UNIQUE INFRARED SYSTEM AT OSU OFFERS POWERFUL RESEARCH TOOLS

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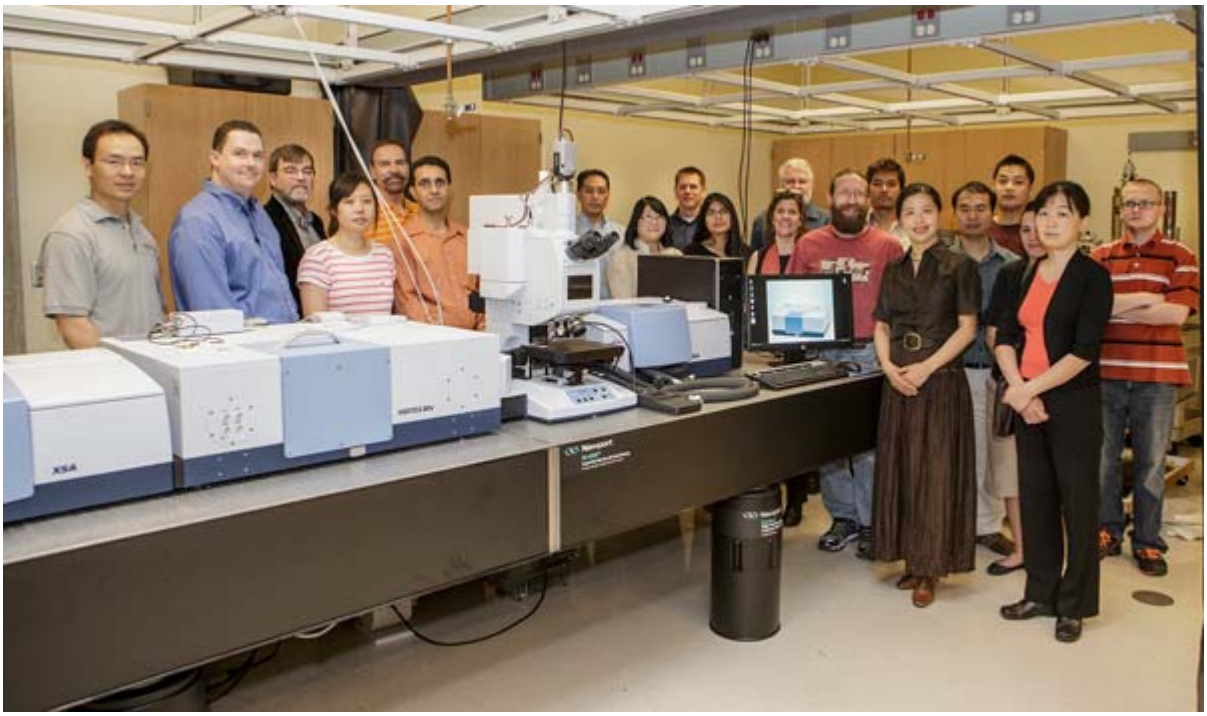

Researchers and students at OSU gather around the newly installed advanced infrared (FTIR) system that offers multiple research capabilities. Those pictured include project leader Dr. Aihua Xie (sixth from right), co-leaders Dr. Wouter Hoff (eighth from right) and Dr. Junpeng Deng (first from left). Department heads are Dr. John Mintmire, physics (third from left) and Dr. Frank Blum, chemistry (fifth from left).

Oklahoma State University is now home to an advanced infrared (FTIR) system that is unique worldwide for being able to integrate an array of best infrared technologies for multi-disciplinary research, including the fight against cancer.

“New technologies often lead to new discoveries in science,” said project leader Dr. Aihua Xie, a physics professor at OSU and fellow of the American Physical Society. “We expect that this advanced infrared system will open many new research opportunities for scientists in biology, chemistry, physics and engineering, not only at OSU but elsewhere in Oklahoma. We have already enrolled users from California and New York.”

At the core of the infrared system is a spectrometer, which produces an electromagnetic spectrum of light waves used to identify and study the chemical makeup of matter. FTIR (Fourier transform infrared) designates the type of measurement technique the spectrometer uses. The total system integrates more than 40 research instruments and accessories and is capable of performing eight different types of advanced FTIR experiments, enabling broad applications in multi-disciplinary research.

“Drug development, biofuel research, and cancer diagnosis are among the applications of this advanced infrared system,” said Xie. “The system can perform chemical imaging that detects not only the microscopic shape but also the chemical distribution of a single cell. For example, cancer cells in a tissue sample may be recognized early, based on the cells’ chemical composition.”

In addition to research, the system will be used to educate future scientists, engineers, and technicians. Stillwater High School students and OSU undergraduates will be offered the opportunity to access its infrared technologies as early as this fall if they enroll in a course on “Basic and Advanced Infrared Spectroscopy” that Xie will teach. The course information will soon be posted on the facility website http://irsb.okstate.edu/.

The system is funded by a three-year grant from the National Science Foundation (70%) and matching funds from OSU (30%) totaling $790,000.

Training sessions started this month for those who will play key roles in operating the infrared system. The manufacturer, Bruker Optics, is supplying several experts to help with the training since no one individual is familiar with all the systems’ functions. Located in the Henry Bellmon Research Center, it took engineers 10 long days to install the system, which the company’s senior engineer, Baron Vazindel, calls “the greatest FTIR system that Bruker has ever made.”

Xie and the project co-leaders, Drs. Wouter Hoff, Robert Burnap and Junpeng Deng, are currently working toward establishing a Center for Advanced Infrared Biology to enhance research, education and funding at Oklahoma State University.