

"NANO-BIO-AI CONVERGENCE: ACHIEVEMENTS AND CHALLENGES"

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Bio: Yaroslava G. Yingling is a Kobe Steel Distinguished Professor of Materials Science and Engineering at North Carolina State University, USA. She received a University Diploma in Computer Science and Engineering from St. Petersburg State Technical University of Russia in 1996 and a Ph.D. in Materials Engineering and High-Performance Computing from Pennsylvania State University in 2002. She carried out postdoctoral research at Penn State University Chemistry Department and the National Institutes of Health National Cancer Institute before joining North Carolina State University in 2007. Her research focuses on developing materials informatics approaches, advanced computational models, and novel multiscale molecular modeling methods for investigating properties and processes in composite, soft, and biological materials. Dr. Yingling has made significant contributions to areas such as biomolecule self-assembly, design of nanomaterials, and the application of data science techniques to problems in materials science.

Abstract: This presentation will highlight recent breakthroughs and examine the grand challenges and transformative opportunities of application of AI tools to biology and nanomedicine. By integrating nanoscale innovation with the predictive power of AI, this convergence is revolutionizing fields such as healthcare, sustainability, and scientific advancement. Examples include machine learning-optimized nanoparticle design for precise drug delivery and accelerated biomolecular design for next-generation therapeutics. Nano-AI convergence has the potential to reshape our understanding of biological systems and create innovative solutions to global health and environmental challenges.