



AGENDA

CHiMaD Phase Field Methods XX

May 19 – 21, 2026

Hybrid & @CHiMaD HQ

Scope

For the 20th phase field workshop, we invite discussions on the future of phase field benchmarking and code development, as AI tools become increasingly prevalent. Part of the program will be dedicated to discussing the use of AI in phase field code development and the necessity for benchmarking AI-generated code. We hope to evaluate the “AI-readiness” of the existing benchmarks and nucleate a working group to discuss best practices related to the use of generative AI when developing phase field codes. In addition, speakers will discuss recent advances in phase field modeling, with particular application to simulating solidification in nonequilibrium and multicomponent systems.

All Times in CDT

Tuesday, May 19, 2026

12:00PM – 12:40PM Lunch

12:40PM – 12:50PM Welcome & Logistics

12:50PM – 01:00PM Opening Remarks

01:00PM – 01:40PM **Improving the Performance of Quantitative Phase-Field Models for Concentrated Alloys**

(Alex Chadwick, *U.S. Naval Research Laboratory*)

01:40PM – 02:20PM **Architecting Fast Physics: A Practical Path to GPU-First Simulations in Python**

(Eric Stimpson, *Wayne State University*)

02:20PM – 03:00PM **JAX-PF: A GPU-Accelerated Differentiable Phase-Field Platform for Inverse Problems**

(Fanglei Hu, *Northwestern University*)

03:00PM – 03:15PM Break

03:15PM – 03:20PM In Memory of James Belak

03:20PM – 05:00PM Lightning Talks (15 mins each)

Arbitrary misorientation-dependence of grain boundary energy in orientation-field models (Phil Staublin, *University of Michigan*)

PRISMS-PF 4.0 (Jason Landini, *University of Michigan*)

Symbolic Derivation with SymPy and Python-Based Parameterization of a Phase-Field Crystal Model for 2D Materials
(Sumiya Khan Sujana, *Wayne State University*)

AMMBER Updates - Automatic Phase-field Parametrization
(Xander Mensah, *University of Michigan*)

05:00PM – 05:30PM Open-ended Discussion

05:30PM Dinner

All Times in CDT

Wednesday, May 20, 2026

08:30AM – 08:55AM Breakfast

08:55AM – 09:00AM Opening Remarks

09:00AM – 09:40AM **SYCL Solver using Heterogeneous Computing for Microstructure Evolution**
(Gandham Phanikumar, *Indian Institute of Technology Madras*)

09:40AM – 10:20AM **A Study of Rare Coarsening Events by Laboratory Diffraction Contrast Tomography**
(Erik Lauridsen, *XnovoTech*)

10:20AM – 10:30AM Group Photo (In-person & Online)

10:30AM – 10:45AM Break

10:45AM – 11:30AM **Not all materials problems are materials problems: complexity, software, and the future of AI**
(Calvin Li, *Fum Technologies*)

- 11:30AM – 11:45AM **Vision for AI and Benchmarking - The NIST Perspective**
(Jim Warren, *NIST*)
- 11:45AM – 12:30PM Open-ended discussion: **AI, PF, and Benchmarking**
(Chair: Jim Warren, *NIST*)
- 12:30PM – 01:30PM Lunch
- 01:30PM – 02:20PM Community Action Items: **AI, PF, and Benchmarking: Metrics for assessing AI code and how can we utilize PFHub?**
(Chair: Jon Guyer, *NIST*)
- 02:20PM – 03:00PM **Latent dynamic models for accelerating phase field models**
(Remi Dingreville, *Sandia National Laboratory*)
- 03:00PM – 03:15PM Break
- 03:15PM – 04:00PM Lightning Talks (15 mins each)
- A diffuse interface model for selective dissolution**
(Beck Andrews, *University of Michigan*)
- Simulation of solidification in multicomponent systems using a CALPHAD database** (Takumi Morino, *Yokohama National University*)
- 04:00PM – 04:30PM **Grain Growth Benchmark** - Updates & Follow-up
(Mike Tonks - *University of Florida*)
- 04:30PM – 04:45PM Break
- 04:45PM – 05:10PM **TMS Phase Field Short Course** - Debrief and Future Plans
(David Montiel and Jin Zhang, *University of Michigan*)
- 05:10PM – 05:30PM **PFHub Website 2.0**
(Mythreyi Ramesh and Phil Staublin, *University of Michigan*)
- 06:30PM – Group Dinner - Union Squared Pizza

All Times in CDT

Thursday, May 21, 2026

08:30AM – 08:55AM Breakfast

08:55AM – 09:00AM Opening Remarks

09:00AM – 09:20AM **MatCore Metadata Standard for Phase Field**
(Daniel Wheeler, *NIST*)

09:20AM – 10:00AM Discussion: **MatCore Feedback**
(Daniel Wheeler, *NIST*)

10:00AM – 10:15AM Break

10:15AM – 11:30AM Discussion: **PF Recommended Practices Guide:
Current Status and Future Work**
(Jon Guyer, *NIST*)

11:30AM – 11:45PM **Retrospective on the Phase Field Workshops**
(Jon Guyer, *NIST*)

11:45AM – 12:30PM Discussion: **Future of the Phase Field Workshops**

12:30PM – 01:00PM Lunch (to-go) and Adjourn