

NSF NANOSCALE SCIENCE AND ENGINEERING GRANTEES CONFERENCE:
NANO AND AI CONVERGENCE
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“Nano-AI convergence for biology and nanomedicine”
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Bio: Andrew Ferguson is Professor and Vice Dean for Education and Outreach at the Pritzker School of Molecular Engineering and Professor of Chemistry at the University of Chicago. His research uses theory, simulation, and machine learning to understand and design self-assembling materials, macromolecular folding, and antiviral therapies. He is the recipient of a 2020 Dreyfus Foundation Award for Machine Learning in the Chemical Sciences and Engineering, 2018/19 Junior Moulton Medal of the Institution of Chemical Engineers, 2016 AIChE CoMSEF Young Investigator Award for Modeling & Simulation, 2015 ACS OpenEye Outstanding Junior Faculty Award, and 2014 NSF CAREER Award. He is a co-founder of the protein engineering company Evozyne, Inc. (www.evozyne.com).

Abstract: Data-driven modeling and deep learning present powerful tools that are opening up new paradigms and opportunities in the understanding, discovery, and design of soft and biological materials. I will describe our recent work on autoregressive discrete diffusion models employing physicochemical and natural language conditioning for data-driven functional protein design with applications to biological understanding, biomolecular design, and nanomedicine.