Resources and Cyberinfrastructure for a Nanomanufacturing Future – the Network for Computational Nanotechnology Nanomanufacturing Node

Elif Ertekin, Ph.D.
Associate Professor of Mechanical Science and Engineering
University of Illinois at Urbana-Champaign

Abstract: From data sharing platforms, virtual networks for integrated cybermanufacturing, and the introduction of artificial intelligence and machine learning to process development optimization, the emerging nanomanufacturing community is supported by an extensive and growing set of networks, resources, and cyberinfrastructure now available in the US and beyond. This presentation will overview several of these networks and resources, highlighting in particular the work of nanoMFG – the Nanomanufacturing Node at the University of Illinois at Urbana-Champaign and the University of California, Berkeley. The nanoMFG node is a cyberinfrastructure effort of the Network for Computational Nanotechnology. The node adopts a comprehensive approach to assembling, developing, and implementing advanced cyberinfrastructure tools for research, education, and industrial deployment of integrated, nanoscale manufacturing processes and systems. The tools deployed target the needs of the nanomanufacturing community, while addressing the challenges of integrating data and models from multiple dimensional scales. We will highlight the node's tools and cyberinfrastructure, available on the NCN Cyberplatform (nanoHUB), that connect nanomanufacturing researchers from academia and industry to share resources, data, and knowledge. The node also sponsors regular workshops and seminars, and provides educational opportunities and training to promote the growth of the nanomanufacturing community.

Bio: Elif Ertekin is an Associate Professor of Mechanical Science and Engineering at the University of Illinois at Urbana-Champaign. She currently the Director of the Nanomanufacturing Node, a node of the Network for Computational Nanotechnology that engages the nanomanufacturing community in the creation and design of software and simulations tools that can enable emerging nanomanufacturing processes. She received her PhD in Materials Science and Engineering from UC Berkeley, and carried out post-doctoral work at the Massachusetts Institute of Technology. She has received the NSF CAREER Award, the TMS Early Career Faculty Fellow Award, the Emerging Leader Award from the Society of Women Engineers. She currently serves as the Director of Mechanics Programs in the Department of Mechanical Science and Engineering, and is an Associate Editor for the Journal of Applied Physics.