

FALL 1982

# OKCHE

SCHOOL OF CHEMICAL ENGINEERING AND MATERIALS SCIENCE THE UNIVERSITY OF OKLAHOMA



The University of Oklahoma Energy Center

## Bulletin

### President Banowsky Is Back

On October 14, the regents announced that William S. Banowsky had been reappointed president of the University of Oklahoma. The inside pages of this issue of *OkChE* had been printed, but we were able to put this note in because the cover had not been printed. We literally stopped the press!

There are references to President Banowsky's resignation and "former President Banowsky" in some of the features in this issue. We are elated that Bill Banowsky has decided to return to the University of Oklahoma and that those statements are in error.

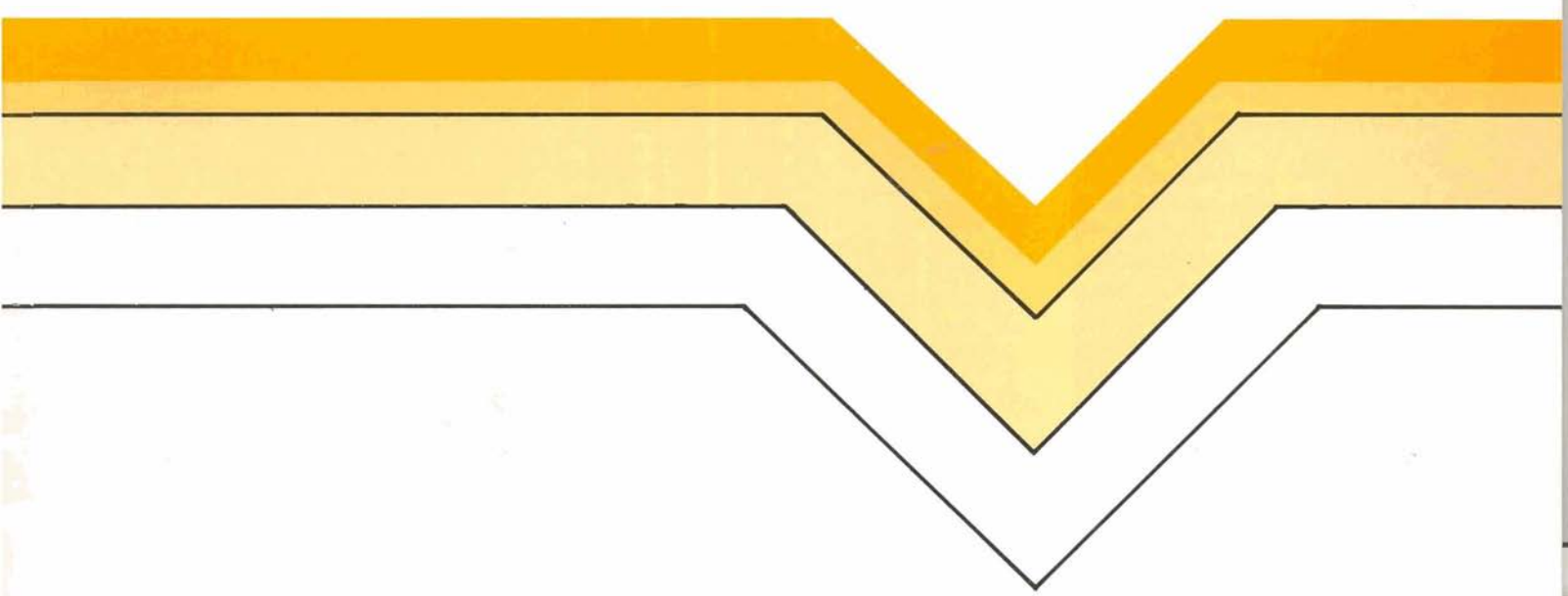
President Banowsky had a strong, positive impact on the university during his first four years here, most significantly in my mind, on the morale of the faculty, staff, and students. We expect things will continue in this same manner during the remainder of his tenure here and our morale is again boosted.

Carl E. Locke  
Director  
School of Chemical Engineering  
and Materials Science

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# OU Makes Plans for World-Class Energy Center

The construction of an historic \$45 million Energy Center, which will fuse all energy-related research and instruction at the University of Oklahoma, was one step closer with the approval of the architectural drawings and schematic design in May.

Groundbreaking for the Energy Center, whose programs will be enriched by an additional \$20 million endowment, took place on Sept. 11, almost one year to the day after the university initiated its drive to construct such a facility.

"This is one of the most exciting things happening in higher education today—nothing we have done has captured the attention and support of industry and private citizens so intensely as this project, which can have a dramatic and immediate impact in the field of energy education and research," said former OU President William S. Banowsky.

"The University of Oklahoma has a long, respected tradition in energy-related disciplines, primarily the fossil fuels. We were, after all, the first school of petroleum geology in the world. The creation of this Energy Center brings together our current activities in this area, offers the most up-to-date facilities and equipment, and is providing opportunities to engage in a broader range of research," Banowsky added.

For almost a year, architects worked with a campus committee to identify the programs that would be housed in the Energy Center, how much space would be allocated to each, and the number and types of laboratories, classrooms and offices to include. On May 27, the Benham Group of Oklahoma City brought the design before the OU Board of Regents, which approved the concept unanimously.

The 300,000-square-foot facility, to be constructed just east of OU's



Oklahoma Gov. George Nigh starts the drilling rig which was used to break ground for the University of Oklahoma's \$45 million Energy Center, a facility that will house educational and research programs in energy-related fields. Hailed by a Department of Energy official as a means of helping this nation "chart the new energy course for America and the world," the OU Energy Center is being financed by \$30 million in private funds and \$15 million from the state of Oklahoma. With Nigh on the drilling platform are OU Energy Center Executive Director Jay T. Edwards (left) and Interim OU President J. R. Morris. Ground breaking was Sept. 11.

Carson Engineering Center, will house OU's new College of Geosciences, which was created July 1, 1981, to combine the university's strong programs in geology and geophysics, geography and meteorology. Also in the center will be the School of Chemical Engineering and Materials Science, School of Petroleum and Geological Engineering, portions of the Energy Resources Institute, the Oklahoma Geological Survey, Oklahoma Climatological Survey, a computer facility and an energy library.

Included in the scope of the project, but to be constructed at a separate site, is a 40,000-square-foot core and sample library.

More than half of the space in the building is in laboratories, numbering approximately 200, with 400 offices, 20 classrooms and 10 photo labs.

"We are designing a building that is beautiful, functional and highly energy efficient. It will be flexible enough to accommodate a wide mix of programs and to handle the unpredictable evolution energy-related programs may take as we approach the 21st century," said Banowsky.

Approximately half of the building is underground in two massive floors that measure 414 feet by 360 feet and will house many of the laboratory facilities, the Oklahoma Geological Survey and some classrooms. The rest of the facility reaches 250 feet up in a 20-story tower that measures 82 feet by 136 feet and will be constructed of brick that will be selected to match as closely as possible that used in OU's oldest campus buildings.

"This will be a very energy conserving complex," noted principal design architect Buford Duke, senior corporate vice president of the Benham Group. "It will operate on 50 to 65 percent the amount of ener-



*A project as expansive and bold as the University of Oklahoma's \$45 million Energy Center requires the support and assistance of all constituents, as represented at the ground breaking for the OU project. University officials were joined by elected state officials, leaders in the oil industry and representatives of the state's system of higher education. The Energy Center, which will be constructed with a combination of private and state funds, will house educational and research programs in various energy-related fields. (Pictured from left to right are: State Rep. Cleta Deatherage, U.S. Rep. Dave McCurdy, Oklahoma Gov. George Nigh, Interim OU President J. R. Morris, Oklahoma Chancellor for Higher Education J. A. Leone, newspaper publisher and president of the OU Board of Regents Charles Engleman, Houston oilman Brian E. O'Brien (who chairs the Energy Center Founders, each of whom have contributed a minimum of \$100,000), and Executive Director of the Energy Center Jay T. Edwards.)*

gy a conventional building of this scope would use, and we may even do better than that!"

The south face of the tower will become a passive solar collector, he explained. Double-faced glass, with three feet of air space between them, will catch the rays of the sun in winter—when the sun is low in the sky—heating the air between the glass. The heated air will rise, where it will be collected at the top of the tower and pumped to heat

the north side of the building. Overhangs above the windows will shade them in the summer, when the sun is higher in the sky.

Earth is an efficient insulator, which will protect the underground floors from drastic temperature changes—and, since much of the lower two floors will be completely covered with dirt, the area can be landscaped. During the day, most lighting will be natural light from above in the laboratories and from windows in the tower. Photocell

controls will monitor lighting levels and shut off lights when enough daylight is provided.

The park-like area around the tower and above much of the underground portion of the facility will include partierres, or diagonal walkways, that lead to the main ground-floor entrance and to the various underground entrances.

Also planned in conjunction with the center is an enclosed bridge that would attach to the Energy Center and span Jenkins Avenue. A 150-space parking lot also will be constructed to the east of the Energy Center.

Construction on the Energy Center will begin in June.

The first phase of construction will cost \$18 million, \$9 million of which has been awarded this year to OU from the \$15 million appropriation from the Oklahoma Legislature. OU will raise the additional \$9 million from private sources before June.

Between now and June, in addition to raising funds, efforts will be devoted to setting utilities and clearance at the site.

Over a three-year period, \$30 million will be raised from private sources and added to the \$15 million state appropriations to make up the \$45 million project. Fund raising for the \$20 million endowment program will follow construction of the building.

"This has been a challenging design project," Banowsky noted. "We wanted a facility designed for the year 2002, not 1982, that could provide a setting for the variety of research and studies required for disciplines in the basic and social sciences as well as engineering. It also had to be energy efficient and beautiful. Approval of these plans move us one step closer to construction of OU's Energy Center, and the realization of our dreams."

## Engineering Veteran Joins CEMS

The School of Chemical Engineering and Materials Science is pleased to announce a new faculty member who joined our staff in August. He is an experienced teacher, researcher, designer, project manager, and corporate engineering officer.

Rex T. Ellington assumed teaching and research duties as professor this fall. "Engineering has been very good to me," he says, "and I hope that I can repay the profession by using my experience to add to the education of the very capable young people coming along now."

Rex holds a bachelor's degree in chemical engineering from the University of Colorado and Master of Gas Technology, Master of Science, and Ph.D. degrees from the Illinois Institute of Technology.

In the gas industry he worked for the Atlanta Gas Light, Boston and Chattanooga Gas Companies and was involved in coal gasification in the 1940s and 1950s. He chaired and taught in the Institute of Gas Technology program and directed basic research for six years in addition to consulting for many gas companies.

Rex headed production research and mineral resource development for Sinclair Oil in Tulsa, where he worked with fire and polymer



*Rex T. Ellington*

floods and started his long-term work with oil shale. After the merger with ARCO, he led synthetic crude development and became involved with Athabasca tar sands and coal liquefaction as well as oil shale.

After a short time with Transco on naptha and crude oil gasification projects, he switched to the contractor's side of the business and spent six years with Fluor. There he was project manager on a number of refinery, polymer, chemical, coal

conversion, and oil shale projects.

More recently he has headed the engineering of the Cathedral Bluffs oil shale project (Tenneco and Occidental partnership) and the technical development of Occidental's modified in situ retorting process. An important part of this work has been the detailed analysis of complete plant systems for every oil shale retorting process, including actual pilot plant runs with Cathedral Bluffs shale on several of them.

Throughout his career Rex has maintained an active interest in engineering education and has worked with OU, OSU, and the University of Tulsa. His research work started with gas properties, heat transfer and combustion, and continued through heading the Gas Processors Association K-value and Thermodynamics Properties committees for which he received the GPA Distinguished Service Award.

"I am eager to bring myself completely up to date in processing, heat transfer and control systems, do research on some industrial problems that haven't received enough attention, and help industry by consulting as my teaching loads permit," he says.

## CEMS Faculty Member Receives Award for Excellence

John M. "Jay" Radovich, a University of Oklahoma associate professor of chemical engineering and materials science, is the recipient of an award for excellence in laboratory teaching and instruction.

The award, sponsored by the Tektronix Corp. of Oregon, is presented annually by the American Society of Engineering Education, a division of experimental and laboratory-oriented instruction.

Radovich, a member of the CEMS faculty for six years, was presented a certificate and \$1,000 at the June



*Radovich receives ASEE award.*

meeting of ASEE held at Texas A&M University.

A recipient of the Regents' Award for Superior Teaching and the Baldwin Study-Travel Award for Excellence in Undergraduate Teaching, Radovich was instrumental in developing a laboratory reference library for students and has rebuilt the Unit Operations Lab in which students receive essential experience.

## Locke Co-authors Corrosion Control Book



Carl Locke



Olen Riggs

The newest, different corrosion control method is the focus of a new book written by Carl E. Locke, director of the University of Oklahoma's School of Chemical Engineering and Materials Science, and Olen L. Riggs Jr. of the Kerr-McGee Technical Center in Oklahoma City.

Locke, who joined the OU faculty in 1973, has done considerable research in the area of corrosion control.

Their book, *Anodic Protection: Theory and Practice in the Prevention of Corrosion*, is written for engineers, researchers, and students of corrosion science, electrochemistry, mate-

rials science, metallurgy and chemical engineering as well as plant corrosion control specialists.

All aspects of anodic protection are discussed, including theoretical information, practical applications, descriptions of equipment, and an economic evaluation to determine whether or not the corrosion control technique should be used in a given situation.

A final chapter addresses the future uses of anodic protection. In addition, the book contains a list of U.S. patents relating to anodic protection and a bibliography with references dating back to the 18th century.

Although practical applications of anodic protection have been used successfully for more than 15 years, the method is not well known among persons concerned with corrosion control and is often confused with cathodic protection.

The authors expect that more extensive use of anodic protection will follow a better understanding of its principles, its application paramet-

ers and economic benefits.

The consulting editor for the book is Norman E. Hamner, a Katy, Texas, resident.

Locke, a native of Texas, earned his bachelor's, master's, and doctoral degrees in chemical engineering at the University of Texas, Austin.

Prior to joining OU he had worked as an associate research engineer for Continental Oil Co., production manager for R.L. Stone Co., and as program manager for thermal instruments at Tracor Inc. During the summer of 1974, he conducted carbon black corrosion research for Phillips Petroleum Co. in Bartlesville.

Locke was named director of OU's School of Chemical Engineering and Materials Science in September 1980.

As one of the few people in the United States studying corrosion of concrete and steel, he has gained international attention that has resulted in invitations to international conferences.

## Graduate Student Pieces Together Parts of Donated Sour Gas Plant

Chemical engineering graduate student Jay Morris has spent much of the past year piecing together a labyrinth of pipes, valves, and pumps that makes up a sour gas plant being donated to the University of Oklahoma.

The plant, which purifies natural gas, is owned by Perry Gas Processors Inc. of Odessa, Texas. The firm has offered to rent the plant to OU's School of Chemical Engineering and Materials Science for \$1 annually over the next four years, then to donate the unit to the university.

"It has been like putting together a jigsaw puzzle with some of the pieces missing and no picture to use as a model," said Morris of his project, which was undertaken to meet

his master's thesis requirements. "I've had to reuse as many of the parts as I could, but I've had to rearrange much of the system to meet our needs. It's been a challenge right from the start."

The plant was obtained by Jay Radovich, an associate professor of chemical engineering at OU. "I originally visited Perry Gas Processors to explore opportunities to acquire equipment for our Unit Operations Lab," he said.

The sour gas treating plant was built in 1979 by the firm to run unattended in the field for a client. After collecting the needed data, the company closed the portable plant and moved it to a storage yard, where it sat unused for about a year before being shipped to OU.

Morris has cleaned and replaced some of the plant's components, and altered its network of pipes and tanks to form a closed-loop system for undergraduate studies and research projects.

In the plant, natural gas containing such acid gases as hydrogen sulfide and carbon dioxide passes through an absorber tower, Radovich said. A solution enters the tower and absorbs the acid gases. Then, the purified natural gas leaves the tower and the solution containing the acid gasses is pumped to a stripper tower, where it is heated. The acid gases are driven off by the heat, leaving the solution ready for reuse.

Normally, the acid gases would be released into the air and the

purified gas would be piped off to be sold. To keep the cost of running the plant to a minimum, however, the acid gases are remixed with the purified natural gas to form a steady supply of sour gas.

"Recent finds of natural gas like that found in the Overthrust Belt in Wyoming and Montana are under great pressure and contain high volumes of carbon dioxide. Computer models are available which suggest changes in current gas treating systems to eliminate high concentrations of carbon dioxide from the natural gas, but no commercial process actually has been developed for these models," the professor said.

"No one knows for sure which solutions are best for absorbing acid gases under high pressure and temperature conditions. The plant will be used to develop performance data to test the validity of the com-

puter models currently available."

The plant was not reconstructed without help. "The Kimray Co. of Oklahoma City repaired valves and pumps free of charge. C. M. Slipevich of OU'S chemical engineering school donated miscellaneous equipment and the use of a shed for housing the plant. The Energy Resources Center at OU funded some of the salaries and much of the additional equipment that was needed, and chemical engineering provided a technician and machinist, K. Hudson, to help with the reconstruction.

"Jay and I would be at a total loss as to how to reconstruct the plant without the help and advice of all these people," Radovich said.

"As far as I know, no other university has a research facility of this type. We are extremely grateful to the people who have helped make this a reality."



*Jay Morris checks a pipe fitting on a sour gas plant being donated to the University of Oklahoma by Perry Gas Processors Inc. Morris rebuilt the plant to fulfill master's thesis requirements, and his efforts will enable OU students and researchers to search for effective methods of purifying natural gas.*

## CEMS Undergraduates Do Research

The most successful students are the ones who have the ability to take initiative, discipline themselves, and stay with the job at hand. They are the ones who are not afraid to try, to fail, and to try again. They are the kind of students working on the Supercompressibility Project, the Coal Fluids Project, the Polar Fluids Project, and the Data Availability Project, directed by Dr. Kenneth Starling.

Many of these achievers are undergraduates who have made important contributions to the research projects, their own knowledge of the research process, and their personal experience through their work in CEMS.

Some of these undergraduates, in addition to their work on the projects, also participated in the 1981 Fall Technical Meeting, held at Phillips University, and the 1982 Mid-Winter Collegiate Meeting, held at the University of Oklahoma. Both meetings were sponsored by the Oklahoma Academy of Science. The following papers were presented at

the 1981 Fall Technical Meeting:

"Development of a Computer Data Bank for Thermodynamic Properties of Coal Fluids," presented by Chiu-Kwan So and co-authored by Thai Q. Tran, Janet L. Tateya, and Kenneth E. Starling, all members of the Coal Fluids Project; "The Compilation and Evaluation of Diffusion Coefficients and Excess Thermodynamic Properties Data for the Gas Industry," presented by Wayne Chang and co-authored by Mark Langenberg and Kenneth E. Starling, members of the Data Availability Project.

Papers presented at the 1982 Mid-Winter Collegiate Meeting were: "Coal Fluids Data Bank Development," presented by Thai Q. Tran and co-authored by Chiu-Kwan So, Janet L. Tateya, and Kenneth E. Starling, members of the Coal Fluids Project; "Compilation and Evaluation of Pure Natural Gas Component Thermodynamic Properties Data for the Development of a Gas Properties Correlation," presented by Lisa M. Tibbetts, who

won third place for her presentation, and co-authored by P. René Hisle, Janet L. Tateya, and Kenneth E. Starling, members of the Supercompressibility Project; "Compilation and Evaluation of Binary and Multicomponent Natural Gas Thermodynamic Properties Data for the Development of a Gas Properties Correlation," presented by Jeff R. Selvidge and co-authored by Warren Becraft, Lee R. Shouse, and Kenneth E. Starling, members of the Supercompressibility Project; "An Assessment of Availability, Quality and Needs for Excess Thermodynamic Properties and Diffusion Coefficients Data for the Gas Industry," presented by Mark Langenberg and co-authored by Wayne Chang and Kenneth E. Starling, members of the Data Availability Project.

Lisa M. Tibbetts, who presented at the Oklahoma Academy of Science 1982 Mid-Winter Collegiate Meeting, was later presented the CEMS award for outstanding freshman. →



Upper left: Thai Tran, C. Fish Greenfield, Mark Langenberg, Janet Tateya. Lower left: Danell Wright, P. René Hisle and Chiu-Kwan So

## Engineering Enrollments: Some New Limitations

Enrollment in CEMS during 1981-1982 reached an all-time high. We were consistent with the College of Engineering, since total college enrollments were also higher than ever before. CEMS and college enrollments over the last five fall semesters are tabulated below.

|                  | 1977  | 1978  | 1979  | 1980  | 1981  | 1982  |
|------------------|-------|-------|-------|-------|-------|-------|
| Ch.E.            | 240   | 281   | 309   | 340   | 368   | 369   |
| Met.E.           | 14    | 17    | 18    | 22    | 16    | 16    |
| College of Engr. | 1,754 | 1,952 | 2,266 | 2,697 | 3,053 | 3,119 |

Some steps have been taken to decrease these total numbers. An enrollment limitation was approved by the regents during the spring of 1981.

This policy states, "It is the philosophy of the University of Oklahoma to accept all qualified students applying for admission to the College of Engineering. However, because the current number of applicants exceeds the limited amount of resources available, it has become necessary to place a limitation on the number of applicants who may be admitted. Because the university's primary obligation is to citizens and taxpayers of Oklahoma, first priority in the admission of undergraduate students shall be given to residents of Oklahoma. Beginning with the fall semester of 1981, a minimum of 75 percent of the total undergraduate positions in the College of Engineering shall be reserved for residents of Oklahoma.

"Both residents and non-residents of Oklahoma shall be expected to meet the minimum criteria for admission set forth below. In the event that all timely applicants in either category exceed the number of spaces available in a given year, priority for admission shall be given to those judged best qualified. . . .

"Students must be admitted to the University of Oklahoma before

being admitted to the College of Engineering. First-year students and all other prospective engineering students who have not yet met the course requirements for admission to the College of Engineering are admitted in University College. Inquiries concerning admission to the university and University College should be addressed to the Office of Admissions and Records, University of Oklahoma, Norman OK 73019. Students are cautioned, however, that the admission requirements for the College of Engineering program are more stringent than the requirements for admission to the university. Students should carefully assess their potential to meet the college's requirements before committing to attend the University of Oklahoma with a proposed major in engineering."

The college office has accumulated statistics for the fall and spring semesters of last year, the first year of the policy. The number of foreign students has declined, and our information indicates that most of them left because they recognized it would be very difficult for them to be admitted to the college. The effect on CEMS enrollments has not been dramatic because the international student enrollment is less than 20 percent.

### Undergraduate International Student Enrollment

|       | Fall 1979<br>% Int. | Fall 1980<br>% Int. | Fall 1981<br>% Int. | Fall 1982<br>% Int. |
|-------|---------------------|---------------------|---------------------|---------------------|
| Ch.E. | 19.7                | 16.2                | 16.0                | 10.8                |
| Met.  | 44.4                | 36.4                | 56.2                | 37.5                |

Work on the research projects, for the undergraduate students, usually involves a three-stage process. When the students first enter the project and before they have acquired the necessary technical knowledge for other things, they become involved in library research. This encompasses the collection and compilation of articles pertinent to the particular project's research. The second stage is data compilation and calculations using those data. The third stage is development of a properties correlation in the project.

When asked why they wanted to join a research project, most students answered that they wanted to understand what chemical engineering encompassed. René Hisle explained that the research enabled her to gain a perspective on what the difference may be between research and other types of professional chemical engineering employment. Danell Wright added that one of the most interesting facets of research is that an answer remains to be found, while many academic aspects of the university already have answers.

## Awards and Scholars Abound

The Seventh Annual Chemical Engineering Awards Banquet was held April 16, 1982, at the Ramada Inn in Norman, honoring all Program of Excellence students.

Special departmental awards were presented to the following students: Lisa Tibbetts, Tahlequah—Celanese Award for Outstanding Freshman in Chemical Engineering; Samuel Little, Norman—CEMS Award for Outstanding Sophomore; Jack R. Lane, Seminole—Phillips Award for Outstanding Junior in Chemical Engineering; Brian VanderHeyden, Tulsa—Pamela Pesek Johnson Award for Outstanding Senior in Chemical Engineering Design; Steven Wray, Altus—Outstanding Metallurgical Award; Russ Davidson, Frankfort, Ill.—Robert Vaughn Award for Excellence in Chemistry.

We continue to think we have the best undergraduate students on campus in a program of any size. We also continue to attract a large number of the students awarded scholarships by the university. This year the numbers of each type of scholarship held by freshmen declaring chemical engineering as a major are tabulated below:

|                            |       |
|----------------------------|-------|
| University Scholars        | 7     |
| Achievement Awards         | 2     |
| President Leadership Class | 3     |
| Alumni Scholars            | 4     |
| Boyd Gunning Scholars      | 4     |
|                            | <hr/> |
|                            | 20    |

In addition we awarded six departmental scholarships to freshmen. These 26 students have an average ACT composite score of 29. The distribution of the composite scores are shown below:

| No. of students | ACT Composite |
|-----------------|---------------|
| 14              | ≥ 30          |
| 3               | 29            |
| 2               | 28            |
| 5               | 27            |
| 4               | ≤ 26          |

(Three of these students made a perfect score of 36 on math!)

Our scholarship program continues to do well. We have 75 schol-

ars supported by departmental money and 20 supported by university scholarships. We are very proud to list all of our Program of Excellence students and their home towns.

### University Scholars

Elisabeth Cotter, Tulsa  
David Hilton, Choctaw  
Michael McDoniel, Chickasha  
Sharon Patterson, Houston  
Mitsuno Reedy, Norman  
Jeffrey Weber, Norman  
Cissy Yin, Ada

### Achievement Awards

Sang Gil Lee, Moore  
Nhugn Vau Vu, Duncan

### President's Leadership Class

Bradley Ellis, Norman  
Timothy Holt, Pryor  
Lori Walker, Copan

### Alumni Scholars

Kevin Ingram, Marlow  
Bryan Norman, Norman  
Stephen Shiflet, Bartlesville  
Katherine Washer, Bartlesville

### R. Boyd Gunning Scholars

Clark Andrew Bonham, Shawnee  
Terri Gilchrist, Oklahoma City  
Jerry James, Muskogee  
Billie Kae Winter, Bartlesville

### Department (Four-Year)

Nic Cordum, Oklahoma City  
Randall Gee, Okmulgee  
Richard Krenek, Norman  
Scott Ford McCurdy, Norman  
Gary Simmons, Tulsa  
Steven Paul Statham, Pryor

### Department (Three-Year)

Tom Ebeling, Edmond

### Department (Two-Year)

Jimmy Ivie, Midwest City

### Department (One-Year)

Craig S. Narum, Madison Lake, Minn.  
Pamela Tucker, Norman

### Program of Excellence Students

Warren Becraft, Ponca City  
Jean Ann Breshears, Perry  
Michael Bresson, Bartlesville  
James Canavar, Del City

Charles Carr, Midwest City  
Geoffrey Chappell, Oklahoma City  
Scott Childs, Blanchard  
Kevin Clary, Moore  
Russ Davidson, Frankfort, Ill.  
Terry Davis, Durant  
Jeanette Susan Dockery, Bartlesville  
Neil Dotson, Tulsa  
Timothy Elrod, Eufaula  
Michael Fox, Moore  
Bradley Gollhardt, Shawnee  
Mark Gonce, Oklahoma City  
Charles Greenfield, Frederick  
Phillip (Tony) Haddad, Oklahoma City

Renee Hisle, Norman  
Wm. Paul Ives, Tulsa  
Charles Jones, Oklahoma City  
Michael Jones, Tulsa  
Johnny Jordan, Pryor  
Linda Kaiser, Enid  
Yong H. Kim, Moore  
Susan Lack, Tulsa  
Jack Lane, Seminole  
Bryan Lansford, Sulphur  
Karen Lawrence, Norman  
Michael Lee, Oklahoma City  
Samuel Little, Norman  
Brenda Littlejohn, Newcastle  
Thomas Long, Tulsa  
Bradley Lowery, Tulsa  
Patricia Lyle, Del City  
Scott Meadows, Ardmore  
Ronda Millhollin, Arlington, Texas  
Wm. B. Miller, Bartlesville  
Janet Nash, Ardmore  
Les Nichols, Tulsa  
Wes Nichols, Tulsa  
Michael North, Rochester, N.Y.  
Rajendra Patel, Durant  
Sharon Potter, Keithville, La.  
Ronald Rauniker, Wilburton  
Stephanie Reid, Norman  
Kelli Riddle, Tulsa  
James Rogers, Blair  
Paula Root, Norman  
Scot Roswurm, Billings, Mont.  
Karen Rudesill, Ft. Sill  
Glenda Sonderegger, Oklahoma City  
James Stanley, Bartlesville  
Karen Stanley, Bartlesville  
Diane Steelman, Pocasset  
Janet Tateya, Del City  
Ngoc Chau Thi Thai, Oklahoma City  
Lisa Tibbetts, Tahlequah  
Kelly Trice, Oklahoma City  
Stan Vlasimsky, Tulsa

## CEMS Student Receives Gulf Oil Honors Scholarship

A University of Oklahoma student majoring in chemical engineering, Robert Brent Landers, is the recipient of a two-year undergraduate Gulf Oil Honors Scholarship.

Robert, who recently completed his sophomore year at OU, has a perfect 4.0 grade average. He was named a University Scholar and the recipient of an Alumni Scholarship.

He is a member of Phi Eta Sigma and Alpha Lambda Delta honorary societies, was named Alpha Tau Omega fraternity "Outstanding Pledge," and is a member of Engi-Club.

A native of Miami, Landers was valedictorian of his class and was graduated with a perfect 4.0 grade average from Miami High School.

The scholarship will provide approximately 80 percent of students' expenses for tuition, books, fees, room and board for his junior and senior years. In addition, Gulf will offer employment to the OU student during the summer between his junior and senior years.



Robert Landers is congratulated by Dr. Mark Townsend.



To promote faculty-student esprit de corps, a slide show was presented after the Awards Banquet dinner by Dr. Lloyd Lee, whereby the private lives and hobbies of CEMS professors were revealed to a cheering audience.

## Prize Won by Kaiser

Linda J. Kaiser, a University of Oklahoma chemical engineering sophomore from Enid, has been awarded a \$500 scholarship from the state auxiliary of the Oklahoma Society of Professional Engineers.

Linda carries a 3.61 grade point average and is active in the Society of Women Engineers and is a member of Engine Club and the American Institute of Chemical Engineers.



Linda Kaiser receives the OSPE Auxiliary Scholarship from Mal Schindler (left) and Kathleen Bone.

# Strong Support for CEMS

The School of Chemical Engineering and Materials Science would like to acknowledge and express appreciation to those who have so generously given time and money to our school during the last year. Listed below are the members of the OkChE Board of Directors and the Foundation for Excellence Board of Directors as well as the contributors to the OkChE Fund.

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## Foundation for Excellence

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## Gulf Gives \$50,000 to CEMS

To assist in the purchase of an interactive computer, the Gulf Oil Foundation has presented the second installment of a \$150,000 gift to the University of Oklahoma School of Chemical Engineering and Materials Science.

"Interactive computer services dominate the world of engineering practice and business," said the school's director, Carl E. Locke. "We have recognized a critical need for widely available, real time, interactive computational capabilities to support the educational and research programs of our students and faculty."

Officials of Warren Petroleum Co. in Tulsa, a division of Gulf Oil Corp., visited the OU campus re-

cently to present the second \$50,000 installment to Locke. Representing Warren Petroleum were K. C. Purgason, vice president for manufacturing, and Ray Canfield, director of employment and personnel administration.

The OU School of Chemical Engineering and Materials Science is striving to have the finest undergraduate chemical engineering program in the country, Locke explained. To complement its program, the school needs facilities similar to those encountered in industry. An interactive computer system with enough terminals for students to have almost immediate access to the system is a top priority.

Such systems range in price from \$150,000 to \$400,000 and any additional funds needed by the OU school will be sought from within and outside the university.

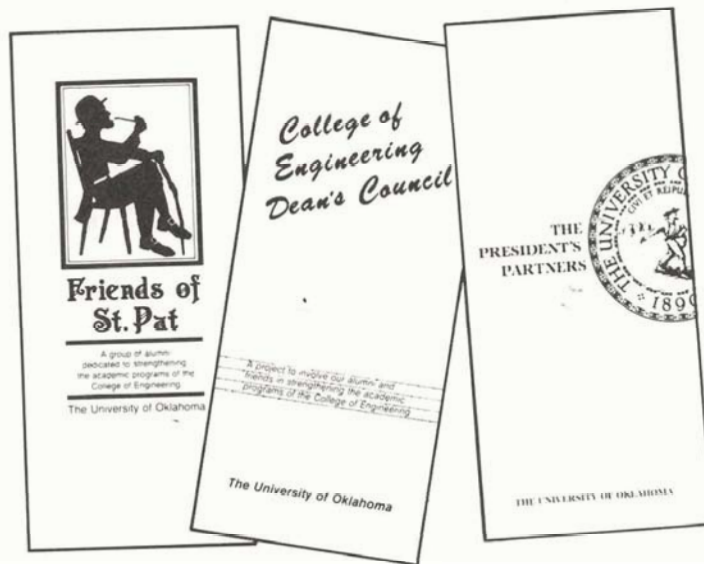
A decision will be made this summer about what type of equipment to purchase, said Locke. "We have intentionally delayed expenditure of the money until it is determined what the college and the university are going to do to meet their computing needs," he said.

"We want to integrate with the college and university computer systems so that the most computing power possible is available to both graduate and undergraduate students for coursework and research."

# OkChE Joined by New Giving Programs

OkChE has been one of the most successful alumni donation programs at the University of Oklahoma. For years ours was the only program of its type in the College of Engineering, but that is changing now. Martin Jischke, dean of the college, has begun two new programs for engineering alumni—Friends of St. Pat and the Dean's Council. We thought our OkChE members would like to know something about those and how they relate to the School of Chemical Engineering and Materials Science.

In addition, the university has begun a new program called President's Partners. Each of these programs is described below.



## Friends of St. Pat

This program initiated by Dean Martin Jischke is aimed at new graduates from the College of Engineering. He states in the brochure you may already have received, "By making a yearly contribution of \$25 or more, Friends of St. Pat will play a vital role in improving the academic programs and opportunities of the College of Engineering. One of the serious challenges that the college now faces is the development of resources to meet the needs of the growing numbers of young people majoring in engineering at OU and the extremely competitive market for engineering faculty. We see the Friends of St. Pat as a special effort by the college to enlist the support we need to meet these challenges." The funds will be used for academic purposes—specifically scholarships, laboratory equipment, and faculty recruiting.

You can designate your donation to the Friends of St. Pat for the School of Chemical Engineering and Materials Science. We will consider you a member of OkChE if you do so.

## Dean's Council

The College of Engineering Dean's Council is a fund-raising program directed at those individuals who can contribute \$500 per year. These funds are distributed by the dean to the individual schools for instructional laboratory equipment and faculty recruiting. It is not possible to direct your contribution to a specific school, but the amount contributed by the alumni from a school is one of the factors considered when the distribution of funds is made.

## President's Partners

The President's Partners is "a financial support group designed to encourage the university's most loyal alumni and friends to participate directly in the building of a great university. Your contribution of \$100 will provide a living endowment for the academic enrichment of the University of Oklahoma," to quote from their promotional brochure. Your gift can be designated for a particular college, school, or department and will be used in the same manner as OkChE funds—to support scholarships, laboratory equipment, and other academic endeavors—if you designate your contribution for CEMS. You will have President's Partners benefits as well.

You now have a number of opportunities to give to the University of Oklahoma. You have control of where your money is spent, and we encourage you to consider CEMS. OkChE contributions have been very helpful to our students, and we hope to continue helping new students as they join us.

## Alumni Notes

Let us know where you are and what you are doing. Please fill out one of the attached information cards and send it to us. We will publish the information in our next issue of *OkChE*.

### 1940s

**William A. Grieves**, '46 bs, 12302 Overcup, Houston TX 77024, works as a senior technical advisor for Exxon USA.

**Edward Weber Jr.**, '47 bs, 124 Regent Place, Alamo CA 94507, is a project manager for Bechtel, working on a Department of Defense nuclear waste storage facility approximately 2,200 feet underground in bedded salt near Carlsbad, New Mexico.

### 1950s

**Frank Williamson**, '50 bs, is employed as an engineering consultant for Aramco in Dhahran, Saudi Arabia.

### 1960s

**C. T. Science**, '60 bs, '64 ms, '66 phd, 715 Westcliff, Wilmington DE 19803, works as a technical manager for E. I. du Pont de Nemours, coordinating programs of approximately 300 engineers and chemists.

**David W. Ramsey**, '69 bs, 272 Fawn Trail, Lake Jackson TX 77566, is a process engineering supervisor for Dow Chemical USA. He and his wife have a son aged five and a daughter, eight months.

### 1970s

**Dana B. Jackson**, '73 bs, 405 S. Fern, Broken Arrow OK 74012, is a member of the technical staff of Rockwell International in Tulsa.

**William C. Boyer**, '77 bs, 3812 S. 120 E. Ave., Tulsa OK 74145, is employed as a project engineering supervisor for Cities Service, working

on a \$60 million natural gas liquids fractionation facility. He and his wife have a year-old son.

**Ali Djowharzdeh**, '77 bs, 12901 Sungrove, Garden Grove CA 92640, has worked for the last three years as a process engineer in the semiconductor wafer department of Commodore Computer.

**Hafez Hafezzadeh**, '77 ms, 3205 S. Roanoke, Springfield MO 65807 works as a project engineer for Syntex Inc.

**David W. Gustafson**, '78 bs, 7856 Board Dr., Baton Rouge LA 70816, is employed as a production engineer in the environmental control regulatory group for water effluents with Dow Chemical USA. He is married and has a new son.

### 1980s

**Jim Hardebeck**, '81 bs, 3004 Robin Ridge Road, Oklahoma City OK 73120, is studying while he recuperates from a car accident.

**Rosendo Zambrano**, '81 ms, Edificio C-22, Dept. 42, Mexico D.F. 01480, is working at Pemex in Mexico City.



*Charles R. Perry (right) receives a Citation for Service from E. C. Lindenberg, president of the Gas Processors Association at the 61st Annual Convention of that organization. Perry, who has spent his entire career in gas processing, is a 1951 graduate of OU and a generous contributor of alumni funds to the CEMS department. Perry is the chairman of Perry Gas Companies, and Lindenberg is executive vice president of Warren Petroleum Company in Tulsa.*

Dear Alumni:

The month of July was an extremely eventful time in Norman this year. President Banowsky submitted his resignation to accept the position of president of the Los Angeles Chamber of Commerce effective September 1. The Saxon \$30-million gift to the Energy Center was delayed due to changing conditions in the oil and gas industry. Nevertheless, the regents and administration of the university have reemphasized our commitment to completion of the Energy Center as discussed in the lead article.


The Energy Center, as projected during the last year, promises to be one of the most exciting ventures the University of Oklahoma has ever undertaken. We wanted to share some of the plans with you in this magazine as well as to point out the fact that CEMS will be housed in the building.

At the present time, we have 26,000 square feet of space allocated to CEMS. That is an increase of approximately 4,000 square feet over what we now have in Carson Engineering Center. We plan to use the space as shown below:

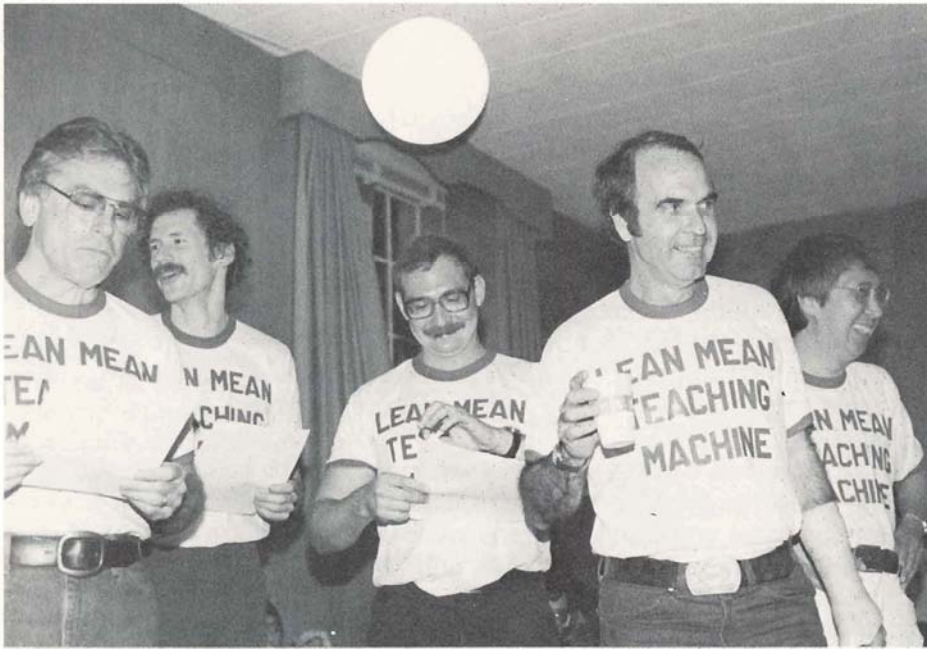
|                        |              |
|------------------------|--------------|
| Research laboratories  | 13,000       |
| Ch.E. instruction lab  | 4,500        |
| Met.E. instruction lab | 1,300        |
| Storeroom shop         | 1,500        |
| Faculty offices        | 3,500        |
| Departmental space     | <u>2,200</u> |
|                        | 26,000       |

We are very excited about the possibilities of increasing our space and getting a new building. From all indications, the Energy Center will be a fine facility and allow us to do our jobs in a better way.

Sincerely yours,



Carl E. Locke  
Director



## The 1982 Student-Faculty Roast

The school year couldn't end without the traditional CEMS student-faculty roast. It's hard to determine whose burns were more severe.

The "lean, mean teaching machines" had the first chance to present awards to "outstanding" students. Then students followed with "appropriate" skits; here Pat Dillon performs.

Just wait till next year!

