

II. Sensor & System Applications

(C) Integrated and Networked Sensor Platforms & Infrastructure Technology

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System-level, distributed nanosensors have application across DoD and Homeland Defense. They are, for example, a requirement of both the Army's Future Combat Systems and the emerging Army Network Science initiative, where engineered nanomaterials are envisioned as a critical part in the sensing and transduction of threats to the warfighter. There are many new sensor concepts based on the advantages of nanoscale electronic, magnetic, and photonic devices. These advantages include improved sensitivity, lower power, smaller size, higher detection speed, and ease of integration into systems (e.g., MOTE architectures) tailored to specific applications such as remote and embedded monitoring of chemical, biological, radiological and energetics parameters. However, very few nanosensory devices have been conceived or designed to accommodate system-level requirements through a multiplexed architecture. Nanosensors place special requirements on system designs such as in sensor fusion, sensor networks, interfaces to micro and macro components, fault tolerance, communications and packaging.

This session will focus on: 1) the advantages of nanosensor technologies over other current detection methods, 2) the applications-driven requirements that must be considered as part of the design of systems containing nanosensors, and 3) design, efficacy and survivability of nanosensory devices in the battlespace and other challenging environments and 4) common architectural designs for networking.