THE CHEMICAL ENGINEERING MAJOR

A Newsletter for Alumni and Friends of Chemical Engineering

Summer 2001 *Volume 13, Number 2*

West Virginia University
College of Engineering and Mineral Resources

Message From the Chair

"What in the world are chemical engineers doing?" This type of musing is particularly brought forth by this time of year, the period that borders the end of the Spring semester and the beginning of summer. At one end of this period, we have the return of familiar faces of distinguished alumni at the Annual Meeting of the Academy of Chemical Engineers; at the other, the departure of familiar fresh young faces as our graduates go forth with a certain swagger to conquer the world. (The swagger is mixed with some trepidation that they hope that we faculty don't see, but what of it.) The question had special significance this year, as Dr. James E. Mitchell (B'61), the current President of the Academy, suggested that a significant portion of the meeting be devoted to an examination of the changing trends in the education of chemical engineers.

Professor Michael E. Prudich (B'74, D'79), the Academy's Second Vice-President, chairs the Chemical Engineering Department at Ohio University, and he organized a crackerjack program that held our attention for most of the afternoon. Mike started off the proceedings with a background by way of introduction. He pointed out that the approach of many departments currently ranges from Chicken Little ("The sky is falling!") to Paul Revere ("Changes for the better are coming!"). The Three Paradigms approach that he introduced was built upon by yours truly, who pointed out that the First Paradigm ("Unit Operations") and the Second Paradigm ("Transport Phenomena") are clear, now that they are behind us; however, the Third Paradigm, which we appear to be entering, is not. Almost by definition, paradigm shifts cannot be predicted by extrapolating trends. A plan is necessary. and one should have one and follow it, but one needs to be prepared to change plans when necessary. The Third Paradigm may be Molecular Engineering, or it may be Systems Engineering, but I believe that it will evolve to be neither of the above. Our goal should be to keep vibrant the core of chemical engineering, and actively to encourage the specializations (large-scale optimizations, life-science engineering, electronic materials, etc.) on the periphery. Following this, Professor L.-S. Fan (M'73, D'75), who chairs the Chemical Engineering Department at Ohio State University, spoke of the evolving research areas as foci for National Science Foundation (NSF) programs. New thoughts in bioengineering/biotechnology, reactions / catalysis, colloids / particle technology, computational chemistry, multiphase flow, composite materials, and technology at (and of) the nanometer scale ("nanotechnology") are being encouraged, not only by NSF but also by other federal agencies such as Defense, Energy and NASA. The final speaker was Professor Joseph D. Henry (B'64), from Carnegie Mellon University's Department of Engineering and Public Policy, who can always be counted upon to be both provocative and insightful. Joe's thesis was that improving ourselves would depend upon recognizing the new drivers of innovation -- shorter life-cycles, nonlinear innovation processes, globalization, and dependence on the business cycle. These presentations gave me and the other department faculty much food for thought, food that we will use to flesh out our own strategic plan for the department during the current year.

What do you think? What should we be doing differently? What in the world are you doing? Drop us a note, and let us know if you consider it to be "traditional" or "new-wave."

Note added later: See "The Changing Face of Chemical Engineering," an article by Chemical and Engineering News's Stephen K. Ritter (C&EN's June 4 issue), for a different perspective, triggered by the name change at Tufts University to the Department of Chemical and Biological Engineering.

College News

Cilento Becomes Dean of CEMR

The interim dean of the College of Engineering and Mineral Resources has accepted the permanent deanship effective May 11, 2001. Our own Eugene V. Cilento had served as the interim dean of the College since last July and was chosen as the dean following a national search. Provost Lang states, "He has strong support within the college and from alumni, and his broad knowledge of the college's programs allows him to provide the leadership needed to move the college forward in the areas of teaching, research and outreach."

Dr. Cilento has been a faculty member in the Department of Chemical Engineering since 1979 and was department chairman from 1988 to 1999. He has also been a research professor in the School of Medicine's Department of Anatomy since 1978.

Department News

Emeritus Luncheon

On Friday, April 27, 2001, the College of Engineering and Mineral Resources (CEMR) held the Annual Emeritus Luncheon as part of the University Emeritus Weekend. The following Chemical Engineering alumni attended the luncheon, which was held in the Engineering Sciences Building.

Kenneth Barker, BS 1949
John H. Faber, BS 1943
Reid Feather, BS 1950
Paul Westfall, BS 1950

We look forward to seeing all of them again next year.

Departmental Industrial Advisory Committee Meeting

The Departmental Industrial Advisory Committee met on March 21 and 22, 2001 for the Annual Meeting. The following members were present, and provided valuable advice and counsel to the Department.

Dr. Gary L. Brown, Union Carbide Corporation/Dow
Dr. Leonard Graham, NETL
Dr. George Keller, BIDCO
Dr. James Ritscher, Crompton

Our special thanks to Gary Brown who served again as Chair of the Committee.

Union Carbide Corporation Jean B Cropley Distinguished Lecture

This year's lecture was given by Boudewijn vanLent of Bayer Corporation. The seminar was presented in Assembly Room A of the WVU National Research Center for Coal and Energy on Friday, February 16, 2001. The title of Dr. vanLent's talk was "Correlation Between Physico-Chemical and Application/Processing Properties of Dispersions." The seminar was attended by students, faculty, representatives from Union Carbide, as well as other industrial representatives. The Union Carbide Corporation Jean B Cropley Distinguished Lecture Series was established in 1994 to honor Jean B Cropley's association with the Department and the University. Our thanks to Union Carbide for their continued generous support for this Lecture Series, and its companion, the Union Carbide Corporation R. Richard Bannister Distinguished Lecture Series.

CEMR 2000-2001 Outstanding Teachers Announced

Three of the six CEMR Outstanding Teachers selected for 2000-2001 were from Chemical Engineering. Congratulations to Drs. Edwin Kugler, Richard Turton, and John Zondlo.

Student News

Scholarships Announced

The Academy of Chemical Engineers provided scholarships of $1500 each for five rising seniors and three rising juniors to be made in the Fall 2001 semester,

Raymond W. Chafin II ('02)
Travis J. Crites ('03)
Jason T. Gaspar ('02)
Adria K. Hartman ('03)
Jennifer A. Leeson ('02)
Jarod A. McCormick ('02)
David M. Miller ('02)
Gregory M. Miller ('03)

All these scholarship winners were recognized at the 2000-2001 annual Academy Banquet on April 27. The banquet was attended by 115 people, including 31 students attending as guests of the Academy. (See Academy News, below.)

Senior Design

This years' senior design project was led by Raymond Harvey, Chief Engineer; the client was Diminutive Processes, Inc. (Dr. Richard Turton, Senior Engineering Manager); and Dr. Joseph Shaeiwitz was Vice President of Engineering, TechnoCats, Inc. Below is a brief description of the project and results.

"Design of a Carbon Monoxide Unit Using a Fuel Cell to Produce Electricity"
Chief Engineer: Raymond Harvey

On August 27, 2000, Diminutive Processes, Inc. contracted Technocats, Inc., to perform a feasibility study on the potential of combining process miniaturization with fuel cell technology. This research led to the discussion of several different product ideas involving the process miniaturization and fuel cell technology.

One of the product ideas discussed was the concept of Just-In-Time Production Technology. Just-In-Time Production Technology involves the manufacture of hazardous raw materials at the point of use, or location where the materials are needed. The benefits of this technology include the elimination of transportation costs and the reduction of hazardous material inventory.

The specific application involving Just-In-Time Production Technology that was discussed was the on-site manufacture of carbon monoxide. Carbon monoxide is often used as an intermediate in the production of a more valuable-product. For the purposes of this design, the carbon monoxide was considered to have the requirements for use as a feedstock to a phosgene production unit.

Diminutive Processes, Inc. requested the design of a production facility to produce 10,000 metric tons per year of raw-material-grade carbon monoxide. In areas where the side-product hydrogen generated cannot be purified and sold, it is conventionally sent to a boiler to be combusted to make steam. However, Diminutive Processes, Inc. requested the investigation of the potential of using the side-product of hydrogen generated in the process to make electricity in the fuel cell.

The Carbon Monoxide process developed is made up of three units. Unit 100 was the Natural-Gas Reformer unit and the Group Leaders were Christopher Ashley and Nicholas Starita. Unit 200 was the Gas Separations unit and the Group Leader was Laura Eddy. Unit 300 was the Solid-Oxide Fuel-Cell (SOFC) unit and was led by Marisa Riggs and Shawnray Huffman.

The optimal Net Present Value for the process using a fuel cell at a capital cost of $3000/kW to produce electricity is -$16.8 million. A negative NPV is not unrealistic because the value credited for the carbon monoxide product is lower than the value of the end use of the product. The required Fixed Capital Investment for this case is $19.8 million. The annual cost of manufacturing is $5.5 million. The annual revenue generated from this process is $3.3 million. The case is not economically favorable compared to using the hydrogen to make steam. However, the use of a fuel cell in this process will be economically beneficial if current efforts to improve fuel cell operation results in a capital cost of $700/kW.

New Design Competition

During the 2000-2001 academic year, in addition to the regular design group, the Department had two teams working on the AIChE-sanctioned ChE Car Design Competition. The two teams were:

Team Alpha: Andrea Albert - Sr, Jeremy Hengst - Sr, Nathan King - Sr, Jennifer Leeson - Jr, Julie Patterson - Jr, and Keith Tyo - Sr.

Team Beta: Brian Carney - Sr, Gerard Rogers - Sr, Michael Skocik - Sr, James Snider - Sr, Christine Thomson - Jr, and Aaron Wine - Jr.

The seniors on the teams worked on this competition instead of doing the year-long ChE Senior Design Project, and the juniors on the team received technical credit for their year-long efforts on this project by registering for three technical credits in the Spring Semester 2001. The two teams were advised by Drs. Cilento and Turton. This year-long project resulted in a shoe-box size car that competed at the Mid-Atlantic Regional Conclave here in Morgantown on March 16, 2001. We are happy to report that the WVU ChE Cars placed first (Alpha) and second (Beta) at the Mid-Atlantic Regional Conclave. As a result, WVU will be competing at the Annual AIChE Meeting in Reno, NV in November 2001. If you're going to be in Reno, come and cheer on the team.

Student Organizations

The new officers for the Student Chapter of AIChE are:

Aaron Wine ('02), President
Brian Sizemore, Vice-President
Adria Hartman, Secretary
Christi Thomson, Treasurer
Matt Cooper, Assistant-Treasurer

New officers during 2001-2002 for Omega Chi Epsilon are:

Melinda Barr, President
Mary Metzger, Vice President
Jennifer Leeson, Secretary
J. Christopher Taylor, Treasurer

Recent Graduates

The Department had 98 undergraduate students enrolled for 2000-2001 in the sophomore through senior years. This year we graduated 27students, and this fall we anticipate having about 35 rising sophomores. The BSChE graduates for 2000-2001 are shown below. A large majority of the students were employed or pursuing graduate or professional studies by graduation ceremonies on May 13, 2001. Our congratulations and best wishes to all of them in their careers! Please keep in touch!

CLASS OF 2001

December 2000
William A. Caswell
Jennifer M. Logan

May 2001
Andrea S. Albert
Georges E.Alexis
Christopher T. Ashley
Brian D. Carney
Michail K. Dolgovskij
Laura S. Eddy
Brian K. Ferguson
Lloyd J. Ford
Raymond P. Harvey
Jeremy A. Hengst
Shawnray M. Huffman
Nathan D. King
Daniel M. Kuntz
Robert D. Mills
Bryan W. Mulik
Marisa D. Riggs
Gerard M. Rogers, II
Michael P. Skocik
Daniel R. Smith
James M. Snider, II
Nicholas A. Starita
Joseph M. Stoffa
Keith E. Tyo
Lane A. Young
Anthony N. Zinn

The job market is strong, but if your company is hiring, please let us know. We are always interested in providing more opportunities for our graduates.

In 2000-2001, the Department had thirty-nine graduate students enrolled, of whom thirteen are in the PhD program. We graduated eight M.S. students and one Ph.D. during this school year. Their names, research topics, and research advisors are as follows.

December 2000

Brian Bland (M.S.)
Research Advisor: Alfred H. Stiller
"Design, Construction, and Evaluation of Coal Extraction Pilot Plant to Manufacture Coal Based Carbon Pitch"

Chrystal A. Garland (M.S.)
Research Advisor: Rakesh K. Gupta
"Effect of Manufacturing Process Conditions on the Durability of Pultruded Vinyl Ester/Glass Composites"

Lizbeth Laureano-Perez (M.S.)
Research Advisor: John W. Zondlo
"Carbon Products From Coal Liquefaction Fractions"

Sridhar Narasimhan (M.S.)
Research Advisor: Hisashi O. Kono
"Dynamic Behavior Characterization of Fine Powders Consisting of a Homogeneous Emulsion and Synthesis and Decomposition of Methane Gas Hydrate - A Reaction Engineering Study"

Prashant Seshadri (M.S.)
Research Advisor: Eung H. Cho
"Treatment of Acid Mine Drainage With Weirton Steel Slags"

Shannon L. Stover (M.S.)
Research Advisor: John W. Zondlo
"Removal of Uranium From Aqueous Wastes Using Electrically Charged Carbon Nanofibers"

May 2000

Wei Cheng (M.S.)
Research Advisor: Ray Y.K. Yang
"Pretreatment and Enzymatic Hydrolysis of Lignocellulosic Materials"

Ganeshkumar A. Subramanian (M.S.)
Research Advisor: Richard Turton
"Coating Studies and Video Imaging of the Flow Patterns of Tablets in a Semi-Circular Fluidized Bed"

Katherine S. Ziemer (Ph.D.)
Research Advisor: Charter D. Stinespring
"Studies of the Initial Stage of Silicon Carbide Growth on Silicon"

Our congratulations and best wishes to these graduates in their future careers!

Academy News

The last meeting of the Academy of Chemical Engineers was held on campus on Friday, April 27, 2001. The Banquet and Induction Ceremony of the Academy was held that evening at the Erickson Alumni Center. The highlight of the evening was the induction of two new members into the Academy. Their biosketches follow.

William S. Britt
Trask Britt
230 S 500 E STE 300
PO Box 2550
Salt Lake City UT 84110

Bill was born in Smithfield, PA to William M. and Rebecca B. Britt, both school teachers, in 1931. In high school, he dreamed of going to WVU to play college basketball. That dream wasn't realized. Fortunately for him, he was a better student than a basketball player. He graduated in 1954 from WVU, belonging to Tau Beta Pi, Phi Lambda Upsilon and Sigma Gamma Epsilon.

From 1954 to 1960, Bill worked as an engineer for PPG Industries at Natrium, WV, and served as a Nuclear Weapons Officer in the U.S. Navy for three years.

In 1960, Bill enrolled in the evening division of Duquesne Law School, after having been transferred by PPG to Pittsburgh as a patent attorney trainee. After graduating in 1964 with an LLB degree, he worked at PPG as a patent attorney, prevailing in a major patent interference on chemical strengthening of glass. Bill also was an Associate Professor of Law at Duquesne University, 1965-66, and Adjunct Professor, evening division, 1966-69.

In 1969, Bill joined his friend David Trask, formerly of PPG, in Salt Lake City, Utah. In 1973, they formed Trask Britt, which has grown to over 20 Intellectual Property (IP) lawyers. The firm has been involved in significant IP litigation, setting precedent in several cases. Bill is listed in Best Lawyers in U.S., 2000-2001 edition.

Bill's children are: daughters Margaret and Beth, and sons Bob and David. Bob is a Chemical Engineer and David is a Ph.D. Bioengineer. Both belong to Tau Beta Pi, as does Jenn, David's wife. Bill's wife, Martha, died in 1987 ending 26 years of a great marriage. Beth has Down's Syndrome and Martha and Bill were very active in many organizations promoting the welfare of mentally and physically handicapped people.

Bill is currently active with Trask Britt and in community activities, when he isn't hiking in the scenic mountains of Utah.

Paul E. Sample
Samples, Inc.
308 Walden Road
Wilmington DE 19803-2424

Paul E. Sample was born in Chicago, Illinois of Kentucky parents on November 24, 1928. An alumnus of Illinois Institute of Technology, BS (ChE ('51), Dr. Sample received his MSChE ('55) and PhD ('57) from West Virginia University following military service with US Army Chemical Corps. He is a member of Sigma Xi, Phi Lambda Upsilon and Alpha Chi Sigma.

Dr. Sample was employed by E.I. DuPont de Nemours from 1957 to 1990 in their Films and Polymers Departments in a series of manufacturing, product development and research management assignments. He retired from DuPont in 1990 to begin a successful consulting business. In 1998 the Delaware Legislature formed the Technical Advisory Office under the

Division of Research for the Delaware Legislative Council and appointed Dr. Sample as the first Technical Coordinator. His office provides the General Assembly with un-biased, non-partisan, research, analysis and recommendations on technical and scientific issues and their impact on the State. Under his leadership, this office received the Council of State Governments Innovations Award in December, 2000. In this position he has lead scientific investigations into areas such as a) fish kills by toxic pfiesteria, a harmful algal bloom - their cause and affect, b) agricultural nutrient management - animal litter value and processing schemes, c) assessment of brownfields and their renovation, and d) highway noise control - the value of "sound barriers."

In 2000 he was appointed to serve as a member of the Delaware BioEnergy Consortium, and Delaware Climate Change Consortium.

He is a member of the American Institute of Chemical Engineers, American Chemical Society, and Society of Plastic Engineers; he is a Fellow and Chairman of ASTM D-20 Committee on Plastics; Vice Chairman/Secretary of F-17.63 a Plastic Piping System Subcommittee. He is active in D19 Committee on Plastics; Vice Chairman/Secretary of F-17.63 a Plastic Piping Systems committee on Water, D22 Committee on Sampling and Analysis of Atmospheres, and E50 Committee on Environmental Assessment, in support of his technical advisory responsibilities.

Dr. Sample and his wife, Jacqulyn, live in Wilmington, Delaware. They have four sons, one daughter and seven grandchildren. One son, Bradley E., received his PhD from the College of Forestry at West Virginia University.

Sports

The 2001 WVU football schedule is as follows:

September 1	Boston College	Away
September 8	Ohio	Home
September 15	Maryland	Away
September 22	Kent State	Home
October 6	Virginia Tech	Home
October 13	Notre Dame	Away
October 25	Miami	Away
November 3	Rutgers	Home
November 10	Syracuse	Away
November 17	Temple	Home
November 24	Pitt	Home

Make sure you find your favorite spot to root on the Mountaineers being led by new Head Coach Rich Rodriguez! His commercials promise that the Mounties are going to "play like our hair's on fire!"

Class Notes

1949

Ernest F. Dourlet (BS) is retired and resides in Tucson during the winter months and Flagstaff, AZ during the summer months.

1959

Donald H. Graham (BS) is semi-retired from Vivendi and resides in Ft. Ashby, WV.

1973

Mike Estep (BS), resides in Kennett Square, PA and is employed by Dupont.

1977

Randall Conaway (BS), resides in Kingsport, TN and is Manager of Plant Protection for Eastman Chemical Company.

1985

David Strickland (BS), is employed by The Poole and Kent Company in Miami, FL. David lives with his wife and two children in Plantation, FL.

1987

Karl Bloss (BS), after employment with Air Products and Chemicals for 9 years, received his PhD in chemical engineering from Lehigh University and is currently seeking a new position. Anyone in need of Karl's expertise should contact him at bloss@enter.net or 7637 Brandywine Circle, Trexlertown, PA 18087 (610-366-1420). Also, his resume can be found at http://www.enter.net/~bloss/vitae.html.

1989

Michael Reed (BS, MS '92) is a Senior Chemical Engineer for Parsons Engineering and resides in Fairmont, WV.

1990

Wendy (Webb) Wilker (BS) is a Chemical Operations Leader for GE Plastics in Bay St. Louis, MS. Wendy and husband reside in Picayune, MS.

1992

Shawn Jennings (BS) is a Quality Engineer for Kyowa America. Shawn and wife reside in Arthurdale, WV. Shawn would love to hear from his fellow classmates.

1994

Glenn Ridenour (BS) attended the University of Illinois where he received an MS in chemical engineering. After receiving his MS he returned to WVU to attend medical school, completing his MD in 1998. He is currently finishing his 3rd year of residency at the Medical College of Virginia in Internal Medicine and Pediatrics. Glenn should finish in June of 2002 and will stay on for fellowship training in Infectious Diseases. Glenn is married and they are expecting their first child this summer.

Nicholas Leclerc (BS) works for UOP LLC doing technical sales of molecular sieves and activated aluminas. Nicholas is getting married in June 2001 to Colleen Baker. Nicholas resides in Newton Square, PA.

1996

Francisco Benavides (MS) has relocated to the Philippines, where he lives with his wife Angela and daughter Andrea. Francisco is employed by Intel Technology as an Environmental Health and Safety Manager.

Brian Bland (BS, MS '00) is an Advanced Engineer working for Owens Corning in their Science and Technology Center in Granville, OH.

Michelle (Wilson) Daugherty (BS), married Richard Daugherty in June 2000 and was promoted to Director of E-Commerce for Ormet Corporation. Michelle and her husband reside in Martins Ferry, OH.

Jeffrey Jackson (BS) is an Environmental Engineer for Air/Compliance Consultants, Inc. in Pittsburgh, PA.

Brett Senters (BS) was recently promoted to a new DCS Engineer position for Aristech Chemicals. Brett does control applications and DCS support for all production units at the Haverhill Ohio plant site. Brett resides in Huntington, WV.

1997

Robert M. Taylor (BS, MS '99) is a Crew Training Engineer for Bechtel Bettis. Since starting for Bechtel Bettis, he has received extensive training as a nuclear engineer. He now uses that training to prepare Navy personnel to handle and operate nuclear powered submarines and aircraft carriers safely. Robert recently accepted a new position with the Nuclear Regulatory Commission in Rockville, MD and should start sometime this summer.

Deana (Fijewski) VanDer Kamp (BS) graduated in December 2000 with an MS in Pharmaceutics from The University of Iowa. She started a position with Eli Lilly in Indianapolis working as an Associate Pharmaceutical Chemist in Early Phase Formulation. Deana and her husband reside in Fishers, IN.

1998

Ian Conner (BS) is a MD/PhD student at WVU and resides in Canonsburg, PA.

Toni (Hartline) Conner (BS) is a Process Engineer for Bayer, Inc. and commutes from Canonsburg, PA to New Martinsville, WV.

1999

John Derenge (BS) is an Industrial Hygiene Technician for Applied Environmental, Inc. of Reston, VA. John resides in Annandale, VA.

2000

Sridhar Narasimhan (MS) is a Senior Engineer I for Acusphere, Inc. Sridhar and wife reside in Framingham, MA.

Anyone wishing to provide updates via email can send email to cheadm@cemr.wvu.edu.

Don't forget to visit our Home Page on the WWW.
Http://www.cemr.wvu.edu/~wwwche/

Our WEB page continues to receive the most inquiries in CEMR. We continue to try to make it more informative and useful to our visitors. Let us know your thoughts and comments. Drop us a line.

Alumni Update Page
June 2001

PLEASE WRITE TO US! We want to know where life has taken you since you left West Virginia University. Complete and return this form with your news and comments. Also, pass this Newsletter on, or let us know of any Alumni who are not receiving The Major.

Send to: Department of Chemical Engineering, West Virginia University, 403 ESB, PO Box 6102, Morgantown, WV 26506-6102.

Http://www.cemr.wvu.edu/~wwwche/

Name_____
Degree(s) _____ Year _____
Home Address_____
City _____ State _____ Zip _____
Home phone _____ Business phone _____

E-mail: _____

Employer: _____
Position Title: _____
Firm Address: _____
City _____ State _____ Zip _____

Preferred Mailing Address: Home _____ Work _____

Brief News of Professional and Family Activities for Future Newsletters:

Suggestions/Comments: