

Kunok Chang

Assistant professor, Nuclear Engineering, Kyunghee University
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EDUCATION

Ph.D. in Materials Science and Engineering, 2011

- The Pennsylvania State University, University Park, PA
- Academic advisor: Dr. Long-Qing Chen
- Dissertation title: *Quantitative Evaluation of Topological Measures from Grain Structures Generated by Large-Scale Phase-Field Simulation of Grain Growth*

B.A. in Materials Science and Engineering and Physics, 2004

- Seoul National University, Seoul, Korea

EXPERIENCE

Assistant professor

- Kyung Hee University, Yongin, Korea (Mar. 2018 - Current)

Senior Researcher

- Korea Atomic Energy Research Institute, Daejeon, Korea (Aug. 2013 - Feb. 2018)

Postdoctoral Researcher

- KU Leuven, Leuven, Belgium (Oct. 2012 - July 2013)

Postdoctoral Researcher

- Georgia Institute of Technology, Atlanta, GA, USA (Sep. 2011 - Sep. 2012)

Research Assistant

- The Pennsylvania State University, University Park, PA, USA (Aug. 2006 - July. 2011)

Software Developer

- Develop commercialized mobile games (Platform BREW(C/C++), JAVA)
- Mojses, co., Seoul, Korea (Dec. 2003 - May 2006)

FELLOWSHIP

Brindley Choe Graduate Fellowship

- The Pennsylvania State University, 2009 and 2011

RESEARCH INTERESTS

- Radiation damage on materials (Nuclear safety)
- Computational Materials Science
- Mesoscale modeling

SKILLS

- Programming Language (C/C++, Fortran, Python)
- Parallel computing (MPI, OpenMP, CUDA)
- Simulation package (COMSOL, Thermocalc, DICTRA, TC Prisma)

PUBLICATIONS

26. Effect of magnetic ordering on the spinodal decomposition of the Fe-Cr system: A GPU-accelerated phase-field study, J. Lee, **K. Chang***, 169:109088, 2019 [link](#)
25. Effect of Inhomogeneous Nucleation of Hydride at α/β Phase Boundary on Microstructure Evolution of Zr2.5 wt%Nb Pressure Tube, Metals and Materials International, S.S. Kim, S. Lim, D. Ahn, G.G. Lee, **K. Chang***, 25:838, 2019 [link](#)
24. Effect of grain boundary energy anisotropy in 2D and 3D grain growth process, **K. Chang**, H. Chang, *Results in Physics*, 12:1262, 2019 [link](#)
23. Phase-field Modeling of Precipitate Behavior in RPV Steel Using CALPHAD Database, **K. Chang**, J. Kwon, G.G. Lee, *Korean Journal of Metals and Materials*, 56:472, 2018 [link](#)
22. Structural effect of two-dimensional BNNS on grain growth suppressing behaviors in Al-matrix nanocomposites, S. Nam, **K. Chang**, W. Lee, M. Kim, J. Hwang, H. Choi, *Scientific Reports*, 8:1614, 2018 [link](#)
21. Atom probe tomography analysis of radiation-induced solute clustering in austenite stainless steels, G.G. Lee, H. Jin, **K. Chang**, J. Kwon, *Radiation Effects and Defects in Solids*, 173:694, 2018 [link](#)
20. Effect of particle-matrix coherency on Zener pinning: A phase-field approach, **K. Chang**, J. Kwon, C.K. Rhee, *Computational Materials Science*, 142:297, 2018 [link](#)
19. The role of Cr on oxide formation in Ni-Cr alloys: A theoretical study, K.H. Hong, J.H. Kim, **K. Chang**, J. Kwon, *Computational Materials Science*, 142:185, 2018 [link](#)
18. Atom probe tomography analysis of nanostructure evolution in Ni-Cr-Mo low alloy steel under neutron irradiation, G.G. Lee, H.H. Jin, **K. Chang**, S. Lim, M.C. Kim, B.S. Lee, J. Kwon, *Journal of Mechanical Science and Technology*, 31:3675, 2017 [link](#)
17. Effect of strong nonuniformity in grain boundary energy on 3-D grain growth behavior: A phase-field simulation study, **K. Chang**, L.Q. Chen, C.E. Krill III, N. Moelans, *Computational Materials Science*, 127:67, 2017 [link](#)
16. Role of second-phase particle morphology on 3D grain growth: A phase-field approach, **K. Chang**, J. Kwon, C.K. Rhee, *Computational Materials Science*, 124:438, 2016 [link](#)
15. A phase-field modeling of void swelling in the Austenitic stainless steel, **K. Chang**, G.G. Lee, J. Kwon, *Radiation Effects and Defects in Solids*, 171:242, 2016 [link](#)
14. Prediction of potential candidates for dispersion strengthening materials in Ni based alloys, K.H. Hong, J.H. Kim, **K. Chang**, J. Kwon, *Computational Materials Science*, 117:215, 2016 [link](#)
13. Atomistic Analysis Of Radiation-Induced Segregation In Ion-Irradiated Stainless Steel 316, G.G. Lee, H.H. Jin, **K. Chang**, B.H. Lee, J. Kwon, *Archives of Metallurgy and Materials*, 60(2):1179, 2015 [link](#)
12. Phase-field simulations of the interaction between a grain boundary and an evolving second-phase particle, **K. Chang**, N. Moelans, *Philosophical magazine letters*, 95(4):202, 2015 [link](#)
11. An integrated fast Fourier transform-based phase-field and crystal plasticity approach to model recrystallization of three dimensional polycrystals, L. Chen, J. Chen, R.A. Lebensohn, Y.Z. Ji, T.W. Heo, S. Bhattacharyya, **K. Chang**, S. Mathaudhu, Z.K. Liu, L.Q. Chen, *Computational Methods in Applied Mechanics and Engineering*, 285:829, 2015 [link](#)
10. Effect of grain boundary energy anisotropy on highly-textured grain structures studied by phase

- field simulations, **K. Chang**, N. Moelans, *Acta Materialia*, 64:443, 2014 [link](#)
9. Determination of fracture toughness of AZ31 Mg alloy using the cohesive finite element method, X. Guo, **K. Chang**, L.Q. Chen and M. Zhou, *Engineering Fracture Mechanics*, 96:401, 2012 [link](#)
 8. Linking phase-field and finite-element modeling for process structure property relations of a Ni-base superalloy, B.S. Fromm **K. Chang**, D.L. McDowell, L.Q. Chen and H. Garmestani, *Acta Materialia*, 60(17):5984, 2012 [link](#)
 7. Evaluating microstructural parameters of three-dimensional grains generated by phase-field simulation or other voxel-based techniques, **K. Chang**, C.E. Krill III, Q. Du and L.Q. Chen, *Modelling Simulation Materials Science Engineering*, 20(7):075009, 2012 [link](#)
 6. Effective elastic properties of polycrystals based on phase-field description, G. Sheng, S. Bhattacharya, H. Zhang, **K. Chang**, S.L. Shang, S. Mathaudhu, Z.K. Liu and L.Q. Chen, *Material Science Engineering A*, 554(30):67, 2012 [link](#)
 5. Quantitative evaluation of particle pinning force on a grain boundary using phase-field method, **K. Chang** and L.Q. Chen, *Modelling Simulation Materials Science Engineering*, 20(5):055004, 2012 [link](#)
 4. A Spectral iterative method for the computation of effective properties of elastically inhomogeneous polycrystals, S. Bhattacharyya, T. Heo, **K. Chang** and L.Q. Chen, *Communications in Computational Physics*, 11(3):726, 2012 [link](#)
 3. A Phase field model of stress effect on grain boundary migration, S. Bhattacharyya, T. Heo, **K. Chang** and L.Q. Chen, *Modelling Simulation Materials Science Engineering*, 19(3):035002, 2011 [link](#)
 2. Phase-field simulation of phase coarsening at ultrahigh volume fractions, K.G. Wang, X. Ding, **K. Chang** and L.Q. Chen, *Journal of Applied Physics*, 107(6):061801, 2010 [link](#)
 1. Effect of second-phase particle morphology on grain growth kinetics, **K. Chang**, W. Feng and L.Q. Chen, *Acta Materialia*, 57(17):5229, 2009 [link](#)