# Wu-Rong Jian

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## Employment

**Postdoctoral Scholar**
Stanford University,
Stanford, CA, United States 04/2022-present
Advisor: Professor Wei Cai

## Education

**Ph.D. - Mechanical Engineering**
University of California Santa Barbara,
Santa Barbara, CA, United States 09/2018-03/2022
Advisor: Professor Irene J. Beyerlein

**M.S. - Mechanics**
South China University of Technology, Guangzhou, China 09/2014-06/2018
Advisor: Professor Xiaohu Yao

**B.S. - Engineering Mechanics**
South China University of Technology, Guangzhou, China 09/2010-07/2014

## Honors and Awards

- Regents in Mechanical Engineering Fellowship, University of California, Santa Barbara, United States, 2018
- Outstanding Master Thesis (Guangdong), Guangdong, China, 2018
- Outstanding Graduate Student (Guangdong), Guangdong, China, 2016
- National Scholarship for Graduate Students, China, December 2015
- Scholarship for Excellent Freshmen of Postgraduate, South China University of Technology, China, September 2014

## Journal Reviewers (21 Journals)

Acta Materialia, Scripta Materialia, International Journal of Plasticity, Journal of Materials Science & Technology, Computational Materials Science, Modelling and Simulation in Materials Science and Engineering, Journal of Alloys and Compounds, Nanotechnology, Applied Surface Science, Journal of Materials Research, Journal of Physics D: Applied Physic, Journal of Physics: Materials, Journal of Physics: Condensed Matter, Materials Research Express, Micromachines, Materials, Journal of Micromechanics and Microengineering, Nanomaterials, Nuclear Technology, Applied Sciences, Polymers

## Presentations

1. “Dislocation Evolution in Copper during Nanoindentation,” The 10th International Conference on Multiscale Materials Modeling (Baltimore, USA, 2022)

2. "Deformation mechanisms in the medium entropy alloy CoCrNi: Effects of lattice distortion and chemical short-range order," MS&T21: Materials Science & Technology (Columbus, USA, 2021)
3. "Confined layer slip in nanolaminates: Effect of interface structure and layer thickness," MS&T21: Materials Science & Technology (Columbus, USA, 2021)
4. "Mechanical Properties of Cu(111)/ $Cu_{64}Zr_{36}$ glass nanolaminates," The 54th Annual Technical Meeting of the Society of Engineering Science (Boston, USA, 2017)
5. "Shock-induced melting of open-cell nanoporous Cu foams: Effects of porosity and specific surface area," The 26th International Conference on High Pressure Science and Technology (Beijing, China, 2017)

**Publications (1-36)**

1. Guanyu Huang, Xiaoqing Zhang, Zhuocheng Xie, **Wu-Rong Jian**, Run Zhang and Xiaohu Yao, Effects of lattice distortion and chemical short-range order on creep behavior of medium-entropy alloy CoCrNi, *Mechanics of Materials* In Press.
2. Ankit Gupta, **Wu-Rong Jian**, Shuozhi Xu, Irene J. Beyerlein and Garritt J. Tucker, On the deformation behavior of CoCrNi medium entropy alloys: Unraveling mechanistic competition, *International Journal of Plasticity* 159 (2022) 103442.
3. Shuozhi Xu, **Wu-Rong Jian** and Irene J. Beyerlein, Ideal simple shear strengths of two HfNbTaTi-based quinary refractory multi-principal element alloys, *APL Materials* 10 (2022) 111107.
4. Zhuocheng Xie, **Wu-Rong Jian**, Shuozhi Xu, Irene J. Beyerlein, Xiaoqing Zhang, Xiaohu Yao and Run Zhang, Phase transition in medium entropy alloy CoCrNi under quasi-isentropic compression, *International Journal of Plasticity* 157 (2022) 103389.
5. **Wu-Rong Jian**, Shuozhi Xu, Yanqing Su and Irene J. Beyerlein, Energetically favorable dislocation/nanobubble bypass mechanism in irradiation conditions, *Acta Materialia* 230 (2022) 117849.
6. **Wu-Rong Jian**, Shuozhi Xu, Yanqing Su and Irene J. Beyerlein, Effects of layer thickness and dislocation distribution on confined layer slip in nanolaminated Nb, *International Journal of Plasticity* 152 (2022) 103239.
7. Rebecca A. Romero, Shuozhi Xu, **Wu-Rong Jian**, Irene J. Beyerlein and C.V. Ramana, Atomistic simulations of the local slip resistances in four refractory multi-principal element alloys, *International Journal of Plasticity* 149 (2022) 103157.
8. **Wu-Rong Jian**, Zhuocheng Xie, Shuozhi Xu, Xiaohu Yao, Irene J. Beyerlein, Shock-induced amorphization in medium entropy alloy CoCrNi, *Scripta Materialia* 209 (2022) 114379.
9. Shuozhi Xu, **Wu-Rong Jian**, Yanqing Su and Irene J. Beyerlein. Line-length-dependent dislocation glide in refractory multi-principal element alloys. *Applied Physics Letters* 120 (2022) 061901.
10. Zhuocheng Xie, **Wu-Rong Jian**, Shuozhi Xu, Irene J. Beyerlein, Xiaoqing Zhang, Zhihua Wang and Xiaohu Yao. Role of local chemical fluctuations in the shock dynamics of medium entropy alloy CoCrNi. *Acta Materialia* 221 (2021) 117380.
11. **Wu-Rong Jian**, Liang Wang, Wenbo Bi, Shuozhi Xu, and Irene J. Beyerlein. Role of local chemical fluctuations in the melting of medium entropy alloy CoCrNi. *Applied Physics Letters* 119 (2021) 121904. (Invited Paper)
12. Ruo-Yao Zheng, **Wu-Rong Jian**, Irene J. Beyerlein, and Wei-Zhong Han. Atomic-Scale Hidden Point-Defect Complexes Induce Ultrahigh-Irradiation Hardening in Tungsten. *Nano Letters* 21 (2021) 5798.

13. **Wu-Rong Jian**, Yanqing Su, Shuozhi Xu, Weisen Ji and Irene J. Beyerlein. Effect of interface structure on dislocation glide behavior in nanolaminates. *Journal of Materials Research* 36 (2021) 2802. (Invited Paper)
14. Xiaowang Wang, Shuozhi Xu, **Wu-Rong Jian**, Xiang-guo Li, Yanqing Su and Irene J. Beyerlein. Generalized stacking fault energies and Peierls stresses in refractory body-centered cubic metals from machine learning-based interatomic potentials. *Computational Materials Science* 192 (2021) 110364.
15. **Wu-Rong Jian**, Shuozhi Xu, and Irene J. Beyerlein. On the significance of model design in atomistic calculations of the Peierls stress in Nb. *Computational Materials Science* 188 (2021) 110150.
16. Shuozhi Xu, Yanqing Su, **Wu-Rong Jian** and Irene J. Beyerlein. Local slip resistances in equal-molar MoNbTi multi-principal element alloy. *Acta Materialia* 202 (2020) 68.
17. **Wu-Rong Jian**, Zhuocheng Xie, Shuozhi Xu, Yanqing Su, Xiaohu Yao and Irene J. Beyerlein. Effects of lattice distortion and chemical short-range order on the mechanisms of deformation in medium entropy alloy CoCrNi. *Acta Materialia* 199 (2020) 352.
18. Zhuocheng Xie, **Wu-Rong Jian**, Xiaochang Tang, Xiaoqing Zhang, and Xiaohu Yao. Strengthening and toughening mechanisms of metallic glass nanocomposites via graphene nanoplatelets. *Journal of Non-Crystalline Solids* 546 (2020) 120284.
19. Shuozhi Xu, Emily Hwang, **Wu-Rong Jian**, Yanqing Su, and Irene J. Beyerlein. Atomistic calculations of the generalized stacking fault energies in two refractory multi-principal element alloys. *Intermetallics* 124 (2020) 106844.
20. Zhuocheng Xie, **Wu-Rong Jian**, Zhihua Wang, Xiaoqing Zhang, and Xiaohu Yao. Layer thickness effects on the strengthening and toughening mechanisms in metallic glass-graphene nanolaminates. *Computational Materials Science* 177 (2020) 109536.
21. **Wu-Rong Jian**, Min Zhang, Shuozhi Xu, and Irene J. Beyerlein. Atomistic simulations of dynamics of an edge dislocation and its interaction with a void in copper: a comparative study. *Modelling and Simulation in Materials Science and Engineering* 28 (2020) 045004.
22. X. J. Long, Y. Cai, **W. R. Jian**, L. Wang, and S. N. Luo. Acoustic and double elastic shock waves in single-crystal graphene. *Journal of Applied Physics* 127 (2020) 055101.
23. Y. H. Mo, L. Y. Meng, X. C. Tang, X. H. Yao, J. W. Qiao, and **W. R. Jian**. The toughening mechanism and spatial–temporal evolution of shear bands at different strain rates in Vit-1 metallic glass. *Materials Science and Engineering: A* 773 (2020) 138855.
24. **Wu-Rong Jian**, Xiaohu Yao, Yugang Sun, Zhuocheng Xie, and Xiaoqing Zhang. Size-dependent vibration analysis of carbon nanotubes. *Journal of Materials Research* 34 (2019) 2148. (Invited Paper)
25. J. M. Zhan, **W. R. Jian**, X. C. Tang, Y. L. Han, W. H. Li, X. H. Yao, and L. Y. Meng. Tensile deformation of nanocrystalline Al-matrix composites: Effects of the SiC particle and graphene. *Computational Materials Science* 156 (2019) 187.
26. **W. R. Jian**, L. Wang, X. H. Yao, and S. N. Luo. Tensile and nanoindentation deformation of amorphous/crystalline nanolaminates: Effects of layer thickness and interface type. *Computational Materials Science* 154 (2018) 225.
27. X. C. Tang, L. Y. Meng, J. M. Zhan, **W. R. Jian**, W. H. Li, X. H. Yao, and Y. L. Han. Strengthening effects of encapsulating graphene in SiC particle-reinforced Al-matrix composites. *Computational Materials Science* 153 (2018) 275.

28. **W. R. Jian**, X. J. Long, M. X. Tang, Y. Cai, X. H. Yao, and S. N. Luo. Deformation and spallation of shock-loaded graphene: Effects of orientation and grain boundary. *Carbon* 132 (2018) 520.
29. X. C. Tang, **W. R. Jian**, J. Y. Huang, F. Zhao, C. Li, X. H. Xiao, X. H. Yao, and S. N. Luo. Spall damage of a Ta particle-reinforced metallic glass matrix composite under high strain rate loading. *Materials Science and Engineering: A* 711 (2018) 284.
30. **W. R. Jian**, L. Wang, X. H. Yao, and S. N. Luo. Balancing strength, hardness and ductility of Cu64Zr36 nanoglasses via embedded nanocrystals. *Nanotechnology* 29 (2017) 025701.
31. **W. R. Jian**, L. Wang, B. Li, X. H. Yao, and S. N. Luo. Improved ductility of Cu64Zr36 metallic glass/Cu nanocomposites via phase and grain boundaries. *Nanotechnology* 27 (2016) 175701.
32. Bo Li, Liang Wang, **Wu-Rong Jian**, E. Jun-Cheng, Hong-Hao Ma, and Sheng-Nian Luo. Irradiation-initiated plastic deformation in prestrained single-crystal copper. *Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms* 368 (2016) 60.
33. **W. R. Jian**, B. Li, L. Wang, X. H. Yao, and S. N. Luo. Shock response of open-cell nanoporous Cu foams: Effects of porosity and specific surface area. *Journal of Applied Physics* 118 (2015) 165902.
34. F. P. Zhao, B. Li, **W. R. Jian,** L. Wang, and S. N. Luo. Shock-induced melting of honeycomb-shaped Cu nanofoams: Effects of porosity. *Journal of Applied Physics* 118 (2015) 035904.
35. **W. R. Jian**, X. H. Yao, L. Wang, X. C. Tang, and S. N. Luo. Short-and medium-range orders in Cu46Zr54 metallic glasses under shock compression. *Journal of Applied Physics* 118 (2015) 015901.
36. W. H. Lee, X. H. Yao, **W. R. Jian**, and Q. Han. High-velocity shock compression of SiC via molecular dynamics simulation. *Computational Materials Science* 98 (2015) 297.