

INSTITUTE FOR SOLDIER NANOTECHNOLOGIES

The Institute for Soldier Nanotechnologies (ISN) (<https://isn.mit.edu>) is an MIT research institute where faculty members, postdoctoral associates, and students collaborate with Army and industry investigators on innovative fundamental research and rapid transitioning in service of the the Nation. It was established at MIT in 2002 as a US Army–sponsored University-Affiliated Research Center (UARC). MIT oversight of the ISN is provided by the MIT Vice President for Research.

The ISN mission is to help the US Army, other US military services, and US government departments and agencies dramatically improve the protection, survivability, and mission capabilities of the warfighter and of warfighter-supporting platforms and systems. This is achieved through basic research with a foundation in nanotechnology and by transitioning promising outcomes of that research in partnership with the Army, other US military services, and companies.

A major ISN goal is to enable advanced protection and survivability capabilities through multifunctional, lightweight clothing and equipage of increased comfort and decreased energy demand.

To these ends, the ISN performs research on improving blast and ballistic protection, detection and detoxification of chemical and biological substances, portable electric power, physiological monitoring, and medical care on mission and in remote locations, as well as providing the soldier with reliable communications and situational awareness tools.

ISN researchers and other MIT personnel have access to state-of-the-art instrumentation at the approximately 40,000 square foot ISN facility in Technology Square. Most research is performed by graduate students as part of master's and doctoral theses in MIT academic departments, by postdoctoral researchers, or occasionally by undergraduates participating in the Undergraduate Research Opportunities Program (UROP). Many theses are co-supervised by two or more faculty members representing different areas of technical expertise. Each year, more than 20 MIT faculty members from roughly a dozen departments participate in ISN research. Additionally, visiting researchers from Army and industry laboratories participate in ISN research and transitioning, bringing knowledge and practical perspectives that greatly enrich the learning environment. Army partners collaborate with the ISN on basic and applied research, provide guidance on the soldier relevancy of ISN research, and participate in tech transfer. Industry partners provide expertise on product development, systems integration, and affordable manufacturing in quantities needed by customers, helping bring laboratory-scale ISN innovations closer to real-world applications.

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Students seeking to perform thesis or UROP research at the ISN should contact ISN-affiliated faculty members or professional research staff (<https://isn.mit.edu/people/faculty>) directly to express their interest. For further information, contact ISN Headquarters via email (isn@mit.edu) or by calling 617-324-4700.