



NORTH DAKOTA STATE UNIVERSITY | SPRING 2007

It has been a very long time since the Department has published a newsletter, and I sincerely hope that you will enjoy hearing about developments in the Department of Physics, its recent history and current faculty---and news updates from some past faculty and alumni.

As detailed elsewhere in this newsletter, there have been many changes in the department over the last several years. In fact, there is only one faculty member who has been here more than 10 years, and that is Charles Sawicki. Most, if not all, of you know him, since he has been with the Department for 28 years, just six years less than the combined tenure of the rest of the faculty! However, even Charlie has not been around as long as South Engineering, which will celebrate its 100th birthday this year.

This is only my third year as Head of the Department, and this appointment is the most exciting and challenging of my career. While I cannot say that I enjoy the administrative responsibilities, it is very rewarding to serve in a department with excellent faculty in a very collaborative, supportive atmosphere. I am also grateful for the opportunity to contribute to the establishment of a strong center for research and teaching in the area of Computational Soft Matter Physics and Biophysics, and Experimental Laser Physics. In addition, NDSU, as a land grant institution, continues to attract many excellent undergraduates from North

Dakota and Minnesota, so that we have been able to continue the tradition of graduating many young physicists who go on to successful careers in a wide range of fields.

We are particularly interested in hearing from alumni, and want to use this newsletter to provide a venue for you to communicate information about your life, career, and family to friends from your time at NDSU. As a start, we have some contributions from both previous faculty and several alumni in this issue. For the rest of you, please provide the department with news for our next newsletter.

Finally, I would like to personally thank all of you who have contributed to one of the department funds that has enabled us to recognize outstanding undergraduate scholarship. Further information regarding these funds and scholarships are provided in the body of this newsletter. Please continue to provide support for these scholarship funds. Finally, I would like to encourage all of you to come by the department when you are in Fargo. We would enjoy showing you around and hearing about your life after NDSU.

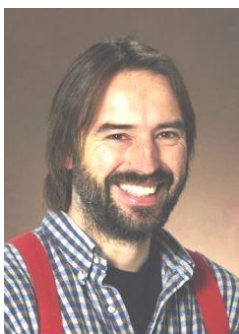
Daniel Kroll
Professor/Department Chair



I arrived at NDSU via a long circuitous route with stays in Chicago, Philadelphia, Germany, and Minneapolis. My own research interests include the development of new mesoscale simulation techniques and their application to study phenomena such as the phase behavior and rheology of complex fluids, flow and transport in porous media, and the statistical mechanics of membranes. I spent much of my career in research positions, and I am enjoying the opportunity to teach and work more closely with undergraduates. I also farm – and raise Bison, naturally!

A LOOK AT OUR FACULTY

Alexander Wagner



Assistant Professor NDSU Appointment 2002

I live with my wife and two sons (2y and 7mo) in north Fargo. I became an Assistant Professor in the department in 2002. Before I came to NDSU I worked as a postdoc in the Department of Physics at Edinburgh University in Scotland. Before that I was a postdoc in the Department of Materials Science and Engineering at MIT, Cambridge, MA. I obtained my doctorate from the department of Physics at Oxford University in England. Since I arrived I have been the faculty advisor of the Society of Physics Students. We had a great pumpkin launch competition with MSUM in 2004. We won hands down by using a helium balloon with a remote controlled release against their catapult construction. Last year the SPS managed to obtain a \$2,000 SPS research grant to experimentally examine phase-separation phenomena. My research focuses on the fascinating world of complex fluids, in particular the dynamics of phase separation.

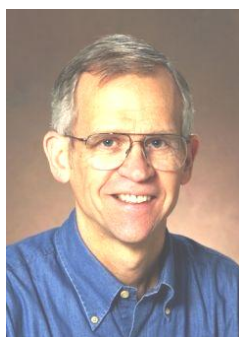
Alan Denton



Associate Professor NDSU Appointment 2000

Having joined NDSU in 2000, I feel somewhat alarmed to be already an “old-timer” in the Department, but fortunate to be surrounded by outstanding colleagues. My main research obsessions are in theoretical and computational modeling of colloids, polymers, and other soft materials, with potential applications to colloidal crystal technologies. In my home laboratory/kitchen, I enjoy exploring thermal and viscoelastic properties of the liquid and gel states of matter. After tormenting students across the curriculum, I still seek the right balance between high- and low-tech teaching approaches. My wife, Anne Denton, is a faculty member of the Department of Computer Science, and we are proud parents of two NDSU graduates (preschool, that is). Warm wishes to all former South Eng. shipmates!

Orv Swenson



Associate Professor NDSU Appointment 1997

I graduated from NDSU with a BS in physics in 1970 and continued for another year to complete an experimental field emission microscopy MS under Dr. M. K. Sinha in 1971. I completed my PhD at the Air Force Institute of Technology in 1982. After a 21 year career as an Air Force Officer, I returned to NDSU in 1992 and worked with Greg Gillespie in the Department of Chemistry on various laser spectroscopy projects for 5 years. I am in my 10th year of teaching in the Physics Department. Since, returning to the department, I have been instrumental in establishing an interdisciplinary undergraduate Optical Science and Engineering program with a state-of-the-art optics teaching laboratory located on the first floor of South Engineering (<http://www.ece.ndsu.nodak.edu/~drogers/Optics2004/index.htm>). For the past year I have been a faculty associate at the new Center for Nanoscale Science and Engineering in the NDSU Research Park. My current research interests include laser sintering of direct write materials, imaging of aerosols in flows, development of a tunable sub nanosecond fiber laser, and microchip laser-pumped tunable dye lasers.

Sylvio May Assistant Professor NDSU Appointment 2004

I still consider myself as one of the new guys in the Department—in January 2005 my family and I plunged into the deep winter surrounding NDSU. Before my arrival I worked at a biological department of the Friedrich-Schiller University Jena, Germany. Biology? Yes, this indicates one of my research fields: biophysics. More specifically, I'm interested in the physics of lipid membranes. This field is quite exciting as biologists are currently discovering that biomembranes are not only filled with lipids and proteins but also with lots of physics. Here is where our Department's new focus on soft condensed matter comes into play; it offers a remarkable range of opportunities for me to collaborate. I should call it unique for a Department of that size.



Terry Pilling Assistant Professor NDSU Appointment 2004

I arrived at NDSU after postdoctoral work at the Joint Institute for Nuclear Research in Dubna, Russia. Prior to that I did my PhD here at NDSU in High Energy Particle Physics and String Theory. My Master's degree in Theoretical Nuclear Physics was completed in 1998 at the Saskatchewan Accelerator Laboratory in Canada. I have taught several undergraduate and graduate courses at NDSU and I enjoy teaching immensely. My research in the past few years has been in the areas of High Energy Particle Physics and String Theory and my most recent work has been on Black Hole thermodynamics and Hawking Radiation via quantum tunneling across the Black Hole event horizon.



Thomas Ihle Assistant Professor NDSU Appointment 2004

I joined the Department of Physics in August 2004, after many years as a scientific nomad in Germany, France and the USA, often working in very hierarchical structures. It was a very positive change for me to finally have academic freedom, to pursue my research interests and to see a future in academia. I enjoy the family-like atmosphere in a small, coherent department with efficient collaborations. Teaching subjects I haven't dealt with since the '80s, such as Einstein's theory and Quantum Physics, is a definite challenge, but I see it as a chance to widen my perspective; in the long run it could lead to new ideas in my research and keeps me excited about physics. Currently, I am working on computer simulations of microemulsions and active particles and biofibers in liquids. I am particularly interested in developing and testing new simulation algorithms. Personally, things have settled too; one month ago I got married to Erin, whom I managed to convince to move away from the Twin Cities. If not doing physics, you'll probably find me paddling whitewater rivers in spring or playing button box and bagpipe the rest of the year.



Charles Sawicki Associate Professor NDSU Appointment 1979

B.S. with honor Caltech, PhD Cornell (Solid State Physics), Post Doc and Research Associate (Biophysics) Cornell Department of Biochemistry, Molecular and Cell Biology.

Research interests over the years: Solid State Physics, Detection of conformational changes in hemoproteins, geophysics.



SOUTH ENGINEERING TURNS 100!

By Alan Denton

The year was 1907, just two years since a young Albert Einstein had revolutionized physics with his theories of special relativity, the photoelectric effect, and Brownian motion. That same year, the South Engineering building at NDSU first opened its doors. A century later, with many generations of denizens come and gone, the grand old building lives on, its essential character preserved through many remodeling projects.



The most recent update created a new Computational Physics Laboratory at the heart of the building. Completed last year, with major support from the College of Science and Mathematics, North Dakota EPSCoR, and a Technology Fees grant, the second-floor lab features modern classroom technology and a networked computer cluster. The multi-purpose facility now hosts all Physics courses



with computational components, including a new course, Phys 370 Introduction to Computational Physics, while providing essential computing resources for graduate and undergraduate research projects. A focal point of the Department, the new lab furthers our long-term goals of promoting education in computational methods and establishing NDSU as a leader in computational physics.

Two years ago, physicists around the globe celebrated the World Year of Physics, marking the centennial of Einstein's "miracle year". This year, physicists around ... well, Fargo at least, are celebrating the Year of South Engineering.

STAFF MEMBERS



Diane Goede

I joined the Department of Physics in November 2006 after my husband and I relocated to Fargo following his retirement from the United States Air Force after 22 years of service. The Air Force bought us to Grand Forks, North Dakota in May 2001. Since my husband and I have moved over the years, it has given me the opportunity to work in a variety of offices, most recently as secretary for the office of Academic Affairs/Faculty Affairs at the School of Medicine and Health Sciences at UND. I look forward to helping as we touch base with our alumni across the country.



Jeff Hansen

I came to NDSU last July after graduating from the University of Minnesota, Morris in May with degrees in Mathematics and Physics. I have enjoyed reconnecting with old friends in the area as well as my first post-collegiate professional venture. Fulfilling my role as Laboratory Technician has been a test of both my computational and managerial powers, but I have already initiated the process of modernizing our outdated and deteriorating lab equipment. I also look forward to helping create a long-term plan for the renovation of our laboratory space.

AWARDS AND SCHOLARSHIPS

The Department of Physics wishes to thank all donors who have contributed to our scholarship programs. You are making a significant difference in the lives of our students.

Eivind Horvik Memorial Award

A cash award of \$100 plus a recognition plaque for the best overall performance in the calculus-based physics sequence. The recipient's name is recorded on a permanent plaque in the Physics Department office. Funds are provided by friend and associates of Eivind Horvick.

Sinha Family Scholarship

Initial funds to support this endowment in the amount of \$5,000 were provided by Dr. and Mrs. Mahendra K. Sinha in memory of Mr. and Mrs. Pratap Narain, the parents of Dr. Mahendra K. Sinha, Emeritus Professor of Physics. It is understood that the recipient of this award will meet the following preferred criteria:

- Be properly enrolled at North Dakota state University at the time of application and disbursement.
- Be physics major with Junior or Senior standing.

Special consideration should be given by the selection committee to the applicant's academic merit and financial need.

Physics Scholarship Fund

The purpose of this endowment is to provide funding for scholarships to deserving undergraduate students.

Your continued financial support is requested to keep the scholarship and awards programs growing.

Enclosed is my gift of \$ _____ .

Please detach and mail with your gift to:

NDSU Development Foundation
P.O. Box 5144
Fargo, ND 58105

Make checks payable to:

NDSU Development Foundation

Please designate your gift to one of the following:

- **Eivind Horvik Memorial Award**
- **Sinha Family Scholarship**
- **Physics Scholarship Fund**

Thank you!

Payment options:

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A BRIEF HISTORY OF (RECENT) TIME

By Alan Denton

The new millennium has ushered in dramatic and exciting changes to Physics at NDSU. The past six years have seen a revitalization of the Department through a major turnover in personnel. The challenge of recruiting new faculty created a rare opportunity to lay the foundations for a world-class center of excellence in the rapidly growing and inter-related fields of computational physics, soft matter physics, biophysics, and laser physics/photronics.

Computational physics exploits advances in computing power to model physical behavior of complex systems, including macromolecular (soft) materials, ranging from polymers and colloids to biological membranes.

Modern optics underpins nearly all fields of science and technology and is a natural experimental emphasis for a small (and growing) department. These materials-oriented research areas open doors to interdisciplinary collaborations with several other departments and the

Center for Nanoscale Science and Engineering at NDSU.

The current faculty roster features Alexander Wagner, Orven Swenson, Charles Sawicki, Terry Pilling, Sylvio May, Daniel Kroll, Thomas Ihle, and Alan Denton. Other new faces on the block are Department Secretary Diane Goede and Laboratory Technician Jeff Hansen. And whither the Spirits of Physics Past? Rich Hammond is now a program officer at the Army Research Office in Durham, NC; Patrick Kelly is Associate Professor in the Department of Mathematics and Physics at Ave Maria University in Naples, FL; Doug Kurtze is Associate Professor and Chair of the Department of Physics at St. Joseph's University in Philadelphia, PA; and Craig Rottman is a financial consultant in the Fargo area. Congratulations and warm wishes to Patty Hartsoch, promoted to Administrative Assistant in University Studies, and Nathan Schoenack, lured away by the IT industry.

THOUGHTS FROM A RETIRED PROFESSOR

Ghazi Hassoun retired in the spring of 1998 after 32 years at NDSU. He and his wife, Linda, live in Fargo and escape to Naples, FL, during the cold winter months. In the summer, they are most likely to be found at the family cottage on Pelican Lake, MN.

His thoughts:

“Early on in my retirement, I traveled quite a bit to places I had longed to see for many years, such as Turkey, Hungary, Austria, Poland, as well as Middle Eastern countries, in general. The last

few years, my travel has been limited to the USA. I have no problem keeping busy. Top activities are reading, swimming, tennis and jogging.

“The human condition intrigues me greatly: world affairs, war and peace, poverty and riches, ill health and good health, etc. Religious and ethnic diversities; absolute religion vs. relativity of religion. I toy with the notion that absolute space-time might relate to absolute view of religion; the frame of

Continued on page 7

reference of the observer needs to be factored in. It has been ignored far too long in religious studies. It might alleviate a lot of what bedevils the world today. Philosophy, science and religion are natural pursuits for me in my retirement.

“I also reflect on my career in physics, especially at NDSU. I see far more good than anything else; no regrets, none

whatsoever. I may not have felt this way earlier in my retirement. I think I am wiser now. Having taught, touched and got touched by so many students is a treasured asset. I feel it was a privilege and good fortune to have gone into physics. It may not give us all the answers but provides us with the tools of inquiry, like no other pursuit.”

ALUMNI NEWS

Feng Hong is the director of the physics program at the State University of New York in Canton, NY, where he has been a tenure rack Assistant Professor in the Physics Department of the Canino School of Engineering since 2005. After completing his PhD program at NDSU under Dr. Swenson, he joined the Chemistry Department at Washington State University at Pullman where he did post doctoral work on the fabrication and test of high-resolution miniature ion mobility spectrometry housed in a penetrometer for detecting and analyzing environments contaminants.

Jeromy Rezac and his wife, Jean (Blaskowski) Rezac and children, are in Albuquerque, NM, where Jeromy works for ITT Corporation’s Advanced Engineering and Sciences division. He is the Project Manager and Lead Scientist for a portable version of standoff chem-bio prototype sensors using Raman spectroscopy. Jeromy says the most interesting part of the project is using both the science and engineering together to design, integrate, characterize and validate the sensors. (<http://www.aes.itt.com/feature5.htm>) He spent time in Maine working on cavity ring-down spectroscopy after receiving his PhD from Oklahoma State University. In their spare time, the family enjoys the outdoor activities that living near the mountains offers them.

Jennifer Docktor is a graduate student in Physics at the University of Minnesota, Twin Cities campus. She received her MS in 2006 with a research project in elementary particle physics, and expects to complete her PhD research with the Physics Education Research and Development Group there within a few years.

Gary Withnell is at Dakota Clinic in Fargo working on radiation safety, the application of computerized dose modeling to radiation treatments and diagnostic imaging. After spending his entire college career at NDSU, graduating with a BS in physics in 1974, an MS in 1976 and PhD in applied physics in 1980, he has been employed locally as a medical physicist. He and his wife have 2 children and live in south Fargo. He is currently mentoring an undergraduate student in a physics Capstone project.

Willis Lindemann is retired and living in West Fargo after a 40+ year career with companies across the US, mostly focusing on leading edge military electronics projects. He was instrumental in getting one of the first instruments using transistors qualified for use on aircraft while he was at Honeywell in the early 1950s. Later he worked with Inertial Guidance Systems and related Launch Control Equipment for missiles, attitude control systems for the Gemini Space Capsule and was the engineering group leader in the development of computer controlled automatic test systems used on military aircraft. Willis and his wife, Corrine, raised 3 sons.

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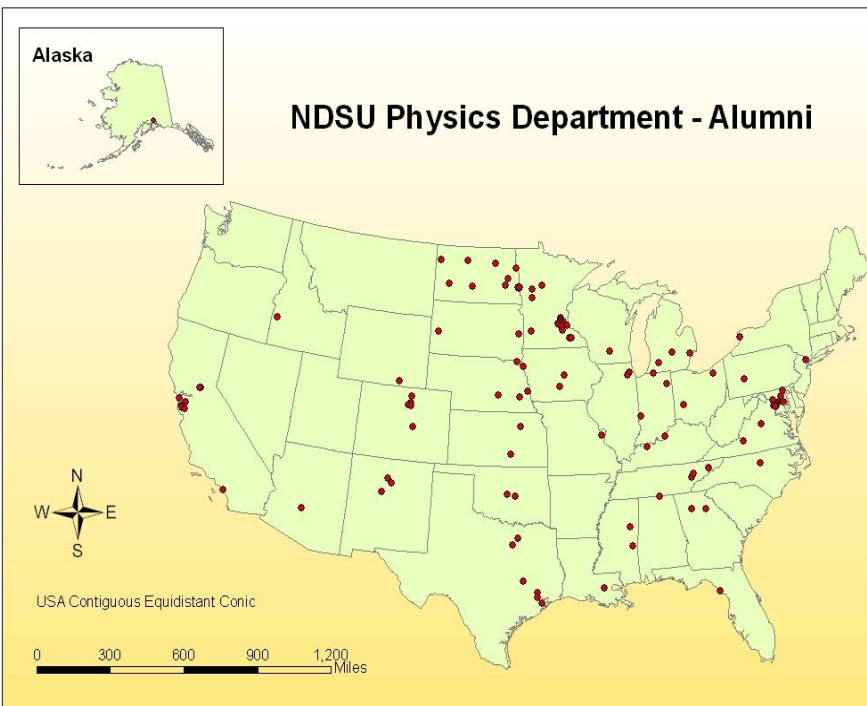


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NDSU graduates from the Physics Department are scattered throughout the United States and across the globe. We are eager to hear from our alums. Please send an email or note to update us on what's happening in your world.
diane.goede@ndsu.edu