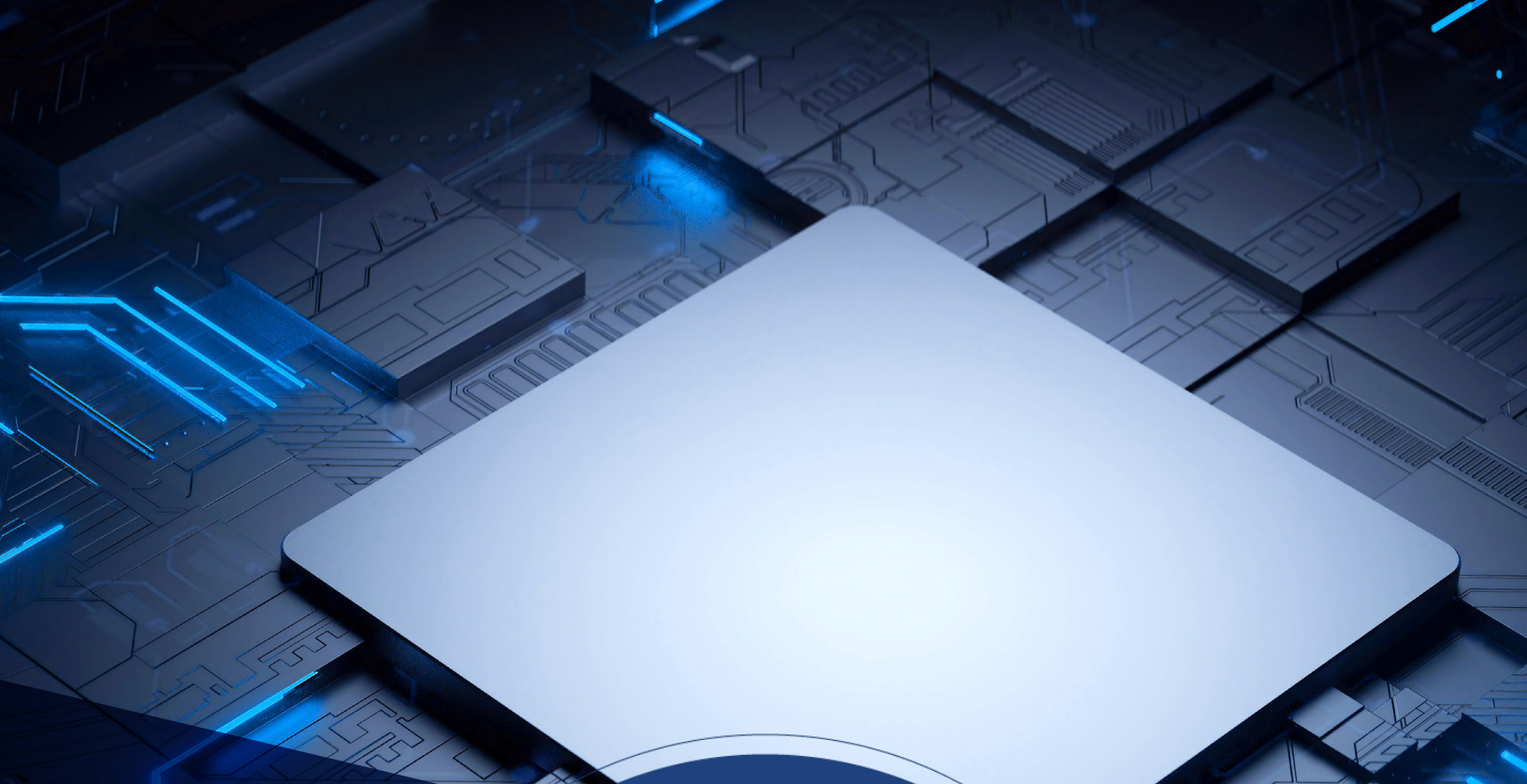


MASH

Mid-Atlantic SEMICONDUCTOR

HUB

Partnering for a Strong American Semiconductor Future

MASH Mission & Scope

MISSION & SCOPE

MASH will support the CHIPS and Science Act to enhance America's strength in semiconductors and microelectronics and promote economic development.

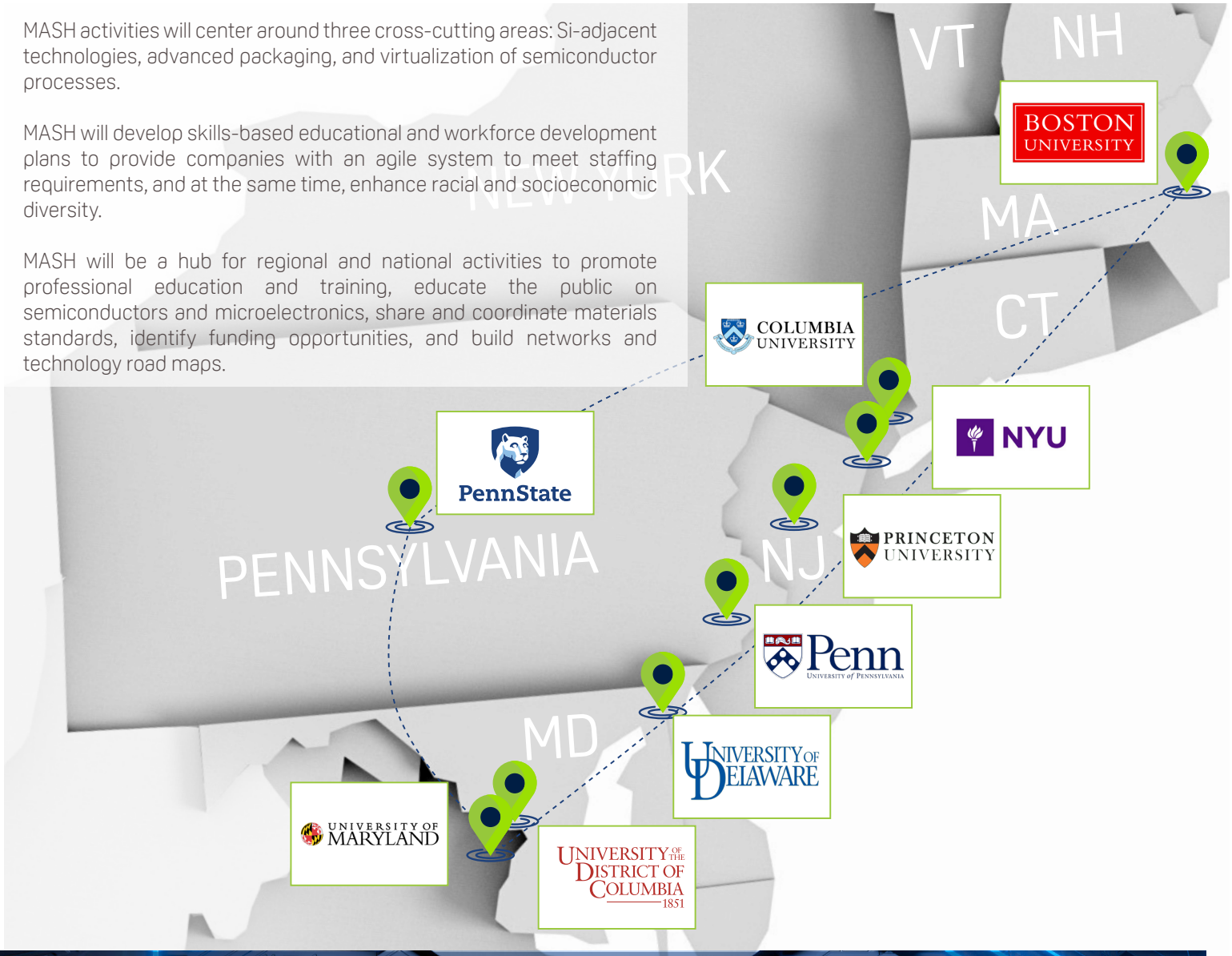
The goal of MASH is to create the world's largest nanofabrication, packaging, and characterization facility by linking and enhancing the facilities in the region. The MASH "distributed" network of facilities will support technology transition to manufacturing and offer redundancy of resources and immediate access to a huge amount of technical expertise in semiconductors.

MASH will focus on helping the semiconductor industry to transition materials into systems, which is a critical industrial need of many emerging applications such as advanced communications, non-volatile memory, More than Moore devices, Industrial Internet of Things, artificial intelligence, edge computing, wireless communications, quantum devices, environmental sustainability, and materials and substrates.

MASH activities will center around three cross-cutting areas: Si-adjacent technologies, advanced packaging, and virtualization of semiconductor processes.

MASH will develop skills-based educational and workforce development plans to provide companies with an agile system to meet staffing requirements, and at the same time, enhance racial and socioeconomic diversity.

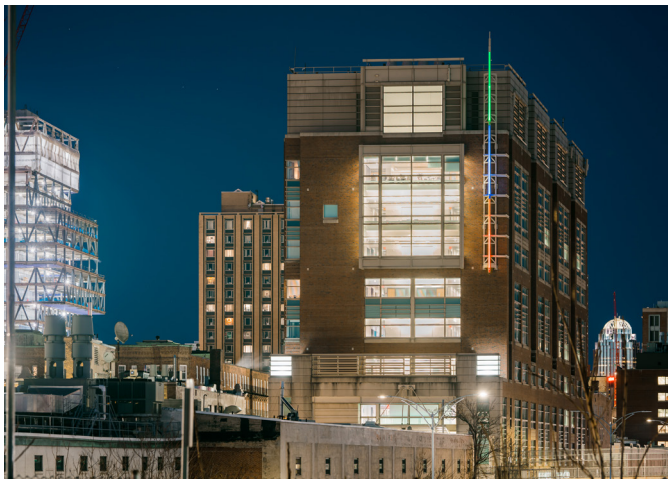
MASH will be a hub for regional and national activities to promote professional education and training, educate the public on semiconductors and microelectronics, share and coordinate materials standards, identify funding opportunities, and build networks and technology road maps.



MASH Mid-Atlantic SEMICONDUCTOR HUB

BOSTON UNIVERSITY

Boston University does research that matters, including materials science and engineering work that crosses disciplines and has a direct impact on the industries of the future. From its Engineering Product Innovation Center, a 15,000-square-foot, multi-million dollar engineering and manufacturing facility, to the Fraunhofer Center for Manufacturing Innovation, which transforms emerging research into viable technology solutions for domestic and global clients—BU centers, labs, and equipment are driving cutting-edge research and technologies to address the biggest challenges of the 21st century.



The facilities described below are all housed in the Boston University Photonics Center, a nine-story building housing world-class research laboratories that sustain the work of over 170 faculty, staff, and students.

LAB: cleanroom

OPTOELECTRONIC PROCESSING FACILITY

This multi-user cleanroom is outfitted with advanced equipment for fabricating semiconductor and optoelectronic devices on a wafer-to-die level. The 2,500-square-foot facility includes both a Class 100 photolithography room and a Class 1000 cleanroom. In the Class 1000 cleanroom, capabilities include wet chemical processing, dry etching, thin film physical vapor deposition (including thermal oxidation and annealing), metrology, dicing saw, and wire bonding.

LAB: microscopy

FOCUS ION BEAM/TRANSMISSION MICROSCOPY FACILITY

This multi-user facility provides equipment for materials characterization and high-resolution imaging and analysis of a variety of solid, non-biological materials on nanoscale. The facility is supplemented by an adjacent materials preparation laboratory with equipment for cutting, polishing, dimpling, and ion milling for preparation of surfaces and cross-sections from bulk specimens for examination. These capabilities will be key as semiconductor devices shrink into the nanometer range and new materials are required.

LAB: characterization

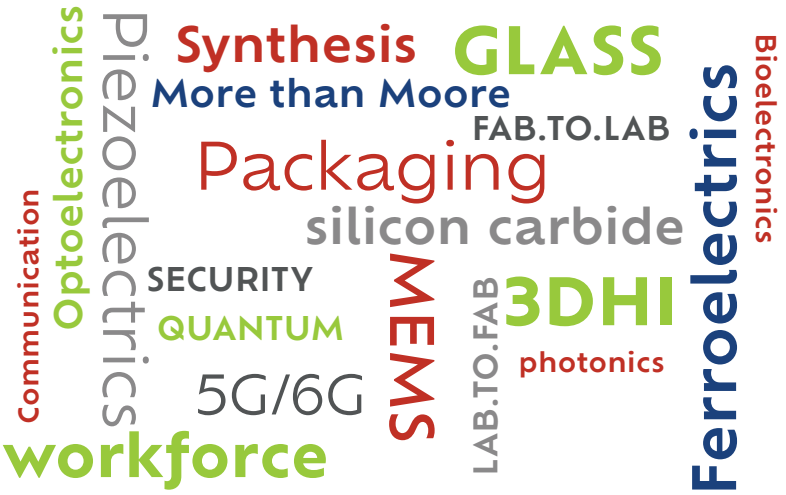
PRECISION MEASUREMENT LABORATORY

This lab is a shared-use, core facility dedicated to the characterization of materials using scanning and surface probe microscopies. It also provides capabilities for examination of topographical features using optical laser interferometry profiling.

LAB: materials science

MATERIALS SCIENCE CORE FACILITY

This multi-user facility for materials science characterization houses a variety of equipment including processing hoods for materials preparation and Bruker X-ray equipment for analyzing crystallinity of thin solid-state films.



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KEY MASH CONTACTS

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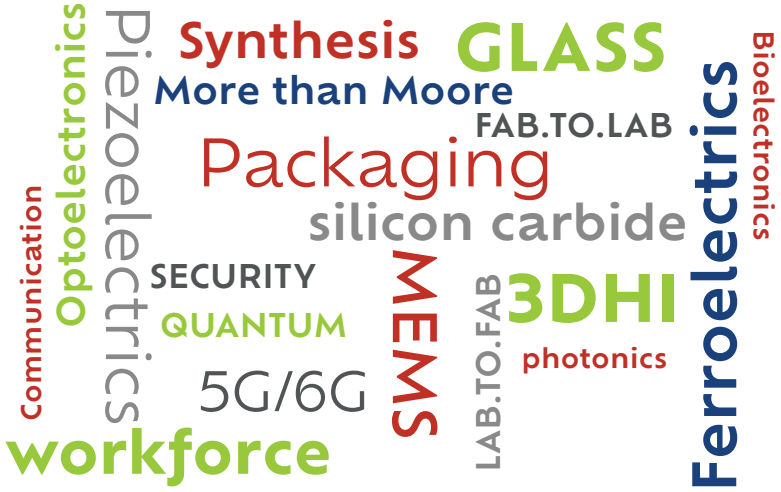

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