

AGENDA

Date: June 26-29, 2023
Venue: Colorado School of Mines
Ben H. Parker Student Center
Ballroom B & C (2nd Floor)
1516 Maple St, Golden, CO 80401
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JUNE 2023 IAB Meeting of the NSF I/UCRC: Ma²JIC





Welcome Reception: Monday, June 26, 2023 (all times MDT)	
7:30 - 9:30pm	 <p>Denver Marriott West 1717 Denver West Boulevard, Golden, CO 80401 (appetizers + cash bar) Keystone & Telluride Rooms</p>
Ma²JIC Meeting Day 1: Tuesday, June 27, 2023 (all times MDT)	
Virtual Streaming link: click here to join the meeting (view/listen access only)	
7:30 – 8:30 am	Breakfast & Registration: Ballroom B & C (2nd Floor) All attendees are asked to sign in & non-members will be required to sign a non-disclosure agreement
8:30 – 8:35 am	Introduction Jorge Penso , Shell, Industry Advisory Board (IAB) Chair Martin McDonnell , Ground Vehicle Systems Center (GVSC), IAB Co-Chair Antonio Ramirez , The Ohio State University (OSU), Ma²JIC Director
8:35 – 8:45 am	 <p>Welcome: Dr. Richard Holz, Provost of Colorado School of Mines (CSM)</p>
8:45 – 9:05 am	 <p>Keynote: Materials at Mines Dr. Michael Kaufman, Co-Director of Materials and Energy Initiatives and Professor at Metallurgical and Materials Engineering (CSM)</p>
9:05 – 9:25 am	Ma²JIC Center Update: Antonio Ramirez , OSU, Ma²JIC Director
9:25 – 9:45 am	Overview of Airtable Form Feedback Process Pete He, PhD , Ma²JIC Assessment Coordinator National Science Foundation https://airtable.com/shrwLCtBuYjniMgf4 
9:45–10:00 am	Student Award Criteria Review Stephen Tate , Electric Power Research Institute (EPRI)
10:00–10:10 am	Break
ADDITIVE MANUFACTURING/PROCESS DEVELOPMENT/CONTROL	
10:10–11:40 am	<p>Chair: Andrzej Nycz, Oak Ridge National Laboratory (ORNL); Stephen Tate, EPRI Co-Chair: Bradley Jared, University of Tennessee (UTK)</p> <p>Thrust Area Update (10 -minutes) Andrzej Nycz, moderator</p> <p>Student Presentations <i>15-minute presentation + 5-minute Q&A</i></p> <ul style="list-style-type: none"> Abhirup Saha, 02-PSU-102020, Role of Beam Manipulation on Enhancing Keyhole Stability and Producing Defect-Free Laser Welds in Aluminum Alloys <p><i>10-minute presentation + 5-minute Q&A</i></p> <ul style="list-style-type: none"> Taosif Alam, 02-OSU-2022, Understanding Nugget Formation and Microstructure Evolution in Multilayer Welds of Battery Fields Dylan Lewis, 10-UTK-2022, Adaptive Welding for Power Plant Piping and Pressure Vessels Mingze Gao [recorded], 06-PSU-2021, Controlling Solidification and Selective Alloying Element Vaporization in the Additive Manufacturing of High Strength Aluminum Alloys (<i>Todd Palmer for Questions</i>) Hanwen Yang [recorded], 06-UW-2022, Novel Laser Welding Methods for Energy and Transportation (<i>Adrian Gerlich for questions</i>)



11:40–12:00 pm	Poster Session, Additive Manufacturing/Process Development/Control		
12:00–12:20 pm	Thrust Area Open Discussion, Additive Manufacturing/Process Development/Control		
LUNCH & HOT TOPIC PRESENTATIONS			
12:20-12:50 pm	Break and Food Buffet (<i>Ballroom B & C</i>)		
12:50 -1:35 pm	<div>Intro: Jorge Penso, Shell, IAB Chair & moderator</div> <div>Hot Topic: 15-minute presentation + 5 mins Q&A</div> <div><div></div><div>High-Power Femtosecond Laser-Induced Additive Manufacturing, Surface Coating, and Dissimilar Joining Dr. Anming Hu, Assoc. Professor, (UTK)</div></div> <div><div></div><div>Directed Energy Deposition of NiTi Shape Memory Alloys: Some Comments on Influence of Feedstock Compositions Dr. Reginald Hamilton, Assoc. Professor, Pennsylvania State University</div></div>		
1:35 –1:45 pm	GROUP PHOTO, Christine Mitchell		
MATERIAL/JOINT PERFORMANCE			
1:45–3:20 pm	<div>Chair: Steve Levesque, Edison Welding Institute (EWI), Daniel Paolini, Honda, Co-Chair: Boian Alexandrov, OSU</div> <div>Thrust Area Update (10-minutes) Steve Levesque, moderator</div> <div>Student Presentations 15-minute presentation + 5-minute Q&A<ul style="list-style-type: none">Jacque Berkson, 03-OSU-032019, Exploration and Development of New Technologies for Coke Drum Fabrication and Repair <i>[final presentation]</i>Wenguang Liao [presenting virtually], 05-OSU-2021, Effect of Niobium on the Weld Metal Toughness of Pipeline Steels: Phase III <i>[final presentation]</i>Will Siefert, 01-OSU-022020, Qualification of Dissimilar Metal Welds for Service in Hydrogen Containing Environment Phase II: Dissimilar Metal Welds with Improved Resistance to Hydrogen Assisted Cracking <i>[final presentation]</i></div> <div>10-minute presentation + 5-minute Q&A<ul style="list-style-type: none">Giacomo Melaragno, 01-OSU-2022, Design and Additive Manufacturing of Functionally Graded Components for Olefin Furnaces</div>		
3:20–3:40 pm	Poster Session, Material/Joint Performance		
3:40-4:00 pm	Thrust Area Open Discussion, Material/Joint Performance		
4:00-4:15 pm	Bylaw Changes & Updates, Antonio Ramirez		
4:15-4:20 pm	End of Day Remarks & Updates, Heather Spisak		
CENTER PEER MEETINGS			
Separate IAB, PI & Student meeting (<i>link will allow to view and listen only</i>)			
4:20–5:20 pm	IAB Members & Industry Guests Room: Ballroom A Click here to join the meeting Notes taker: Christine Mitchell, OSU Click here to join the meeting	Ma ² JIC PI – Zhenzhen Yu Room: Ballroom B&C Notes taker: Joe Kleindienst, CSM Click here to join the meeting	Ma ² JIC Students - Jacque Berkson Room: BE 204 Notes taker: Henry Leon, OSU Click here to join the meeting



6:00-9:00pm Dinner & Networking
Buffalo Rose: 1119 Washington Ave, Golden, CO 80401 (9 min walk from CSM)
(Dinner + cash bar)

Ma ² JIC Meeting Day 2: Wednesday, June 28, 2023 (all times MDT)	
Virtual Streaming link: click here to join the meeting (view/listen access only)	
7:30 – 8:30 am	Breakfast & Registration: <i>Ballroom B & C (2nd Floor)</i> All attendees are asked to sign in & non-members will be required to sign a non-disclosure agreement
8:30 – 8:40 am	Morning Kickoff & Recap Jorge Penso , Shell, IAB Chair Martin McDonnell , GVSC, IAB Co-Chair Antonio Ramirez , OSU, Ma ² JIC Director
MATERIALS/MICROSTRUCTURE/WELDABILITY	
8:45 – 9:40 am	Chair: Jeff Rodelas, Sandia National Lab (SNL); Ravi Menon, ESAB; Co-Chair: Carolin Fink, OSU; Elliot Biro, University of Waterloo (UW) Thrust Area Update (10-minutes) Jeff Rodelas , (SNL) Student Presentations 10 min presentation + 5 min Q&A: <ul style="list-style-type: none"> ▪ Ania Grimm, 09-OSU-CSM-2022, <i>Inoculated High Strength Aluminum Wire Feedstocks for Welding and DED</i> ▪ Juan Gonzalez, 20-CSM-2023, <i>Weldability and Creep Performance of Additively Manufactured Austenitic Stainless Steels</i> ▪ Joris Hochanadel, 08-OSU-2021, <i>Development of Computational Tools for Determining Process Conditions for Laser and Electron Beam Welding of Strategic Materials – Phase II</i>
9:40 – 10:10 am	Poster Session , Material/Joint Performance
10:10– 10:25 am	Thrust Area Open Discussion , Material/Joint Performance
10:25 – 10:55 am	Road Mapping Update , Boyd Panton
PROJECT PROPOSALS & EXTENSIONS	
11:00– 11:55pm	Proposal: 10-minute presentation + 5-minute Q&A (<i>brief presentation</i>) <ul style="list-style-type: none"> ▪ Jonah Klemm-Toole, 27-CSM-2023, <i>High Thermal Conductivity Feedstocks for Space Flight Hardware Manufacturing</i> ▪ Zhenzhen Yu, 26-CSM-2023, <i>Simulating weld microstructures for systematic study of hydrogen susceptibility</i> ▪ Zhili Feng, Yanfei Gao & Zhenzhen Yu, 28-UTK-2023, <i>Stress Relaxation Cracking for Creep and Corrosion Resistant Alloys: Experiments and Modeling</i> Project Extensions: 5-minute presentation + 5-minute Q&A (<i>brief presentation</i>) <ul style="list-style-type: none"> • Todd Palmer, 29-PSU-2023, <i>Role of Beam Manipulation on Enhancing Keyhole Stability and Producing Defect-Free Laser Welds in Aluminum Alloys</i>
LUNCH & HOT TOPIC PRESENTATIONS	
11:55 –12:25 pm	Break and Food Buffet (Ballroom C)
12:30 –1:30 pm	Introduction: Jorge Penso , Shell, IAB Chair Hot Topic: 15-minute presentation + 5 min Q&A <div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>Additive Manufacturing Dr. Joy Gockel, Assoc. Professor, CSM</p> </div> <div style="text-align: center;">  <p>Mechanisms of Hydrogen Assisted Cracking in Dissimilar Metal Weld Subjected to Slow Rate Straining Dr. Abbas Mohammadi, OSU</p> </div> </div>

MODELING	
1:30 – 2:00am	<p>Chair: Adam Hope, Thermo-Calc; Andres Acuna, Lincoln Electric, Co-Chair: Zhenzhen Yu, CSM</p> <p>Thrust Area Update (10 -minutes) Adam Hope, Thermo-Calc</p> <p>Student Presentations 15-minute presentation + 5-minute Q&A Yuxiang Luo, 04-OSU-062020, Computational Modeling on the Temperbead Welding Phase II</p>
2:00-2:10 pm	Break
CENTER PEER FEEDBACK	
2:10–3:05 pm	<p>Reports from Separate IAB, PI, & Student Meetings 10 min report + 5 min Q&A</p> <p>Students: Jacque Berkson, OSU IAB: Jorge Penso, Shell PI: Zhenzhen Yu, UTK</p> <p>Recap Discussion of Center Peer Meetings 10-minutes Q&A</p>
3:05-3:25 pm	STUDENT AWARDS
MEETING	
3:25-3:35 pm	<p>Meeting Wrap Up Jorge Penso, Shell, IAB Chair Antonio Ramirez, OSU, Ma²JIC Director</p>
3:35-3:40 pm	End of Day Remarks & Updates, Heather Spisak
3:40-4:10 pm	<p>Attendee Feedback Survey Heather Spisak</p> <div> <p>IAB Pulse IAB Pulse Survey</p>  </div> <div> <p>Student Survey Student survey</p>  </div> <div> <p>Faculty Survey Faculty survey Phase II & III</p>  </div> <div> <p>In-kind Survey Members in-kind survey</p>  </div>
MEETING ADJOURN (no evening event)	

Ma ² JIC Meeting Day 3: Thursday, June 29, 2023 (all times MDT)	
Virtual Streaming link: click here to join the meeting (view/listen access only)	
8:00 -8:30 am	Registration: <i>Ballroom B & C (2nd Floor)</i> All attendees are asked to sign in
8:30-10:00 am	 Thermo-Calc Short Course & Capabilities 60 -minute presentation + 30 mins Q&A Dr. Adam Hope , Technical Sales and Support, Thermo-Calc Software Inc
10:00-10:50 am	 Gleeble Short Course & Capabilities 30-minute presentation + 20 mins Q&A Todd A. Bonesteel , Gleeble Historian, Dynamic Systems Inc
10:50 – 11:00 am	Break
11:00 –11:35 am	Lunch: <i>Boxed lunch served in Ballroom B & C (2nd Floor)</i>
11:45 am	Bus Pickup Time & Location: Colorado School of Mines - 1500 Illinois Street, Golden, CO, 80401
11:45 –12:15 pm	Transport to Fortius Metals Address: 505 Stacy Ct Unit A, Lafayette, CO 80026
12:30 – 2:30 pm	Tour at Fortius Metals
2:45 – 3:30 pm	Transport to Denver West Marriott and/or Colorado School of Mines

Upcoming Ma²JIC Meetings

2024 Ma²JIC IAB ANNUAL MEETING

Location: The Ohio State University @

Edison Welding Institute

Date: Jan 22-25th

2024 MID-YEAR Ma²JIC IAB MEETING

Location: The Pennsylvania State University

Date: June 10-13th

2025 Ma²JIC IAB ANNUAL MEETING

Location: University of Tennessee

Tentative Date: Feb 10-13th

2025 MID-YEAR Ma²JIC IAB MEETING

Location: The Ohio State University

Tentative Date: TBD