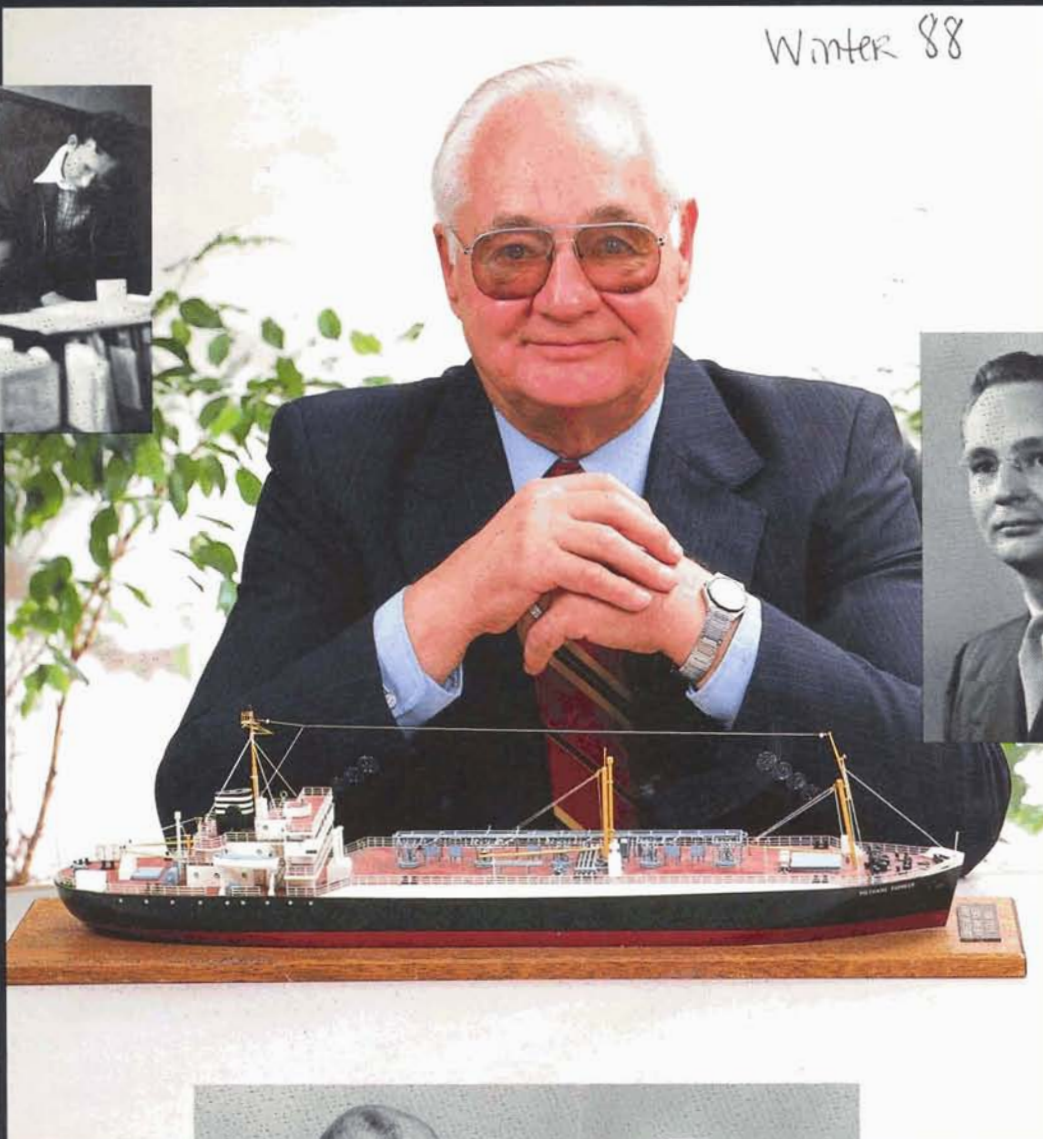


OKCHE

SCHOOL OF CHEMICAL ENGINEERING AND MATERIALS SCIENCE THE UNIVERSITY OF OKLAHOMA

Winter '88



C.M. Sliepcevich

OKChE

Contents

Winter 1988-89

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OkChE Magazine

Published by
The University of Oklahoma
School of Chemical Engineering
and Materials Science
100 East Boyd, Room F-339
The Energy Center
Norman, Oklahoma 73019

OkChE is a production of University Publications. Managing editor, Professor Raymond D. Daniels; assistant editor, Rick D. Wheeler.

This publication, printed by the Transcript Press, is issued by the University of Oklahoma and authorized by the director of CEMS. 2,200 copies have been prepared and distributed at no cost to the taxpayers of the state of Oklahoma.

- 2 Notes from the Director
- 3 Center for Polymer Research Holds First Meeting
- 3 C. Judson King 1988 Memorial Lecture Speaker
- 4 "Cheddy"
- 6 OkChE Initiates Centennial Project
- 7 Laurance S. "Bud" Reid
- 10 First Reid Scholarship Recipient Selected
- 11 New Faculty Appointment Strengthens CEMS Biotechnology Research
- 13 Lance Lobban Exploring New Materials Frontiers
- 14 Larry Crynes Awarded Centennial Doctoral Research Assistantship
- 14 CEMS Doctoral Student Receives NSF Fellowship
- 15 1987-88 CEMS Scholarships and Student Awards
- 15 Lori Hole Receives College Fellowship
- 16 Alumni Notes
- 16 Program of Excellence Scholars 1988-89
- 17 New Alumni 1987-88
- 17 Lost Alumni Search

On the cover: C.M. "Cheddy" Sliepcevich

(Center) Sliepcevich, a George Lynn Cross Research Professor of Engineering, is shown with a model of the Methane Pioneer, the first ocean carrier of liquified natural gas, commissioned in 1959. The former dry cargo vessel was converted to carry about 32,000 barrels of methane gas liquified in a process invented by Sliepcevich. He was project manager for the conversion of the ship. Much of the research and development for the project was done at the University of Oklahoma. (Left) Cheddy, the young scholar at study. (Right) Sliepcevich, fresh out of the University of Michigan. (Bottom) Recognized as the top young college engineering research worker in America, Sliepcevich receives the Curtis W. McGraw Research Award in 1958. Presenting the award is Kurt Wendt, president of the American Society for Engineering Education.

NOTES FROM THE DIRECTOR



This issue of OkChE Magazine reminds me of the adage that the strength of a university is in its faculty. Our focus is on Bud Reid and Cheddy Slepcevic, two OU faculty members who have placed their mark on more than a generation of students and whose professional accomplishments will be recalled for generations to come.

The issue also focuses on OkChE's Centennial project to establish an endowed professorship in chemical engineering. In establishing the professorship we not only honor Cheddy Slepcevic but help assure the high quality of faculty to follow.

The School of Chemical Engineering and Materials Science has in excess of 1,800 alumni. This is a strong alumni base, but we have a continuing problem of locating our people. Engineers move frequently, especially in the early years after graduation. This issue of the magazine could also be considered a quest for lost alumni. We have listed several hundred former students for whom we have no current addresses. We ask OkChE readers to help us locate these missing alumni. Please drop us a note if you have the address of any of the individuals on the list.

For news on our faculty, we are pleased to introduce to our readers our newest faculty member, Roger Harrison. He should be familiar to those of you in the class of '67. He joins us from Phillips Petroleum Company, where he was engaged in biotechnology research.

Another faculty member, Jeff Harwell, is in Washington, D.C., this academic year on assignment with the National Science Foundation. Jeff is serving as program director for separation and purification processes in the Division of Chemical, Biological and Thermal Engineering.

Ed O'Rear was on sabbatical leave for the 1987-88 academic year. In May he went to Japan for a three-month assignment with Hitachi Ltd. as a visiting senior researcher in Hitachi's central research laboratory. He is back with us in the department full time this fall.

Bob Block had a heart attack in March. He was on sick leave for the balance of the spring semester. He seems to be making good progress in recovery but has asked that his sick leave be extended through the fall semester. We look forward to his return in the spring.

Raymond D. Daniels
Professor and Director

OkChE Contributions

Alumni Contributions	\$ 8,649
President's Partners	410
Associates Program	4,469
Graduate Program	50
Company Matching	15,547
	<u>\$ 29,125</u>

OkChE Expenditures

Publication and Postage	\$ 6,841
Scholarships and Awards	7,977
Student Activities	2,219
Academic Support	1,001
Secretarial Support	4,127
OkChE Meeting Expenses	609
	<u>\$ 22,776</u>

Center for Polymer Research Holds First Meeting

The first consortium meeting of the Center for Polymer and Fiber Research was held October 19 at the OU Energy Center.

Among the seven industrial sponsors attending the meeting were five U.S. Fortune 500 companies, one European and one Japanese company.

The daylong meeting included lectures by OU professors Robert Shambaugh and Lance Lobban and graduate students John Kayser, Marc Uyttendaele, Tien Wu and Seema Vad. The lectures were interspersed with laboratory demonstrations and group discussions.

One of the "graduate student" speakers, Vad, wore two hats—she spoke as a representative of CEMS and also attended the meeting with colleagues from her new employer, Dow Chemical U.S.A., one of the consortium sponsors.



The Kuraray Corp. of Japan officially joined OU's Center for Polymers and Fiber Research on May 13, 1988. H. Noguchi and M. Yamada represented Kuraray at the signing ceremony. Present for the signing were (seated) College of Engineering Dean Bill Crynes; Brad Quinn of Grants and Contracts; M. Yamada, Kuraray; (standing) Roger Frech of the Chemistry Department, Gene Walker, Associate Dean of the College of Engineering; Karen Petry of the Office of Research Administration; CEMS Professor Lance Lobban; John Moore, OU Controller; H. Noguchi, Kuraray; CEMS Professor Bob Shambaugh; K. Naruse, Mitsui; and Yoshi Sasaki, professor of Meteorology.

C. Judson King 1988 Memorial Lecture Speaker

C. Judson King, professor of chemical engineering and provost for Professional Schools and Colleges at the University of California, Berkeley, presented the 14th annual Harry G. Fair Memorial Lecture in April on the topic "Recovery of Carboxylic Acids by Separation Processes Based upon Reversible Chemical Complexation."

He discussed extraction and adsorption processes for recovery of polar organic substances from aqueous solution, with applications to recovery of chemicals made by bioprocessing, processing of phenolic waters and environmental control.

C. Judson King,
14th annual Harry
G. Fair Memorial
Lecturer.

King is well known for his recent research activities in separation processes. Much of his early



work dealt with drying rates, tendencies toward product collapse and processing improvements for freeze drying of foods.

More recently he has investigated various aspects of spray drying, including flow and mixing patterns and factors governing retention of volatile flavor substances, changes in particle morphology and product stickiness.

King has authored two books, *Separation Processes* (McGraw-Hill, 1971, 1980) and *Freeze Drying of Foods* (CRC Press, 1971). He is a member of the National Academy of Engineering and a founding director and chairman-elect of the Council for Chemical Research.

The memorial lecture is made possible by the Harry G. Fair Memorial Fund contributed by his widow, Jane Swift Fair. Each year, a special lecture is given in memory of Harry G. Fair, an outstanding OU alumnus of 1939.



.....
*Cheddy
at five*

“CHEDDY”



Internationally recognized as “the complete engineer,” Cheddy was inducted into the Oklahoma Hall of Fame in 1974, in recognition of his accomplishments in research, technological innovation and engineering education.



.....
Though Cheddy (front row, left) had been placed two years ahead of his peers in junior high school, he joined the older and bigger boys of a proud 1932 Class B basketball championship team.

During his more than three decades at OU, C. M. Sliepcevich has made outstanding contributions as an innovative researcher, administrator, teacher and scholar.

“Cheddy,” as he is called, was born in Anaconda, Montana, in 1920, the son of immigrants from Hercegovina, which is now part of Yugoslavia. His parents taught their three children to love and value education. As a result, Cheddy has devoted his life to teaching engineering and improving the world through technology.

He attended Montana State College in Bozeman from 1937 to 1939, then transferred to the University of Michigan. There he received his B.S. degree in '41, his M.S. in '42 and his Ph.D. in '48, majoring in chemical engineering.

Shortly after completing his undergraduate degree, Cheddy began a long list of “firsts.” Early in 1942, he undertook the first electron microscopic study of crystals of hydration from Portland cement, contributing to a better understanding of the hardening process. During this period, he worked on a number of classified defense research projects including work on generation and maintenance of screening smokes, development of proximity fuses and heat transfer studies related to the development of the Oak Ridge nuclear facilities.

In his doctoral research, Cheddy pioneered the design of equipment for carrying out chemical reactions at high pressures and high temperatures. In subsequent work in the lab and in development of industrial processes, he made important contributions to the understanding of high pressure technology, reaction kinetics and catalysis. The magnitude and quality of these contributions ultimately led to his selection as the recipient of the American Chemical Society's International Ipatieff Prize in 1959.

Cheddy began teaching as a graduate assistant at the University of Michigan and was appointed assistant professor of

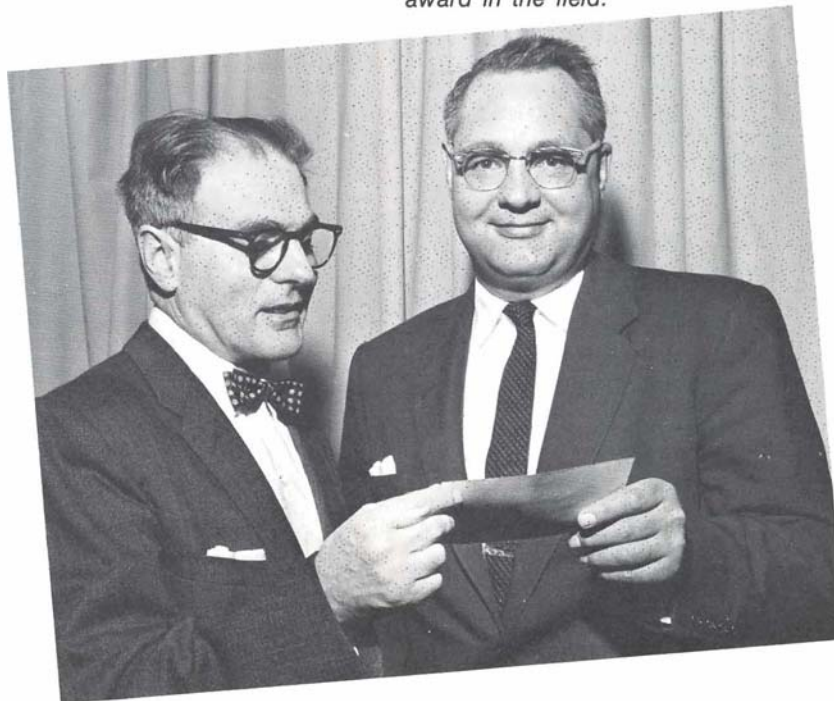
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Cheddy came to the University of Oklahoma in February 1955 as professor and chair of the School of Chemical Engineering. From 1956 through 1962, he served as associate dean of the College of Engineering. His leadership in research, graduate study, accreditation, and faculty recruitment and development revitalized the college. Based on his conviction that the traditional engineering disciplines had much in common, he implemented the undergraduate core curriculum concept in

During this period, Cheddy was instrumental in the rapid growth of the Research Institute (now Office of Research Administration) and led OU to the forefront among universities in the use of digital computers. While fostering

The great woman behind the great man in Cheddy's case is Cleo Whorton Sliepceovich. Cleo has long been famous as a gourmet cook and a gracious hostess. She and Cheddy have traditionally opened their home during the holidays to graduate students who cannot be with their families.

C.M. Sliepcevic accepting the 1959 Impatjeff Prize, an international award given every three years for the most outstanding chemical experimental work in catalysis and high pressure, presented by Herman Pines of Northwestern University, which administers the most prestigious award in the field.





■ Sliepcevich at his
■ North Campus
■ laboratory.

conditions for broader and deeper research universitywide through the institute. Cheddy himself served as principal investigator for contracts and grants in excess of \$3.5 million.

In 1963, Cheddy relinquished administrative responsibilities to devote full time to research and teaching as a George Lynn Cross Research Professor of Engineering—the youngest person to receive this distinction. He has directed 67 Ph.D. students, one Doctor of Engineering student, and 29 M.S. degree candidates (52 Ph.D.'s, one Doctor of Engineering, and 27 M.S.'s at OU).

While at OU, Cheddy developed the Process Control, Cryogenics and High Pressure Laboratories and the Flame Dynamics Laboratory, which has become internationally recognized for its significant contributions to fire research. The lab played a major role in evaluating the escape worthiness and occupant survival in automobiles and buses. He currently chairs the committee to establish the Perry Laboratory for Gaseous Fuels.

Cheddy has published more than 165 technical papers in energy scattering, high-scattering, high-pressure reaction kinetics, flame dynamics, heat and mass transfer, extractive metallurgy and desalination. He currently serves on the National Research Council Committee on Pipelines, Land Use and Public Safety.

In addition, he has maintained an active consulting practice. Through his work with Chicago Stock Yards and Continental Oil Company, Cheddy managed and pioneered the research, development and implementation of the first commercial process for liquefaction and ocean transport of liquified natural gas (LNG).

For this pioneering research in LNG technology, which became the basis for a multibillion dollar

industry, Cheddy received the 1986 Gas Industry Research Award by the American Gas Association Operating Section. The "Father of LNG," as AGA referred to him at the presentation, Cheddy accepted the award at the 1986 AGA meeting in Seattle. The award, sponsored by Sprague Schlumberger, honors high scientific achievement in research representing a significant contribution of lasting benefit to the gas industry.

His numerous awards include the William H. Walker Award from

the American Society of Chemical Engineers, Oklahoma Academy of Sciences Award of Merit, the University of Michigan's Sesquicentennial Award for Distinguished Alumni and OU's highest honor, the Distinguished Service Citation (1975). In 1972, Cheddy was elected to the National Academy of Engineering, and in 1974, he was inducted into the Oklahoma Hall of Fame.

Cheddy currently teaches graduate courses in thermodynamics and kinetics in addition to writing technical papers

OkChE Initiates Centennial Project

Last December, the OkChE Board of Directors and CEMS announced the undertaking of a Centennial project to raise funds to endow the C. M. Sliepcevich Professorship in Chemical Engineering. The endowment is designed to honor Professor Sliepcevich and create a legacy in his name that will assure the continued high quality of chemical engineering education at OU.

This OkChE project is being conducted in conjunction with the University of Oklahoma Centennial Campaign, a \$100 million fund-raising effort begun July 1, 1986, and culminating in 1990 with the observance of OU's 100th anniversary.

As the university celebrates this milestone with a renewal of its commitment to excellence in academic programs, CEMS and OkChE will honor a man who has committed one third of a century to excellence in growth and development of the College of Engineering and research at OU. Cheddy Sliepcevich will reach the mandatory retirement age of 70

in 1990, the university's Centennial year.

The C. M. Sliepcevich Professorship in Chemical Engineering will be one of 40 endowed faculty positions established on the Norman campus as a major part of the Centennial Campaign objective to increase academic excellence.

An endowed professorship is a faculty position funded primarily by an endowment. The investment income, when added to university funds, enables the university to attract and retain outstanding teachers, scholars and researchers. The professorship signifies a prestigious faculty position and honors the name associated with it.

Funds raised to create the endowment to support the Sliepcevich professorship will be invested and managed by the University of Oklahoma Foundation Inc. The principal sum will remain intact with only the income from the investment used to support the professorship.

Laurance S. "Bud" Reid

The legacy of the late Laurance S. "Bud" Reid is evident in the legion of natural gas engineers who return each year to the University of Oklahoma for the exchange of data and ideas critical to the continued growth and economic strength of their industry.

The university's eminent role as host to two major international gas industry conferences for continuing education is much the result of Reid's commitment to research and education.

Throughout his career, Reid gained industrial experience in almost every phase of the gas business, from initial geophysical exploration to gas conditioning research. His experience prepared him well for service to industry and to the university through his contributions to their synergetic research and education ventures. OU alumni of four decades and natural gas engineers from all over the world benefited from his skilled leadership in the schools of chemical, petroleum and natural gas engineering, as well as OU's programs of continuing education, the International School of Hydrocarbon Measurement and the OU Gas Conditioning Conference.

The man who fostered excellence in natural gas engineering education in Oklahoma was an Iowa native, born in Ottumwa in 1909, and reared in Fort Worth, Texas. He attended Rice University in Houston for two years, returning in 1928 to his native state to complete a bachelor of science degree in chemical engineering at Iowa State University in 1931.

After graduation, he entered geophysical exploration with J. G. Thomas Inc. in Kansas City, Mo. He moved into refinery engineering at Lion Oil Co. in El Dorado, Ark., in 1933. Reid married Mary E. Allyn of El Dorado the following year. In 1935, his first son, Robert Allyn, was born.

In 1936, the young family man came to the University of Oklahoma for graduate study, completing a master's degree in petroleum engineering in 1937. That year his second son, Laurance Standish Jr., was born.

The new OU alumnus honed his research skills in the area of secondary recovery at Phillips Petroleum Co. in Bartlesville. In 1938, he joined Black, Sivalls and Bryson Inc. in Oklahoma City.

During this early period of his career in industry, Reid developed an interest in deep high-pressure gas condensate reservoirs and the hydrate formations usually found in them. Around this time, he coined the phrase "gas conditioning" to refer to processes involving the removal of all types of contaminants in high pressure gas.

An innovative research engineer who would accumulate numerous U.S. and foreign patents, Reid was one of the first engineers to recognize the advantages of using high pressure short-cycle gas adsorption units for both the removal of water and natural gasoline. He was also one of the first to use glycol injection for low temperature processes. During his early industrial employment, Reid became interested in use of a new, rare compound—triethylene glycol—which was the basis for much of his later work in gas processing.

Reid joined the OU faculty as associate professor of chemical engineering in 1940. At a time when world war had decimated enrollment and operating budgets, virtually all faculty members were consulting on various war-time efforts to provide an adequate energy supply and substitutes for the supply of essential materials cut off by the war.

In 1943, Reid joined the energy effort as assistant chief engineer at Southern Natural Gas Co. in Birmingham, Alabama. At war's end in 1945, he returned to OU as professor of chemical engineering.

While at OU in the '40s, Reid devoted his research efforts to gas conditioning processes, including a small package dehydration unit and automatic



The young Bud Reid when he joined the OU chemical engineering faculty.

switching systems for quick cycle adsorption units. He also developed processes to provide super dry, high-purity glycol used in gas dehydration processes. In 1949, he collaborated with Dr. Richard L. Huntington on a book, *Natural Gas and Natural Gasoline*, which became a part of the McGraw Hill Chemical Engineering Series. In 1950, he collaborated with two graduate students, E. L. McCarthy and W. L. Boyd, to furnish the first extensive correlation of natural gas hydrates, hydrate temperatures and pressures—the Boyd-McCarthy-Reid Hydrate Curve—still in use by gas engineers today.

During the early '50s, Reid made one of his most significant contributions to OU and the natural gas industry by developing the OU Gas Conditioning Conference, which is devoted to all

continued next page

In 1955, Reid marshalled the Society of Natural Gas Engineers field trip to the gas fields of Garvin and McClain counties of Oklahoma.

phases of natural gas conditioning in preparation for market, except extraction and recovery of liquefiable hydrocarbons. The university had begun to offer degrees in natural gas engineering in 1932, and had provided continuing education to the industry as early as 1924 through another conference course, the annual three-day Southwestern Gas Measurement Short Course. However, content of the short course, with which Reid was associated for many years, was then confined to natural gas measurement, flow rate and pressure control. Reid responded to the industry's need to address problems particular to the area of gas conditioning by developing a separate forum.

This forum, the Gas Conditioning Conference, actually evolved from a lecture at OU on the subject "Gas Hydrates" sponsored by the American Chemical Society for students, faculty and gas industry engineers in January 1951. The enthusiastic discussion that followed led to an informal meeting later that evening to continue the productive exchange of ideas. That meeting resulted in an agreement to meet again the following year. The ad hoc group met again in 1953 and, at that meeting, named and formalized the conference as an annual event.

Considered to be the foremost event in bringing gas conditioning research and practice together, the conference draws 200 to 300 participants and panelists internationally from both industry and academia. Many of the original attendees have returned every year up to the present.

Reid shaped the character of the conference. To preserve the opportunity for a free exchange of ideas, he kept the meetings small, and to maintain spontaneity, he preferred to keep no official record of questions and discussions. Under his guidance, the forum provided lively technical debates. Initially, Reid personally solicited all of the papers presented and set up the entire



annual event. In 1954, Professor John M. Campbell (MSChE '48, Ph.D. '51) joined Reid as co-chair of conference.

Reid ensured the continuity of the conference beyond his lifespan through creation of an advisory board in 1970. In 1985, gas processing industry members honored Reid as "an outstanding engineer, educator and businessman" by renaming the conference the Laurance Reid Gas Conditioning Conference.

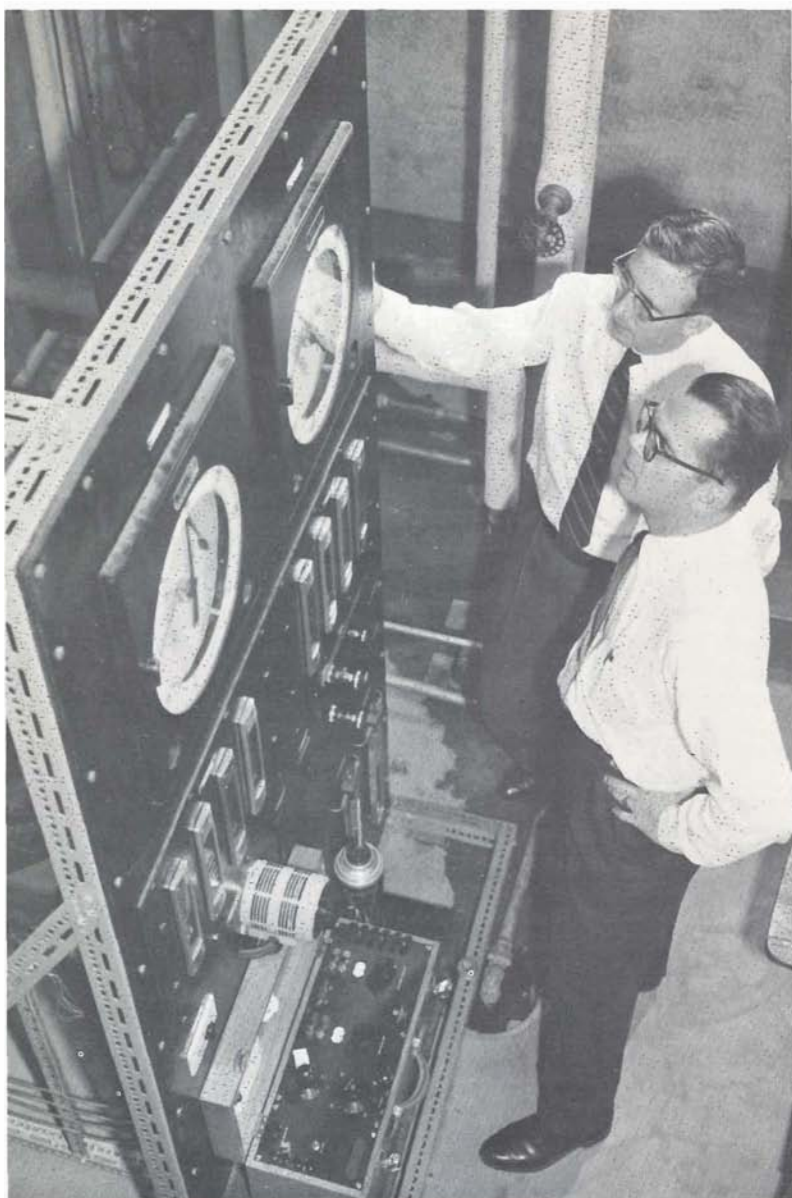
In 1952, the year after the first informal conference, Reid was appointed chairman of the School of Natural Gas Engineering. The curriculum of the school had been restructured in 1951 to conform gas engineering instruction to modern industrial practices to better fulfill needs of the postwar industry. In 1955, Reid doubled administrative service, serving also as chairman of the

School of Chemical Engineering. He served in this dual capacity until 1957, when he was appointed director of the OU Industrial Research Park under development by the OU Research Institute as a center for business and industrial research facilities.

At that time, Cheddy Silepcevich was appointed chairman of the School of Chemical Engineering, and Reid's frequent research partner F. Mark Townsend (BSChE '47, MSChE '48, Ph.D. '55), an assistant professor of chemical engineering, was named chairman of the School of Natural Gas Engineering.

Beyond his new responsibilities to the research park, Reid remained active in research as professor of chemical engineering, collaborating with Townsend on a project concerning the decontamination of jet fuels for the armed services and on another to develop a sour gas treatment process based on a unique reaction mechanism discovered by Townsend. Reid and Townsend

Reid and F. Mark Townsend discuss gauge readings during a process they pioneered. (ca. 1952)



combined functions of three separate processes then in use, removing hydrogen sulfide and hydrates bringing sour gas to pipeline specification while producing elemental sulfur as a by-product. Though not a commercial success, the process was a notable departure from conventional processes of the time and led the way to others that have found widespread commercial application.

In 1959, the university consolidated the research park and the OU Research Institute into a single administrative unit, and Reid was charged with the additional responsibilities of management of industrial relations for the Institute and coordination of contract re-

search sponsored by industry. Under this arrangement, OU could facilitate projects outside the normal scope of industrial research labs and provide an economic central research facility for projects sponsored by smaller firms unable to support research facilities on their own.

In 1961, Reid resumed teaching, joining the faculties of the petroleum engineering and chemical engineering departments. The natural gas engineering curriculum had grown highly specialized over the years, and, by 1960, the last graduates of the School of

Natural Gas Engineering had graduated under Townsend, and the school had been dissolved. The degree in natural gas engineering was incorporated as an optional curriculum in the School of Petroleum and Geological Engineering, chaired at that time by John Campbell. Reid taught courses in natural gas engineering until retirement from teaching in 1969.

Though "retired," he remained a leader in natural gas education both through his own enterprise as consultant to the gas industry and as new chairman of the Southwestern Gas Measurement Short Course, the oldest petroleum industry school in the Free World devoted to fluid measurement and control.

Since its inception, the short course had met at OU every spring since 1924, except for one year during the depression of the '30s and one year during World War II. College of Engineering Dean William H. Carson had chaired the short course since 1926. Following Carson's death in 1968, Reid, with his vast experience and expertise, was the natural successor.

By the early '70s, during Reid's tenure as chairman, the United States' energy problems had worsened and imports of petroleum liquids increased, making better measurement practices of paramount importance. In response to this crisis, the course content was expanded to include measurement and handling of all petroleum liquids ranging from liquefied natural gas to tar-sand slurries. To reflect the changes, the short course was renamed the International School of Hydrocarbon Measurement.

With the cooperation of the university, sponsoring associations and commissions, and industry representatives, the school seeks to provide instruction in both technical and non-technical subjects for personnel in the hydro-

continued next page

carbon measurement and control industry. In addition, the school seeks to promote development, exchange and publication of accurate information to benefit both industry and consumers.

To that end, the school is comprised of a three-day series of lectures, approximately 145 in number, and an extensive exhibit by 87 manufacturers whose exhibited equipment must conform to standards established and controlled by the General Committee of the school. As a petroleum industry program hosted by the university, the modest costs of the school are borne by petroleum industry attendees, exhibitors, speakers and General Committee members, with only Executive Committee members, university faculty and properly enrolled university students exempted.

As chairman, Reid supervised the large undertaking of the self-supporting, not-for-profit school through 1981. That year, ISHM recognized Reid for his outstanding contributions to the gas industry by creating an annual industry service award bearing his name. The Laurance Reid Award for Outstanding Contribution to Hydrocarbon Measurement and/or Control is given to individuals contributing the plan, design, program, development, or improvement of a method, appara-

tus, or material by which the measurement and control of fluids is made more accurate or economical.

In recognition of such wide-ranging technical contributions, Reid was recognized by the Gas Processors Association in 1970 with the Hanlon Award, the highest honor in the industry.

During the period from 1981 until his death on Oct. 9, 1986,

Reid remained active as a technical consultant and adviser to the petroleum and gas industries and as a member of the OkChE Board of Directors.

Reid was a member of the American Institute of Chemical Engineers and the Society of Petroleum Engineers. His honorary technical memberships included Sigma Xi, Tau Beta Pi and Sigma Tau.

First Reid Scholarship Recipient Selected

Taylor James Walraven, a senior in the School of Chemical Engineering and Materials Science, has been awarded the first Laurance S. Reid Scholarship for Natural Gas Processing.

The \$800 scholarship for 1988-89 was presented to Walraven at a reception for the OkChE Board of Directors and CEMS Scholars during the board's Sept. 16 meeting.

"Ty," as he is called, worked this past summer as an engineering technician for Warren Petroleum Company in its natural gas processing plants in southwestern Louisiana. He was responsible for analysis of glycol and amine systems for cryogenic and oil absorption type plants.

The Moore, Oklahoma, senior is currently treasurer of the OU student chapter of the American Institute of Chemical Engineers. He was president of the Latter-day Saint Student Association during 1987-88 and served as a mission-

ary in the northeastern region of Spain, where he made use of his fluent Spanish language skills. His interests include computer programming using FORTRAN and BASIC languages, and operation of several systems for spreadsheet accounting, database utility, graphing and word processing. He also is an avid sportsman and a fan of all sporting activities. He plans to graduate in May 1989.

The memorial fund established to honor Laurance S. "Bud" Reid, the longtime OU professor of chemical and petroleum engineering and founding member of the OkChE board, had grown sufficiently to allow an \$800 award to be made this fall. The scholarship is available to seniors or graduate students in either chemical or petroleum engineering who demonstrate an interest and aptitude in natural gas conditioning and processing. The recipient is chosen on the basis of scholastic standing, with consideration of need, by a committee composed of the directors of both schools and faculty members teaching courses in natural gas processing and related subjects.

In time, when endowed funds have grown sufficiently, the scholarship stipend will increase to a level to include tuition, fees and books for a full academic year. Interest funds generated by the memorial fund provided the \$800 scholarship for 1988-89.

The scholarship fund was established with the University of Oklahoma Foundation Inc. by Reid's family, friends and fellow OkChE alumni in October 1986, shortly after his death. The award seeks to honor his name while focusing on the area of his lifelong commitment—natural gas processing and conditioning.

Professor Raymond Daniels and Mary A. Reid presented the first Laurance S. Reid Scholarship for Natural Gas Processing to CEMS senior Taylor James Walraven at the student reception for the OkChE Board of Directors following its September meeting.



A black and white photograph of a man with glasses and a polo shirt, smiling while holding a small book or box. A computer monitor is visible in the background.

His appointment strengthens the school's position to develop broad based biotechnology programs and to increase opportunities for collaboration in research in biochemistry, molecular biology and microbiology at OU.

While at Phillips, Harrison led a development team in a project for low cost production of a peptide in a genetically engineered yeast. The yeast was administered to cattle and pigs to increase their feeding efficiency with the objective of reducing farmers' costs of raising them to market. Harrison directed the design of the separation and purification side of the pilot plant for recombinant proteins and peptides. His responsibilities included design and specification of a variety of

[illegible]

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equipment and supervision of implementation of the FDA's Current Good Manufacturing Practice regulations for such processes.

When Phillips management decided early this year to eliminate its biotechnology division as part of a cost-saving effort, Harrison was given the opportunity to join the company's polymers division research and development department, but chose to continue bioengineering research.

"I chose the job at OU over two attractive job offers from pharmaceutical companies on the east coast primarily because of the much greater amount of freedom that I would have at OU to pursue my own research interests in biotechnology. I was very impressed with the CEMS faculty and felt that I would enjoy working with them," he said.

"One of my main research interests is bioseparations, and I am interested in collaborating with those CEMS faculty members doing work in the separations area, including John Scamehorn, Jeff Harwell and Richard Mallinson," he said. "I have an interest in research on mass transfer and hydrodynamics in the body (the area of my Ph.D. thesis) and could collaborate with Ed O'Rear in this area."

Harrison added that he is interested in collaborating with Professor Robert Shambaugh on the interaction of proteins and polymers.

In addition to team research efforts within CEMS, Harrison plans joint ventures in research with faculty in other departments. Harrison and Professor Bruce Roe, who is in the Department of Chemistry and Biochemistry, will pursue development of large quantity production processes for generation of small peptides, such as hormones, by recombinant DNA methods.

Current processes to produce peptides at large scale (greater than 1000 kilograms per year) are

very inefficient. Harrison will explore recombinant DNA methods that promise improvement in purification, where most of the costs lie. This research will span nearly the whole spectrum of biotechnology and provide excellent training for biochemical engineers entering the field.

The investment by chemical companies in this new frontier of chemical engineering has just begun to yield products produced from recombinant protein processes. Some of these include a tissue plasminogen activator, a recombinant protein now on the market used to dissolve blood clots and another nearing the market, an animal growth hormone, used to increase milk production in cows and to increase the feeding efficiency of cows, pigs and sheep.

The challenges for chemical engineers in biotechnology, Harrison said, are in understanding and dealing with the special problems and restrictions in the purification of proteins and peptides, in selection and development of the unit operations to use and the sequence in which to use them, and in application of recombinant DNA techniques that will lead to more efficient bioseparation processes.

Harrison has two patents to his credit, both related to improved methods for purification of aminoglycoside antibiotic, such as he developed for application to the human antibiotic gentamicin to achieve economy in purification to reduce the very high cost of production.

Harrison was born in Lebanon, Missouri, where his father was in Army training during World War II. But he calls Oklahoma home, having been reared in Altus.

"The opportunity to stay in my home state of Oklahoma was a big plus," he said in his decision to join CEMS.

After graduation from OU in 1967, Harrison attended the University of Wisconsin in Madison, receiving his M.S. in chemical engineering in 1968. That year, he was employed by Chevron Research Company in Richmond, California, as research engineer

in the Process Design Department. There he participated in the design of several large petroleum refineries and worked as process engineer in Chevron's El Segundo Refinery until 1970.

Harrison returned to the University of Wisconsin, receiving his Ph.D. in 1975. His doctoral research involved hydrodynamics and mass transfer in mammalian systems.

From 1975 until 1981, when he joined Phillips, he was employed by the Upjohn Co. in Kalamazoo, Michigan, as Research Scientist in the Fermentation Research and Development Department of Upjohn's Fine Chemicals Division. There he worked extensively in solid-liquid extraction, liquid chromatography, and crystallization in development of large scale processes for the separation and purification of antibiotics from fermentation broth, at lab, pilot plant and plant scale.

He and his wife, Kathy, have two sons, Mike, 12, and Zack, 9. A Des Moines, Iowa, native, Kathy received a B.A. in English from Cornell College in Iowa, and an M.S. in English from the University of Illinois. She has taught high school English for 12 years.

Harrison's interests outside chemical engineering research include music, sports, and European and American history. Harrison plays guitar, and he sang in his church choir in Bartlesville, where he helped organize the Oklahoma Mozart Music Festival. He has coached his sons' soccer and basketball teams and likes to play golf when he can.

Lance Lobban Exploring New Materials Frontiers

Since joining the CEMS faculty last fall, Kansas native Lance Lobban has pursued a spectrum of research interests complementing our chemical engineering and materials programs.

His primary interest in reaction engineering and catalysis has been focused on development of a graduate course encompassing a broad range of industrial problems and applications. Lobban is intrigued by production of ceramics, which are increasingly in demand by industry. His interest in materials research has led to collaboration with Professor Robert Shambaugh on a novel process for production of polymer fibers with unusual properties.

Lobban plans to offer the course in reaction engineering and catalysis by the summer 1989. The incentive for improving the design of industrial reaction equipment and improving catalysts is the tremendous savings and increased productivity it will bring to manufacturers. Such changes promise growth for makers of everything from motor oils and gasoline to synthetics for clothing and plastics.

The catalysts used in almost all industrial processes to induce acceleration of desired reactions often accelerate undesired reactions as well, producing unwanted byproducts and wasting raw material. Improved catalysts for industrial reactors, which typically process thousands of pounds of raw material a day, could reduce waste, energy requirements and reactor size.

Lobban plans to find ways to improve heterogeneous catalysts and catalyst utilization by studying the reaction mechanism of methane coupling (to ethane and ethylene) on metal oxide catalysts. This reaction has huge potential as an alternate route for production of petrochemicals feedstocks.

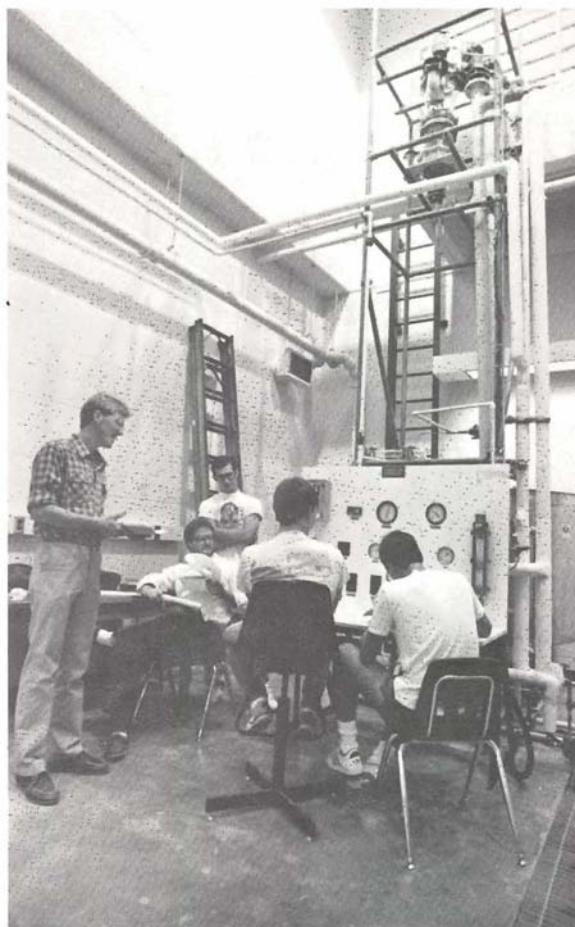
By discriminating between possible reaction mechanisms and identifying elementary steps in the reaction process, the research can lead to improved process yields and selectivities.

Many conventional petrochemical production processes use ethylene as the starting material. Much of the ethylene comes from petroleum refineries. Thus, when the price of oil goes up, so does the cost of ethylene and all the products made from it. When oil supplies tighten, so does the supply of ethylene and its products. An alternate source of ethylene would provide flexibility and abundance of raw supply and would stabilize supply of products made from it.

Another area of interest to Lobban is the polymer fiber research initiated by Bob Shambaugh. By incorporating additives in the fibers, unusual properties, such as electrical conductivity, can be achieved. Lobban and Shambaugh are collaborating in a project involving gel spinning, a novel technique for the production of polymer fibers. The gel spinning technique allows very good alignment of polymer molecules resulting in very high strengths.

Chemical manufacture of ceramics is a challenging new field Lobban plans to explore. While metals have been a very widely used class of materials for machined parts such as engines, their use can be limited by their strength, by the temperature to which they can be raised, and by the fluids that contact and corrode them. Ceramics can be stronger per unit weight, better able to withstand higher temperatures, and can be more resistant to chemical attack. Because of these features, industrial demand is increasing for ceramics for a wide variety of applications.

Automobile or other engines using ceramic parts could operate at higher temperatures and, therefore, be more energy efficient. Metal pump parts, which



Professor Lance Lobban confers with a team of Unit Operations Laboratory class members about results obtained in the course of an experimental process.

continued next page

Larry Crynes Awarded Centennial Doctoral Research Assistantship

Lawrence L. Crynes, a CEMS doctoral candidate, has been awarded a Centennial doctoral Research Assistantship for 1988-89.

The award is renewable for up to four years and includes tuition, fees and a stipend of \$11,000 per year.

The research assistantship, which was created by OU as part of its \$100 million Centennial Campaign, is one of 12 given in 1988-89 to highlight the university's strong programs.

Larry received his bachelor's degree in chemical engineering at Oklahoma State University in May 1987. He gained considerable undergraduate research experience and publications credits at OSU as laboratory assistant in work with a high-temperature, high-pressure catalytic hydrotreating reactor.

He also assisted in another project directed by CEMS alumni Bob Wills involving testing of a film composed of polyvinyl chloride-dacron electrets for use in artificial blood vessels.

On another project involving pyrolysis of hydrocarbons, Larry worked with his father, OU College of Engineering Dean Bill Crynes, during 1986 while both were still OSU "Cowboys."

"It was great!" Larry said of the experience. "He was harder on me than anyone else. He has very high standards and expectations," observed the younger Crynes, whose own performance well proves he is equal to the challenge.

While at OSU, Larry received numerous scholastic awards and honors and earned nearly a dozen university, foundation and corporate scholarships.

As a design engineer at Moore Business Forms in Stillwater during

the summer of 1987, Larry was responsible for developing the overall cost analysis of a cooling system for a reaction vessel, plant and vessel ventilation system, and a waste acid recovery system.

Larry is a registered Engineer in Training in the Oklahoma Society of Professional Engineers and a member of AIChE and Tau Beta Pi.

CEMS Doctoral Student Receives NSF Fellowship

David Krehbiel, a McPherson, Kan., doctoral student in chemical engineering, has been awarded a national Science Foundation Fellowship.

The fellowship, which is considered one of the most distinguished awards on campus, provides \$12,300 plus tuition, books and fees for up to three years.

Krehbiel is a May graduate of McPherson College in Kansas, where he received a bachelor's degree in chemistry with a 4.0 cumulative grade point average. He will be conducting dissertation research under the supervision of Professor John Scamehorn.

While at McPherson, Krehbiel garnered numerous scholastic awards and gained extensive research experience through summer research internships at the University of Kansas at Lawrence and at Denver University in Colorado.

Krehbiel also was awarded a \$1,000 Gordon Fellowship by the College of Engineering for 1988-89.

He is an associate member of ACS and a member of the American Association for the Advancement of Science.

■ Lobban continued

corrode quickly, can be replaced by more durable ceramics. Ceramics are already finding application in these and other ways, but they have been expensive to produce, limiting the economical usage of the new materials.

Improvement of ceramics manufacturing processes could reduce costs and allow much wider usage. Chemical manufacture of refractory powders (from which ceramics may be formed) generally involves very exothermic reactions. Control of product purity and size distribution is critical, but reaction rates can be difficult to control in such high heat-producing reactions. Increased understanding of the reaction mechanisms can aid in the design of the manufacturing process and process controls.

Along with research, Lobban enjoys teaching and interacting with students—major factors in his decision to pursue a career in academia. Last year, he taught the Design and Unit Operations laboratory course and the Process Dynamics and Control course.

His biggest distraction from his work is an interest in almost everything. He enjoys participating in sports, particularly tennis, racquetball, biking, softball, volleyball, basketball, golf and others. He attributes his interest in competitive sports to the example set by his elder brother and sister. He likes reading, music and theater, and enjoys (when things go well) working on his car, bike, and anything else that needs fixing.

Lobban graduated with a B.S. in chemical engineering from the University of Kansas in 1981 and continued his studies at the University of Houston, earning his Ph.D. in 1987.

1987-88 CEMS Scholarships and Student Awards

CEMS student awards for 1987-88 were presented in a reception following the April meeting of the OkChE Board of Directors.

Senior award recipients were Murray Hamilton, who received the Robert Vaughan Award for Outstanding Undergraduate Research; Darrel Hail, recipient of the F. Mark Townsend Scholarship; Mark Richards, recipient of the Pamela Pesek Johnson Award; and Marilyn Grass, who received the Phillips Petroleum Award and the American Institute of Chemists Award. Grass also was voted Outstanding Senior in the College of Engineering.

Awards for outstanding academic achievement by juniors were presented to Kris Christain, who received the Dow Chemical Company Award, and Steven Shimoda, who received the AIChE Award. Jana Armstrong was recognized by CEMS as Outstanding Sophomore.

CEMS Undergraduate Research Scholarships were awarded during 1987-88 to Jana Armstrong, Lance Gibson, Murray Hamilton, Kevin McKeown and Julie Sheffield. This program has allowed opportunities for a number of Program of Excellence scholars to gain valuable research experience and to contribute to technical publications at the undergraduate level. Each participant earns additional financial assistance for the award semester as an integral member of a research team of graduate students working under supervision of CEMS faculty.

Burl Lampl was recognized by Tau Beta Pi alumni of Kerr-McGee Corp. as an outstanding OU junior in 1987, an honor that included a \$1,000 scholarship. The award was presented to Lampl at the Tau Beta Pi annual awards dinner in December.



Senior Joseph Klepak received third place in the AIChE Environmental Division student paper contest for the entry "Use of Ligand-Modified Micellar Enhanced Ultrafiltration in the Selective Removal of Metal Ions From Water."

The paper was reviewed by a panel of chemical engineers associated with academia, industry, consulting firms and national laboratories. The \$100 award was presented in August at the Environmental Division's Awards dinner in Englewood, Colo.

CEMS scholastic achievement awards were presented last spring to (from left) Darrel Hail, Marilyn Grass, Mark Richards, Murray Hamilton, Kris Christain, Jana Armstrong and Steven Shimoda.

Lori Hole Receives College Fellowship

CEMS graduate student Lori Ann Hole was selected by the College of Engineering to receive the \$4,500 Mary Ann Phelps Knowles Fellowship for 1988-89.

Lori is a spring 1989 candidate for a master's degree in chemical engineering. Her thesis research involves measuring the kinetics of surfactant precipitation in a project of her advisor, Professor John Scaemhorn.

The Wichita, Kansas, native completed her undergraduate work in 1987 at the University of Kansas at Lawrence. While enrolled at KU, Lori received the N.T. Veatch Engineering Scholarship and spent two summers in Puerto Rico on a General Electric Spanish Engineering Internship.

Lori is a member of the OU student chapters of AIChE and ACS, and an honorary member of the Alpha Chi Sigma chemistry honor fraternity.

The Mary Ann Phelps Knowles Fellowship was endowed by the late Rex V. Phelps and his widow, Margaret Sue Phelps, of Indian Shores, Florida, to provide for scholarships, library acquisitions and unrestricted support to the College of Engineering as a memorial to their daughter, a 1965 graduate in general engineering.

Alumni Notes

Mark D. Boren (BSChE '83, MSChE '86), Virginia Gray Luster (BSChE '83, MSChE '85), and Kevin J. Kennelley (BSMetE '80, MSMetE '85, Ph.D. '86), co-authors of a paper with former CEMS professor Carl E. Locke, were honored by selection of their paper "A Study of Corrosion Properties of a New De-icer, CMA" to receive the D. Grant Mickle Award, which is given each year by the National Research Council for the best paper in the area of operation, safety and maintenance. The award was presented during the 67th annual NRC meeting in Washington, D.C. Boren is an engineer with CIBA-Geigy in McIntosh, Alabama; Luster is a research scientist with Alcon Laboratories in Ft. Worth, Texas; and Kennelley is a senior research engineer with Exxon Production Research in Houston.

Bradley D. Blevins (BSChE '82) just completed an MBA at OU and has accepted a position with the Enron Corp. as an associate project manager in Houston.

John M. Campbell (Ph.D. '51) was recently honored by Iowa State University with a professional achievement award in recognition of his pioneering developments of petroleum technology and the effective transfer of that technology through numerous books and technical articles. The former OU professor of petroleum engineering received his bachelor of science degree in chemical engineering at Iowa State in 1943.

Don Green (MSChE '59, Ph.D. '63), a Conger-Gabel Distinguished Professor of Chemical and Petroleum Engineering at the University of Kansas, Lawrence, at long last received his school's honor for an Outstanding Progressive Educator. Six times previously he had finished as a finalist for the only KU teaching award bestowed exclusively by students. Finally in fall 1987, on his seventh nomination since 1980, he received the winner's plaque and a \$200 award check. Green says that when he joined KU in 1964, he kept thinking, "If the students knew how little ahead of them I was, it might be scary. But somehow they never caught on." But Don caught on, and now the

voting seniors finally did too. His secretary says Don enjoys teaching so much that he says he would probably pay the university for the chance to teach there. Congratulations, Don!

Deaths

Harvey von Eggers Doering (MSMetE '63), a recognized expert in superalloy corrosion and gas turbine fuel oil specifications, died Jan. 4, 1987. Doering had retired from General Electric in 1986, where he specialized in the study and abatement of corrosion and deposits in gas turbines.

Program of Excellence Scholars 1988-89

The Program of Excellence Scholarships continue to enable CEMS to recruit a large number of superior undergraduate students. This year, we have 37 Program of Excellence Scholars, including 16 freshmen, seven sophomores, 11 juniors and three seniors.

Atlantic Richfield

Katricia Louthan

Chevron

Mark Dawkins
Kevin McKeown

Conoco

Tom Burghart
Randall Craddock
Suma Gollahalli
Dana Harding
Heather Horstman
Carrie Newton
Brian Oakwood
Sharon Provine
Julie Sheffield

Diamond Shamrock

Jason Anderson

Dow Chemical

Kris Christain
Mark Porter

Mobil

Burt Lampi

Phillips Petroleum

Paul Pfeffer

Procter & Gamble

Lance Gibson
Derek Gregory
Steven Shimoda

OkChE

Cheveil Bush
Tracy Byford
Steven Grigsby
Steven Harris
David Hildebrand
Rebecca Holland
Kimberly Leedy
Nora Melton
Michael Odell
Vanessa Ong
Meredith Pate
Cynthia Pham
Tuyet Pham
Kristy Sells
Matthew Syverson
James Thomas
Kimberly Yates

New Alumni 1987-88

Bachelor of Science in Chemical Engineering

Mark R. Allee
Grady K. Bergen
Robert N. Bourbeau
Brett C. Brown
Sharon D. Carroll
Bryan K. Colvin
Fernando E. Gonzalez
Darrel L. Hail
Timothy E. Huffer
Doug D. James
Laura J. Kasar
Jerry N. Kennedy
Daniel M. McCurley
John E. Poarch

Mark A. Richards
Brian L. Schmoeyer
Lee R. Shouse
David C. Tamakloe
Robert D. Vanskike
Irawan Wirgho
Ward A. Zerger

Master of Science in Chemical Engineering

Ali Abdollahi
Joel C. Amante
John A. Boyd Jr.
Tuan A. Dang
Steven C. French
Kevin L. Gering
Ashiq Husain
Jeffrey J. Lopata
Darryl L. Mamrosh
Ann J. Montgomery
K. M. Narasimhan
Michael W. Peters
Thumrong Pungasmi

Venkateswara R. Puranapanda
David L. Steinhoff
Kalyanaraman Subramanian
Seema B. Vad

Master of Science in Metallurgical Engineering

Rhonda J. Eubanks
Donna E. Hatfield
Quang X. Mai
Guy T. Nguyen
Yetunde O. Ponnle
Andreas E. Toliopoulos

Doctor of Philosophy in Chemical Engineering

Robert O. Dunn Jr.
Chan H. Lee
Cuong M. Nguyen
James F. Rathman
Jengyue Wu
Mark A. Yeskie

Lost Alumni Search

We have listed below just over 400 alumni with whom we have lost contact over the last few years. If you have a recent address for any of them, we would appreciate very much if you would forward it to us along with any news about yourself you may wish to share with fellow alumni. Thank you for your help.

Anees Abbas, BSCE '79
Said Nezameddin Aghili-Koromahalleh, BSCE '71
Gholam H. Ahmadiyar, BSCE '79
Mohamad Ahmadiyar, BSCE '76
Charles Ahn, BSCE '83
Carol Clifford Akers, BSCE '48
Mashkoor Alam, BSCE '70
Buford Lee Alderidge, BSCE '49
Daniel Bacon Allen, BSCE '49
Joe Young Allen Jr., BSCE '40
Mohammad Amiri, BSCE '78
Anis F. Andary, BSCE '73
John Daniel Anderson Jr., BSCE '76
Ahmood Torabi Angaji, BSCE '79
Mark J. Anthony, BSCE '69
Ardeshr Azodi, BSCE '72
Jeff Lane Bell, BSMET '81
Colon Underwood Bickford, BSCE '38
Akbar Biniyazan, BSCE '78
Harry Kenneth Bishop, BSCE '51
Tommy Lester Black, BSCE '40
Christopher Scott Blair, BSCE '79
Allen L. Blancett, BSCE '61

Emanuel B. Bolene, BSCE '37
Virgil R. Bonnette, BSCE '43
Mehdi Boroumand, BSCE '74
Ali-Ashraf Bouer, BSCE '75
John L. Bowie, BSCE '62
John W. Bowles Jr., BSCE '59
Lawrence G. Boyts, BSCE '35
Carl Owen Brady, BSCE '61
Herman Ludwig Brandt, BSCE '41
Carl Larue Brattain, BSCE '20
Michael Patrick Breeson, BSCE '83
Robert Edward Breidenthal, BSCE '47
Kenneth D. Brenton, BSCE '58
Merritt G. Brigham
Leonard Richard Brooks, BSCE '50
Paul Douglas Bross, BSCE '55
Lloyd K. Buchanan, BSCE '54
Hugh Robinson Bumpas Jr., BSCE '51
Noah Louis Butkin, BSCE '40
Dorsey Buttram Jr., BSCE '72
Robert Andrews Byorum, BSCE '42
Dwight Clarke Cain, BSCE '39
Joyce Marie Callen, BSCE '83
John Floyd Campbell II, BSCE '49
Pedro Edgar Campos, BSCE '80
John William Carmichael, BSCE '79
Connie Lynn Carroll, BSCE '80
Billy Glynn Casteel, BSCE '53
Flor O. Castillo, BSCE '80
George Theodore Chadwell, BSCE '38
Chao Hsin Chang, MSCE '62
Wayne Chun-Wei Chang, BSCE '84
Wei-Jin Chao, MSCE '79
Yung-Kuo Chao, BSCE '78
Nan-Kwang Chien, BSCE '84

Carlton Aloysius Chin, BSCE '62
Philip C. Chu, BSCE '70
Ting-Hong Chung, PHD CHE 80
James Berton Clapp, BSCE '58
Richard Merton Clarke, BSCE '47
Richard Allan Clausen, BSCE '77
Charles Clifford Jr., BSCE '42
John Charles Coffin, BSCE '85
Arnold L. Coldiron, BSCE '55
Jerry Wayne Cole, BSCE '60
Harold Thomas Connally, BSCE '48
Georgia C. Cooper, MSCE '48
John N. Cooper, BSCE '49
Harold John Corbett, BSCE '50
Donald Hood Cowan, BSCE '36
Stanley Carl Cox, BSCE '85
Suzan Lynn Cox, BSCE '83
Orville Ellis Craig, BSCE '40
William Roy Crawford, BSCE '39
Trevor Paige Cutmore, BSCE '49
Paul Ramey Cutter, PHD CHE '50
Raghunath Vinayak Date, BSCE '61
Claude James Davenport III, BSCE '64
Cynthia Ann Davis, BSCE '78
Richard E. Davis, BSCE '84
Randel Deatherage, BSCE '72
Gerald Lewis Decker, BSCE '47
Changiz Dehghanian, PHD CHE '80
Donald Paul Denny, BSCE '31
Hittendrakumar B. Desai, BSCE '73
John M. Devine, BSCE '24
Bernardo J. Diaz-Lyon, BSCE '72
Mahmoud H. Diba, BSCE '70
Iskandar Zeki Dibe, BSCE '83
Patrick William Dillon, BSCE '82
Ali Djowharzadeh, BSCE '77
Ronald Llewellyn Dobson, BSCE '55

continued

"El Scamil", the Egyptians called him . . . cross the dunes, past the ancient pyramids he rode his trusty camel, the dutiful graduate committee member to hear the defense of the dissertation of Dawlat Seyed (Ph.D. 88) . . . Interestingly, the most frequent comment about the photo on our office bulletin board was, "The camel suits him."



John O. Donaldson, BSCHE '19
James Vorhees Drumheller, BSCHE '40
Thurman J. Dupy, BSCHE '35
James D. Ekstrand, BSCHE '75
Abdallah El-Yazghi, BSMETE '84
George B. Ellis, BSCHE '40
Richard Harold Elliston, BSCHE '43
Merrill Endicott, BSCHE '34
Harvard Eng, BSCHE '47
Louis Allen Evans, BSCHE '72
Douglas N. Ezzell, BSCHE '50
Anis H. Fakeeha, PHDCHE '86
Ferial Faramarzi, BSCHE '76
Iraq Farhangi, BSCHE '76
Joseph Hugh Faulk, BSCHE '48
Olaf Jerome Feely, BSCHE '39
Ralph Hall Fender, BSCHE '53
Darin Lee Fields, BSCHE '87
Donald Finn, MSCHE '58
Daniel Wayne Fox, PHD CHE 53
Harold H. Francis, BSCHE '20
Gerald I. Freeze, BSCHE '43
Kenneth Don Frieshour, MSCHE '84
James Randolph Friou, BSCHE '53
William P. Fulton, BSCHE '60
Thomas Barton Gage, PHD CHE '58
Dan Lewis Ganz, BSCHE '87
Ernest L. Garton, BSCHE '27
Thomas Roy Garvin, BSCHE '62
Mabrouk Ali Ghannudi, MSCHE '83
Khosrow Ghassemi, BSCHE '73
Hadi Gilak, BSCHE '66
Melvin Edward Gilbert, BSCHE '50
Tom F. Gilmore, BSCHE '60
Phillip R. Godshalk, BSCHE '51
Riley G. Goldsmith, BSCHE '58
Luis Rafael Gonzalez, BSCHE '84
Raman Gopalkrishnan, MSCHE '84
Leonard Gordon, BSCHE '49
Jeffrey Scott Graham, BSCHE '84
James Allen Grubb, BSCHE '59

Diana Sue Gunter, BSCHE '80
Ahid Elle Haddad, BSCHE '80
Phillip A. Haddad, BSCHE '85
Hafez Hafezzadeh, MSCHE '77
Arian B. Hale, BSCHE '35
Taleb Ali Hallal, BSCHE '83
John Hallman
Joe Cabot Hannah, BSCHE '41
William Dean Harbert, BSCHE '39
Cullie B. Harris, BSCHE '40
Ernest Moore Haskell, BSCHE '39
Donna Ellen Hatfield, MSMETE '88
Manford Ray Haxton, BSCHE '51
Delbert Lloyd Haynes, BSCHE '37
Edwin Lamar Head, BSCHE '51
Gerald Morley Hechter, BSCHE '39
Dana G. Hefley, BSCHE '26
William Henderson, BSCHE '22
Steven Ray Hendon, BSCHE '84
Sabina Doris Henry, BSCHE '85
William Case Hewitt, BSCHE '36
Hung Huy Hoang, BSCHE '80
Charles Clifton Hobbs, PHD CHE '53
Ralph L. Hock, BSCHE '37
Stanley R. Hoggatt, BSCHE '67
Waymon Clifford Holloway, BSCHE '51
Orville Horton Jr., BSCHE '39
Jules Arthur Houssiere, BSCHE '40
Richard Phillip Howerton, BSCHE '53
Jaan-Chyi Hsu, PHD CHE '79
Anthony John Hubert Jr., BSCHE '49
Ronda Milhollin Huffines, BSCHE '87
Charles Clayton Hughes, BSCHE '68
Howard Hurst, BSCHE '50
Tito Libio Hurtado, BSCHE '80
Ashiq Husain, MSCHE '87
Gregory Lewis Hutchinson, BSCHE '30
Matt Eugene Immel, BSCHE '80
Don Michael Ingles, MSCHE '62
Khan Zafar Iqbal, PHD CHE '79
Dauda Angulu Ismaila, BSCHE '79
Lella Mroue Issa, BSCHE '80
Fred M. Jackson, BSCHE '73

Parvin Jahanbakhsh, BSCHE '80
Clarence W. Janes, BSCHE '54
Arthur W. Jastrow, BSCHE '20
Benjamin Newton Jenkins, BSCHE '43
Sidney Hartman Jenkins, PHD CHE '53
Suchard Jindasurat, MSCHE '79
Parvin Johanbakhsh, BSCHE '80
Donald Richard Johnson, BSCHE '50
Michael Stephen Johnson, BSCHE '73
Shelton Morris Johnson, MSCHE '44
William Colan Johnson, BSCHE '42
James B. Jones, BSCHE '40
Kenneth H. Jones, BSCHE '61
Ting Yih Ju, MSCHE '41
Ajit Kache, MSCHE '84
Abbas Kachoul, BSCHE '73
Kaveh Kaihani, BSMETE '83
Jerry Neal Kennedy, BSCHE '88
Washington L. Kennedy Jr., BSCHE '44
Raymond Joseph Kenny, BSCHE '50
Clayton P. Kerr, BSCHE '61
Mohammed Arif Khalil, BSCHE '84
Fahim Ashraf Khaneng, MSCHE '84
Doris Jane Killough Larue, BSCHE '48
Abbas Kimya, BSCHE '72
Thomas Frank King, BSCHE '43
Linden Brooks Kirlin, BSCHE '82
Deral Duane Knight, BSCHE '67
Ralph A. Koenig Jr., BSCHE '71
Chen Chun Ku, MSCHE '43
Kesavalu Hemarath Kumar, PHD CHE '80
John J. Lacey, BSCHE '50
Frank Bivins Lachle, BSCHE '31
Tom Lambrecht, BSMETE '61
James E. Lamkin, BSCHE '49
Angel F. Landino, BSCHE '59
Jack Roger Lane, BSCHE '83
Daniel Jonathan Lankford, BSCHE '37
Robert John Larkins, BSCHE '85
Doris K. Larue, BSCHE '48
Jen-Lien Allen Lin, MSCHE '82
James Allan Loomer, BSCHE '54
Zoraida Margarita Lopez, BSCHE '80
Hugh Everett Luffman, BSCHE '36
John Rudolph Lynn Jr., BSCHE '54
Antoine A. Maatouk, BSCHE '79
Ralph E. Macy, BSCHE '46
Joseph L. Maher, BSCHE '36
John Amos Mann, BSCHE '32
Ramono Alberto Mantellini, BSCHE '61
Ralph John Markland, BSCHE '85
Ralph Richard Marley Jr., BSCHE '76
John Alfred Marshall, BSCHE '40
Whitfield Anthony Martin, BSCHE '42
Jesus S. Martinez, BSCHE '55
Louis Edison Matthews, BSCHE '40
Clifford Wayne McCall, BSCHE '38
Christopher Dean McCarty, BSCHE '83
Robert Gordon McCollum, BSCHE '54
Alfonso Alfredo McLean, BSCHE '81

Charles Robert McMahan, BSCHE '38
 Jimmy Reece McMahan, BSMETE, '70
 Charles Raymond McMurry, BSCHE '49
 Charles Richard McNeese BSCHE '50
 Danny Lee McNeill, BSCHE '71
 Hugh Omar Meeks, BSCHE '41
 Yassin Salehi Mehmandoust,
 BSCHE '84

Pankaj Mehta, MSMETE '76
 Paulo F.V.M. Mendes, BSCHE '64
 Ana Maria Mendez, BSCHE '80
 F. Frederick Merliss, BSCHE '68
 Valentine Mertz, BSCHE '40
 Edwin Arthur Meyer, BSCHE '51
 Randall Lee Miller, BSCHE '82
 Victor T. Miller, BSCHE '52
 Elven Keith Mitchell, BSCHE '84
 Guy Sibley Mitchell, MSCHE '25
 Kenneth Gene Mitchell, BSCHE '52
 Roy Clyde Mitchell, BSCHE '15
 Wilbur Clifford Mitchell, BSCHE '39
 Yadollah Montazerolghaem, BSCHE '83
 Anne Jenkins Montgomery, BSCHE '87

Calvin Turner Moore II, BSCHE '81
 Robert Fraser Morgan, BSCHE '43
 James Harrod Morton, BSCHE '40
 Amin Mostafavi, BSCHE '77
 William Copland Moyer, BSCHE '37
 John Alvin Mylar, BSCHE '80
 Dan Max Nail, PHD CHE 54
 Craig Scott Narum, BSCHE '84
 Azadeh Naseri, BSCHE '84
 Douglas Randal Nath, BSCHE '83
 Guillermo Navarrete, BSCHE '40
 Pham Nghiem, BSCHE '84
 Dien D. Nguyen, BSCHE '80
 Duc Van Nguyen, BSCHE '83
 Dung A. Nguyen, BSCHE '84
 Hoan Trong Nguyen, BSCHE '84
 Tuyetmai Thi Nguyen, BSCHE '84
 Gayle Howard Nichols, BSCHE '44
 Lynn Clyde Nordahl, BSCHE '42
 James Maitland Norman, BSCHE '48
 Thomas Gilbert Norris, BSCHE '56,
 MSCHE '57

Onyenma Dan Nwaelele, BSCHE '84
 Desmond R. O'Steen, BSMETE '68
 Burton R. Ogden, BSCHE '56
 Victor Benjamin Ogden, BSCHE '45
 Ema Sunday Ogoro, BSCHE '82,
 MSCHE '85
 Edwin Theodore Otte, BSCHE '39
 John M. Pace Jr., BSCHE '49
 Leroy Earl Page, BSCHE '55
 Maria Esperanza Palacios, BSCHE '83
 Stanley Ray Pearson, BSCHE '51
 Joe Edward Perick, BSCHE '42
 Elijah Edward Petty, BSCHE '48
 Quang Nguyen Pham, BSCHE '85
 Donald F. Pitts, BSCHE '61
 Patrick David Plumb, MSCHE '80
 Mark D. Polderman, BSCHE '63
 Irwin Politzner, MSCHE '51
 James W. Porter, BSMETE '69



■ The final
 ■ phase of con-
 ■ struction of OU's
 ■ Energy Center is
 well under way.

Ahmad Poureshmenantalemy,
 BSCHE '66
 Scott D. Powers, BSCHE '84
 Johnny Harrell Price, BSCHE '85
 Bennie Warren Primeaux, BSCHE '80
 Connie Lynn Primeaux, BSCHE '80
 Karen Prock, BSCHE '84
 Robert Ward Propp, BSCHE '48
 Redus Hayes Pruitt, BSCHE '39
 Venkateswara Rao Puranapanda,
 MSCHE '87
 David Wayne Quillin, BSCHE '85
 Clinton Connell Randall, BSCHE '44
 Laura Mari Rausch, BSCHE '85
 Steven Scott Raybourn, BSCHE '78
 Robert Randall Read, BSCHE '41
 Vincent Junior Reh, BSCHE '44
 Carl E. Resittle Jr., BSCHE '22
 Bernard Reymond, MSCHE '64
 William Larry Richards, BSCHE '50
 Thomas Merlweher Richardson,
 BSCHE '87
 Randy L. Richey, BSCHE '79
 Michael Riddle, BSCHE '74
 Zoraida Margarita Rincon, BSCHE '80
 Ralph E. Ringelman, BSCHE '43
 James Allen Rogers, BSCHE '85
 Mal David Rogers Jr., BSCHE '48,
 MSCHE '50
 Richard Charles Ross, BSCHE '44
 Frances M. Rossi, BSCHE '50
 Samuel Wendell Royse, BSCHE '50
 Morris H. Russak, BSCHE '39
 A. L. Saffahl, BSMETE '73
 Mayra Elena Sanchez, BSMETE '83
 Phil Sanders, BSCHE '84
 Albert R. Schaefer, BSCHE '35
 Charles Cass Schelman, BSCHE '53
 Herbert Leo Scher, BSCHE '47

Martin David Schlesinger, BSCHE '41
 Ludwig Schmidt, BSCHE '21
 Robert F. Schvally, BSCHE '35
 J. O. Scott, BSCHE '50
 Robert Vining Scott, BSCHE '44
 Leroy D. Scovill, BSCHE '53
 Alix Yolanda Segura, BSCHE '79
 Raymond Evereff Selders, BSCHE '19
 Ray-Chiang Sen, MSCHE '78
 Ashok B. Shah, BSCHE '86
 Khalej S. Shana'a, BSCHE '83
 Iyad Naim Shanaa, BSCHE '87
 Carleton Gregory Shead, BSCHE '37
 Glenn H. Shipley, BSCHE '48
 Ahmed Sweil Shleibak, BSMETE '84
 Phillip Shnier, BSCHE '47
 Billy Fred Short, BSCHE '51
 Corbin Wesley Shouse, BSCHE '51
 James Garnett Shouse, BSCHE '43
 Saul Shragowitz, BSCHE '44
 Maurice Silvergleit, BSCHE '50
 Bobby Gene Simmons, BSCHE '58
 Arthur Gaty Simons Jr., BSCHE '51
 Kent C. Sinex, BSMETE '65
 Aultman Thomas Smith, BSCHE '55
 Herbert Dwight Smith, BSCHE '50
 Phillip Reynold Smith, BSCHE '56
 Teddy Cecil Smith, BSCHE '52
 Wallace Robert Smith, BSCHE '48
 Joseph Quincy Snyder, PHD CHE '54
 James Sommerfrucht, BSCHE '34
 Richard John Sonnenfeld,
 PHD CHE '56
 Carleton David Spangler, BSCHE '50
 David A. Sparkman, BSMETE '72
 Framroze Jehangir Spencer, BSCHE
 '48, MSCHE '50
 Mark Mattison Sperry, BSMETE '78
 Earl Stafford, BSCHE '43
 Roscoe Fertig Stahl, BSCHE '36,
 MSCHE '42

continued

The student reception for the OkChE Board of Directors provides an opportunity for Program of Excellence Scholars to meet the leaders of industry who play an important part in their education. Tom Sciance, Ed Lindenberg and Bob Purgason chat with program freshmen Matt Syverson and Dana Harding.



Clyde Tilden Standridge, BSCHE '40
 David Joseph Stark, BSCHE '44
 Steven Paul Statham, BSCHE '87
 Norman Chester Stephens, BSCHE '44
 Terry Paul Stone, BSCHE '78
 David Lindbloom Stoner, BSMETE '68
 Ronald Keith Streetman, BSMETE '73
 Edward Strunk, BSCHE '41
 Jose Arfillo Tapias, BSMETE '81
 Billy Timon Taylor, BSCHE '37
 John Mortimer Terry, BSCHE '37
 Victor Bismark Thegze, MSCHE '41
 Leroy Ernest Thompson, BSCHE '59
 James William Thurmond, BSCHE '50
 Saied Toobian, BSCHE '74
 Greg Allan Tracy, BSCHE '81
 Ching Chang Tsao, MSCHE '50
 Harry Mitchell Turner, BSCHE '72
 Richard Perry Turner, BSCHE '49
 Kursad Ulusoy, BSCHE '84
 Frank Peyton Vance Jr., BSCHE '38
 Denes Varallyay, BSMETE '62
 Daniel James Vaughan, PHD CHE '50
 Richard Henry Vaughan, BSCHE '44
 Gangaram Vichare, MSCHE '61
 Cameron A. Vickers, BSCHE '64
 Stan Michael Vlasimsky, BSCHE '85
 John F. Voeks, BSCHE '44
 Tuan Duy Vu, BSCHE '80
 Benny Dale Wagner, BSMETE '61
 Safdar Waliullah, BSCHE '64
 Britain William Walton, BSCHE '42
 Phillip Michael Ward, BSCHE '80
 Marinus Willett Wame, BSCHE '27
 Dan D. Washburn, BSCHE '36
 Larry Waters
 Bert Weidner, BSCHE '36

Alfred Barton Weirich, BSMETE '63
 Bryan David Wells, BSCHE '26
 Scott John Werner, BSCHE '48
 Donald Garrison West, BSCHE '77
 James William Whalen, PHD CHE '51
 Jeptha Davis White, BSCHE '44
 Nealy Homer White, BSCHE '33
 William R. White, BSCHE '33
 Nealy Homer White Jr., BSCHE '40
 Larry Dean Wickline, BSCHE '75
 Byron Lee Williams, BSCHE '53
 Woodrow W. Williams, BSCHE '33
 Bill Paul Willis, BSCHE '55
 Horace Shelton Wilson, BSCHE '23
 Sidney Lafern Windham, BSCHE '50
 Charles N. Windle Jr., BSCHE '50,
 MSCHE '51
 Jack Winnick, BSCHE '58
 Joseph John Wolek, BSCHE '48
 Luke Gregory Wooden, BSCHE '79
 Clyde Lowell Workman, BSCHE '39
 Dan Wright, BSCHE '85
 M. A. Yazdanifard, BSCHE '76
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