Changning Niu

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Research Interests

First-principles simulation of solid-state materials, high-entropy alloys, chemical disorder, thermodynamics, diffusion, phase formation

Professional Experience

2015– **Postdoctoral Researcher**, Ohio State University, Columbus, OH, USA
Materials Science and Engineering (Advisor: Maryam Ghazisaeidi)

Education

2015 **Ph.D.**, North Carolina State University, Raleigh, NC, USA
Materials Science and Engineering (Advisor: Douglas L. Irving)

2011 **B.Sc.**, University of Science and Technology Beijing, Beijing, China
Materials Physics (Minor: Information and Computational Science)

Peer-reviewed Publications

Journal articles

2017 J. Miao, C. E. Slone, T. M. Smith, **C. Niu**, H. Bei, M. Ghazisaeidi, G. M. Pharr, and M. J. Mills. The evolution of the deformation substructure in a Ni-Co-Cr equiatomic solid solution alloy. *Acta. Mater.*, 132:35–48, June 2017

C. Niu, W. Windl, and M. Ghazisaeidi. Multi-Cell Monte Carlo Relaxation method for predicting phase stability of alloys. *Scripta Mater.*, 132:9–12, Apr. 2017

2016 **C. Niu**, A. J. Zaddach, C. C. Koch, and D. L. Irving. First principles exploration of near-equiatomic NiFeCrCo high entropy alloys. *J. Alloy. Compd.*, 672:510–520, July 2016

A. J. Zaddach, **C. Niu**, A. A. Oni, M. Fan, J. M. LeBeau, D. L. Irving, and C. C. Koch. Structure and magnetic properties of a multi-principal element Ni–Fe–Cr–Co–Zn–Mn alloy. *Intermetallics*, 68:107–112, Jan. 2016

2015 **C. Niu**, A. J. Zaddach, A. A. Oni, X. Sang, J. W. Hurt III, J. M. LeBeau, C. C. Koch, and D. L. Irving. Spin-driven ordering of Cr in the equiatomic high entropy alloy NiFeCrCo. *Appl. Phys. Lett.*, 106(16):161906, Apr. 2015

X. Sang, E. D. Grimley, **C. Niu**, D. L. Irving, and J. M. LeBeau. Direct observation of charge mediated lattice distortions in complex oxide solid solutions. *Appl. Phys. Lett.*, 106 (6):061913, Feb. 2015

2014 K. M. Youssef, A. J. Zaddach, **C. Niu**, D. L. Irving, and C. C. Koch. A Novel Low-Density, High-Hardness, High-entropy Alloy with Close-packed Single-phase Nanocrystalline Structures. *Mater. Res. Lett.*, 3(2):95–99, Dec. 2014

2013 A. J. Zaddach, **C. Niu**, C. C. Koch, and D. L. Irving. Mechanical Properties and Stacking Fault Energies of NiFeCrCoMn High-Entropy Alloy. *JOM*, 65(12):1780–1789, 2013

Book chapters

2016 M. C. Gao, **C. Niu**, C. Jiang, and D. L. Irving. *High-Entropy Alloys*, chapter 10. Applications of Special Quasi-random Structures to High-Entropy Alloys. Springer, 2016

Presentations

Presented Talks

2017 *C. Niu*, W. Windl, and M. Ghazisaeidi. Phase prediction via ab-initio Monte Carlo Simulation for High Entropy Alloys. In *TMS*, San Diego, CA, Feb. 2017

2015 *C. Niu*, A. J. Zaddach, A. A. Oni, X. Sang, J. W. Hurt III, J. M. LeBeau, C. C. Koch, and D. L. Irving. First principles studies of NiFeCrCoMn high entropy alloys. In *TMS*, Orlando, FL, Mar. 2015

2014 *C. Niu*, A. J. Zaddach, C. C. Koch, and D. L. Irving. First principles simulation of a NiFeCrCoMn high entropy alloy. In *TMS*, San Diego, CA, Feb. 2014

Contributed Talks

2017 *D. L. Irving*, C. Niu, A. Zaddach, A. Oni, J. LeBeau, and C. Koch. Predicted Properties of NiFeCrCo Based HEAs from First Principles (*invited*). In *TMS*, San Diego, CA, Feb. 2017

2015 C. Niu, A. J. Zaddach, A. A. Oni, X. Sang, J. W. Hurt III, J. M. LeBeau, C. C. Koch, and *D. L. Irving*. Probing the local structure of NiFeCrCo: synthesis, characterization, and simulation (*invited*). In *TMS*, Orlando, FL, Mar. 2015

A. J. Zaddach, K. M. Youssef, C. Niu, D. L. Irving, and C. C. Koch. A low-density, single-phase high entropy alloy produced by mechanical alloying. In *TMS*, Orlando, FL, Mar. 2015

2014 *A. J. Zaddach*, C. Niu, J. M. LeBeau, C. C. Koch, and D. L. Irving. Low stacking fault energy high entropy alloys. In *TMS*, San Diego, CA, Feb. 2014

A. J. Zaddach, C. Niu, K. M. Youssef, *D. L. Irving*, and C. C. Koch. Stacking fault energies and mechanical properties of fcc high entropy alloys (*invited*). In *TMS*, San Diego, CA, Feb. 2014

2013	*D. L. Irving*, C. C. Koch, C. Niu, and A. J. Zaddach. Preparation and simulation of fcc high entropy alloys (*invited*). In *TMS*, San Antonia, TX, Mar. 2013

Professional Membership

TMS (The Minerals, Metals and Materials Society)