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## Focal Point

Posted: Thursday, Dec 23, 2004 - 02:54:14 pm MST

### UA Optical Science Center

still central to Optics Valley

*Editor's note: Want to know what makes Optics Valley tick? Well, so do we. That's why Inside Tucson Business will provide extended coverage of the optics industry in Tucson. Expect to see new stories in this series every few weeks on companies, researchers and other optics innovations in the local community.*

By Kyle Schliesman

*Inside Tucson Business*

Nearly 40 years ago, Steward Observatory director Aden Meinel should have called his new project the Optical Sciences Epicenter.

Today, the University of Arizona Optical Sciences Center, which Meinel founded in response to a shortage of optical scientists, remains one of the top centers of activity globally for optics training and research.

"It is one of the really well-known, highly recognized optical sciences centers in the world," said Bob Hagen, chair of the Southern Arizona Tech Council. "It's given us a lot of notoriety and exposure."

Due to its clear skies and dark nights, Arizona has attracted many astronomers over the years. Their desire for better telescope lenses has fueled optics research in the Tucson area. Responding to that need, the center started in 1964 with about 80,000 square feet on campus and a handful of faculty.

"That got the center up and going," said James Wyant, director of the Optical Sciences Center. "Now, this is by far the largest optics education and research center in the U.S."

Meinel Hall now measures 110,000 square feet. A new building next door, which is scheduled for completion in about one year, will add another 47,000 square feet. The new facility will largely be used to give faculty a little more breathing room, as well as bring in faculty located in other buildings around campus.

"We've spread around some," Wyant said. "The new addition will bring some of those together."

The center has about 50 faculty, with another two dozen or more related faculty scattered throughout the university. The center also is home to two Nobel laureates, the only ones in the state.

Research is divided into three areas: basic, applied and engineering. Basic optics involves more theory, such as physics or quantum optics. Applied optics includes photonics, communications and other practical applications of optics. Optical engineering includes design and testing of systems, etc.

The center offers both graduate and undergraduate degrees in optical sciences. More than 900 students are enrolled in the graduate degree program, including

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162 Ph.D. candidates, making it one of the world's largest. By comparison, Rochester, N.Y., (the location of another top school for optical sciences) has one-third as many graduate-level optics students.

Also one of the largest in the country, the UA center's undergraduate program has more than 150 students. Three years ago, the undergraduate program had only 60 students.

"Both of these have been growing the last three or four years," Wyant said. "We're really at capacity for the number of undergraduates."

Tucson's reputation as a center for optics excellence helps the center maintain high enrollment figures. However, the center still concentrates on promoting itself to potential students.

"There is fierce competition out there," Wyant said. "The competition is MIT, Stanford, CalTech."

Many of the undergraduates are recruited from the college of engineering as freshmen. Every year, representatives from the Optical Sciences Center make a presentation to students in the College of Engineering.

"We have people go out to local high schools," Wyant said. "We do most of the high schools in town."

For the past five years, the center selected the top graduate candidates from around the country and brought them to the UA at the beginning of the year to show them around the campus and the optics facilities. Of the 17 candidates who visited the school through this program last year, 16 decided to attend the UA.

"Our students have not had any trouble getting jobs," Wyant said. "There are opportunities out there in Tucson."

About 15 percent of graduates from the optical sciences program remain in Tucson. This is major fuel for the industry locally.

"Most of those graduates stay pretty closely involved with the Optical Sciences Center," said Kathleen Perkins, chief executive officer of Breault Research Organization. "Having the world's leading center in optics, aside from the graduates, spurs a lot of activity. That is everything from conferences to startups to people coming here to look at businesses or research."

Breault hosts more than 250 scientists from around the world each year. They come for training on Breault's software products, but many also want to visit the Optical Sciences Center, Perkins said.

"People all over the world want to know what is coming out of the Optical Sciences Center," Perkins said.

The center's budget is a little over \$20 million. About 13 percent of the center's funding comes from the state, while the rest comes from research grants and private donations. The center draws some of the private donations through its industrial affiliate program in which more than 50 companies actively participate with the center.

"We've had a number of spin-off companies," Wyant said. "Several of us here are very industrial-oriented."

Wyant served as president for one of the larger spin-offs, Wyko Corp., a laser interferometer company acquired by Veeco, a metrology and process equipment manufacturer based in New York. In the past two years, Dmetrix also spun off from the university. Dmetrix develops microscopic-imaging instrumentation.

The faculty from the Optical Sciences Center continues to work with many of those companies and stay in close contact with the private industry, as well.

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