



Keynote Lunch Address

“From Interconnect to Innovation in the DoD”

Presented by Dr. Livia Racz

Assistant Leader of the Chemical, Microsystem & Nanoscale
Technologies Group - Lincoln Laboratory - Massachusetts Institute of
Technology, Lexington, MA

Email: livia.racz@ll.mit.edu

URL: <https://www.ll.mit.edu/mission/electronics/cmnt/bios/racz-l.html>

12:15 – 12:45 – Exhibit Hall



Keynote Abstract

In electronics packaging, as in all areas of electronics in the 20th century, the military used to set the pace for new developments, with major investments in facilities and strategic initiatives, and engineering innovation happening in large, captive semi-monopolies. This is no longer the common model for innovation. Additionally, there is instant and widespread dissemination of technological information all over the world. The aggregate result of these shifts is that we are no longer optimally equipped to apply the best technologies to problems of national security. This talk broadly examines some of the top unmet needs, reviews some of the approaches that are being used successfully to address the challenges, and focuses on the value added by truly innovative developments in Advanced Packaging and Microsystems Integration. An innovation framework is presented, which introduces rigor into value creation by integration, which goes beyond reduction of size, weight, and power. Case studies are selected and reviewed from the literature, and example research projects are highlighted that are currently in progress at MIT Lincoln Laboratory. These include a tiled, large-format imager, a 3D-integrated platform for quantum computing, and multimaterial fiber and textile devices.

Biography

Dr. Livia M. Racz is the Assistant Leader of the Chemical, Microsystem and Nanoscale Technologies Group, where she currently leads a major experimental effort in the physical realization of superconducting qubits. In addition to this activity, Dr. Racz has broader interests in materials engineering and microsystems integration, and she leads the Novel and Engineering Materials (NEMs) internal research and development technology portfolio for Lincoln Laboratory. Prior to joining the Laboratory, Dr. Racz held positions of increasing responsibility at the Charles Stark Draper Laboratory, including Technical Director and program manager of several programs in miniaturized electronic systems, leader of the Advanced Packaging Group, and leader of the Microsystems Technologies Division. She has more than 20 years of experience in developing new materials, processes, and integration schemes for miniaturized electronic systems. She has more than 50 publications, patents, and awards in these areas. She has worked at startup companies and has served on the faculty of Tufts University's Department of Mechanical Engineering. Dr. Racz received her SB and PhD degrees in materials science and engineering from MIT and was an Alexander von Humboldt Research Fellow at the Institute for Space Simulation in Cologne, Germany