Wen Chen

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EDUCATION

- **Ph.D.,** Mechanical Engineering & Materials Science **08/2011-11/2015**
  Yale University, New Haven, CT
  Dissertation: "Using Artificial Microstructures to Understand Microstructure-Property-Processing relationships in Metallic Glasses"
- **M.Phil.,** Industrial and Systems Engineering **08/2009-08/2011**
  The Hong Kong Polytechnic University, Hong Kong
  Dissertation: "Plasticity Enhancement of Bulk Metallic Glasses by Metal Electroplating"
- **B.S.,** Materials Science and Engineering **08/2004-07/2008**
  Nanjing University of Science and Technology, Nanjing, China

PROFESSIONAL EXPERIENCE

- **Assistant Professor**, University of Massachusetts, Amherst **07/2018-Present**
- **Postdoctoral Research Scientist**, Lawrence Livermore National Lab **12/2015-06/2018**
- **Research Assistant**, Yale University **08/2011-11/2015**
- **Research Assistant**, The Hong Kong Polytechnic University **08/2009-08/2011**

HONORS AND AWARDS

- 2015 Acta Student Award, The Acta Journals **2016**
- Second Place Poster Award, 11th International Bulk Metallic Glasses Conference **2016**
- Chinese Government Award for Outstanding Oversea Students **2016**
- Pierre W. Hoge Fellowship, Yale University **2011-2015**
- Outstanding Reviewer awarded by Materials Science and Engineering: A **2015**
- Outstanding Reviewer awarded by Materials Letters **2015**

- Outstanding Reviewer awarded by Materials Science and Engineering: B **2014**

TEACHING AND ADVISING EXPERIENCE

- **Graduate Student Advisor**, University of Massachusetts, Amherst **08/2018-Present**
- **Undergraduate Research Mentor**, Yale University **06/2012-11/2015**

RESEARCH INTERESTS

- Microstructure-property-processing relationships in structural metals
- Mechanical behavior of materials and structures
- Materials processing and additive manufacturing
  (Thermoplastic forming, Direct ink writing, Laser selective melting)
- Physical metallurgy and advanced alloy development
- Architected materials by design
- Combinatorial materials science

PUBLICATIONS (*AS CORRESPONDING AUTHOR) Google Scholar: https://scholar.google.com/citations?hl=en&user=LIsTLP8AAAAJ&view_op=list_works&sortby=pubdate

[1] S. Mooraj, S.S. Welborn, S. Jiang, S. Peng, J. Fu, S. Baker, E.B. Duoss, C. Zhu, E. Detsi, W. Chen, Three-dimensional hierarchical nanoporous copper via direct ink writing and dealloying, *Scripta Materialia*, 177 (2020) 146.

[2] W. Chen, T. Voisin, Y. Zhang, J-B. Florein, C.M. Spadaccini, D.L. McDowell, T. Zhu, Y.M. Wang, Microscale residual stresses in additively manufactured stainless steel. *Nature Communications*, 10 (2019): 4338.

[3] W. Chen, S. Watts, J.A. Mancini, W.L. Smith, C.M. Spadaccini, Isotropic stiff lattices beyond Maxwell criterion, *Science Advances*, 5 (2019): eaaw1937

[4] C. Zhu, Z. Qi, V.A. Beck, M. Luneau, J. Lattimer, W. Chen, M.A. Worsley, J. Ye, E.B. Duoss, C.M. Spadaccini, C.M. Friend, J. Biener, Toward digitally controlled catalyst architectures: Hierarchical nanoporous gold via 3D printing, *Science Advances*, 4 (2018): eaas9459.

[5] J. Ketkaew, W. Chen, H. Wang, A. Datye, M. Fan, G. Pereira, U.D. Schwarz, Z. Liu, R. Yamada, W. Dmowski, M.D. Shattuck, C.S. O'Hern, T. Egami, E. Bouchbinder, J. Schroers, Mechanical glass transition revealed by the fracture toughness of metallic glasses, *Nature Communications*, 9 (2018) 3271.

[6] M.A. Gibson, N.M. Mykulowycz, J. Shim, R. Fontana, P. Schmitt, A. Roberts, J. Ketkaew, L. Shao, W. Chen, P. Bordeenithikasem, J.S. Myerberg, R. Fulop, M.D. Verminski, E.M. Sachs, Y.M. Chiang, C.A. Schuh, A. J. Hart, J. Schroers, 3D Printing Metals like Thermoplastics: Fused Filament Fabrication of Metallic Glasses, *Materials Today*, 21 (2018) 697-702.

[7] P. Gong, S. Wang, Z. Liu, W. Chen, N. Li, X. Wang, K.F. Yao, Lightweight Ti-based bulk metallic glasses with superior thermoplastic formability, *Intermetallics*, 98 (2018) 54-59.

[8] Z. Qi, J. Ye, W. Chen, J. Biener, E.B. Duoss, C.M. Spadaccini, M.A. Worsley, C. Zhu, 3D-Printed, Superelastic Polypyrrole-Graphene Electrodes with Ultrahigh Areal Capacitance for Electrochemical Energy Storage, *Advanced Materials Technologies*, 1800053, 2018

[9] Y. M. Wang, T. Voisin, J.T. McKeown, J.C. Ye, N.P. Calta, Z. Li, Z. Zeng, Y. Zhang, W. Chen, T.T. Roehling, R.T. Ott, M.K. Santala, P.J. Depond, M.J. Matthews, A.V. Hamza, T. Zhu, Additively-manufactured hierarchical stainless steels with high strength and ductility, *Nature Materials*, 17 (2018) 63–71. (*Highlighted by ScienceDaily and other media reports*)

[10] W. Chen, H.F. Zhou, Z. Liu, J. Ketkaew, L. Shao, N. Li, P. Gong, W. Samela, H.J. Gao, J. Schroers, Test sample geometry for fracture toughness measurements of bulk metallic glasses, *Acta Materialia*, 145 (2018) 477-478.

[11] F. Qian, P.C. Lan, M.C. Freyman, W. Chen, T. Kou, T.Y. Olson, C. Zhu, M.A. Worsley, E.B. Duoss, C.M. Spadaccini, T. Baumann, T.Y. Han, Ultralight Conductive Silver Nanowire Aerogels, *Nano Letters*. 17 (2017) 7171–7176. (*Featured as Journal Cover*)

[12] C. Zhu, T. Kou, F. Qian, W. Chen, S. Chandrasekaran, B. Yao, Y. Song, J.D. Kuntz, E.B. Duoss, C.M. Spadaccini, M.A. Worsley, Y. Li, 3D Printed Functional Nanomaterials for Electrochemical Energy Applications: a Review, *Nano Today*, 15, 2017.

[13] W. Chen, L. Thornley, H.G. Coe, C. Zhu, E.B. Duoss, R.M. Hunt, M.J. Wight, D. Apelian, A.J. Pascall, J.D. Kuntz, C.M. Spadaccini, Direct metal writing: Controlling the rheology through microstructure, *Applied Physics Letters*, 110 (2017) 094104. (*Highlighted by Phys.org and other media reports*)

[14] W. Chen, H.F. Zhou, Z. Liu, J. Ketkaew, N. Li, J. Yurko, N. Hutchinson, H.J. Gao, J. Schroers, Processing effects on fracture toughness of metallic glasses, *Scripta Materialia*, 130 (2017) 152-156.

[15] W. Chen, Z. Liu, J. Ketkaew, R. Mota, S. Kim, M. Power, W. Samela, J. Schroers, Flaw tolerance of metallic glasses, *Acta Materialia*, 107 (2016) 220-228.

[16] N. Li, W. Chen, L. Liu, Thermoplastic micro-forming of bulk metallic glasses: A Review, *JOM*, 68 (2016) 1246-1261.

[17] D.J. Magagnosc, W. Chen, G. Kumar, J. Schroers, D.S. Gianola, Thermomechanical behavior of molded metallic glass nanowires, *Scientific Reports*, 6 (2016) 19530.

[18] C. Su, Y. Chen, P. Yu, M. Song, W. Chen, S.F. Guo, Linking the thermal characteristics and mechanical properties of Fe-based bulk metallic glasses, *Journal of Alloys and Compounds*, 663 (2016) 867-871.

[19] Z. Liu*, W. Chen*, J. Carstense, J. Ketkaew, R. Mota, J.K. Guest, J. Schroers, 3D metallic glass cellular structures, *Acta Materialia*, 105 (2016) 35-43.

[20] S.F. Guo, K.C. Chan, Z.Q. Zhu, Z.R. Wu, W. Chen, M. Song, Microstructure and tensile behavior of small scale resistance spot welding of sandwich bulk metallic glasses, *Journal of Non-Crystalline Solids*, 447 (2016) 300-306.

[21] R. Lofti, J.V. Carstensen, J.K. Guest, W. Chen, J. Schroers, Topology optimization of cellular materials with maximized energy absorption, *ASME 2015 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, Boston, MA.

[22] J. Kong*, Z. Ye, W. Chen*, X. Shao, K. Wang, Q. Zhou, Dynamic mechanical behavior of a Zr-based bulk metallic glass composite, *Materials & Design* 88 (2015) 69-74.

[23] W. Chen, J. Ketkaew, Z. Liu, R. Mota, K.S. O'Brien, J. Schroers, Does the fracture toughness of bulk metallic glasses scatter? *Scripta Materialia*, 107 (2015) 1-4. (*Featured as Top 25 ScienceDirect Hottest Article*)

[24] J. Ketkaew, Z. Liu, W. Chen, J. Schroers, Critical crystallization for embrittlement in metallic glasses, *Physical Review Letters*, 115 (2015) 265502.

[25] W. Chen, Z. Liu, H. Robinson, J. Schroers, Flaw tolerance versus performance: a tradeoff in metallic glass cellular structures, *Acta Materialia*, 73 (2014): 259-274.

[26] W. Chen, Z. Liu, J. Schroers, Joining of metallic glasses in air, *Acta Materialia*, 62 (2014): 49-57. (*Featured as Top 25 ScienceDirect Hottest Article*)

[27] S.F. Guo*, J.L. Qiu, P. Yu, S.H. Xie, W. Chen*, Fe-based bulk metallic glasses: brittle or ductile? *Applied Physics Letters*, 105 (2014): 161901.

[28] W. Chen, K.C. Chan, S.H. Chen, S.F. Guo, W.H. Li, G. Wang, Plasticity enhancement of a Zr-based bulk metallic glass by an electroplated Cu/Ni bilayered coating, *Materials Science and Engineering: A*, 552 (2012): 199-203.

[29] W. Chen, K.C. Chan, P. Yu, G. Wang, Encapsulated Zr-based bulk metallic glass with large plasticity, *Materials Science and Engineering: A*, 528 (2011): 2988-2994.

[30] W. Chen, K.C. Chan, S.F. Guo, P. Yu, Plasticity improvement of an Fe-based bulk metallic glass by geometric confinement, *Materials Letters*, 65 (2011): 1172-1175.

[31] W. Chen, J. Kong, W.J. Chen, Effect of rare earth Ce on the microstructure, physical properties and thermal stability of a new lead-free solder, *Journal of Mining and Metallurgy Section B-Metallurgy*, 47 (2011): 11-21.

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[33] S.F. Guo, Z. Liu, K.C. Chan, W. Chen, H.J. Zhang, J.F. Wang, A plastic Ni-free Zr-based metallic glass with high specific strength and good corrosion properties in simulated body fluid, *Materials Letters*, 84 (2012): 81-84.

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[35] P. Yu, K.C. Chan, W. Chen, L. Xia, Elastic moduli and mechanical properties of bulk metallic glasses after quasi-static compression, *Journal of Alloys and Compounds*, 509 (2011): 8518-8521.

[36] J. Kong, C. Xu, J. Li, W. Chen, H. Hou, Evolution of fractal features of pores in compacting and sintering process, *Advanced Powder Technology*, 22 (2011): 439-442.

[37] P. Yu, K.C. Chan, W. Chen, L. Xia, Low temperature mechanical properties of $Ce_{68}Al_{10}Cu_{20}Co_2$ bulk metallic glass, *Philosophical Magazine Letters*, 91 (2010) 75-82.

PATENTS

- J. Schroers, Z. Liu, M. Kanik, W. Chen, P. Bordeenithikasem, R. Mota, J. Ketkaew, Method and system of fabricating bulk metallic glass sheets, US Patent Appl. No. 15/106487, 2016. (*Highlighted by Phys.org and other media reports., licensed by Supercool Metals Inc.*)
- J. Schroers, W. Chen, Z. Liu, Joining of metallic glasses in air, US Patent 9764418, 2017.
- J. Ye, J. Biener, P. Campbell, W. Chen, J.A. Jackson, B.D. Moran, J. Oakdale, W. Smith, C.M. Spadaccini, M.A. Worsley, X. Zheng, Three-dimensional deterministic graphene architectures formed using three-dimensional templates, US Patent Appl. No. 15/417134, 2017.
- Z. Qi, J. Biener, W. Chen, E. Duoss, C. Spadaccini, M.A. Worsley, J. Ye, C. Zhu, Hierarchical porous metals with deterministic 3d morphology and shape via dealloying of 3d printed alloys, US Patent Appl. No. 15/790,810, 2019.

PROFESSIONAL ACTIVITIES AND SERVICE

- Editorial Board Member, Scientific Reports (since 2019)
- 2018 Materials Research Society (MRS) Fall International Conference, Session Chair (Symposium PM01: Architected Materials—Synthesis, Characterization, Modeling and Optimal Design)

- Peer reviewer for Journal of Mechanics and Physics of Solids, Materials Research Letters, Acta Materialia, Scripta Materialia, Applied Physics Letters, Scientific Reports, Journal of Applied Physics, Journal of the Mechanical Behavior of Biomedical Materials, Journal of Alloys and Compounds, Materials Science and Engineering: A, Materials Science and Engineering: B, Materials & Design, Applied Surface Science, APL Materials, Advanced Powder Technology, Journal of Materials Science, Materials Chemistry and Physics, Materials Letters.

TALKS AND CONFERENCE ORAL PRESENTATIONS

- **Wen Chen**, Luke Thornley, Diran Apelian, Andrew Pascall, Eric Duoss, Joshua Kuntz, Christopher Spadaccini, Direct Metal Writing: Controlling the Rheology through Microstructure, 2018 TMS Annual Meeting & Exhibition, Phoenix, AZ, March 2018.
- **Wen Chen**, Materials with Engineered Microstructures, University of Toronto, Toronto, ON, Canada, April 2017.
- **W. Chen**, Additive Manufacturing: Opportunities for Future, Missouri University of Science and Technology, February 2017.
- **W. Chen**, Materials Design by Additive Manufacturing, George Mason University, January 2017.
- **Wen Chen**, Additive Manufacturing: Opportunities for Materials and Manufacturing Design, University of Massachusetts, Amherst, MA, March 2017.
- **Wen Chen**, Ze Liu, Jittisa Ketkaew, Jan Schroers, 3D Metallic glass architectures, 2016 MRS Fall Meeting, Boston, MA, November 2016.
- **Wen Chen**, Ze Liu, Jittisa Ketkaew, Jan Schroers, Flaw Tolerance of Metallic glasses. 11th International Bulk Metallic Glasses Conference, Washington University in St. Louis, MO, June 2016.
- **Wen Chen**, Ze Liu, Jittisa Ketkaew, Rodrigo Miguel Ojeda Mota**,** Jan Schroers, Notch Toughness of Bulk Metallic Glasses: Notch Root Radius Sensitivity, 2014 MRS Fall Meeting, Boston, MA, December 2014.
- **Wen Chen**, Ze Liu, Jan Schroers, Joining of active bulk metallic glasses in air. 2014 TMS Annual Meeting & Exhibition, San Diego, CA, February 2014.
- **Wen Chen**, Ze Liu, Hannah Mae Robinson, Jan Schroers, Flaw tolerance versus performance: a tradeoff in cellular structures. 2013 MRS Fall Meeting, Boston, MA, December 2013.
- **Wen Chen**, Baran Sarac, Jan Schroers, Using artificial microstructures to understand microstructure property relationships in metallic glasses. 2013 TMS Annual Meeting & Exhibition, San Antonio, TX, March 2013.