Xiaochuan (Brooks) Tang

Résumé

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ORCID: 0000-0003-2468-8439

EDUCATION

Doctor of Philosophy, in *Engineering-Applied Science* Dec. 2018
University of California Davis, One Shields Ave., Davis, CA 95616, U.S.
Dissertation Title: *Verification and Modification of the Generalized Born Model*

Master of Science, in *Engineering-Applied Science* Mar. 2012
University of California Davis, One Shields Ave., Davis, CA 95616, U.S.

Bachelor of Science, in *Physics* Jun. 2008
Wuhan University, Wuhan, Hubei Province, P.R.China 430072

PROFESSIONAL EXPERIENCE

Instructional Assistant Professor at Department of Math Aug. 2025 - now
Texas A&M University, 400 Bizzell St, College Station, TX 77840

Postdoctoral Researcher at Department of Mechanical Engineering Jan. 2022 - Jun. 2025
Colorado State University, 400 Isotope Dr, Fort Collins, CO 80521

Research Associate at Department of Mechanical Engineering Jun. 2018 - Mar. 2020
Colorado State University, 400 Isotope Dr, Fort Collins, CO 80521

Instructor at Department of Physics Aug. 2016 - Dec. 2018
Colorado State University, 1875 Campus Delivery, Fort Collins, CO 80523

STRENGTHS & SKILLS

- **Computational:**
  Languages: Fortran, C++, Python, SQL, MPI, PETSc
  Softwares: Matlab, Mathematica, AMBER, SolidWorks, FreeCAD
  Simulation: density functional theory, molecular dynamics, Monte Carlo, kinetic Monte Carlo
- **Experimental:**
  Material Characterization, Plasma Diagnostics, Additive Manufacturing

AWARDS

DARPPA Riser, DARPA Forward 2022
Graduate Student Fellowship, Department of Applied Science, University of California Davis, 2008-2009

TEACHING EXPERIENCE

- Thermodynamics and Statistical Mechanics
  PH361, Department of Physics, Colorado State University, Fall 2017
- College Physics
  PH121, Department of Physics, Colorado State University, Spring 2018
- Classical Mechanics
  PH621, Department of Physics, Colorado State University, Fall 2018

- Teaching Assistant, University of California Davis
  EAD115, Numerical Algorithms for Engineering, Fall 2008, Spring 2013
  MAT17B, MAT17C, Calculus and Linear Algebra, Spring 2012, Spring 2014
  ECH155A, ECH155B, Chemical Engineering Lab, Fall 2012, Fall 2013

RESEARCH EXPERIENCE

Postdoctoral Researcher Mar. 2023 - Now
Colorado State University, 400 Isotope Dr, Fort Collins, CO 80521
PI: Christopher R. Weinberger

- Dislocation mobility of bcc metals
- Thermodynamic stability of high entropy ceramics

Postdoctoral Researcher Jan. 2022 - Mar. 2023
Colorado State University, 400 Isotope Dr, Fort Collins, CO 80521
PI: Kaka Ma

- Design and build plasma testing device
- Investigation of low work function materials for usage in critical environment
- Additive manufacture: laser directed energy deposition

Research Associate Jun. 2018 - Mar. 2020
Colorado State University, 400 Isotope Dr, Fort Collins, CO 80521
PI: Christopher R. Weinberger

- Grain-boundary effect on the plasticity of fcc metals
- Diffusion mechanism of point defects in transition metal carbides
- Hydrogen-embrittlement enhancement of high-strength steels

Graduate Student Researcher Sep. 2010 - Jul. 2016
UC Davis Genome Center, 451 Health Sciences Drive, Davis, CA 95616, U.S.
PI: Yong Duan

- Molecular dynamics simulations: protein stability of scFv antibodies
- Verification and modification of the generalized Born model

Visiting Student Jun. 2009 - Aug. 2010
Lawrence Berkeley National Lab, 1 Cyclotron Rd, Berkeley, CA 94720, U.S.

- Calculation of triple-differential cross sections of the double photoionization of a helium atom

SELECTED PUBLICATIONS

X. Tang, H.K. Hunter, G. B. Thompson, C. R. Weinberger, "The effects of surface kink nucleation on the dislocation mobility for bcc metals: a kinetic Monte Carlo study", *Modelling and Simulation in Materials Science and Engineering*, 2025

X. Tang, G. B. Thompson, C. R. Weinberger, "Mixing the transition metals in transition metal diborides", *Computational Materials Science*, 2025

X. Tang, G. B. Thompson, C. R. Weinberger, "The importance of the vibrational entropy in the mixing stabilization for complex ceramics", *Journal of the American Ceramic Society*, 2024

X. Tang, B. R. Watkins. G. B. Thompson, C. R. Weinberger, "Density functional theory predictions of the Hf-HfC-HfN ternary: phase stability and properties", *Computational Materials Science*, 2024

X. Tang, G. B. Thompson, K. Ma, C. R. Weinberger, "The role of entropy and enthalpy in high entropy carbides", *Computational Materials Science*, 2022

X. Tang, A. E. Kuehster, B. A. DeBoer, A. D. Preston, K. Ma, "Enhanced thermionic

emission of mayenite electride composites in an Ar glow discharge plasma", *Ceramics International*, 2021

X. Tang, R. Salehin, G. B. Thompson, C. R. Weinberger, "Long-range hydrogen-binding effects of carbide interfaces in iron", *Physical Review Materials*, 2021

X. Tang, R. Salehin, G. B. Thompson, C. R. Weinberger, "Statistical study of vacancy diffusion in TiC and TaC", *Physical Review Materials*, 2020

X. Tang, Y. Duan, "Verification of the Generalized Born Model at Short Distances", *Journal of Mechanics in Medicine and Biology*, 2013