

PAULO BRANICIO

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EDUCATION

Ph.D., Physics, Federal University of Sao Carlos, Brazil	2001
M.S., Physics, Federal University of Sao Carlos, Brazil	1997
B.S., Physics, Federal University of Sao Carlos, Brazil	1995

PROFESSIONAL EXPERIENCE

• Associate Professor, University of Southern California	2024–present
• Assistant Professor, University of Southern California	2017–2024
• Senior Scientist, Institute of High Performance Computing	2013–2016
• IHPC Independent Investigator and Scientist, Institute of High Performance Computing	2011–2013
• Senior Research Engineer, Institute of High Performance Computing	2008–2011
• Postdoctoral Researcher, Federal University of Sao Carlos	2004–2007
• Adjunct Professor, Department of Physics, Federal University of Sao Carlos	2004
• Postdoctoral Researcher, University of Southern California	2003–2004
• Postdoctoral Researcher, Louisiana State University	2001–2002
• Visiting Scientist, Louisiana State University	1999

AWARDS AND HONORS

• Best Poster Award, ICMAT	2013
• IHPC Independent Investigator Award	2010
• Outstanding Symposium Paper - MRS Fall Meeting	2008
• FAPESP Postdoctoral Research Associateship Award, Brazil	2004–2007
• CNPq Overseas Postdoctoral Research Associateship Award, Brazil	2001–2003
• FAPESP Ph.D. Fellowship Award, Brazil	1997–2001
• CNPq MSc Fellowship Award, Brazil	1995–1997

RESEARCH INTERESTS

My interests lie in the application of machine learning approaches and multiscale methodologies—from quantum mechanical to mesoscale levels—to investigate materials synthesis and properties. This includes examining structural correlations and dynamic behavior of metallic nanoglasses, developing low-friction coatings, and characterizing nanoporous materials. I investigate phenomena that encompass mechanical behavior, friction, and fluid-flow in nanoconfined spaces.

PUBLICATIONS

GOOGLE SCHOLAR CITATIONS (PAULO S BRANICIO): 3861, H-INDEX: 32, I10-INDEX: 71
https://scholar.google.com/citations?user=65r_BW8AAAAJ&hl

WEB OF SCIENCE CITATIONS (BRANICIO, PAULO S.): 3032, H-INDEX: 30
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PEER-REVIEWED JOURNAL ARTICLES

* Indicates member of research group

2024

UNDER REVIEW

1. Jianping Liu, Yikun Liu, Chenyao Xiao, Xiaoliang Chen, **Paulo S. Branicio**, Liang Tian, Mechanisms and Strategies to Achieve Stability in Inkjet Printed 2D Materials Electronics. *Contribution: revised the manuscript.*
2. Amanda P. Carvalho, Aoyan Liang,* Megumi Kawasaki, Livia Cupertino-Malheiros, **Paulo S. Branicio**, Roberto B. Figueiredo, Dynamic recovery as a strengthening mechanism in nanostructured metals. *Contribution: participated in the design of the computational part the work, provided the computational resources, participated in data analysis and interpretation, revised the manuscript.*

PUBLISHED

1. Emily Gurniak,* Xuezhen Ren,* Suyue Yuan,* and **Paulo S. Branicio**, Harnessing Graph Convolutional Neural Networks for identification of glassy states in metallic glasses. *Computational Materials Science*, **244**, 113257 (2024). *Contribution: corresponding author, conceived and designed the work, participated in data analysis and interpretation, revised the manuscript, obtained funding.*
2. Aoyan Liang,* Chang Liu,* and **Paulo S. Branicio**, Colloid Transport in Bicontinuous Nanoporous Media. *Langmuir*, **40**, 10868 (2024). *Contribution: corresponding author, participated in data analysis and interpretation, conceived and designed the work, conceived and designed the analysis, revised the manuscript, obtained funding.*
3. Xuezhen Ren,* Suyue Yuan,* Emily J. Gurniak,* and **Paulo S. Branicio**, Structural and thermodynamic characterization of CuZr metallic glass nanoparticles: Insights from atomistic simulations. *Physical Review Materials*, **8**, 046001, (2024). *Contribution: corresponding author, conceived and designed the work, participated in data analysis and interpretation, revised the manuscript, obtained funding.*
4. Adie Alwen, Aoyan Liang,* **Paulo S. Branicio**, Andrea M. Hodge, Combinatorial and high-throughput investigation of growth nanotwin formation. *Acta Materialia*, **270**, 119839 (2024). *Contribution: participated in data analysis and interpretation, revised the manuscript.*

2023

5. Suyue Yuan,* Aoyan Liang,* Chang Liu,* Liang Tian, Normand Mousseau, and **Paulo S. Branicio**, Effect of heat treatment paths on the aging and rejuvenation of metallic glasses. *Physical Review Materials*, **7**, 123603, (2023). *Contribution: corresponding author, participated in data analysis and interpretation, revised the manuscript, obtained funding.*
6. Yu Chen, **Paulo S. Branicio**, Zhen-Dong Sha, Mechanical Properties of Heterogeneous Metallic Glasses: Insights from Brick-and-Mortar Designs. *Thin-Walled Structures*, **193**, 111298 (2023). *Contribution: corresponding author, participated in data analysis and interpretation, revised the manuscript.*
7. Suyue Yuan,* Aoyan Liang,* Chang Liu,* Aiichiro Nakano, Ken-ichi Nomura, and **Paulo S. Branicio**, Uncovering metallic glasses hidden vacancy-like motifs using machine learning. *Materials & Design*, **233**, 112185 (2023). *Contribution: corresponding author, participated in data analysis and interpretation, revised the manuscript, obtained funding.*
8. Aoyan Lian,* Daniel C Goodelman, Andrea M. Hodge, Diana Farkas, and **Paulo S. Branicio**, CoFeNiTi_x and CrFeNiTi_x high entropy alloy thin films microstructure formation. *Acta Materialia*, **257**, 119163 (2023).

Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript.

9. Shan Li, Yue Yu, **Paulo S. Branicio**, Zhen-Dong Sha, Effects of rejuvenation modes on the microstructures and mechanical properties of metallic glasses. *Materials Today Communications*, **36**, 106493 (2023). *Contribution: corresponding author, participated in data analysis and interpretation, revised the manuscript.*
10. Hong Li, Jia-Cheng Zhang, **Paulo S. Branicio**, Zhen-Dong Sha, Composition-dependent fracture energy in metallic glasses. *Physical Review Materials*, **7**, 035602, (2023). *Contribution: corresponding author, participated in data analysis and interpretation, revised the manuscript.*
11. Suyue Yuan* and **Paulo S. Branicio**, Atomistic simulations of nanoindentation on nanoglasses: Effects of grain size and gradient microstructure on the mechanical properties. *Intermetallics*, **153**, 107782, (2023). *Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, drafted the paper, revised the manuscript, obtained funding.*

2022

12. Liqiu Yang, Subodh C. Tiwari, Shogo Fukushima, Fuyuki Shimojo, Rajiv K. Kalia, Aiichiro Nakano, Priya Vashishta, **Paulo S. Branicio**, Photoexcitation-induced nonthermal ultrafast loss of long-range order in GeTe. *The Journal of Physical Chemistry Letters*, **13**, 10230-10236, (2022). *Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript.*
13. Chang Liu,* Suyue Yuan,* Jinwoo Im, Felipe P. J. de Barros, Sami F. Masri, **Paulo S. Branicio**, Mechanical properties, failure mechanisms, and scaling laws of bicontinuous nanoporous metallic glasses. *Acta Materialia*, **239**, 118255, (2022). *Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript, obtained funding.*
14. Emily Gurniak,* Subodh Tiwari, Sungwook Hong, Aiichiro Nakano, Rajiv K. Kalia, Priya Vashishta, **Paulo S. Branicio**, Anisotropic atomistic shock response mechanisms of aramid crystals. *The Journal of Chemical Physics*, **157**, 044105, (2022). *Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript.*
15. Wei-Hui Lin, Chong-Min She, Chun-Yu Zhang, **Paulo S. Branicio**, Zhen-Dong Sha, Tuning the mechanical properties of cellular metallic glasses. *International Journal of Plasticity*, **156**, 103373 (2022). *Contribution: corresponding author, participated in data analysis and interpretation, revised the manuscript.*
16. Wanghui Li, Eric N. Hahn, **Paulo S. Branicio**, Xiaohu Yao, Timothy C. Germann, Biao Feng, Xiaoqing Zhang, Defect reversibility regulates dynamic tensile strength in silicon carbide at high strain rates, *Scripta Materialia*, **213**, 114593 (2022). *Contribution: participated in data analysis and interpretation, revised the manuscript.*
17. Haoxuan Li* and **Paulo S. Branicio**, Ultralow friction of graphene-coated silica nanoparticle film, *Computational Materials Science*, **204**, 111184 (2022). *Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript.*
18. Xiaoyu Guan,* Aoyan Liang,* **Paulo S. Branicio**, High pressure shear induced microstructural evolution in nanocrystalline aluminum, *Computational Materials Science*, **203**, 111105 (2022). *Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript.*
19. Michael G. Eberhardt,* Andrea M. Hodge, and **Paulo S. Branicio**, Atomistic modeling of physical vapor deposition on complex topology substrates, *Computational Materials Science*, **203**, 111111 (2022). *Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript.*

20. Lanxi Feng, Wanghui Li, Eric N. Hahn, **Paulo S. Branicio**, Xiaoqing Zhang, Xiaohu Yao, Structural phase transition and amorphization in hexagonal SiC subjected to dynamic loading. *Mechanics of Materials*, **164**, 104139 (2022). *Contribution: participated in data analysis and interpretation, revised the manuscript.*

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21. Chang Liu,* and **Paulo S. Branicio**, Pore-Size Dependence of Permeability for Bicontinuous Nanoporous Media, *Langmuir*, **37**, 14866-14877 (2021). *Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript, obtained funding.*
22. Kaifeng Zheng,* Suyue Yuan,* Horst Hahn, **Paulo S. Branicio**, Excess free volume and structural properties of inert gas condensation synthesized nanoparticles based CuZr nanoglasses, *Scientific Reports*, **11**, 19246 (2021). *Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript, obtained funding.*
23. Aoyan Liang,* Chang Liu,* **Paulo S. Branicio**, Hot-press sintering of AlN nanoceramics, *Physical Review Materials*, **5**, 096001 (2021). *Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript.*
24. Hong Li, Qing-Xiang Pei, Zen-Dong Sha, **Paulo S. Branicio**, Intrinsic and extrinsic effects on the fracture toughness of ductile metallic glasses, *Mechanics of Materials*, **162**, 104066 (2021). *Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript.*
25. Saeed Z. Chavoshi, **Paulo S. Branicio**, Qi An, Transition between Hall-Petch and Inverse Hall-Petch behavior in nanocrystalline silicon carbide, *Physical Review Materials*, **5**, 073606 (2021). *Contribution: participated in data analysis and interpretation, revised the manuscript.*
26. Peng Geng,* **Paulo S. Branicio**, Atomistic insights on the pressure-induced multi-layer graphene to diamond-like structure transformation. *Carbon*, **175**, 243 (2021). *Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript.*
27. Wanghui Li, Eric N. Hahn, **Paulo S. Branicio**, Xiaohu Yao, Xiaoqing Zhang, Biao Feng, Timothy C. Germann, Rate dependence and anisotropy of SiC response to ramp and wave-free quasi-isentropic compression. *International Journal of Plasticity*, **138**, 102923 (2021). *Contribution: participated in data analysis and interpretation, revised the manuscript.*
28. S. Yuan,* **P. S. Branicio**, Tuning the mechanical properties of nanoglass-metallic glass composites with brick and mortar designs. *Scripta Materialia*, **194**, 113639 (2021). *Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript, obtained funding.*
29. C. Liu,* S. Yuan,* **P. S. Branicio**, Bicontinuous nanoporous design induced homogenization of strain localization in metallic glasses. *Scripta Materialia*, **192**, 67-72 (2021). *Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript, obtained funding.*

2020

30. S. C. Tiwari, A. Nakano, F. Shimojo, R. Kalia, P. Vashishta, **P. S. Branicio**, Photoexcitation induced ultrafast nonthermal amorphization in Sb₂Te₃. *The Journal of Physical Chemistry Letters*, **11**, 10242-10249, (2020). *Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript.*
31. Jing Ning, Jose C. Martinez, Jamo Momand, Heng Zhang, Subodh C. Tiwari, Fuyuki Shimojo, Aiichiro Nakano, Rajiv K. Kalia, Priya Vashishta, **Paulo S. Branicio**, Bart J. Kooi, Robert E. Simpson, Differences in

- Sb₂Te₃ grown by pulsed laser and sputter deposition. *Acta Materialia*, **200**, 811-820 (2020). *Contribution: contributed data, participated in data analysis and interpretation, revised the manuscript.*
32. S. Yuan,* **P. S. Branicio**, Gradient microstructure induced shear band constraint, delocalization, and delayed failure in CuZr nanoglasses. *International Journal of Plasticity*, **134**, 102845 (2020). *Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript, obtained funding.*
33. Kaifeng Zheng,* **P. S. Branicio**, Synthesis of metallic glass nanoparticles by inert gas condensation. *Physical Review Materials*, **4**, 076001, 2020. *Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript, obtained funding.*
34. G. P. Kumar, S. Yuan,* F. Cui, **P. S. Branicio**, M. Jafary-Zadeh, Nanoglass-based balloon expandable stents. *Journal of Biomedical Materials Research Part B: Applied Biomaterials*. **108**, 73–79 (2020). *Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, contributed data, participated in data analysis and interpretation, revised the manuscript.*
35. W. Lin, Y. Teng, Z. Sha, S. Yuan,* **P. S. Branicio**, Mechanical properties of nanoporous metallic glasses: Insights from large-scale atomic simulations. *International Journal of Plasticity* **127**, 102657 (2020). *Contribution: corresponding author, conceived and designed the analysis, contributed data, contributed analysis tools, participated in data analysis and interpretation, revised the manuscript.*
36. Hao Yang, Buyun Chen, Boxiang Song, Deming Meng, Subodh Tiwari, Aravind Krishnamoorthy, Xiaodong Yan, Zerui Liu, Yunxiang Wang, Pan Hu, Tse-Hsien Ou, **Paulo Branicio**, Rajiv Kalia, Aiichiro Nakano, Priya Vashishta, Fanxin Liu, Han Wang, Wei Wu, Memristive Device Characteristics Engineering by Controlling the Crystallinity of Switching Layer Material. *ACS Applied Electronic Materials*, **2**, 1529-1537 (2020). *Contribution: contributed data: produced computational models to support experimental results.*
37. S. Yuan,* Xinxiang Song,* **P. S. Branicio**, Tuning the Mechanical Properties of Shape Memory Metallic Glass Composites with Brick and Mortar Designs, *Scripta Materialia* **186**, 69-73 (2020). *Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript, obtained funding.*

2019

38. C. Liu,* **P. S. Branicio**, Efficient generation of non-cubic stochastic periodic bicontinuous nanoporous structures. *Computational Materials Science* **169**, 109101 (2019). *Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript, obtained funding.*
39. S. C. Tiwari, K. Shimamura, A. Mishra, F. Shimojo, A. Nakano, R. K. Kalia, P. Vashishta, **P. S. Branicio**, Hydrogen Bond Preserving Stress Release Mechanism Is Key to the Resilience of Aramid Fibers. *The Journal of Physical Chemistry B* **123**, 9719–9723 (2019). *Contribution: corresponding author, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript.*
40. M. Jafary-Zadeh, K. H. Khoo, R. Laskowski, **P. S. Branicio**, A. V. Shapeev, Applying a machine learning interatomic potential to unravel the effects of local lattice distortion on the elastic properties of multi-principal element alloys. *Journal of Alloys and Compounds* **803**, 1054–1062 (2019). *Contribution: participated in data analysis and interpretation, revised the manuscript.*
41. H. Li,* **P. S. Branicio**, Ultra-low friction of graphene/C₆₀/graphene coatings for realistic rough surfaces. *Carbon* **152**, 727–737 (2019). *Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript.*
42. S. Z. Chavoshi, M. A. Tschopp, **P. S. Branicio**, Transition of deformation mechanisms in nanotwinned single crystalline SiC. *Philosophical Magazine* **99**, 2636–2660 (2019). *Contribution: participated in data analysis and interpretation, revised the manuscript.*

2018

43. **P. S. Branicio**, K. Bai, H. Ramanarayan, D. T. Wu, M. B. Sullivan, D. J. Srolovitz, Atomistic insights into the nanosecond long amorphization and crystallization cycle of nanoscale Ge₂Sb₂Te₅: An ab initio molecular dynamics study. *Physical Review Materials* **2**, 043401 (2018). *Contribution: corresponding author; conceived and designed the work, conceived and designed the analysis, contributed data, contributed analysis tools, performed the calculations, participated in data analysis and interpretation, drafted the paper.*
44. **P. S. Branicio**, J. Zhang, J. P. Rino, A. Nakano, R. K. Kalia, P. Vashishta, Shock-induced microstructural response of mono- and nanocrystalline SiC ceramics. *Journal of Applied Physics* **123**, 145902 (2018). *Contribution: corresponding author; conceived and designed the work, conceived and designed the analysis, contributed data, contributed analysis tools, performed the calculations, participated in data analysis and interpretation, drafted the paper.*
45. O. M. Roscioni, **P. S. Branicio**, J. Kalikka, X. Zhou, R. E. Simpson, Local structure of Ge₂Sb₂Te₅ during crystallization under pressure. *Applied Physics Letters* **112**, 151901 (2018). *Contribution: participated in data analysis and interpretation, revised the manuscript.*
46. M. Jafary-Zadeh, G. Praveen Kumar, **P. Branicio**, M. Seifi, J. Lewandowski, F. Cui, A Critical Review on Metallic Glasses as Structural Materials for Cardiovascular Stent Applications. *Journal of Functional Biomaterials* **9**, 19 (2018). *Contribution: revised the manuscript.*
47. **P. S. Branicio**, J. Zhang, J. P. Rino, A. Nakano, R. K. Kalia, P. Vashishta, Plane shock loading on mono- and nano-crystalline silicon carbide. *Applied Physics Letters* **112**, 111909 (2018). *Contribution: corresponding author; conceived and designed the work, conceived and designed the analysis, contributed data, contributed analysis tools, performed the calculations, participated in data analysis and interpretation, drafted the paper.*

2017

48. W. H. Li, X. H. Yao, **P. S. Branicio**, X. Q. Zhang, N. B. Zhang, Shock-induced spall in single and nanocrystalline SiC. *Acta Materialia* **140**, 274–289 (2017). *Contribution: corresponding author; participated in data analysis and interpretation, revised the manuscript.*
49. Z. Sha, W. H. Wong, Q. Pei, **P. S. Branicio**, Z. Liu, T. Wang, T. Guo, H. Gao, Atomistic origin of size effects in fatigue behavior of metallic glasses. *Journal of the Mechanics and Physics of Solids* **104**, 84–95 (2017). *Contribution: conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, drafted the paper; revised the manuscript.*
50. T. Hirata, J. Ye, **P. Branicio**, J. Zheng, A. Lange, J. Plank, M. Sullivan, Adsorbed Conformations of PCE Superplasticizers in Cement Pore Solution Unraveled by Molecular Dynamics Simulations. *Scientific Reports* **7**, 16599 (2017). *Contribution: conceived and designed the work, conceived and designed the analysis, contributed data, contributed analysis tools, performed the calculations, participated in data analysis and interpretation, revised the manuscript.*
51. Z.-D. Sha, **P. S. Branicio**, H. P. Lee, T. E. Tay, Strong and ductile nanolaminate composites combining metallic glasses and nanoglasses. *International Journal of Plasticity* **90**, 231–241 (2017). *Contribution: conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript.*
52. T. Hirata, **P. Branicio**, J. Ye, J. Zheng, Y. Tomike, A. Lange, J. Plank, M. Sullivan, Atomistic dynamics simulation to solve conformation of model PCE superplasticisers in water and cement pore solution. *Advances in Cement Research* **29**, 418–428 (2017). *Contribution: conceived and designed the analysis, contributed data, contributed analysis tools, performed the calculations, participated in data analysis and interpretation, drafted the paper.*

2016

53. **P. S. Branicio**, G. Vastola, M. H. Jhon, M. B. Sullivan, V. B. Shenoy, D. J. Srolovitz, Elastic interaction of hydrogen atoms on graphene: A multiscale approach from first principles to continuum elasticity. *Physical*

Review B **94**, 165420 (2016). *Contribution: corresponding author; conceived and designed the work, conceived and designed the analysis, contributed data, contributed analysis tools, performed the calculations, participated in data analysis and interpretation, drafted the paper.*

54. K. Bai, T. L. Tan, **P. S. Branicio**, M. B. Sullivan, Time-temperature-transformation and continuous-heating-transformation diagrams of GeSb₂Te₄ from nanosecond-long ab initio molecular dynamics simulations. *Acta Materialia* **121**, 257–265 (2016). *Contribution: corresponding author; conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, drafted the paper.*
55. S. Adibi, **P. S. Branicio**, R. Ballarini, Compromising high strength and ductility in nanoglass-metallic glass nanolaminates. *RSC Advances* **6**, 13548–13553 (2016). *Contribution: corresponding author; conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript.*
56. H. W. Ho, **P. S. Branicio**, W. D. Song, K. Bai, T. L. Tan, R. Ji, Y. Yang, P. Yang, Y. H. Du, M. B. Sullivan, Unravelling the anomalous electrical and optical phase-change characteristics in FeTe. *Acta Materialia* **112**, 67–76 (2016). *Contribution: participated in data analysis and interpretation, revised the manuscript.*

2015

57. S. Adibi, **P. S. Branicio**, R. Lontas, D. Z. Chen, J. R. Greer, D. J. Srolovitz, S. P. Joshi, Surface roughness imparts tensile ductility to nanoscale metallic glasses. *Extreme Mechanics Letters* **5**, 88–95 (2015). *Contribution: conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript.*
58. Z. D. Sha, **P. S. Branicio**, Q. X. Pei, Z. S. Liu, H. P. Lee, T. E. Tay, T. J. Wang, Strong and superplastic nanoglass. *Nanoscale* **7**, 17404–17409 (2015). *Contribution: conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript.*
59. S. Adibi, **P. S. Branicio**, S. P. Joshi, Suppression of Shear Banding and Transition to Necking and Homogeneous Flow in Nanoglass Nanopillars. *Scientific Reports* **5**, 15611 (2015). *Contribution: corresponding author; conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript.*

2014

60. L. Dai, V. Sorkin, Z. D. Sha, Q. X. Pei, **P. S. Branicio**, Y. W. Zhang, Molecular Dynamics Simulations on the Frictional Behavior of a Perfluoropolyether Film Sandwiched between Diamond-like-Carbon Coatings. *Langmuir* **30**, 1573–1579 (2014). *Contribution: participated in data analysis and interpretation, revised the manuscript.*
61. J. Y. Zhang, **P. S. Branicio**, D. J. Srolovitz, Planar fault energies of copper at large strain: A density functional theory study. *Journal of Applied Physics* **116**, 103512 (2014). *Contribution: conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript.*
62. R. Paupitz, C. E. Junkermeier, A. C. T. van Duin, **P. S. Branicio**, Fullerenes generated from porous structures. *Physical Chemistry Chemical Physics* **16**, 25515–25522 (2014). *Contribution: contributed analysis tools: co-developed the ReaxFF used in simulations, participated in data analysis and interpretation, revised the manuscript.*
63. S. Adibi, **P. S. Branicio**, Y.-W. W. Zhang, S. P. Joshi, Composition and grain size effects on the structural and mechanical properties of CuZr nanoglasses. *Journal of Applied Physics* **116**, 043522 (2014). *Contribution: corresponding author; conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript.*

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64. Z. D. Sha, V. Sorkin, **P. S. Branicio**, Q. X. Pei, Y. W. Zhang, D. J. Srolovitz, Large-scale molecular dynamics simulations of wear in diamond-like carbon at the nanoscale. *Applied Physics Letters* **103**, 073118 (2013).

Contribution: conceived and designed the work: prepared the simulation models, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript.

65. **P. S. Branicio**, J. Y. Zhang, D. J. Srolovitz, Effect of strain on the stacking fault energy of copper: A first-principles study. *Physical Review B* **88**, 064104 (2013). *Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, contributed data, contributed analysis tools, performed the calculations, participated in data analysis and interpretation, drafted the paper.*
66. Z. D. Sha, **P. S. Branicio**, Q. X. Pei, V. Sorkin, Y. W. Zhang, A modified Tersoff potential for pure and hydrogenated diamond-like carbon. *Computational Materials Science* **67**, 146–150 (2013). *Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript.*
67. J. Y. Zhang, Z. D. Sha, **P. S. Branicio**, Y. W. Zhang, V. Sorkin, Q. X. Pei, D. J. Srolovitz, Superplastic nanocrystalline ceramics at room temperature and high strain rates. *Scripta Materialia* **69**, 525–528 (2013). *Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript.*
68. V. Sorkin, Z. D. Sha, **P. S. Branicio**, Q. X. Pei, Y. W. Zhang, Atomistic molecular dynamics study of structural and thermomechanical properties of Zdol lubricants on hydrogenated diamond-like carbon. *IEEE Transactions on Magnetics* **49**, 5227–5235 (2013). *Contribution: participated in data analysis and interpretation, revised the manuscript.*
69. Z. Sha, Q. Pei, V. Sorkin, **P. S. Branicio**, Y. Zhang, H. Gao, On the notch sensitivity of CuZr metallic glasses. *Applied Physics Letters* **103**, 081903 (2013). *Contribution: participated in data analysis and interpretation, revised the manuscript.*
70. S. Adibi, Z. D. Sha, **P. S. Branicio**, S. P. Joshi, Z. S. Liu, Y. W. Zhang, A transition from localized shear banding to homogeneous superplastic flow in nanoglass. *Applied Physics Letters* **103**, 211905 (2013). *Contribution: conceived and designed the work, conceived and designed the analysis, participated in data analysis and interpretation, revised the manuscript.*
71. **P. S. Branicio**, A. Nakano, R. K. Kalia, P. Vashishta, Shock loading on AlN ceramics: A large scale molecular dynamics study. *International Journal of Plasticity* **51**, 122–131 (2013). *Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, contributed data, contributed analysis tools, performed the calculations, participated in data analysis and interpretation, drafted the paper.*
72. H. W. Ho, W. D. Song, K. Bai, **P. S. Branicio**, T. L. Tan, R. Ji, L. T. Law, C. M. Ng, L. Wang, Correlation between optical absorption redshift and carrier density in phase change materials. *Journal of Applied Physics* **114**, 123504 (2013). *Contribution: participated in data analysis and interpretation, revised the manuscript.*

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73. **P. S. Branicio**, Atomistic Mechanisms in Silicon Carbide Nanostructures. *Journal of Computational and Theoretical Nanoscience* **9**, 1870–1880 (2012).
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90. **P. S. Branicio**, R. K. Kalia, A. Nakano, P. Vashishta, Shock-Induced Structural Phase Transition, Plasticity, and Brittle Cracks in Aluminum Nitride Ceramic. *Physical Review Letters* **96**, 065502 (2006). *Contribution: corresponding author, conceived and designed the analysis, contributed data, contributed analysis tools, performed the calculations, participated in data analysis and interpretation, drafted the paper.*
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CONFERENCE PROCEEDINGS AND OTHER PUBLICATIONS

1. Mohammad Hadi Yazdani, **P. S. Branicio**, Ken-ichi Nomura, Benchmarking Machine Learning Models on a Dielectric Constant Database for Bandgap Prediction. *Journal of Computational Science Education*. **15**, 10 (2024). *Contribution: revised data analysis and interpretation, revised the paper.*
2. K. Bai, T. L. Tan, **P. S. Branicio**, M. Sullivan, Crystallization kinetic studies of GeSbTe phase change materials by ab initio molecular dynamics. *Calphad*. **51**, 358 (2015). *Contribution: participated in data analysis and interpretation, revised the paper.*
3. J. Zhang, **P. S. Branicio**, Molecular Dynamics Simulations of Plane Shock Loading in SiC. *Procedia Engineering* **75**, 150–153 (2014). *Contribution: corresponding author, conceived and designed the work, conceived and designed the analysis, contributed analysis tools, participated in data analysis and interpretation, revised the paper.*
4. S. Ezhilvalavan, **P. S. Branicio**, L. B. Kong, Editorial Preface. *Procedia Engineering* **75**, 1–2 (2014).
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6. **P. S. Branicio**, J. Zhang, Atomistic Modeling of Shock Loading in SiC Ceramics. *Materials Research Society Symposium Proceedings* **1535**, 370 (2013). *Contribution: corresponding author, conceived and designed the*

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INVITED CONFERENCE PRESENTATIONS (INTERNATIONAL/SOCIETY)

1. P. Branicio, “Metallic Glasses and Nanoglasses: Innovations in Heterogeneous Designs”, Joint USA-European Symposium on Machine Learning, Simulations and Experiments for Ultra-lowpower Materials and Devices 2024 – Spetses – Greece, 2024.
2. P. Branicio, “Mechanical Properties of Nanostructured Metallic Glasses”, EMRS - European Materials Research Society 2024 Spring Meeting – Strasbourg – France, 2024.
3. P. Branicio, “3D Nanoporous Graphene-Based CO₂ Capture”, Ershaghi Center for Energy Transition (E-CET) Summit 2024 – Los Angeles – USA, 2024.
4. P. Branicio, “Mechanical Properties of Bicontinuous Nanoporous Metallic Glasses”, Fourth International Symposium on Nanoporous Materials by Alloy Corrosion – Nohfelden, Germany, 2023.
5. P. Branicio, “Mechanical Behavior of Heterogeneous Metallic Glasses”, 2022 Structural Nanomaterials Conference GRC – Gordon Research Conference – Les Diablerets - Switzerland, 2022.
6. P. Branicio, “Deformation and failure of CuZr gradient nanoglasses”, TMS 2020 – The Minerals, Metals & Materials Society annual meeting – San Diego – USA, 2020.
7. P. Branicio, “Deformation and failure of CuZr gradient nanoglasses”, MRS (Materials Research Society) Spring meeting – Phoenix – USA, 2019.
8. P. Branicio, “Mechanical behavior of nanostructured metallic glasses”, CFMS100 - Century Fracture Mechanics Summit – Singapore – Singapore, 2019.
9. P. Branicio, “Mechanical properties and failure mechanisms of gradient nanoporous materials”, International Conference on Plasticity, Damage, and Fracture 2019 – Panama City – Panama, 2019.
10. P. Branicio, “Atomistic modeling of the mechanical behavior of nanostructured metallic glasses”, 2018 Structural Nanomaterials Conference GRC – Gordon Research Conference – Hong Kong, 2018.
11. P. Branicio, “Molecular dynamics simulations at large length and time scales”, 2018 Spetses Symposium on Materials Genome at Exascale - Spetses - Greece, 2018.

12. P. Branicio, S. Tiwari, A. Nakano, R. Kalia, P. Vashishta, K. Shimamura, and F. Shimojo, “Anisotropic shock response of poly (p-phenylene terephthalamide) (PPTA) and its implications for aramid-based fibers performance”, TMS 2018 – The Minerals, Metals & Materials Society annual meeting – Phoenix – USA, 2018.
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14. P. S. Branicio, S. Adibi, Z. Sha, Y. W. Zhang, S. P. Joshi, “From localized shear banding to homogeneous flow in nanoglasses”, International Symposium on Plasticity 2016 – Kona - Hawaii – USA, 2016.
15. P. S. Branicio, J. Zhang, A. Nakano, R. K. Kalia, P. Vashishta, “Atomistic modeling of plane shock loading in high strength ceramics”, SES – Soc. Eng. Science - 50 Annual Technical Meeting – Providence – USA, 2013.
16. P. S. Branicio, A. Nakano, R. K. Kalia, P. Vashishta, “Molecular dynamics simulations of shock loading in aluminum nitride ceramics”, Int. Conf. on Materials for Advanced Technologies – ICMAT - Singapore, 2013.
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22. P. S. Branicio, “Local stress calculation in simulations of multicomponent systems”, ICCES’09 – Int. Conf. Computational & Exp. Eng. and Sci. – Phuket – Thailand, 2009.

CONTRIBUTED CONFERENCE PRESENTATIONS (INTERNATIONAL/SOCIETY)

1. Chang Liu, Suyue Yuan, Jinwoo Im, Felipe P. J. de Barros, Sami F. Masri, and Paulo S. Branicio, “Mechanical Properties and Scaling Laws of Bicontinuous Nanoporous Metallic Glasses”, TMS 2023 – The Minerals, Metals & Materials Society annual meeting – San Diego – USA, 2023.
2. P. Branicio, “Mechanical properties and failure mechanisms of gradient nanoporous materials”, TMS 2019 – The Minerals, Metals & Materials Society annual meeting – San Antonio – USA, 2019.
3. P. Branicio, Z. Sha, H. P. Lee, and T. E. Tay, “Mechanical properties of nanolaminate composites combining metallic glasses and nanoglasses”, TMS 2018 – The Minerals, Metals & Materials Society annual meeting – Phoenix – USA, 2018.
4. P. Branicio, S. Tiwari, A. Nakano, R. Kalia, P. Vashishta, K. Shimamura, and F. Shimojo, “Ab initio shock loading on poly (p-phenylene Terephthalamide) (PPTA) and its implications for Kevlar and other aramid based fibers performance”, APS March 2018 - March Meeting of the American Physical Society – Los Angeles – USA, 2018.
5. P. Branicio, Z. Sha, H. P. Lee, and T. E. Tay, “Mechanical properties of nanolaminate composites combining metallic glasses and nanoglasses”, MRS (Materials Research Society) Fall meeting – Boston – USA, 2017.
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13. **P. S. Branicio**, J. P. Rino, F. Shimojo, “High pressure phases of InP: an ab initio and molecular-dynamics study”, XXIX National Conference of Condensed Matter Physics – Caxambu – MG – Brazil, 2006.
14. **P. S. Branicio**, J. P. Rino, R. K. Kalia, A. Nakano, P. Vashishta, “Plane shock wave on AlN ceramics: a large scale molecular dynamics study”, XXIX National Conference of Condensed Matter Physics – Caxambu – MG – Brazil, 2006.
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17. **P. S. Branicio**, J. P. Rino, N. Studart, “Melting of 2d electrons on helium film: a molecular-dynamics study of orientational order”, XXIV National Conference of Condensed Matter Physics – São Lourenço– MG – Brazil, 2001.
18. **P. S. Branicio**, J. P. Rino, “Structural behavior of Cu nanowires under uniaxial strain: a Molecular Dynamics study”, The 2001 Meeting of the Div. of Computational Phys. of the A. Physical Society, 2001.
19. **P. S. Branicio**, J. P. Rino, R. K. Kalia, A. Nakano, P. Vashishta, “Structural correlations of amorphous Ga_{1-x}In_xAs: a molecular dynamics study”, 10th Brazilian Workshop on Semiconductor Physics, Guarujá – SP – Brazil, 2001.
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OTHER CONFERENCE PRESENTATIONS (INTERNATIONAL/SOCIETY)

*speaker’s name is in bold

1. **A. Liang**, Daniel C. Goodelman, Andrea M. Hodge, Diana Farkas, and **Paulo S. Branicio**, “Atomistic modeling of physical vapor deposition and melt-quenching of CoCrFeNiTi_x high entropy alloys”, TMS 2023 Annual Meeting & Exhibition – San Diego – USA, 2023.
2. **S. Yuan**, Aoyan Liang, Chang Liu, Aiichiro Nakano, Ken-ichi Nomura, and **Paulo S. Branicio**, “Using machine learning tools to find correlations of structure motifs with metallic glass states and mechanical properties”, TMS 2023 Annual Meeting & Exhibition – San Diego – USA, 2023.
3. **A. Liang**, C. Liu, **P. Branicio**, “Atomistic Modeling of Hot-Press Sintering of AlN Nanoceramics”, 2022 TMS Annual Meeting & Exhibition – Anaheim – USA, 2022.
4. **E. Gurniak**, S. C. Tiwari, S. Hong, A. Nakano, R. K. Kalia, P. Vashishta, **P. S. Branicio**, “Atomistic Investigation of Stress Release Mechanisms of Aramid Fibers”, 2022 TMS Annual Meeting & Exhibition – Anaheim – USA, 2022.
5. **S. Yuan**, **P. Branicio**, “Atomistic Modeling of the Mechanical Behavior of Gradient Nanoglasses”, 2022 TMS Annual Meeting & Exhibition – Anaheim – USA, 2022.
6. **A. Liang**, C. Liu, **P. Branicio**, “Atomistic Modeling of Hot-Press Sintering of AlN Ceramics”, 2021 MRS Fall Meeting & Exhibit – Boston – USA, 2021.
7. **S. Yuan**, **P. Branicio**, “Tuning the Mechanical Properties of Nanoglass-Metallic Glass Composites with Brick-and-Mortar Designs”, 2021 MRS Fall Meeting & Exhibit – Boston – USA, 2021.
8. **J. Ning**, J. Martinez, J. Momand, H. Zhang, S. Tiwari, F. Shimojo, A. Nakano, R. Kalia, P. Vashishta, **P. Branicio**, B. Kooi, R. Simpson, “Differences in van der Waals Epitaxial Growth of Sb₂Te₃ Films by Sputtering and Pulsed Laser Deposition”, 2021 MRS Fall Meeting & Exhibit – Boston – USA, 2021.
9. **C. Liu**, **P. Branicio**, “Permeability of Bicontinuous Nanoporous Media”, 2021 MRS Fall Meeting & Exhibit – Boston – USA, 2021.
10. **W. Li**, E. N. Hahn, **P. S. Branicio**, X. Yao, X. Zhang, B. Feng, T. C. Germann, “Rate dependence and anisotropy of SiC response to ramp and wave-free quasi-isentropic compression”, 2021 Virtual APS March Meeting.
11. **L. Yang**, S. C. Tiwari, F. Shimojo, R. K. Kalia, A. Nakano, P. Vashishta, **P. S. Branicio**, “Ultrafast Photoexcitation Driven Non-thermal Amorphization of GeTe”, 2021 Virtual APS March Meeting.
12. **C. Liu**, **P. S. Branicio**, “Effect of Porosity Level on the Mechanical Properties of Bicontinuous Metallic Glasses”, TMS2021 Virtual Annual Meeting.
13. **C. Liu**, **P. S. Branicio**, “Bicontinuous nanoporous design induced homogenization of strain localization in metallic glasses”, 2020 Virtual MRS Spring/Fall Meeting & Exhibit.
14. **S. Yuan**, **P. S. Branicio**, “Tuning the Mechanical Properties of Shape Memory Metallic Glass Composites with Brick and Mortar Designs”, 2020 Virtual MRS Spring/Fall Meeting & Exhibit.
15. **S. C. Tiwari**, K. Shimamura, **P. Branicio**, P. Vashishta, R. Kalia & A. Nakano, “Shock-induced para-crystallinity in PPTA”, APS March 2018 - March Meeting of the American Physical Society – Los Angeles – USA, 2018.
16. **S. Adibi**, **P. Branicio**, S. Joshi, “Suppression of shear banding and transition to necking and homogeneous flow in nanoglass nanopillars”, 55th Annual Technical Meeting for the Society of Engineering Science (SES), Madrid, Spain, 2018.
17. **S. Adibi**, **P. S. Branicio**, S. P. Joshi, “Localized shear banding to superplastic flow transition in metallic nanoglasses”, ASME's International Mechanical Engineering Congress and Exposition (IMECE), Tampa, USA, 2017.
18. **S. Adibi**, **P. S. Branicio**, S. P. Joshi, “Deformation mechanism of nanostructured metallic glass nanopillars via molecular dynamics simulation”, ASME's International Mechanical Engineering Congress and Exposition (IMECE), Phoenix, AZ, USA, 2016.

19. **S. Adibi, P. S. Branicio, S. P. Joshi**, “Size and geometric surface imperfection effects on deformation mechanism of metallic glass nanopillars,” ASME 2015 International Mechanical Engineering Congress & Exposition (IMECE 2015), Houston, TX, United States, 2015.
20. **S. Adibi, P. S. Branicio, S. P. Joshi, R. Ballarin**, “Effect of size, strain rate, and geometric imperfection on the mechanical properties and deformation mechanism of metallic glass nanopillars”, ASME 2015 International Mechanical Engineering Congress & Exposition (IMECE 2015), Houston, TX, United States, 2015.
21. **S. Adibi, P. S. Branicio, S. P. Joshi**, “Mechanical behavior and deformation mechanism of nanostructured metallic glass nanopillars”, SES 52th Annual Technical Meeting, Texas A&M University, College Station, TX, USA, 2015.
22. **S. Adibi, P. S. Branicio, S. P. Joshi, R. Ballarini**, “Atomistic Simulations of Metallic Glass and Nanoglass”, LAMMPS Users' Workshop and Symposium, Albuquerque, NM, USA, 2015.
23. **P. S. Branicio, J. Zhang, A. Nakano, R. K. Kalia, P. Vashishta**, “Atomistic modeling of the dynamic behavior of single and nanocrystalline SiC under plane shock loading”, APS - SHOCK15, 19th biennial conference of the APS Topical Group on Shock Compression of Condensed Matter – Tampa – USA, 2015.
24. **S. Adibi, P. S. Branicio, S. P. Joshi**, “Molecular dynamics simulations of metallic nanoglasses,” 5th Asia Pacific Congress on Computational Mechanics (APCOM2013) and ISCM 2013, Singapore, 2013.
25. **S. Adibi, P. S. Branicio, S. P. Joshi**, “Tunable tensile ductility in nano-engineered metallic glass architecture: An atomistic investigation”, The 23rd International Workshop on Computational Mechanics of Materials (IWCMM 23), Singapore, 2013.
26. **S. Adibi, P. S. Branicio, S. P. Joshi**, “Atomistic investigations of size and strain rate dependence on the mechanical response of nanoscale metallic glass structures”, The 3rd LAMMPS workshop and symposium, Albuquerque, USA, 2013.
27. **S. Adibi, P. S. Branicio, S. P. Joshi**, “Molecular dynamics simulations of metallic nanoglasses”, SES 50th Annual Technical Meeting and ASME-AMD Annual Summer Meeting, Brown University, Providence, USA, 2013.
28. **S. Adibi, P. S. Branicio, S. P. Joshi**, “Molecular dynamics simulation of size and strain rate dependent mechanical response of metallic glass nanorods”, 12th U.S. National Congress on Computational Mechanics (USNCCM12), Raleigh, USA, 2013.
29. **S. Adibi, P. S. Branicio, S. P. Joshi**, “Atomistic tensile loading simulations of metallic glass and nanoglass nanofilms”, 12th U.S. National Congress on Computational Mechanics (USNCCM12), Raleigh, USA, 2013.
30. **S. Adibi, P. S. Branicio, S. P. Joshi**, “Size and strain rate effects on the mechanical response of nanopillar metallic glasses: A molecular dynamics study”, International Conference on Materials for Advanced Technologies (ICMAT 2013), Singapore, 2013.
31. **S. Adibi, P. S. Branicio, S. P. Joshi**, “Molecular dynamics simulations of metallic nanoglasses”, International Conference on Materials for Advanced Technologies (ICMAT 2013), Singapore, 2013. **(Best Poster Award)**
32. **J. Zhang and P. S. Branicio**, “Atomistic modeling of shock loading in sic ceramics”, Int. Conf. on Materials for Advanced Technologies – ICMAT - Singapore, 2013.
33. **J. Zhang & P. Branicio**, “Atomistic modeling of shock loading in sic ceramics”, MMM2012 – 6th International Conference on Multiscale Materials Modeling – Singapore, 2012.
34. **D. F. Botelho, P. S. Branicio, J. P. Rino**, “Thermal conductivity in argon: A non-equilibrium molecular dynamics study”, XXIX National Conference of Condensed Matter Physics – Caxambu – MG – Brazil, 2006.
35. **R. C. Mota, P. S. Branicio, J. P. Rino**, “Pressure-Induced Phase Transformation in CaO: A Molecular Dynamics”, XXIX National Conference of Condensed Matter Physics – Caxambu – MG – Brazil, 2006.
36. **H. Tsuzuki, P. S. Branicio, J. P. Rino**, “Copper Nanowires under Tensile and Compressive Strain Rates”, XXIX National Conference of Condensed Matter Physics – Caxambu – MG – Brazil, 2006.

INVITED TALKS AT UNIVERSITIES AND ASSOCIATIONS

1. Department of Materials Science and Engineering, University of California, Irvine, title “Mechanical Behavior of Heterogeneous Metallic Glasses”. May 19, 2022.
2. Department of Materials Science and Engineering, University of California, Irvine, title “Deformation and Failure of Heterogeneous Metallic Glasses”. May 17, 2019.
3. EPD Lecture Series, Singapore University of Technology and Design - Singapore, title “Mechanical Behavior of Nanostructured Metallic Glasses”. April 22, 2019.
4. Department of Physics and Astronomy, University of Southern California, title “Atomistic Modeling of the Dynamic Behavior of SiC Under Shock Loading”. April 2, 2018.
5. ASM International Orange Coast Chapter, The Irvine Duck Club, Irvine, title “Mechanical Properties of Nanoglasses and Nanolaminate Composites Combining Metallic Glasses and Nanoglasses”. November 15, 2017.
6. California State University Northridge, title “Atomistic Modeling of Shock Loading on Single and Nanocrystalline SiC”. October 25, 2017.
7. California Institute of Technology, title: “Computational Materials Science Using Large-Scale Atomistic Simulations: High strength ceramics under extreme conditions, metallic glasses, nano-glasses, and phase change materials”. March 09, 2016.

CONTRACTS AND GRANTS

TOTAL FUNDING SINCE JOINING USC:

TOTAL: ~\$4.8M, SHARE: ~\$1.7M

FEDERAL GRANTS AND CONTRACTS (EXTERNAL FUNDING)

- **National Science Foundation – ACCESS Computing Allocation (08/07/2023 – 08/06/2024)**

PI: Paulo Branicio

Accelerate ACCESS MAT230044 – 3,000,000 ACCESS Credits

Branicio - estimated value of awarded resources

Total/Share \$23,724

- **National Science Foundation (10/01/2023 - 09/30/2027)**

PI: Andrea Hodge, co-PI: **Paulo Branicio**, Timothy Rupert, Irene Beyerlein

Collaborative Research: DMREF: Data-Driven Discovery of the Processing Genome for Heterogenous Superalloy Microstructures

Branicio

Total \$2,000,000/Share \$466,000

- **U. S. Department of Energy, Basic Energy Sciences (08/15/2022 - 08/14/2025)**

PI: Paulo Branicio

DE-SC0020295: Effect of gradient architectures on the strength, deformation, and failure of nanoglasses (Award Continuation)

Branicio

Total/Share \$390,000

- **American Chemical Society – Petroleum Research Fund (09/01/2021 – 08/31/2023)**

PI: Paulo Branicio

PRF#62663-ND9: Pressure Driven Transport of Solid Dispersions in Bicontinuous Nanoporous Media by Dissipative Particle Dynamics

Branicio - total

Total/Share \$110,000

- **National Science Foundation (06/01/2021 – 05/31/2024)**

PI: Andrea Hodge, co-PI: **Paulo Branicio**

OISE-2106597: IRES Track I: US-Germany Research Experience for Students on Materials for Energy and Sustainability

Branicio

Total \$300,000, Share \$150,000

- **U. S. Department of Energy, Basic Energy Sciences (08/15/2019 - 08/14/2022)**

PI: Paulo Branicio

DE-SC0020295: Effect of gradient architectures on the strength, deformation, and failure of nanoglasses

Branicio

Total/Share \$344,116

- **U. S. Department of Energy, Basic Energy Sciences (08/15/2019 - 08/14/2022)**

PI: Priya Vashishta, co-PIs: **Paulo Branicio**, Andrea Hodge, Rajiv K. Kalia, Aiichiro Nakano, Ken-ichi Nomura (USC), Pulickel Ajayan (Rice), Uwe Bergmann (SLAC)

DE-SC0014607: Materials genome innovation for computational software (MAGICS) center

Branicio

Total \$1,500,000, Share \$44,310

OTHER GRANTS AND CONTRACTS (USC INTERNAL FUNDING)

- **Ershaghi Center for Energy Transition – University of Southern California (01/01/2023 - 12/31/2024)**

PI: **Paulo Branicio**

Carbon Capture on Novel Porous Materials

Branicio

Total/Share \$150,000

TEACHING**USC Courses**

* Scores from students asked “Overall, how would you rate this instructor/course?”

- | | |
|--|-------------------------------------|
| • MASC 515 – Basics of Machine Learning for Materials, Spring 2024 (4 units) | scores: 4.64/5.00, 4.64/5.00 |
| • MASC 520 – Mathematical Methods for Deep Learning, Spring 2023 (4 units) | scores: 4.85/5.00, 4.81/5.00 |
| • MASC 310 – Materials Behavior and Processing, Spring 2022 (4 units) | scores: 4.72/5.00, 4.72/5.00 |
| • MASC 310 – Materials Behavior and Processing, Spring 2021 (4 units) | scores: 4.36/5.00, 3.96/5.00 |
| • MASC 310 – Materials Behavior and Processing, Spring 2020 (4 units) | scores: 4.23/5.00, 3.85/5.00 |
| • MASC 310 – Materials Behavior and Processing, Fall 2018 (3 units) | scores: 3.88/5.00, 3.83/5.00 |
| • MASC 310 – Materials Behavior and Processing, Fall 2017 (3 units) | scores: 3.33/5.00, 3.15/5.00 |
| • MASC 503 – Thermodynamics of Materials, Fall 2023 (4 units) | scores: 4.82/5.00, 4.46/5.00 |
| • MASC 503 – Thermodynamics of Materials, Fall 2022 (4 units) | scores: 4.67/5.00, 4.46/5.00 |
| • MASC 503 – Thermodynamics of Materials, Fall 2021 (4 units) | scores: 4.69/5.00, 4.56/5.00 |
| • MASC 503 – Thermodynamics of Materials, Fall 2020 (4 units) | scores: 4.85/5.00, 4.74/5.00 |
| • MASC 503 – Thermodynamics of Materials, Fall 2019 (4 units) | scores: 4.87/5.00, 4.68/5.00 |
| • MASC 503 – Thermodynamics of Materials, Fall 2018 (3 units) | scores: 4.54/5.00, 4.45/5.00 |

USC Course Development

2019: Revision of MASC 503 -Thermodynamics of Materials. The syllabus was rewritten to reflect the proposed changes to the course content, including an increase from 3 to 4 units of instruction. The course scope was expanded by 37% to encompass additional topics such as statistical mechanics. The overhauled course received positive feedback the from students when it was introduced in 2019.

MENTOR AND ACADEMIC SPONSOR**Current****Postdoctoral Scholars:**

- Atefeh Daemi – University of Southern California – USA 2024–current

Ph.D. Students:

- Daniela Quintana – University of Southern California – USA 2023–current
- Mohammad Hadi Yazdani – University of Southern California – USA 2023–current

- Prashil Joshi – University of Southern California – USA 2022–current
- Li Yang – University of Southern California – USA 2022–current
Passed screening exam, Jun 2024
- Aoyan Liang – University of Southern California – USA 2020–current
Passed qualification exam, Apr 2024
Passed screening exam, Jan 2021
- Emily Gurniak – University of Southern California – USA 2018–current
Passed screening exam, Jan 2021

M.S. Students:

- Leo Huang – University of Southern California – USA 2022–current
- Jihe Wang – University of Southern California – USA 2024–current

Undergraduate Students:

- Laura Garcia – University of Southern California – USA 2024–current
- Kenney Erazo – University of Southern California – USA 2024–current

Former

*First/current job/position indicated, if known

Postdoctoral Scholars:

- Jingyun Zhang – Institute of High Performance Computing – Singapore 2011–2014
Current position: Assoc. Professor – Nanjing Univ. of Information Sci. & Technology, China

Ph.D. Students:

- Suyue Yuan – University of Southern California – USA (Ph.D. degree awarded at 2023) 2017–2023
Current job: Postdoctoral Fellow, Lawrence Livermore National Laboratory - USA
- Chang Liu – University of Southern California – USA (Ph.D. degree awarded at 2022) 2017–2022
Current job: Software Engineer, Google - USA
- Sara Adibi – National University of Singapore – Singapore (Ph.D. degree awarded at 2015) 2012–2015
Current position: Assistant Professor, San Diego State University - USA
- Helio Tsuzuki – Federal University of Sao Carlos – Brazil (Ph.D. degree awarded at 2008) 2005–2008
First job: Postdoctoral scholar, Federal University of Sao Carlos - Brazil

Visiting Scholars:

- Haoxuan Li – University of Southern California – USA 2019–2021
- Xinxiang Song – Univ. of South. Calif. – USA & Nanjing Univ. of Sci. and Tech. – China 2018–2019
First position: Ph.D. student at Nanjing University of Science and Technology, China

M.S. Students:

- Chenge Hu - University of Southern California – USA 2020–2022
First position: Ph.D. student at Brown University - USA
- Peng Geng – University of Southern California – USA 2019–2021
Current position: Ph.D. student at University of California, Los Angeles - USA
- Kaifeng Zheng – University of Southern California – USA 2019–2020
Current position: Ph.D. student at Stony Brook University - USA
- Xiaoyu Guan – University of Southern California – USA 2019–2020
Current position: Ph.D. student at University of Florida - USA
- Aoyan Liang – University of Southern California – USA 2019–2020
Current position: Ph.D. student at University of Southern California - USA
- Haoxuan Li – University of Southern California – USA 2017–2019

First job: Visiting scholar at University of Southern California - USA

Undergraduate Students:

- Kevin Oghalai – University of Southern California – USA 2023–2024
Current position: Ph.D. student at University of California, Davis - USA
- Jelly Ren – University of Southern California – USA 2021–2023
Current position: M.S. student at Stanford University - USA
- Daniela Quintana – University of Campinas – Brazil 2021–2023
Current position: Ph.D. student at University of Southern California - USA
- Benjamin Martin – University of Southern California – USA 2021–2022
First job: Mechanical Engineer at Draper Laboratory - USA
- Michael Eberhardt – University of Southern California – USA 2020–2021
First job: R&D Engineer at Medtronic - USA
- Mandy Hartman – University of Southern California – USA 2021–2021
- Victor Tan Wei De – Nanyang Technological University – Mater. Sci. Eng. Dept. – Singapore 2010–2011

Student Awards and Fellowships

Awards: Postdoctoral, Graduate, and Undergraduate

- Aoyan Liang, Best Graduate Oral Presentation, MFD Dept. Student Symposium (USC) 2024
- Jelly Ren, Best Undergraduate Poster, MFD Dept. Student Symposium (USC) 2023
- Suyue Yuan, Best Graduate Oral Presentation, MFD Dept. Student Symposium (USC) 2021
- Chang Liu, Best Graduate Poster, MFD Dept. Student Symposium (USC) 2021
- Michael Eberhardt, Best Undergraduate Poster, MFD Dept. Student Symposium (USC) 2021
- Suyue Yuan, Best Graduate Poster, MFD Dept. Student Symposium (USC) 2020
- Sara Adibi, Best Poster, Int. Conf. on Mater. for Advanced Technologies (ICMAT), Singapore 2012

Research Fellowships: Graduate students

- Daniela Quintana, Mork Family Dept Graduate Research Fellowship 2023-2025
- Mohammad Hadi Yazdani, Mork Family Dept Graduate Research Fellowship 2023-2025
- Prashil Joshi, Mork Family Dept Graduate Research Fellowship 2022-2024
- Li Yang, USC Graduate School Research Fellowship 2022-2023
- Aoyan Liang, Provost's Graduate Research Fellowship 2020-2021
- Emily Gurniak, Provost's Graduate Research Fellowship 2019-2020
- Chang Liu, Mork Family Dept Graduate Research Fellowship 2017-2019
- Suyue Yuan, Provost's Graduate Research Fellowship 2017-2018

Ph.D. Thesis Committees

Within the USC Viterbi School of Engineering

- Karina Hemmendinger, Mechanical Engineering Ph.D., advisor: Prof. Andrea Hodge 01/12/24
- Brian Feng, Materials Science Ph.D., advisor: Prof. Steve Nutt 11/30/23
- Daniel Goodelman, Aerospace and Mechanical Engineering Ph.D., advisor: Prof. Andrea Hodge 06/27/23
- Suyue Yuan, Materials Science Ph.D., advisor: Prof. Paulo Branicio 05/09/23
- Hikaru Ibayashi, Computer Science Ph.D., advisor: Prof. Aiichiro Nakano 04/11/23
- Huandong Chen, Materials Science Ph.D., advisor: Prof. Jayakanth Ravichandran 01/26/23
- Yang Liu, Materials Science Ph.D., advisor: Prof. Jayakanth Ravichandran 06/02/22
- Chang Liu, Materials Science Ph.D., advisor: Prof. Paulo Branicio 05/17/22
- Zhenzhuo Lan, Chemical Engineering Ph.D., advisor: Prof. Shaama Sharada 04/18/22

- Alina Taormina, Materials Science Ph.D., advisor: Prof. Andrea Hodge 11/01/21
- Andre Kovach, Chemical Engineering Ph.D., advisor: Prof. Andrea Armani 02/24/21
- Joel Bahena, Aerospace and Mechanical Engineering Ph.D., advisor: Prof. Andrea Hodge 06/22/20
- Chelsea Appleget, Materials Science Ph.D., advisor: Prof. Andrea Hodge 06/12/20
- Subodh Tiwari, Materials Science Ph.D., advisor: Prof. Priya Vashishta 03/19/20
- Pankaj Rajak, Materials Science Ph.D., advisor: Prof. Priya Vashishta 06/21/18
- Vinh Diep, Materials Science Ph.D., advisor: Prof. Andrea Armani 03/29/18

Within the USC Dana and David Dornsife College of Letters, Arts and Sciences

- Carlos Mora Perez, Chemistry Ph.D., advisor: Prof. Oleg Prezhdo 04/29/24
- Thomas Linker, Physics Ph.D., advisor: Prof. Aiichiro Nakano 03/28/23
- Lindsey Bassman, Physics Ph.D., advisor: Prof. Aiichiro Nakano 01/29/20

State University of Campinas – Brazil

- Levi Da Costa Felix, Physics Ph.D., advisor: Prof. Douglas Soares Galvão 09/12/22

Ph.D. Candidacy Committees

Within the USC Viterbi School of Engineering

- Anikeya Aditya, Materials Science Ph.D., advisor: Prof. Priya Vashishta 08/07/24
- Aoyan Liang, Materials Science Ph.D., advisor: Prof. Paulo Branicio 04/30/24
- Kyle Russel, Materials Science Ph.D., advisor: Prof. Andrea Hodge 04/17/24
- Danielle White, Materials Science Ph.D., advisor: Prof. Andrea Hodge 12/11/23
- Shantanu Singh, Materials Science Ph.D., advisor: Prof. Jayakanth Ravichandran 12/05/23
- Ruoqiao Sun, Materials Science Ph.D., advisor: Prof. Andrea Armani 11/20/23
- Ruoxi Li, Materials Science Ph.D., advisor: Prof. Sthepen Cronin 11/10/23
- Adie Alwen, Materials Science Ph.D., advisor: Prof. Andrea Hodge 05/22/23
- Nitish Baradwaj, Materials Science Ph.D., advisor: Prof. Priya Vashishta 11/14/22
- Nan Wang, Materials Science Ph.D., advisor: Prof. Han Wang 07/01/22
- Liqiu Yang, Chemical Engineering Ph.D., advisor: Prof. Priya Vashishta 05/23/22
- Ruru Ma, Materials Science Ph.D., advisor: Prof. Priya Vashishta 05/05/22
- Daniel Goodelman, Aerospace and Mechanical Engineering Ph.D., advisor: Prof. Andrea Hodge 05/02/22
- Qi Huang, Materials Science Ph.D., advisor: Prof. Anupam Madhukar 04/27/22
- Boyang Zhao, Materials Science Ph.D., advisor: Prof. Jayakanth Ravichandran 04/14/22
- Ziyu Huang, Aeronautical Engineering Ph.D., advisor: Prof. Joseph Wang 11/18/21
- Kuang Liu (dissertation), Computer Science Ph.D., advisor: Prof. Aiichiro Nakano 08/10/21
- Karina Hemmendinger, Mechanical Engineering Ph.D., advisor: Prof. Andrea Hodge 07/28/21
- Suyue Yuan, Materials Science Ph.D., advisor: Prof. Paulo Branicio 07/22/21
- Chang Liu, Materials Science Ph.D., advisor: Prof. Paulo Branicio 07/21/21
- Hikaru Ibayashi, Computer Science Ph.D., advisor: Prof. Aiichiro Nakano 05/13/21
- Roya Ermagan, Materials Science Ph.D., advisor: Prof. Mike Kassner 07/07/20
- Ankit Mishra, Materials Science Ph.D., advisor: Prof. Priya Vashishta 05/25/20
- Kuang Liu (paper), Computer Science Ph.D., advisor: Prof. Aiichiro Nakano 05/18/20
- Yun Qu, Chemical Engineering Ph.D., advisor: Prof. Pin Wang 05/08/20
- Alina Taormina, Materials Science Ph.D., advisor: Prof. Andrea Hodge 12/09/19
- Kwangtae Son, Materials Science Ph.D., advisor: Prof. Mike Kassner 11/15/19
- Thomas Orvis, Materials Science Ph.D., advisor: Prof. Jayakanth Ravichandran 06/13/19
- Chelsea Appleget, Materials Science Ph.D., advisor: Prof. Andrea Hodge 12/17/18
- Subodh Tiwari, Materials Science Ph.D., advisor: Prof. Priya Vashishta 04/03/18

- Andre Kovach, Chemical Engineering Ph.D., advisor: Prof. Andrea Armani 02/08/18
- Sebastian Riano, Materials Science Ph.D., advisor: Prof. Andrea Hodge 11/03/17
- Chunyang Sheng, Computer Science Ph.D., advisor: Prof. Aiichiro Nakano 10/16/17
- Mingyuan Cao, Chemical Engineering Ph.D., advisor: Prof. Theo Tsotsis 08/28/17
- Shanyuan Niu, Materials Science Ph.D., advisor: Prof. Jayakanth Ravichandran 03/09/17
- Vinh Diep, Materials Science Ph.D., advisor: Prof. Andrea Armani 01/25/17

Within the USC Dana and David Dornsife College of Letters, Arts and Sciences

- Thomas Linker, Physics Ph.D., advisor: Prof. Aiichiro Nakano 10/27/20
- Shane Jackson, Physics Ph.D., advisor: Prof. Rajiv Kalia 11/15/18
- Lindsay Bassman, Physics Ph.D., advisor: Prof. Aiichiro Nakano 04/04/18

PROFESSIONAL SERVICE

Editorial Board of Academic Journals

Scientific Reports of the Nature Publishing Group 2016 - current

Grant Reviewer for Research Agencies

Reviewer for: DOE – BES, DOE – INCITE, NSF – ENG, ACS – PRF, DFG – Germany, FACEPE – Brazil, FONDECYT – Chile, RGC - Hong Kong, and ANR - France.

Reviewer for International Journals (Total: 60 journals)

Regular reviewer for:

ACS Applied Materials and Interfaces; ACS Earth and Space Chemistry; Acta Materialia; Advanced Engineering Materials; Advanced Materials; Applied Physics Letters; Applied Surface Science; Brazilian Journal of Physics; Carbon; Chemical Physics Letters; Computational Materials Science; Computer Physics Communications; Frontiers in Materials; Intermetallic; International Journal of Computational Materials Science and Engineering; International Journal of Nanoscience; International Journal of Plasticity; Journal of Alloys and Compounds; Journal of Applied Physics; Journal of Chemical Physics, Journal of Materials Research; Journal of Materials Research and Technology; Journal of Materials Science and Technology; Journal of Physical Chemistry; Journal of Physics and Chemistry of Solids; Journal of Physics D: Applied Physics; Journal of Physics: Condensed Matter; Journal of Materials Science; Materials; Materials & Design; Materials Characterization; Materials Chemistry and Physics; Materials Research Express; Materials Science & Engineering A; Mechanics of Materials; Metals; Modelling and Simulation in Materials Science and Engineering; Nanomaterials; Nanoscale; Nanotechnology; Nature Communications; NPG Communications Physics; npj Computational Materials; Physica Status Solid B; Physical Chemistry Chemical Physics; Physical Review B; Physical Review E; Physical Review Letters; Physical Review Materials, Physical Review X; Progress in Materials Science; Scientific Reports; Scripta Materialia; Semiconductor Science and Technology; Small, Solid State Sciences; Surface Coatings and Technology; Theoretical and Applied Fracture Mechanics; Vacuum; Wear.

Journals with the largest number of papers reviewed (from Web of Science Research Profile total 228 verified reviews):

<https://www.webofscience.com/wos/author/rid/E-5632-2011>

- Physical Review Letters 35 reviews
- International Journal of Plasticity 21 reviews
- Acta Materialia 13 reviews
- Physical Review B 13 reviews
- Computational Materials Science 12 reviews
- Computer Physics Communications 12 reviews

- Applied Physics Letters 9 reviews
- Journal of Applied Physics 9 reviews
- Journal of Materials Science 8 reviews
- Physical Chemistry Chemical Physics 8 reviews

Organizing of Scientific Conferences

1. Discussion Leader – Plasticity 2019 - International Conference on Plasticity, Damage, and Fracture 2019, Panama City, Panama, Jan 3-9, 2019.
2. Organizing Committee Member and Mini-Symposium Chair – Plasticity 2019 - International Conference on Plasticity, Damage, and Fracture 2019, Panama City, Panama, Jan 3-9, 2019.
3. Organizing Committee Member and Mini-Symposium Chair – Plasticity 2018 - International Conference on Plasticity, Damage, and Fracture 2018, Puerto Rico, USA, Jan 3-9, 2018.
4. Co-Chairman, Symposium W, ICMAT 2013 – International Conference on Materials for Advanced Technologies, Singapore, 2013.

Conference Session chair

1. GRC Structural Nanomaterials – Gordon Research Conference – Les Diablerets – Switzerland, 2022.
2. TMS 2020 – The Minerals, Metals & Materials Society annual meeting – San Diego – USA, 2020.
3. MRS (Materials Research Society) Spring meeting – Phoenix – USA, 2019.
4. 2018 Spetses Symposium on Materials Genome at Exascale – Spetses – Greece, 2018.
5. Emerging Trends in Materials Simulations and Experiments – Palos Verdes – USA, 2010.
6. ICCES'09 – Int. Conf. Computational & Exp. Eng. and Sci. – Phuket – Thailand, 2009.

Society Memberships (Active)

- The Minerals, Metals & Materials Society (TMS) 2018–present
- Materials Research Society (MRS) 2008–present
- American Physical Society (APS) 2001–present

Other synergistic activities

1. Grand Award Judge at Regeneron – International Science and Engineering Fair (ISEF) 2024, Los Angeles Convention Center, Los Angeles – USA, 2024.

USC UNIVERSITY SERVICE

- Reviewer for 2020 Packard Fellowships for Science & Engineering (internal USC) Mar–2020
- Judge for USC 12th Graduate Research Symposium Feb–2020
- Judge 20th Annual Undergraduate Symposium for Scholarly and Creative Work April–2018

USC DEPARTMENT SERVICE

Committees

- MASC 598 – Materials Science Seminar 2022–present
- MFD Ph.D. Progress Review Committee 2021–present
- MFD Curriculum Committee 2020–present
- MFD Ph.D. Prospective Student Visit Committee 2018–2022
- MFD Faculty Search Committee 2021–2022
- MFD Graduate Recruitment Committee 2019–2021
- MFD Graduate Research Symposium Committee 2020–2021
- MFD Lyman Handy Seminar Series Committee 2017–2020
- MFD Distinguished Lecturer Seminar Series Committee 2017–2020

- MFD Faculty Search Committee – Experimental Quantum Materials

2019–2020