

Xian CHEN

Assistant Professor

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EDUCATION

2008-2013 **Ph.D.**, University of Minnesota, US

2008-2011 **M.S.**, University of Minnesota, US

2001-2005 **B.S.**, Huazhong University of Science and Technology, China

PROFESSIONAL EXPERIENCES

2015- **Assistant Professor**, Hong Kong University of Science and Technology, Hong Kong

2015-2016 **Visiting Professor**, California Institution of Technology, CA, US

2014-2015 **ALS Postdoctoral Fellow**, Lawrence Berkeley National Lab, CA, US

2013-2014 **Postdoctoral Associate**, University of Minnesota, MN, US

2008-2013 **Research Assistant**, University of Minnesota, MN US

2006-2007 **Teaching Assistant**, Huazhong University of Science and Technology, Hubei, China

AWARDS

2016 **Early Career Award**, UGC, Hong Kong

2014 **ALS Fellowship** at the Advanced Light Source, Lawrence Berkeley National Lab

2012 **Lawrence E. Goodman Fellowship** in Theoretical and Applied Mechanics
University of Minnesota

RESEARCH EXPERTISE & INTERESTS

The research of our group integrates the theories of mechanics of crystalline solids with advanced structural characterization methods and algorithms to develop new phase-transforming materials. These materials have emerging applications in medical devices, microelectronics and energy conversion devices.

PI of 2 General Research Funds (1.5M HKD), 1 UGC grant (1.3M HKD) and 1 Equipment Fund (1.4M HKD).

PROFESSIONAL ACTIVITIES

Organizer of 6-month workshop of *Mathematical Design of New Materials* at the Issac Newton Institution, Cambridge, UK

Reviewer of journals: Science, Nature Computational Materials (npj), Nature Asia Materials (npj), Acta Materialia, Journal of the Mechanics and Physics of Solids, Journal of Materials Engineering and Performance, Continuum Mechanics and Thermodynamics, Journal of Applied Physics.

Invited talks:

- 07/2017 Plenary talk, International Conference on Martensitic Transformations, Chicago, United States
- 11/2016 Invited talk, City University of Hong Kong, Hong Kong
- 09/2016 [ERC]: Hysteresis, Avalanches and Interfaces in Solid Phase Transformations University of Oxford, UK
- 05/2016 SIAM: Mathematical Aspects of Materials Science, Philadelphia, US
- 04/2016 [CMC] Workshop on Solid and Liquid Crystals, KAIST, Daejeon, South Korea
- 01/2016 NYU-Oxford workshop: Mathematical Models of Defects and Patterns, New York, US
- 10/2015 MCE seminar at Caltech, CA, US
- 10/2015 Highlighted research report at ALS User Meeting 2015, Lawrence Berkeley National Lab, CA, US
- 09/2015 Outstanding scholar forum, Huazhong University of Science and Technology, Wuhan, China
- 05/2015 ESG meeting at Lawrence Berkeley National Lab, CA, US
- 03/2015 PG seminar at Hong Kong University of Science and Technology, Hong Kong
- 01/2015 the 61st lecture in the Magnetic Materials and Applications Forum, Ningbo, China
- 07/2014 Continuum Models and Discrete Systems 13th International Conference, Utah, US
- 07/2013 Mathematics and Mechanics in the Search for New Materials, BIRS, Canada

PUBLICATIONS

Journal Papers

- 11. D. Zhao, J. Liu, **X. Chen**, W. Sun, Y. Li, M. Zhang, Y. Shao, H. Zhang and A. Yan. Giant caloric effect of low-hysteresis metamagnetic shape memory alloys with exceptional cyclic functionality. *Acta Mater.*, 133 (2017):217-223.
- 10. X. Ni, J. Greer, K. Bhattacharya, R. D. James and **X. Chen**[§], Exceptional resilience of small-scale AuCuZn under cyclic stress-induced phase transformation. *Nano Letters*, 16(12) (2016): 7621-7625.

[§]corresponding author

9. **X. Chen**[§], N. Tamura, A. MacDowell, R. D. James, In-situ characterization of highly reversible phase transformation by synchrotron X-ray microdiffraction, *App. Phys. Lett.*, 108 (2016): 211902. (selected for the cover and the featured article)
8. **X. Chen**, Y. Song, N. Tamura, R. D. James, Determination of the stretch tensor for structural transformation, *J. Mech. Phys. Solids*, 93(2016):34-43.
7. **X. Chen**, C. Dejoie, T. Jiang, C-S Ku, N. Tamura, Quantitative Microstructural Imaging by Scanning Laue X-Ray Micro and Nanodiffraction, *MRS Bulletin*, 41, 6(2016): 445-453.
6. J. Yoon, H. Kim, **X. Chen**, N. Tamura, B. S. Mun, C. Park, H. Ju, Controlling the temperature and speed of the phase transition of VO₂ microcrystals, *ACS Appl. Mater. Interfaces*, 8(3) (2016):2280.
5. Y. Song, **X. Chen**[†], V. Dabade, TW. Shield and R. D. James, Enhanced reversibility and unusual microstructure of a phase-transforming material, *Nature*, 502(2013):85.
4. **X. Chen**, V. Srivastava, V. Dabade and R. D. James, Study of Cofactor Conditions: conditions of supercompatibility between phases, *J. Mech. Phys. Solids*, 61(2013):2566.
3. **X. Chen**, S. Cao, T. Ikeda, V. Srivastava, G. J. Snyder, D. Schryvers, R.D. James, A weak compatibility condition of precipitation with application to the microstructure of PbTe-Sb₂Te₃ thermoelectric device, *Acta Mater.*, 59(2011):6124.
2. V. Srivastava, **X. Chen**, R. D. James, Hysteresis and unusual magnetic properties in the singular Heusler alloy Ni₄₅Co₅Mn₄₀Sn₁₀, *App. Phys. Lett.*, 97(2010):3456562.
1. **X. Chen**, J. Yang, J. Pu, J. Li, Finite Element Analysis of Thermal Stresses in Planar SOFCs, *J. Inorganic Mater.*, 22(2) (2007) 1000-324X(2008)02-0339-05.

Conference papers

2. DY. Parkinson, K Beattie, **X. Chen**, et. al, Real-Time Data-Intensive Computing, Proceedings of the 12th International Conference on Synchrotron Radiation Instrumentation-SRI2015.
1. **X. Chen**, S. Cao, T. Ikeda, V. Srivastava, G. J. Snyder, D. Schryvers, R.D. James, 3D Microstructures of Sb₂Te₃ precipitates in PbTe matrix with prediction of a weak compatibility condition, in *Proceedings of 1th International Conference of 3D Materials Science*, 2012.

[†] contributed equally as first author