Joint Workshop 3: Toward Synchrotron-based Autonomous Scattering Studies of Synthesis and Processing

Monday, May 1, Afternoon

1:00 – 1:15 Introduction

1:15 – 1:45 Benji Maruyama (Air Force Research Laboratory)
ARES^{TM} Autonomous Experimentation

1:45 – 2:15 Simon Billinge (Columbia University)
Autonomation for Scientific Discovery: Beamline Experiments of the Future, What They Might Look Like, and How to Get There

2:15 – 2:45 Christopher Tassone (SLAC National Accelerator Laboratory)
Using Artificial Intelligence to Discover Novel Catalysts and Accelerate the Change to Sustainable Feedstocks within the Chemicals Industry

2:45 – 3:15 Break

3:15 – 3:45 Suchismita Sarker (Cornell High Energy Synchrotron Source)
Machine Learning-guided Experimental Materials Discovery

3:45 – 4:15 Yan Zeng
Self-driving Laboratory for Inorganic Solid-state Synthesis

4:15 – 4:45 Taro Hitosugi (The University of Tokyo)
Autonomous Thin-film Synthesis and Characterization System

4:45 – 5:00 Summary

Tuesday, May 2, Afternoon

1:00 – 1:15 Reflection on First Day

1:15 – 1:45 Karena Chapman (State University of New York, Stony Brook)
Challenges for In Situ *Synthesis for Materials Discovery*

1:45 – 2:15 Daniel Olds
Automation and Artificial Intelligence for Autonomous Beamlines

2:15 – 2:45 Gilad Kusne
Autonomous Physics-informed Experiments for Materials Discovery

2:45 – 3:15 Break

3:15 – 3:45 Mathew Cherukara (Argonne National Laboratory)
Autonomous Scattering Experiments at the APS

3:45 – 4:15 Jie Xu (Argonne National Laboratory)
Autonomous Platform (Polybot) for Polymer Thin-film Processing

4:15 – 4:45 Rajeev Assary (Argonne National Laboratory)
Artificial Intelligence-enabled Optimal Materials Discovery

4:45 – 5:00 Summary