Kumar Ankit, Ph.D.

Curriculum Vitae

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EDUCATION

Ph.D. in Mechanical Engineering — *summa cum laude (with highest honor)* — 06/2012–12/2015
Karlsruhe Institute of Technology, Karlsruhe, Germany.

Dissertation title: Phase-field modeling of microstructural pattern formation in alloys and geological veins.

Integrated Dual Degree (Bachelor+Master) in Metallurgical Engineering — *First Class* — 08/2005–05/2010
Indian Institute of Technology, Banaras Hindu University (IIT, BHU), Varanasi, India.

PROFESSIONAL EXPERIENCE

Assistant Professor (Tenure-track) — 08/2017-present
Materials Science & Engineering, School for Engineering of Matter, Transport & Energy, Arizona State University, Tempe, United States.

PROFESSIONAL PREPARATION

Postdoctoral Research Associate — 08/2016–07/2017
Materials Science and Engineering, Texas A&M University, College Station, United States.

Group Leader — 12/2015–07/2016
Institute of Applied Materials (Computational Materials Science), Karlsruhe Institute of Technology, Karlsruhe, Germany.
Group: Quantitative modeling of phase transformations.

Research Assistant — 06/2012–12/2015
Institute of Materials and Processes, Karlsruhe University of Applied Sciences, Karlsruhe, Germany.

Research Assistant — 06/2010–05/2012
Chair of Materials and Process Simulations, University of Bayreuth, Bayreuth, Germany.

RESEARCH

Awards for Research

11/2018:	Robert W. Cahn prize awarded by Springer Nature and the Journal of Materials Science
03/2016:	Early Career Investigator Award of the German Research Foundation (DFG)
08/2014:	*Poster award* at the Third International Symposium on Phase-field Methods, Pennsylvania State University, State College, United States.

Research Interests

My research group specializes in the development and application of mesoscopic modeling techniques and their integration with continuum approaches for both fundamental and applied research in microstructure science and engineering. I am currently interested in deciphering computational pathways to optimally design microstructure processing routes. Target areas include solidification, solid-state transformations and grain coarsening in multicomponent alloys and geomaterials, electromigration-induced damage, and self-organization in polymers and vapor-deposited films.

Funding

Principal investigator Co-PI: Nikhilesh Chawla, Arizona State University National Science Foundation (NSF) Project title: 4D Characterization of Damage in Interconnects: Experiment and Simulation.	$457,194	since 08/2018
Principal investigator Co-I: Martin Glicksman, Florida Institute of Technology National Aeronautics and Space Administration (NASA) Project title: Advanced Modeling and Simulation of Crystal Growth Dynamics.	$200,000	since 08/2018
Principal investigator German Research Foundation's Young Investigator's Grant (DFG Nachwuchsakademie) Project title: Microstructural pattern formation during eutectoid transformation in multicomponent steels.	278,000 €	03/2016 - 03/2019

TEACHING AND MENTORING

Courses taught

Course	Title	Semester	Level
MSE 420	Advanced Metallurgical Alloys	Fall 2020	Undergraduate
MSE 591	Graduate Seminar	Fall 2019	Graduate
MSE 355	Structure and Defects	Fall 2018-20	Undergraduate
MSE 335	Materials Kinetics	Spring 2019-20	Undergraduate
MSE 494/598	Microstructure Modeling & Simulations	Fall 2017	Graduate/Undergraduate

Mentoring

Arizona State University:

Graduate students

08/2017 -present:	Phase-field modeling of nanostructural self-assembly in vapor-deposited films	Rahul Raghavan
08/2018 -present:	Phase-field modeling of electromigration-induced defects in polycrystalline interconnects	William Farmer
08/2019 -present:	Advanced Modeling and Simulation of Crystal Growth Dynamics	Peichen Wu
08/2019 -present:	Phase-field modeling of intermetallic formation in solder joints	Ankita Roy

Masters' thesis students

02/2018 -05/2020:	Phase-field modeling of electromigration-mediated morphological evolution of voids in interconnects	Sree Shivani Vemulapalli

Undergraduate projects

01/2018 -05/2018:	Computational pathways to the optimal design of polymer processing routes	Timoteo Diaz

Karlsruhe Institute of Technology, Germany: As *Leader* of the group - *Quantitative Modeling of Phase Transformations*, co-supervision of:

Graduate students

12/2013 - 08/2015:	Phase-field modeling of diffusive and displacive transformation in binary steel	Tobias Mittnacht (Master's thesis)
08/2014 - 04/2019:	Phase-field modeling of electromigration-induced grain-boundary grooving and hillock formation in interconnects, Electric-field induced pattern formation in diblock copolymers	Arnab Mukherjee
08/2014 - present:	Rapid Solidification in Ni-Zr glass-forming alloys	Sumanth Enugala
07/2015 - 05/2019:	Rayleigh instabilities of pearlitic lamellae during sub-critical annealing of steel	Prince Gideon Kubendran Amos
04/2016 - present:	Phase-field modeling of polycrystalline evolution in geological veins	Nishant Prajapati
04/2016 - present:	Influence of convection on directionally solidified pattern evolution	Pavan Laxmipathy Veluvali

Undergraduate students

06/2013 - 10/2013:	Phase-field study of polycrystalline calcite evolution in geological veins	Sebastian Farag
11/2012 - 10/2013:	Phase-field study of pearlitic growth in mixed diffusion-controlled regime.	Tobias Mittnacht

Postdoctoral researchers

08/2014 - 03/2016:	Phase-field simulations of curvature-induced cascading of Widmanstätten-ferrite plates	Dr. Avisor Bhattacharya (currently a postdoc at IIT, Kanpur
05/2016 - present:	Microstructural pattern formation during eutectoid transformation in multicomponent steels	Dr. Leslie Mushongera (currently a faculty at University of Nevada - Reno)

SERVICE

External Service

Conference Activity

Lead-organizer of the minisymposium titled *Recent advances in phase-field modeling and analysis of microstructural evolution* at the upcoming **SIAM Conference on Mathematical Aspects of Materials Science 2018 (MS 18)** in Portland, OR. This mini-symposium which features 20 invited lectures delivered by experts from all across the globe and a poster session for students focused on the recent developments and applications of the phase-field method and numerical post-processing techniques for microstructural quantification.

Professional Society Affiliations

- TMS (The Minerals, Metals & Materials Society)
- ASM International (American Society for Metals)
- SIAM (Society for Industrial and Applied Mathematics)

Reviewer Service

Journals:	Acta Materialia (Elsevier), Journal of Crystal Growth (Elsevier), Journal of Alloys & Compounds (Elsevier), Scientific Reports (Nature Publishing Group), Physica D : Nonlinear Phenomena (Elsevier), Journal of Materials Science (Springer), Materials Research Letters (Taylor & Francis), Science and Technology of Welding and Joining (Taylor & Francis), Materials Science and Engineering A (Elsevier), IEEE Transactions on Knowledge and Data Engineering (IEEE), Journal of Phase Equilibria and Diffusion (Springer), Materials Theory (Springer), Journal of Physics and Chemistry of Solids (Elsevier), Journal of Materials Research (Cambridge University Press), Canadian Journal of Physics (NRC Research Press), International Journal of Heat and Mass Transfer (Elsevier), Journal of Applied Physics (AIP), Philosophical Magazine Letters (Taylor & Francis), European Journal of Physics E (Springer), Journal of Materials Research and Technology (Elsevier).
Proposals:	National Science Foundation Reviewer, 2020 NASA Reviewer, 2018-2020 ACS Petroleum Research Fund, 2018

Internal Service

SEMTE

Committee Name	**Role**	**Year**
Faculty Search committee	Member	2020
Departmental Seminar committee	Member	2017- present

Program

Dissertation committee of	**Role**	**Degree**	**Year**
Sridhar Niverty	Member	Ph.D., MSE	2018
Chaitanya Kale	Member	Ph.D., MSE	2019
Marion Branch Kelly	Member	Ph.D., MSE	2019
Seid Mohamadali Sadat	Member	Ph.D., MAE	2020
Sijie Huang	Member	Ph.D., MAE	-
Miralireza Nabavi Bavil	Member	Ph.D., MAE	-

MEDIA COVERAGE

- Journal of Materials Science (2018). Robert W. Cahn Best Paper Prize [Webpage]. Retrieved from https://www.springer.com/gp/materials/cahn-prize-2018
- American Association for the Advancement of Science (2018). Scientists discover new field affecting metals solidification [Press release]. Retrieved from https://www.eurekalert.org/pub_releases/2018-02/fiot-sdn020118.php
- ScienceDaily (2018). Scientists discover new field affecting metals solidification: Finding could lead to process improvements, stronger alloys [Press release]. Retrieved from https://www.sciencedaily.com/releases/2018/02/180201125946.htm

- Space Coast Daily (2018). Scientists Discover New Field Affecting Metals Solidification [Press release]. Retrieved from http://spacecoastdaily.com/2018/02/florida-tech-scientists-discover-new-field-affecting-metals-solidification/
- Phys.org (2018). Scientists discover new field affecting metals solidification. [Press release]. Retrieved from https://phys.org/news/2018-02-scientists-field-affecting-metals-solidification.html
- Science Newsline (2018). Scientists Discover New Field Affecting Metals Solidification. [Press release]. Retrieved from http://www.sciencenewsline.com/news/2018020122120024.html
- Foundry Management & Technology (2018). Reanalyzed Data Sheds Light on Solidification Process [Press release]. Retrieved from http://www.foundrymag.com/meltpour/reanalyzed-data-sheds-light-solidification-process
- Florida Institute of Technology Newsroom (2018). Scientists Discover New Field Affecting Metals Solidification [Press release]. Retrieved from https://newsroom.fit.edu/2018/02/19/scientists-discover-new-field-affecting-metals-solidification/
- Look KIT (2015). The Trace of Rocks. Retrieved from https://www.sek.kit.edu/downloads/lookkit_2015_1.pdf

Publications

(*) Corresponding Author, Bold Font: ASU Ph.D. Student, Underline: ASU Masters Student, (#) ASU Undergraduate Student, (∞) Other/Vising Undergraduate Student, (**X**) ASU Postdoctoral Researcher, (‡) High School Student, (+) Equal Contributions (if not equal include % of participation), (~) Presenting author

Peer reviewed articles in technical journals

1. Ankit*, K. and M. Glicksman (2020). Growth competition during columnar solidification of seaweed microstructures. *The European Physical Journal E* **43** (14). *Selected for Journal cover page: February 2020*. DOI: 10.1140/epje/i2020-11940-5.
2. **Farmer, W.** and K. Ankit* (2020). Phase-field simulations of electromigration-induced defects in interconnects with non-columnar grain microstructure. *Journal of Applied Physics* **127** (17). DOI: 10.1063/1.5145104.
3. Glicksman, M. and K. Ankit* (2020). Thermodynamic behavior of solid-liquid grain boundary grooves. *Philosophical Magazine*. DOI: 10.1080/14786435.2020.1740340.
4. Ankit*, K., B. Derby, **Raghavan, R.**, A. Misra, and M. Demkowicz (2019). 3-D phase-field simulations of self-organized composite morphologies in physical vapor deposited phase-separating binary alloys. *Journal of Applied Physics* **126** (6). DOI: 10.1063/1.5110410.
5. Glicksman*, M. and K. Ankit* (2019). Capillary-mediated solid-liquid energy fields: their detection with phase-field method. *IOP Conference Series: Materials Science and Engineering* **529**, 012027. DOI: 10.1088/1757-899x/529/1/012027.
6. Laxmipathy*, V., F. Wang, M. Selzer, B. Nestler, and K. Ankit (2019). Influence of melt convection on the morphological evolution of seaweed structures: Insights from phase-field simulations. *Computational Materials Science* **170**, 109196. DOI: 10.1016/j.commatsci.2019.109196.
7. Amos*, P., A. Bhattacharya, B. Nestler, and K. Ankit (2018). Mechanisms of pearlite spheroidization: Insights from 3D phase-field simulations. *Acta Materialia* **161**, 400–411. DOI: 10.1016/j.actamat.2018.09.043.
8. Glicksman*, M. and K. Ankit (2018). Measuring Solid-Liquid Interfacial Energy Fields: Diffusion-Limited Patterns. *Journal of Materials Science* **53**(15). *Editor's choice: August 2018, Winning article - R.W. Cahn prize 2018*, 10955–10978. DOI: 10.1007/s10853-018-2356-7.
9. Mukherjee*, A., K. Ankit, M. Selzer, and B. Nestler (2018). Electromigration-induced surface drift and slit propagation in polycrystalline interconnects: Insights from phase-field simulations. *Physical Review Applied* **9**, 044004. DOI: 10.1103/PhysRevApplied.9.044004.

10. Mushongera, L., P. Amos, B. Nestler, and K. Ankit* (2018). Phase-field simulations of pearlitic divergence in Fe–C–Mn steels. *Acta Materialia* **150**, 78–87. DOI: 10.1016/j.actamat.2018.02.059.
11. Nani*, E., B. Nestler, and K. Ankit (2018). Analyzing the cooperative growth of intermetallic phases with a curved solidification front. *Acta Materialia* **159**, 135–149. DOI: 10.1016/j.actamat.2018.08.017.
12. Prajapati*, N., M. Selzer, B. Nestler, B. Busch, C. Hilgers, and K. Ankit (2018). Three-Dimensional Phase-field Investigation of Pore space Cementation and Permeability in Quartz Sandstone. *Journal of Geophysical Research: Solid Earth* **123**. DOI: 10.1029/2018JB015618.
13. Xing*, H., H. Chen, K. Ankit, X. Dong, and K. Jin (2018). Growth direction selection of tilted dendritic arrays in directional solidification over a wide range of pulling velocity: A phase-field study. *International Journal of Heat and Mass Transfer* **117**, 1107–1114. DOI: 10.1016/j.ijheatmasstransfer.2017.10.086.
14. Bhattacharya*, A., K. Ankit, and B. Nestler (2017). Phase-field simulations of curvature-induced cascading of Widmanstätten-ferrite plates. *Acta Materialia* **123**, 317–328. DOI: 10.1016/j.actamat.2016.10.035.
15. Glicksman*, M. and K. Ankit (2017). Detection of Capillary-Mediated Energy Fields on a Grain Boundary Groove: Solid–Liquid Interface Perturbations. *Metals* **7**(12), 547. DOI: 10.3390/met7120547.
16. Ankit*, K., H. Xing, M. Selzer, B. Nestler, and M. Glicksman (2016). Surface rippling during solidification of binary polycrystalline alloy: Insights from 3-D phase-field simulations. *Journal of Crystal Growth* **457**, 52–69. DOI: 10.1016/j.jcrysgro.2016.05.033.
17. Meller*, C. et al. (2016). Integrated research as key to the development of a sustainable geothermal energy technology. *Energy Technology (invited review)* **5**(7), 965–1006. DOI: 10.1002/ente.201600579.
18. Mukherjee*, A., K. Ankit, R. Mukherjee, and B. Nestler (2016). Phase-field modeling of grain-boundary grooving under electromigration. *Journal of Electronic Materials* **45** (12), 6233–6246. DOI: 10.1007/s11664-016-4848-z.
19. Mukherjee*, A., K. Ankit, A. Reiter, M. Selzer, and B. Nestler (2016). Electric-field-induced lamellar to hexagonally perforated lamellar transition in diblock copolymer thin films : Kinetic pathways. *Physical Chemistry Chemical Physics* **18**, 25609–25620. DOI: 10.1039/C6CP04903F.
20. Mukherjee*, A., R. Mukherjee, K. Ankit, A. Bhattacharya, and B. Nestler (2016). Influence of substrate interaction and confinement on electric-field-induced transition in symmetric block-copolymer thin films. *Physical Review E* **93**(3), 032504. DOI: 10.1103/PhysRevE.93.032504.
21. Ankit*, K., T. Mittnacht, R. Mukherjee, and B. Nestler (2015). Evolution of mixed cementite morphologies during non-cooperative eutectoid transformation in Fe-C steels. *Computational Materials Science* **108** (B), 342–347. DOI: 10.1016/j.commatsci.2015.03.002.
22. Ankit*, K., R. Mukherjee, and B. Nestler (2015). Deviations from cooperative growth mode during eutectoid transformation: Mechanisms of polycrystalline eutectoid evolution in Fe-C steels. *Acta Materialia* **97**, 316–324. DOI: 10.1016/j.actamat.2015.06.050.
23. Ankit*, K., M. Selzer, C. Hilgers, and B. Nestler (2015). Phase-field modeling of fracture cementation processes in 3-D. *Journal of Petroleum Science Research* **4** (2), 79–96. DOI: 10.12783/jpsr.2015.0402.04.
24. Ankit*, K., J. Urai, and B. Nestler (2015). Microstructural evolution in bitaxial crack-seal veins: A phase-field study. *Journal of Geophysical Research: Solid Earth* **120**(5), 3096–3118. DOI: 10.1002/2015JB011934.
25. Ankit*, K., R. Mukherjee, T. Mittnacht, and B. Nestler (2014). Deviations from cooperative growth mode during eutectoid transformation: Insights from a phase-field approach. *Acta Materialia* **81**, 204–210. DOI: 10.1016/j.actamat.2014.08.015.

26. Ankit*, K., A. Choudhury, C. Qin, S. Schulz, M. McDaniel, and B. Nestler (2013). Theoretical and numerical study of lamellar eutectoid growth influenced by volume diffusion. *Acta Materialia* **61**(11), 4245–4253. DOI: 10.1016/j.actamat.2013.03.050.
27. Ankit*, K., B. Nestler, M. Selzer, and M. Reichardt (2013). Phase-field study of grain boundary tracking behavior in crack-seal microstructures. *Contributions to Mineralogy and Petrology* **166**(6), 1709–1723. DOI: 10.1007/s00410-013-0950-x.
28. Ankit*, K. and N. Prasad (2011). Simulation of creep cavity growth in Inconel 718 alloy. *Materials Science and Engineering A* **528**(12), 4209–4216. DOI: 10.1016/j.msea.2011.02.012.
29. Fleck*, M., L. Mushongera, D. Pilipenko, K. Ankit, and H. Emmerich (2011). On phase-field modeling with a highly anisotropic interfacial energy. *European Physical Journal Plus* **126**(10), 1–11. DOI: 10.1140/epjp/i2011-11095-7.
30. Ankit*, K. (2009). Remaining creep life assessment techniques based on creep cavitation modeling. *Metallurgical and Materials Transactions A* **40**(5), 1013–1018. DOI: 10.1007/s11661-009-9781-9.

Books

1. Ankit*, K. (2016). *Phase-field modeling of microstructural pattern formation in alloys and geological veins*. Vol. 58. Series of Institute of Applied Materials, Karlsruhe Institute of Technology. KIT Scientific Publishing, 242 pages. DOI: 10.5445/KSP/1000052440.

Conference abstracts

1. **Farmer˜, W.**, **Raghavan, R.**, and K. Ankit (2020). Morphological evolution mechanisms in phase-separating polycrystalline alloy films exposed to a vapor phase. *TMS Annual Meeting*. San Diego, CA.
2. **Luktuke˜, A.**, K. Ankit, and N. Chawla (2020). Influence of Indium addition on microstructural properties of Sn-rich solder joints. *TMS Annual Meeting*. San Diego, CA.
3. **Raghavan˜, R.**, **Farmer, W.**, and K. Ankit (2020). Morphological evolution of phase-separated domains in vapor-deposited polycrystalline alloy films. *TMS Annual Meeting*. San Diego, CA.
4. **Farmer˜, W.** and K. Ankit (2019). Predicting Electromigration-mediated Damage in Interconnects Using Phase-Field Models. *Materials Science & Technology*. Portland, OR.
5. Glicksman˜, M. and K. Ankit (2019). Capillary-mediated interface fields. 19th *International Conference on Crystal Growth and Epitaxy*. Keystone, CO.
6. Glicksman˜, M. and K. Ankit (2019). Capillary-mediated solid-liquid energy fields: their detection with phase-field method. 5th *International Conference on Advances in Solidification Processes*. Salzburg, Austria.
7. **Raghavan˜, R.** and K. Ankit (2019). Phase-field Modeling of Self-organization in Physical Vapor-deposited Alloy Films with Coherent Elastic Misfit. *Materials Science & Technology*. Portland, OR.
8. Ankit, K., B. Derby, A. Misra, and M. Demkowicz˜ (2018). Predicting Self-Organization of Nanostructured Morphologies in Vapor Deposited Phase-Separating Binary Alloys. *MRS Spring Meeting*. Phoenix, United States.
9. Glicksman˜, M. and K. Ankit (2018). Detection of Capillary-Mediated Interface Energy Fields Using Phase-Field Residuals. *SIAM Conference on Mathematical Aspects of Materials Science*. Portland, OR.
10. Glicksman˜, M. and K. Ankit (2018). Interface Fields Affecting Solidification Microstructure. *TMS Annual Meeting*. Phoenix, United States.
11. Glicksman˜, M. and K. Ankit (2018). Melting in Microgravity: How crystallite shape changes led to new insights about interface dynamics. 7th *International Conference on Solidification and Gravity*. Miskolc-Lillafüred, Hungary.
12. Glicksman˜, M. and K. Ankit (2017). Capillary-mediated interfacial perturbation fields: Their exposure via phase-field equilibration. *TMS Annual Meeting*. San Diego, United States.

13. Mccue˜, I., K. Ankit, and M. Demkowicz (2017). Averting flow localization in metal nanocomposites by tailoring microstructure morphology. *MRS Spring Meeting*. Phoenix, United States.
14. Mukherjee˜, A., K. Ankit, and B. Nestler (2017). 3-D phase-field modeling of electromigration-induced damage in polycrystalline thin films : Grain-boundary slit propagation and hillock formation. *TMS Annual Meeting*. San Diego, United States.
15. Mukherjee˜, A., K. Ankit, and B. Nestler (2017). Phase-field modeling of grain-boundary grooving and surface drift under homogeneous electromigration. *TMS Annual Meeting*. San Diego, United States.
16. Mushongera˜, L., K. Ankit, and B. Nestler (2017). Microstructural pattern formation during eutectoid transformation in Fe-Mn-C steels: Phase-field simulations. *TMS Annual Meeting*. San Diego, United States.
17. Bhattacharya˜, A., K. Ankit, and B. Nestler (2016). A Phase-field Study of Cascading Widmanstatten-ferrite Plates. *TMS Annual Meeting*. Nashville, United States.
18. Mukherjee˜, A., K. Ankit, and B. Nestler (2016). Interplay of substrate interaction, electric field and confinement on microphase separation of diblock copolymers. *TMS Annual Meeting*. Nashville, United States.
19. Mukherjee˜, A., K. Ankit, and B. Nestler (2016). Morphological stability of interfaces under electromigration condition: insights from phase-field study. *TMS Annual Meeting*. Nashville, United States.
20. Nani˜, E., K. Ankit, and B. Nestler (2016). Theoretical and numerical study of eutectic growth kinetics of NiZr-$NiZr_2$ alloy at low undercoolings. *8^{th} International Conference on Multiscale Materials Modeling*. Dijon, France.
21. Schneider˜, D., K. Ankit, O. Tschukin, M. Selzer, and B. Nestler (2015). Phase-field modeling of solid-solid phase transformations. *9^{th} European Solid Mechanics Conference*. Madrid, Spain.

Presentations

Keynote and invited presentations

1. Predicting the 4D evolution of microstructures and defects using phase-field modeling (2020). *Department of Materials Science & Engineering, University of Arizona, Tucson*. United States.
2. Unraveling the mechanisms of nanostructural self-assembly in physical vapor-deposited immiscible alloy films (2019). *TMS Annual Meeting*. San Antonio, TX.
3. Unraveling the mechanisms of pore space cementation in quartz sandstone: A 3D phase-field approach (2019). *Materials Science & Technology*. Portland, OR.
4. Controlling nanostructured morphologies in vapor-deposited thin films: Towards guided vapor deposition (2018). *International Conference on Plasticity, Damage, and Fracture*. San Juan, PR, United States.
5. Controlling the morphological self-assembly in phase-separating materials (2018). *Nanoscience Seminar, Department of Physics, Arizona State University*. United States.
6. Morphological self-assembly in vapor-deposited binary films (2018). *SIAM Conference on Mathematical Aspects of Materials Science*. Portland, OR, United States.
7. Phase-field modeling of microstructural pattern formation in eutectoid steels (2018). *Department of Materials Science & Engineering, Indian Institute of Technology-Kanpur*. India.
8. Phase-field modeling of microstructural pattern formation in eutectoid steels (2018). *Department of Metallurgical Engineering, Indian Institute of Technology (BHU)- Varanasi*. India.
9. Self-organization of Nanostructured Morphologies in Physical Vapor Deposited Phase-separating Multicomponent Alloys (2018). *13^{th} World Congress in Computational Mechanics*. New York, United States.
10. Controlling the assembly of sputtered, multiphase-metallic thin films (2017). *Engineering Mechanics Institute Conference (EMI 2017)*. San Diego, United States (upcoming).

11. Microstructural pattern formation during eutectoid transformation in multicomponent steels (2015). *German Research Foundation's Early Career Investigators Workshop (DFG Nachwuchsakademie)*. Schlitz, Germany.
12. Phase-field modeling of crystal growth in geological veins - A first look (2014). 3^{rd} *International Symposium on Phase-field Method (PFM) 2014*. State College, United States.
13. Mathematical modeling of microstructural evolution in geological vein networks and solid-state phase transformations (2013). *Workshop on polycrystalline growth - New insights from experiments and modeling*. Karlsruhe, Germany.
14. Numerical methods to study phase transformation and transport mechanisms in veins (2013). *Petrotherm Seminar of the division of Geothermal Energy (AGW, KIT)*. Karlsruhe, Germany.
15. Phase-field modeling of microstructural pattern formation in eutectoid steels (February 2017). *Department of Mechanical Engineering, San Diego State University*. San Diego, United States.
16. Phase-field modeling of microstructural pattern formation in eutectoid steels (February 2017). *School for Engineering of Matter, Transport & Energy, Arizona State University*. Tempe, United States.
17. Phase-field modeling of microstructural pattern formation in eutectoid steels (February 2017). *Department of Mechanical Engineering, University of Louisville*. Louisville, United States.
18. Phase-field modeling of microstructural pattern formation in eutectoid steels (March 2017). *Department of Mechanical and Aerospace Engineering, University of Alabama in Huntsville*. Huntsville, United States.
19. Phase-field modeling of microstructural pattern formation in eutectoid steels (March 2017). *Department of Materials Science & Engineering, Texas A&M University*. College Station, United States.

Contributed conference oral presentations

1. 4D characterization of electromigration-induced grain boundary damage of Cu interconnects: X-ray tomography experiments and phase-field simulations (2020). *TMS Annual Meeting*. San Diego, CA.
2. Predicting Self-organization of Nanostructured Morphologies in Physical Vapor Deposited Phase-separating Alloys (2018). *TMS Annual Meeting*. Phoenix, United States.
3. Tailoring of epitaxially deposited nanostructured thin films: Insights from a phase-field approach. (2016). *Texas A&M University Postdoctoral Research Symposium*. College Station, United States.
4. Amending the theory of non-cooperative eutectoid transformation: insights from phase-field simulations (2015). *TMS Annual Meeting*. Orlando, United States.
5. Phase-field investigation of capillary-mediated interface perturbations (2015). *European Conference on Crystal growth*. Bologna, Italy.
6. A three-dimensional phase-field study of grain boundary tracking behavior in crack-seal microstructures. (2013). *European Geosciences Union - General Assembly*. Vienna, Austria.
7. Computational study of pearlite growth in mixed diffusion-controlled regime (2013). 2^{nd} *World Congress on Integrated Computational Materials Engineering*. Salt Lake City, United States.
8. Theoretical and numerical study of eutectoid transformation in diffusion-controlled regime (2013). *Workshop on Composite Research in Mechanics and Forum for Metal Plasticity and Functionally Graded Structures*. Paderborn, Germany.
9. Modeling mineral vein dynamics: A phase-field approach. (2011). *European Geosciences Union - General Assembly*. Vienna, Austria.

Contributed conference poster presentations

1. Microstructural pattern formation during eutectoid transformation in multicomponent steels (2016). *German Research Foundation's Young Investigator's Academy (DFG Nachwuchsakademie): Proposal Review*. Berlin, Germany.

2. Microstructural pattern formation in crack-sealing veins: A phase-field study (2015). *Workshop on Geothermal Energy (Helmholtz foundation)*. Karlsruhe, Germany.
3. Phase-field method as a microstructure modeling tool for interdisciplinary research: Overview (2015). *TMS Annual Meeting*. Orlando, United States.
4. Amending the theory of non-cooperative eutectoid transformation: an ICME approach (2014). *ICMEg*. Rolduc Abbey, Netherlands.
5. Deviations from cooperative growth mode during eutectoid transformation: Insights from phase-field simulations (2014). 3^{rd} *International Symposium on Phase-field Method (PFM) 2014, State College*. (awarded poster prize).
6. Computational study of flow anisotropy in sheared fractures with self-affine surfaces (2013). *European Geosciences Union - General Assembly*. Vienna, Austria.