Materials Data Science for Stockpile Stewardship Biannual Meeting

November 14th & 15th, 2023

Case Western Reserve University

Cleveland, OH

Event Program

Event Agenda

DAY 1 – Tuesday, November 14th	
Samson Pavilion* | *Room 113	
8:30 – 9:00 AM	**Check-in and Breakfast**
9:00 – 9:20 AM	**Welcome and Opening Remarks –** Director, Prof. Roger French
9:20 – 9:25 AM	**Case School of Engineering Dean's Welcome –** Dean Balakrishnan
9:25 – 9:35 AM	**State of the Center –** Managing Director, Jonathan Steirer
9:35 – 12:00 AM	**Morning Technical Session**
12:00 – 12:05 PM	**Data Enabled Workforce Update** – Program Manager, Tariq Shabazz
12:05 – 12:45 PM	**Lunch**
12:45 – 1:00 PM	**Update on CWRU's Research Enterprise –** CWRU SVP for Research, Dr. Michael Oakes
1:00 – 5:05 PM	**Afternoon Technical Session**
l'Albatros Private Dining Room* | *11401 Bellflower Rd	
6:30 – 8:30 PM	**Dinner –** Invitation Only

Day 2 – Wednesday, November 15th		
Samson Pavilion* | *Room 113 (unless otherwise noted)		
9:00 – 9:30 AM	**Breakfast**	
9:30 – 10:00 AM	**Poster Session**	
10:00 – 10:30 AM	**Technical Discussion**	
10:30 – 11:30 AM	**Collaborator Workshops:** Advanced Manufacturing & XRD	**Advisory Meeting with Dir. French** – *Room 139* by Invitation
11:30 – 12:00 PM	**Lunch & Closing Remarks**	
12:00 – 1:30 PM	**Collaborator Workshop**	**Sponsor Meeting with Dir. French** – *Room 139* by Invitation

Morning Technical Session

START	TITLE	SPEAKER(S)
9:35 AM	**Roundtable #1: AI For Science – CRADLE/FAIR**	
9:35 AM	AI For Science Level Setting	Prof. Roger French
9:45 AM	FAIRification of XRD Datasets	Dr. Daniel Savage (LLNL)
9:55 AM	CRADLE 3.2: Unifying High-Performance and Distributed Computing for Materials Data Science	Arafath Nihar
10:05 AM	CRADLE Data Explorer: Accelerating Time to Analysis	Thomas Ciardi
10:15 AM	A FAIR Framework to Automating Data Analysis & Modeling	Dr. Erika Barcelos
10:25 AM	Path Forward Discussion	*Moderated by Jonathan Steirer*
10:45 AM	**Scene Graphs: Interpretable Graph Representations for X-Ray Computed Tomography**	Thomas Ciardi
11:05 AM	**3D X-ray Imaging of Engineered Materials: Applications & Challenges**	Dr. Nikolaus Cordes (LANL)
11:15 AM	**Uncertainty Quantification using Gaussian Process Regression**	Ayorinde Emmanuel Olatunde
11:25 AM	**Interdigitated Combs as a part of Electronic Components**	Prof. Alp Sehirlioglu
11:45 AM	**Sandia Combs Presentation**	Dr. Matt Kottwitz (SNL)

Afternoon Technical Session

START	TITLE	SPEAKER(S)
1:00 PM	**Assessment of Defect Formation in LPBF Using Statistical Learning**	Redad Mehdi
1:10 PM	**Data Segmentation**	Prof. Vipin Chaudhary
1:30 PM	**Fractography Approaches**	Prof. John Lewandowski
1:50 PM	**Roundtable #2: X-Ray Diffraction (XRD)**	
1:50 PM	Level Setting – Automated Analysis Pipelines for 2D HEXRD	Prof. Matthew Willard
2:00 PM	HEXRD Analysis at Argonne	Hemant Sharma (ANL)
2:10 PM	Synchrotron XRD Analysis	Dr. Daniel Savage (LLNL)
2:20 PM	Deep Learning for 2D HEXRD: Ab-Initio Simulator of Kinematic Diffraction for Regression CNN Training	Prof. Frank Ernst, Redad Mehdi
2:30 PM	XRD Ellipse Detection	Finley Holt, Gabriel Ponon
2:40 PM	Path Forward Discussion	*Moderated by Jonathan Steirer*
3:00 PM	**Roundtable #3: Advanced Manufacturing**	
3:00 PM	Advanced Manufacturing Level Setting	Prof. Laura Bruckman
3:10 PM	Metal AM at Y12	Dr. Kevin Lamb (Y12)
3:20 pm	Collaborator Presentation	Dr. Tanza Lewis (LLNL)
3:30 PM	Data-Driven Digital Twins in Advanced Manufacturing	Kristen Hernandez
3:40 PM	Exploring Error in Build Plate Motion of Direct Ink Write (DIW)	Hein Htet Aung
3:50 PM	Path Forward Discussion	*Moderated by Jonathan Steirer*
4:10 PM	**Roundtable #4: Data-Driven Digital Twins (ddDT)**	
4:10 PM	Data-Driven Digital Twins Level Setting	Prof. Roger French
4:20 PM	Data-Driven Digital Twins for Direct Ink Write (DIW) Inspections	Dr. Jayvic Cristian Jimenez (LLNL)
4:30 PM	Digital Twin Approaches for DIW	Dr. Vikash Kumar
4:40 PM	Data-Driven Digital Twins for Radiography	Alex Harding-Bradley
4:50 PM	SunSmart Data-Driven Digital Twin: Towards Foundation Models in PV System Management	Prof. Mengjie Li
5:00 PM	Path Forward Discussion	*Moderated by Jonathan Steirer*

Visitors

Robert Cerda

Research Support Engineer
Lawrence Livermore National Laboratory

Nik Cordes

R&D Scientist / Team Leader – Bio & Advanced Materials Synthesis Team
Los Alamos National Laboratory

Chris Feldmeier

Y12 National Security Complex
Senior Development Engineer

Sam Franco

Y12 National Security Complex

Ryan Haggerty

Senior Manager, R&D, Materials Reliability & Aging
Sandia National Laboratory

Stephen Hwang

Engineer
Sandia National Laboratory

Jay Jimenez

Postdoctoral Scholar
Lawrence Livermore National Laboratory

Matt Kottwitz

Postdoctoral Scholar
Sandia National Laboratory

Kevin Lamb

Advanced Manufacturing Research – Metal AM Lead
Y12 National Security Complex

Tanza Lewis

Chief of Staff, Materials & Manufacturing Transformation
Lawrence Livermore National Laboratory

Eric Machorro

Sr. Technical Advisor – Nuclear Stockpile Partnerships Sector
Pacific Northwest National Laboratory

Melissa Margraff

Independent Consultant

Bob Maxwell

Program Director – Materials & Manufacturing Transformation
Lawrence Livermore National Laboratory

Christine Orme

Senior Staff Scientist
Lawrence Livermore National Laboratory

Dan Savage

Scientist
Los Alamos National Laboratory

Hemant Sharma

Computation Scientist
Argonne National Laboratory

Kevin Shay

Senior Research & Development Engineer
Y12 National Security Complex

Eric Smith

Nuclear Engineer; Laboratory Fellow
Pacific Northwest National Laboratory

Mike Steinkamp

Manager
Sandia National Laboratory