UNF's

Occasional Papers

THIRTY-SECOND

Annual Fall Convocation Remarks

by

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2003 Distinguished Professor

October 10, 2003

OFFICE OF ACADEMIC AFFAIRS

Number 7,
October, 2003

UNIVERSITY OF NORTH FLORIDA

K.S. Venkatasubban, Ph.D.
2003 Distinguished Professor

Dr. Venkatasubban is the twenty-sixth faculty member to hold the title of Distinguished Professor at UNF. He earned his Ph.D. in physical organic chemistry in 1974 from the University of Kansas. He has held a number of positions at several institutions and was on a postdoctoral fellowship at Emory University for two years. He came to UNF in 1980 from the University of Florida.

Dr. Venkatasubban's teaching experience includes organic and general chemistry, enzyme structure and chemical research. He is the recipient of the 1991 Outstanding Teaching Award, the TIP award in 1994 and 1997, and the PEP award in 1997.

In addition to his teaching, Dr. Venkatasubban has published over 30 articles in journals, established a research program involving UNF undergraduates and co-authored fifteen publications with students. His research has been funded by the American Chemical Society, Research Corporation, and Apple Foundation. Dr. Venkatasubban was awarded the Outstanding Faculty Scholarship Award in 1999.

Since 1994, Dr. Venkatasubban has chaired the Department of Natural Sciences and then the Department of Chemistry and Physics. He designed and oversaw an undergraduate research effort that resulted in many students gaining experience in serious scientific research. "Venkat" has contributed to many organizations and held appointments on numerous professional and local boards including coordinating the Jacksonville's chapter of the International Chemistry Olympiad and has refereed for the *Journals of the American Chemical Society* and *Organic Chemistry, Biochemistry and Spectroscopy Letters*.

Dr. Venkatasubban has devoted his academic career to both his students and his research. He believes that "teaching and research go hand in hand" and fosters an environment where excellence in undergraduate teaching and faculty scholarship enhance each other: "I believe that being involved in research makes me a better teacher".

physical space. The lack of lab space has been a real problem, but we expect the new science and engineering building will alleviate it. This new building will have approximately 40,000 square feet for UNF's chemistry and physics programs.

Starting in the mid-1990s, the UNF administration showed a genuine commitment to improving science programs and science facilities. The availability of travel funds for faculty every year, along with faculty summer research awards, summer research stipends for science students, new environmental lab facilities at the Golf Building, have all been greatly appreciated by the science faculty.

Is research important at UNF, which is considered predominantly as a "teaching institution?" Teaching, particularly at the college level, and research go hand in hand. In science, research is a natural extension of the skills students learn in the classroom and the laboratory. Faculty are obligated to involve themselves and their students in research as a part of their continuing education. I believe that being involved in research makes me a better teacher. UNF's primary mission for the foreseeable future will be excellent undergraduate teaching. But research is essential to enhance one's teaching skills. Fostering teaching and research requires that we hire faculty that have great potential for excellent teaching and have a deep commitment in their hearts to do research. We must also provide them the necessary facilities, startup funds and encouragement to guarantee their success.

Where do the sciences at UNF go from here? I have seen us grow from offering a single combined BA degree in Natural Sciences to offering multiple degrees in sciences. Soon we will be graduating masters students in biology. The natural extension is perhaps to offer a master's degree in a field that combines chemistry and physics. A master's degree in material science combines chemistry, physics and possibly electrical engineering. A master's degree in molecular biology combines chemistry and biology. Master's degrees in science disciplines are becoming more and more popular as industries like to hire master's level students, rather than bachelor or Ph.D. level students. With the engineering and science programs moving into the same facility, more and more interactions between the various disciplines will be a natural evolution.

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Sciences at UNF: A Personal History

It was 1980 when I first visited Jacksonville, a clear and crisp Friday in autumn. I came to interview for a visiting faculty position in organic chemistry in the Department of Natural Sciences. All the organic chemists hired at UNF between 1972 and 1980 had left, prompting concern among faculty in the department. I must confess that I, too, was apprehensive about the turnover in the position.

After receiving a Ph.D. in organic chemistry from the University of Kansas, I had worked as a postdoctoral fellow at Emory University, a lecturer at Texas A & M, and a research associate at the University of Florida, all before interviewing at UNF. Some of my friends joked that I was steadily working my way down, but there were significant attractions about the eight-year-old university in Jacksonville, beginning with average class sizes of only twenty-five students studying organic chemistry. At Texas A & M, my classes had 150 students. I well remember walking into a large class of veterinary medicine majors, all Texans. At five-feet and five-inches tall, and weighing barely one hundred pounds, I was easily the smallest person in the room. I told them I was probably the first Indian crazy enough to attempt to teach organic chemistry to a bunch of cowboys, then I told them to take off their Stetsons and pull up their boots, because this was going to be one war the Indian would win! After that I never had a problem with Texans.

Another thing that initially attracted me to UNF was the Natural Science faculty's dedication to excellence in teaching. Jay Huebner was chosen as a UNF Distinguished Professor that year because of his commitment to teaching and also to research. Through the years, since

1980, I'm happy to report that faculty in the sciences have kept alive the commitment of the founding faculty to excellence in teaching.

One of my main concerns in 1980, and one that has continued to worry me since then, was the lack of infrastructure and resources for doing scientific research at UNF. In 1980, UNF provided no startup funds for new faculty in the sciences. In fact, no startup funds were available for faculty at UNF until 1995, and then the university only offered $10,000 per person maximum. Other colleges roughly the same size as UNF, currently provide, on average, $100,000 in startup funds for beginning faculty.

To work around these limitations has required resourcefulness. Jay Huebner was able to establish a productive research program involving undergraduate students, publish papers in peer-reviewed journals, and secure grants from the National Institute for Health to promote his research, but the secret of his success was his early training in electronics as an engineer. He had special skills and was able to build his own research instruments.

That resourceful tradition has continued among our new hires. Tom Pekarek, for example, brought his own scientific instruments from Purdue University to establish a well-funded research project at UNF. It is the same resourcefulness that motivated another young faculty member, Stuart Chalk, to successfully seek the first ever patent from UNF. A second patent, this time by Jay Huebner, is pending. But there is no question that the lack of infrastructure and resources for scientific research has limited the productivity of the department's faculty members.

In addition to being resourceful, faculty have modified their research projects to utilize the instruments available at UNF. This is what I did in the 1990s, when the department bought a Nuclear Magnetic Resonance (NMR) spectrometer – for instructional purposes. Magnetic Resonance Imaging is used by doctors for diagnostic purposes and works on the same principle as the NMR spectrometer. Recognizing the opportunity for related research, I designed an undergraduate research project utilizing the new instrument. I collaborated with a friend from my days at Texas A & M to design the project.

With the advent of personal computers and fax machines, complicated information could be exchanged rapidly with colleagues at other institutions. Collaborating with scientists at other universities has enabled UNF science faculty to advance their research agendas. In my own case, such collaboration has resulted in a dozen publications in the last ten years, and has involved a number of undergraduate students at UNF in serious scientific research.

Our NMR project essentially showed how the NMR instrument can be used as an analytical tool to determine the actual amount of real drug molecules in a mixture containing the drug and other structurally similar but pharmacologically inactive compounds. Students involved in this project actually determined the NMR characteristics of these drug molecules and thus could easily relate to the NMR concepts they learned in the classroom. This also enabled me to provide appropriate examples from my own research when I discussed NMR concepts in the classroom.

The arrival of the Mayo Clinic at Jacksonville, located so close to our campus, raised the possibility of expanding the number of collaborative research projects. Because I hold a visiting scientist position at the Mayo Clinic, I have been able to work in Professor Terrone Rosenberry's lab. In addition, and this is very important for a teaching institution like UNF, I have been able to involve my students in the research at Mayo, where they have been able to use state-of-the-art instruments.

UNF is a different school than the one I joined in 1980. Our class sizes have become much larger. When a class grows from 25 to 100 students, the workload of the faculty member increases tremendously. And yet we teach the same number of courses every semester. The additional time that goes into preparation, grading examinations and other reports cuts into the faculty research time. Graders can be hired to do some of this work, but not all of it. Hence, research productivity is obviously curtailed. This is a problem that needs to be addressed before too long.

Another problem we have worked to solve is the rapid enrollment growth that came in the 1990s. True, we added faculty lines, but we also suffered further strain on our infrastructure, particularly in terms of