2015	National scholarships for graduate students, Institute of Mechanics, CAS	¥10,000