

Computational Optical Sensing

Michael Gehm and the LENS lab take a nontraditional view of sensor research

Michael E. Gehm is assistant professor in the department of electrical and computer engineering, with a joint appointment in the College of Optical Sciences. As director of the Laboratory for Engineering Nontraditional Sensors, or LENS, his research, much of which is funded by DARPA and NSF, includes compressive measurement for spectral imaging, statistical and information theoretic methods in computational imaging, image formation and computational imaging in extremely large imaging arrays, and adaptive spectroscopy for rapid chemical detection.



**Assistant Professor
Michael Gehm**

As the name suggests, the primary research activity in LENS is the invention design, construction, and testing of novel optical sensor systems. “Our efforts can best be described as computational sensing,” Gehm Said. This approach involves performing certain sensor processing optically, before electronic sampling, rather than via standard post-processing of the sampled data. “Doing so results in sensor systems with revolutionary performance and physical characteristics,” Gehm said.

Recently, LENS has started a second research thrust into the rapid fabrication of volumetric terahertz optical components. The lab is equipped with a rapid-prototyping machine that can be used to easily fabricate complicated optical components that are either impossible or extremely expensive to acquire by traditional methods.

“We are investigating how this technology can be modified and expanded to increase the range of possible components,” Gehm said.