

## CENTER FOR NANO-ENABLED DEVICE & ENERGY TECHNOLOGIES

<http://cnxt.web.cmu.edu/>



At the Center for Nano-enabled Device and Energy Technologies (CNXT), a multidisciplinary team from the College of Engineering and the Mellon College of Science have come together to harness nanoscale research already underway in both colleges. The center, which is housed at the Institute for Complex Engineered Systems (ICES), primarily focuses on nanoscale research that enables the design of innovative systems for sensing, and on future energy generation and storage technologies. The secondary focus of the center is on advanced information and communication technologies.

The unifying theme of the CNXT is nanometer-scale materials that are deliberately synthesized, self-assembled, assisted to self-assemble, or structured to create novel properties, processes, or principles. The Center's current approach to creating unique materials is two-fold. The first approach relies on solid-state synthesis and structuring to produce nanostructures with new physics or chemistry that leads to novel devices. The second approach is based on chemistry, where chemical synthesis creates unique molecules that are used to make novel materials. These, in turn, are used to produce structures with novel function or utility.

The current focus of the Center on nano-enabled sensor and energy technologies is intended to address some of society's most important problems. Energy, for example, is probably one of the most pressing issues of our time. The dwindling world energy resources, combined with a growing world population with a voracious appetite for energy will lead to an unsustainable world order if no new or alternative energy resources, or more efficient ways of using the resources that we do have, are found. The other problems are the quality of the environment, water, food, and more recently, terrorism and war. Nano-enabled sensor technologies such as chemical and biological sensors, physical sensors, and imaging sensors, can be brought to bear on some of the latter problems. In energy, the interest is on technologies for clean energy generation and storage.

Ongoing projects include the generation of hydrogen as a fuel for fuel cells, novel fuel cell technologies, and spectrally broadband photovoltaic cells for solar energy conversion.

The secondary focus of the Center is on nano-enabled information technologies that include devices and sub-systems for electronic and photonic information manipulation, as well as magnetic data storage systems.

### Contact Information

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