

**PRISMS Center Annual Workshop**  
**August 7-8, 2025**  
**Room 1670 Beyser Building - University of Michigan North Campus**  
**Preliminary Program**

**NOTE: Times include discussion times. All speakers should allow time for Q+A at the end of their talks!**

**Thursday August 7**

**8:20am Registration & Coffee/Fruit + Danish**  
**8:40am Welcome and PRISMS Center Overview**  
John Allison

***Complex Deformation Modes and Grain Boundary Effects in Mg***  
*Chair: Amit Misra and Vikram Gavini*

**9:00 Using instrumented indentation to study plasticity in Mg alloys**  
Guest Speaker: Warren Poole, University of British Columbia

**9:40 DFT-FE overview & electronic-structure informed modeling of <c+a> cross-slip in Mg alloys**  
Sambit Das and Vikram Gavini

**10:00 Characterization of slip systems in polycrystalline Mg-Y and Mg-Al alloys by indentation and HR-EBSD**  
Eunji Song and Amit Misra

**10:20-10:40pm Break**

**10:40 Overview of PRISMS-Plasticity and application to indentation studies in Mg alloys**  
Abhishek Kumar, Chaitali Patil, Eunji Song, Amit Misra, Veera Sundararaghavan

**11:00 Computational and Experimental Study of Geometrically Necessary Dislocation Densities in PRISMS-Plasticity**  
Michael Pilipchuk, Chaitali Patil, Tracy Berman, John Allison, Veera Sundararaghavan

**11:20am The Materials Commons approach to FAIR data**  
Glenn Tarcea, Brian Puchala, Tracy Berman, David Montiel and John Allison

**11:40am Machine Learning Texture Evolution Surrogate for Magnesium Alloys**  
Kyle Farmer and Liz Holm

**12:00 am Photo Session**

**12:15-1:15 Lunch (Provided - Blue Lounge GGB Building)**

**Grain Boundaries, Grain Growth and Recrystallization of Mg Alloys**

*Session Chair: Liang Qi and Liz Holm*

- 1:20pm Phase transformations at grain boundaries**  
Guest speaker: Timofey Frolov, Lawrence Livermore National Laboratory
- 2:00pm Atomistic simulations of grain boundary migration in Mg Alloys**  
Liang Qi and Vaidehi Menon
- 2:20 pm Integrated modeling and experiments to investigate static recrystallization in Mg-Zn-Ca alloy using the PRISMS framework**  
Phillip Staublin, Michael Pilipchuk, David Montiel, Supriyo Chakraborty, Tracy Berman, John Allison, Veera Sundararaghavan, Katsuyo Thornton
- 2:40-3:00 Break**
- 3:00pm Investigating static recrystallization in Mg alloys via in-situ EBSD**  
Abdulhamit Sarac, Tracy Berman, Varun Srinivas Venkatesh, Ashwin Shahani, John Allison and Ashley Bucsek
- 3:20pm Grain boundary segregation, recrystallization, anomalous grain growth in Mg-Y**  
Qianying Shi and John Allison
- 3:40pm Classical models of grain boundary segregation and migration in Mg alloys**  
Vadehi Menon and Liang Qi
- 4:00pm The limits of predictability in grain growth simulations**  
Meizhong Lyu and Liz Holm
- 4:20pm Grain Boundary Phase-like Transitions and Grain Boundary Phase Diagrams**  
Guest Speaker: Jian Luo, UCSD
- 5:00pm End day 1 session**

**5:00-6:30pm Poster session and reception with hors d'oeuvres**  
***Tishman Hall (Beyster Building Ground Floor Lobby)***

**Friday August 8**  
**Room 1670 Beyster Building**

**8:30am**      **Coffee/Fruit + Danish**

**Measuring and Modeling Twinning and Detwinning in Mg Alloys**

*Session Chair: Ashley Bucsek and Veera Sundararaghavan*

**9:00am**      **Accommodation twins vs mechanical twins in magnesium and zinc**  
Guest Speaker: Jian-Feng Nie, Monash University

**9:40am**      **Resolving the 3D evolution of deformation twins inside a grain under tension with in-situ DFXM**  
Sangwon Lee, Tracy Berman, Michael Pilipchuk, Can Yaldirim, Carsten Detlefs, Veera Sundararaghavan, John Allison and Ashley Bucsek

**10:10-10:30 Break**

**10:30am**      **PRISMS Multi-Physics: Development of an integrated Phase-Field/CPFE framework and its application to simulate twin morphology evolution in Mg alloys.**  
David Montiel, Chaitali Patil, John Allison, Katsuyo Thornton, Veera Sundararaghavan

**10:55am**      **Experimental measurements and PRISMS-Plasticity modeling twinning formation in Mg-Y alloys**  
Qianying Shi, Chaitali Patil, Veera Sundararaghavan and John Allison

**11:20am**      **On the unit processes mediating twin network evolution: the role of co-deformation.**  
Guest Speaker: Laurent Capolungo, Los Alamos National Laboratory

**12:00**      **End session -walk to lunch**

**12:15-1:15**    **Lunch (Provided - Blue Lounge GGB Building)**

**Measuring and Modeling Twinning and Detwinning in Mg Alloys (Continued)**

*Session Chair: Katsuyo Thornton and Abhishek Kumar*

**1:30pm**      **Kinking vs twinning: atomic mechanisms and experimental observations**  
Guest Speaker: Jian Wang, University of Nebraska - Lincoln

**2:10pm**      **CASM 2.0 - Overview and recent applications.**  
Brian Puchala, Sessa Sai Behara\* and Anton Van der Ven\* \*University of California, Santa Barbara

**2:40pm**      **PRISMS-PF - Overview of new phase field applications, features, improvements in performance and ease of use.**

David Montiel, Jason Landini, Xander Mensah, W. Beck Andrews and Katsuyo Thornton

**3:10 pm**      **Wrap-Up**