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SÉRIE DE SÉMINAIRES

SEMINAR SERIES

Lilo D. Pozzo

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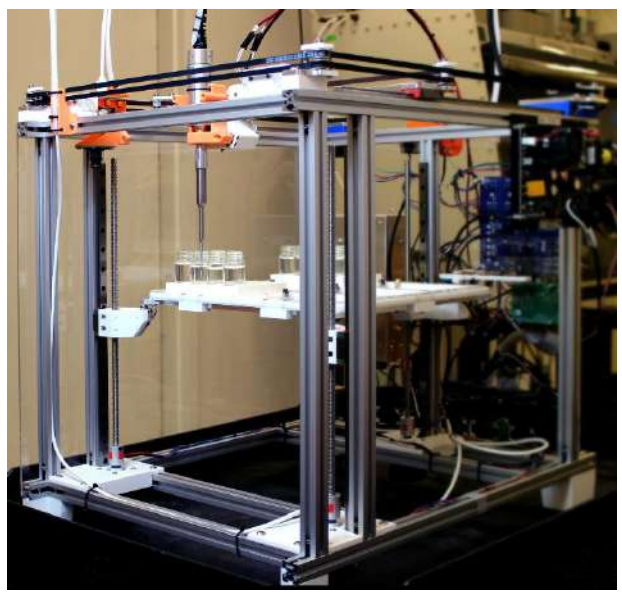
Title | **AI-Driven Experiments and Open-Source Automation for Accelerated Soft Matter Research**

Abstract | Artificial intelligence (AI), when paired with accessible laboratory automation, can greatly accelerate materials optimization and scientific discovery. For example, it can be used to efficiently map a phase-diagram with intelligent sampling along phase boundaries, or in ‘retrosynthesis’ problems where a material with a target structure is desired but a synthetic route is not known. These approaches are especially promising in soft matter systems, including block copolymer self-assembly, nanoparticle synthesis, and controlled colloidal assembly. In these systems, design parameters (e.g. chemical composition, MW, topology, processing) are vast, history-dependent metastable and ‘out-of-equilibrium’ structures are common, and functional properties are intimately tied to molecular design features and processing conditions. In addition, for AI algorithms to operate efficiently in these spaces, they must be ‘encoded’ with domain expertise specific to the problems being tackled. This talk will cover recent advances in hardware and software tools for accelerated materials research in polymeric and soft-matter systems including dispersions and colloids. Finally, it will outline remaining challenges in practical implementations and identify future opportunities for research.



Bio | Prof. Pozzo’s research interests are in the area of colloids, polymers and soft-matter systems. Her research group focuses on controlling and manipulating materials structure for applications in health, alternative energy and separations. Her group also develops and utilizes new advanced measurement techniques based on neutron and x-ray scattering. Prof. Pozzo obtained her B.S. from the University of Puerto Rico at Mayagüez and her PhD in Chemical Engineering from Carnegie Mellon University in Pittsburgh PA. She also worked in the NIST Center for Neutron Research as a post-doctoral fellow and is currently the Boeing-Roundhill Professor of Chemical Engineering at the University of Washington where she has served since 2007. In addition to her research activities, she is also dedicated to improving engineering education with course development in areas of entrepreneurship and service-oriented global engagement.

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