From the Chair:

This past year saw a time of major changes in the department and the University. As most of you know, this was my first year as department chair. I took the chair at a time of severe and ongoing budget cuts, and a faculty depleted by retirements and departures. Last summer saw the retirements of Drs. Stella Elakovich and Doug McCain. In December 2002, Dr. Jack Bedenbaugh officially retired and Mr. Bill Crum, an instructor working with our preservice high school teachers, departed for the U.S. Naval Academy. Dr. Andy Griffin, who has been the USM provost, retired at the end of June 2002 and is now the director of the School of Textile and Fiber Engineering at Georgia Tech. Dr. Rajive Khanna died on May 26, 2002, after a short illness. His obituary can be found at [http://www.chem.usm.edu/obituary.htm](http://www.chem.usm.edu/obituary.htm). A memorial scholarship in his name has been established by the department. Friends and former students of Dr. Khanna are invited to contribute to this scholarship by sending directly to the Department office a check made out to the Rajive Khanna Memorial Scholarship Fund.

We did hire Dr. Deborah Booth to replace Mr. Crum, and Dr. Andrew Lowe as an assistant professor of organic chemistry. You can see them both on the department Web site. We also assisted in the hiring of Dr. Dale Ledford as the chemistry instructor for the USM-Gulf Park campus. The 2002-2003 academic year will be the first time USM chemistry courses have been offered on the Gulf Coast. Dr. Robert Patterson has been teaching organic chemistry as an adjunct for us this summer and hopefully will continue to help us next year as needed.

Despite the major challenges facing the department, we are growing in several areas. Several faculty have brought in research grants this past year and Dr. Peter Butko has received two major instrumentation grants to build a state-of-the-art fluorescence spectroscopy instrument in his research laboratory. This summer will be the second of our National Science Foundation-funded Research Experiences for Undergraduates program headed by Dr. Jeffrey Evans. This program brings in 10 undergraduates from other universities to perform research projects with our faculty. These students get a new experience outside their institution and often come back to USM to graduate school. Other faculty accomplishments are listed elsewhere in this newsletter.

This past year also saw what must be a record number of doctoral degrees granted in our department. (See the list of graduates later in this newsletter.) We are always looking for good applicants to our graduate program, so bring us to the attention of anyone you know who is interested in working on a Ph.D. in chemistry or biochemistry.

As you know, one of our alumni is now president of USM! Dr. Shelby Thames received his B.S. and M.S. degrees in chemistry from USM and also spent time as a chemistry faculty member here prior to founding the Department of Polymer Science. We are looking forward to working with President Thames, and encourage you to send him notes of congratulations and support.

Robert Bateman

From Howard Williams (retired May 1997):

I have been keeping myself busy recuperating from orthopedic surgeries for the past year. First a bunionectomy and now a left hand that was the victim of my radial arm saw. The foot is fine, the left index finger is still on for more therapy over the next six weeks. No fingers were lost.

That was the bad news. The good news is that I have been enjoying retirement here in Florida for the most part. Most of my attention has been focused at becoming rather proficient in my mastery of Photoshop. A HP Photosmart film scanner was purchased with the monetary gift awarded at my retirement supper and it has been a beloved acquisition.

I was hired after being interviewed during the summer of 1970 and started immediately that fall. Jack Bedenbaugh had just become chair and Bob van Aller relinquished chair to become dean of the Graduate School. The faculty at that time consisted of Charlie Brent, Jay Pinson, Dave Wertz, Bruce Campbell, Jack Bedenbaugh and Angela Bedenbaugh as research associate. All offices were in Walker Science Building, second floor. There were only one or two telephones for the chemistry faculty and staff to use. The
Johnson Science Tower was still under construction that fall. The school year was on the quarter system. Emory Howell and Paul Toom started their employment that fall, also. Doug McCain was hired the following year.

My time at USM was a satisfying time in my life and a pleasure to have worked with such a distinguished and gifted group of colleagues.

_from Stella Elakovich (retired June 2001):_
Retirement is great! I have been growing orchids (two different kinds of lady's slipper orchids are now in bud), doing lots and lots of gardening on my two acres of "garden" (my Stewaria is now in full bloom and beautiful!), and doing lots of stained glass. I am planning to sell my stained glass at three local festivals in early May, so I have been very busy getting ready for that. Went to Mexico in early February to see the monarch butterflies that overwinter in the mountains there. Fantastic!! Plan a three-week train trip through southern Africa this summer. I miss all my friends at work, but just haven't had time to miss the work!! Greetings to all!

**Students defending their thesis or dissertation this past year:**
Clemon Terrell (Ph.D. w/Griffin) is director of Parks and Recreation for the city of Hattiesburg.

Jeffrey Quin (M.S. w/Wertz) teaches high school chemistry in Jayess, MS.

Stephen DuBose (Ph.D. w/Wertz) is a postdoctoral fellow at the National Energy Technology Center in Pittsburgh, with Curt White.

Rachell Booth (Ph.D. w/Bateman) is a postdoctoral fellow at the University of Texas Health Science Center in San Antonio.

Virgil Little (Ph.D. w/Khanna) is working for Champion Technologies in Houston, TX.

Michael Cole (Ph.D. w/Hoyle) is working for In Phase Technology in Longmont, CO.

Cecilia Chi-Ham (Ph.D. w/Heinhorst) is a postdoctoral fellow at Michigan State University.

Shawn Goodwin (Ph.D. w/Cannon) is a postdoctoral fellow at Vanderbilt University.

Renetta King Howell (M.S. w/Cannon) is seeking employment.

Nicole Gill (Ph.D. w/Whitehead) is a postdoctoral fellow at Louisiana State University.

Rabih Al-Kaysi (Ph.D. w/Creed) is a postdoctoral fellow at the University of Rochester in Rochester, NY.

Chau Nguyen (Ph.D. w/Hoyle) is working for Albemarle Corporation in Baton Rouge, LA.

Alline “Rie” Peeler Somali (Ph.D. w/Creed) is currently teaching organic chemistry as an adjunct instructor in the department. Rie was voted the Outstanding Graduate Student in the department this past year.

**Students receiving bachelor’s degree since the last newsletter:**
Jay Hunter Russell, B.S., '01; Tihomira Detcheva Petkova, B.S., '01; Amy Jeannine Denson, B.S., '01; Patricia Abbenyi Ekwe, B.S., '01; Yuko Tsutsui, B.S., '02; Eric Ryan Smith, B.S., '02; Raphael Macias, B.S., '02; Kyle Franklin Lott, B.S., '02; Jana Lee Jenkins, B.S., '02; Sherry Janette Dill, B.S., '02; Matthew Wade Cassell, B.S., '02;

**CHEMISTRY AND BIOCHEMISTRY 2001 — 2002 SCHOLARSHIP RECIPIENTS**

**Daniel Antrim**
Bobby R. Thornton Memorial Scholarship
Thad and Gerry Waites Health Professions Scholarship

**Callie Bounds**
Litton Industries Scholarship
Jordan Endowed Scholarship

**Kristi L. Budzinski**
Chemistry/Biochemistry Alumni Scholarship

**Ann Marie Burns**
Bobby R. Thornton Memorial Scholarship

**Ashley N. Burns**
Bobby R. Thornton Memorial Scholarship

**Matthew W. Cassell**
John and Sandra McGowan Biochemistry Scholarship

**Tara Marie Craft**
Merck Scholarship

**Amy J. Denson**
Chemistry/Biochemistry Alumni Scholarship

**Audrey Leigh Evans**
Charles and Carolyn Brent Endowed Scholarship

**Bobbi R. Thornton Memorial Scholarship**

**Shelly Gallender**
Wal-Mart Competitive Edge Scholarship

**Kristen Hoehne**
Chemistry/Biochemistry Alumni Scholarship

**Melody Landrum**
Thad and Gerry Waites Health Professions Scholarship

**Kayce Leard**
Fred and Nadyne Drews Endowed Scholarship

**James Daryl Pollard**
Chemistry/Biochemistry Alumni Scholarship

**Cecil Sharp Endowed Scholarship**

**Eric Ryan Smith**
Wal-Mart Competitive Edge Scholarship

**Kalena Stovall**
Wal-Mart Competitive Edge Scholarship

**Nina Watson**
Goldwater Scholarship

**Amanda Catherine Winters**
Presidential Scholarship

**Brian Zoltowski**
Litton Industries Scholarship
Graduate students go back to elementary school
William Ainsworth and Brian McFarland are the first participants from our department in the new NSF-funded GK-12 Program. These two graduate students in the Pojman research group are part of an effort by the USM Center for Science and Math Education to have graduate students in the sciences spend several hours a week in the local school districts with elementary and secondary school students and their teachers. Bill and Brian are receiving special training this summer for their various roles. Since they have just started this month, we will have to wait until the next newsletter for a full report on their adventure.

Undergraduates Fly Again
A team of our majors (Kristi Budzinski, Kayce Leard, Janette Dill and Shelly Gallender) flew again on NASA's KC-135 aircraft to determine the role that gravity plays in the motion of the plasma streamers in a "plasma ball." More information on their project can be found at http://www-chem.st.usm.edu/USMstudentflights/sf02.1/main

Research Accomplishments of Faculty
Peter Butko
We discovered that the fungal protein hydrophobin self-assembles at the air/water interface through stacking of the protein structural units called beta sheets. This mechanism is operating in many amyloidogenic proteins and peptides, including the amyloid-beta peptide that causes Alzheimer's disease. Our paper, in which an REU student from Delta State University, Justin Buford, is a coauthor, documents spectroscopic evidence for the beta-sheet stacking.

In collaboration with Yuan Luo from the Department of Biological Sciences, and Ikhlas Khan from the National Center for the Natural Products Research, we found that a natural extract from the leaves of the Ginkgo biloba tree is able to prevent aggregation of the amyloid-beta peptide both in vitro and in the cell culture. Our report has just been accepted for publication in the Proceedings of the National Academy of Sciences of USA.

Faqing Huang
During the 2001-2002 year, Professor Huang received two major research grants from NASA ($170,000) and NSF ($80,000) to fund investigation of an exciting class of biomolecules called RNA. Although known for a long time, RNA's biological functions and potentials as pharmaceutical agents are being discovered at rapid pace. Using a powerful combinatorial method, Dr. Huang's group has discovered a series of RNA catalysts that are able to perform a variety of biochemical reactions.

Sabine Heinhorst and Gordon Cannon
Professors Heinhorst and Cannon received an NSF grant ($330,000 for three years) to work on a bifunctional nucleoid protein of higher plant chloroplasts. They also received a $10,000 teacher add-on grant to host biology teacher Helen Peterson from Oak Grove High School this summer. Mrs. Peterson will participate in research activities and will develop classroom materials related to the funded NSF project. SH & GCC received a USDA grant ($25,000 for one year) to study the effect of chloroplast redox state on the association of the bifunctional nucleoid protein with chloroplast DNA. Professor Cannon was USM's fourth T.W. Bennett, Jr. Distinguished Professor in the Sciences from August 1999 until September 2001.

John A. Pojman
Dr. John A. Pojman, Sr., a professor in the Department of Chemistry and Biochemistry, has been awarded $140,359 from the National Science Foundation to study "Optical Gradient Polymeric Materials Via Isothermal Frontal Polymerization." The three-year project will be performed in collaboration with Professor Vladimir Volpert of the Department of Applied Mathematics at Northwestern University, who was also awarded an NSF grant for this project. Pojman and his lab will experimentally investigate a method to prepare special polymeric materials for use in military and data transmission applications. Volpert will develop mathematical models to aid in the selection of optimal conditions for the process.

Professor Pojman continues to work with NASA in developing the "Transient Interfacial Phenomena in Miscible Polymer Systems" (TIPMPS) experiment for flight on the International Space Station. NASA provides $259,000 per year to support this work.

Professor Pojman was coeditor of the book "Polymer Research in Microgravity", published by the American Chemical Society. He co-organized a symposium (with Professor Qui Tran-Cong-Miyata of Kyoto) on "Nonlinear Dynamics in Polymeric Systems", at the Boston ACS meeting this August. They will also edit an ACS symposium series book.

Professor Pojman and his wife, Dionne Rousseau, became the proud parents of John Anthony Pojman, Jr. on Oct. 7, 2001.

David Wertz
Professor Wertz received funding from the Mississippi Department of Environmental Quality Solid Waste Division to construct and operate a continuous-operation pilot plant for converting scrap tires to useful materials. The funding is for two years for $122,500, with additional university match. He also received funding from the Department of the Army, ITAM, for the analysis of soil, leaves, and roots from the Camp Shelby Training Facility. This project is a multiyear project, and Wertz has received ca. $85,000 for the two year period of his involvement to date. This project is expected to continue for at least one more year. It is hoped that the X-ray and sample-handling methodologies being developed by the Wertz group will be adopted by the U. S. military branches as part of their environmental assessment requirements.

Wertz and group published three papers (one in Fuel and two in Energy & Fuels) on their continuing study of the layers and interlayer forces in coals.
Emory Howell
On Dec. 31, 2001, Howell completed a five-year term as high school editor of the Journal of Chemical Education. He was honored for his service at the High School -- College Luncheon held in connection with the 223rd American Chemical Society National Meeting in Orlando, April 8, 2002.
Working with John and Angela Bedenbaugh, Howell codirected the NSF-Funded science teacher enhancement project, "Preparing Leaders to Improve the Teaching of Physical Science on a Statewide Basis." Ten teams, each consisting of two high school teachers and one college faculty member, were prepared through workshops held during the summers of 2001 and 2001. The teams, in turn, provided instruction to in-service teachers of high school physical science and seventh and eighth grade integrated science under the supervision of the project directors. During the summer of 2003, and thereafter, the teams will offer physical science teaching workshops across the state. In support of the project the directors authored a two-volume manual of guided-inquiry instruction that is classroom ready and that uses low-cost readily available materials. The goals of the project will be met when every child in Mississippi has the opportunity to learn physical science concepts under the direction of a qualified teacher.

News from Other Graduates
-- Ryan Smith will start his Ph.D. studies at the University of Colorado in Aug., 2002, following Ashley Trahan, who initiated her studies at UC in August, 2001.
-- Lydia Lee Lewis has accepted a position as assistant professor at Millsaps College, starting August 2002. She will defend her dissertation (under the direction of Professor Pojman) this fall.
-- Dionne Fortenberry (Ph.D., 1998) is an assistant professor at the Mississippi University for Women. She is spending this summer working in the Pojman Lab on spherically-propagating polymerization fronts.
-- Jason Willis (B.S. 1994) is a production chemist at Ciba-Geigy in Macintosh Alabama.

Alumni Survey
In an effort to stay in better touch with our alumni, we have posted an alumni survey form on the department Web site at www.chem.usm.edu/AlumniSurvey.htm. Please take a few minutes to fill out this survey so we can update our records and give you an opportunity to get more involved with the department.