THE ANNUAL CHE SYMPOSIUM AT CARNEGIE MELLON

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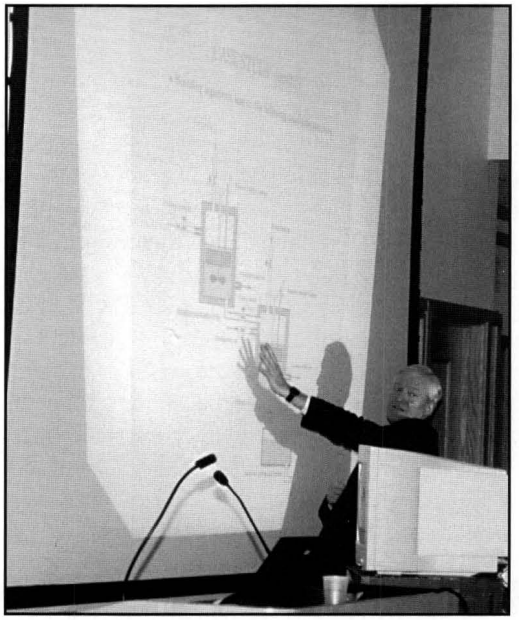


Keynote speaker, Professor John Perkins, describes a flowsheet during his talk.

Over the past few years, chemical engineering departments in several universities around the country have begun to hold annual graduate students research symposia. This tradition began in 1979 at Carnegie Mellon when the Chemical Engineering Graduate Students Association (ChEGSA) organized the first Annual Chemical Engineering Symposium. Since that time, each symposium at Carnegie Mellon has been organized by graduate students for their colleagues and each has been funded entirely from industrial sponsorship, with all funds being raised by the students themselves. Carnegie Mellon's Twentieth Annual Symposium was held in October of 1998, and so it seems fitting to briefly review the significance of the symposium on this anniversary.

INDUSTRIAL PARTICIPATION

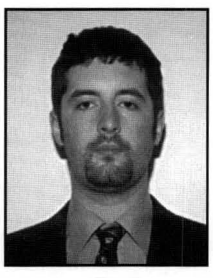
In 1979, Department Head Tomlinson Fort suggested holding an annual symposium, to be organized by ChEGSA. He felt the symposium would promote better communication skills among graduate students and provide a forum in which to exchange research ideas, both within the department and with industry. It has been with that objective in mind that the symposium has continued and enjoyed great success over the past twenty years.

Industrial participation commenced with the Second Annual Symposium and has become increasingly important every year since then. Because the Symposium is funded entirely through donations made by industrial participants, it allows graduate students to refresh their contacts with industry and to learn more about current industrial needs and concerns. In addition, it is a useful way for the students to learn important networking skills and to keep in contact with alumni. Furthermore, the symposium gives industrial participants an opportunity to learn more about current departmental research and provides an excellent means for them to meet graduate students and to get to know them outside the artificially constrained atmosphere of a formal recruiting process.

For many alumni and industrial participants, the symposium provides a first point of contact for those who may be their future colleagues. For this reason, a resume book is compiled and distributed to all of the industrial participants.

KEYNOTE ADDRESS AND STUDENT PRESENTATIONS

Each year since 1984, the symposium has included a keynote address from a researcher and lecturer of international standing. (A full list of all the keynote speakers over the years is given in Table 1.) The purpose of the keynote address is to promote better presentation skills among the students through the example set by an outstanding speaker.



Timothy D. Power is a PhD student in the Department of Chemical Engineering at Carnegie Mellon University. He received his BE degree in 1997 from University College, Dublin, Ireland, and began his graduate work at Carnegie Mellon in the fall of that year. As the 1998 Vice-President of the ChEGSA, Timothy was responsible for organizing the Annual Symposium described in this paper. He is currently working with Professor David Sholl in the area of molecular simulations.

In 1998, the keynote speaker was Professor John D. Perkins, Head of the Department of Chemical Engineering and Chemical Technology at Imperial College, London. His talk, "Trends in Process Systems Engineering," was received with great interest, as it touched both on the history of process systems engineering and recent trends in design and control integration.

In recent years, the symposium has been held in a conference room on campus in mid-October. Since it takes place in mid-week, classes for all graduate students are cancelled for those days. Over the two-day period of the symposium, the PhD students in the department give approximately thirty-five presentations. While a handful of second-year students usually participate, most of the presentations are made by the third-, fourth-, and fifth-year students.

The range of research topics covered in the symposium spans all primary areas of specialization at Carnegie Mellon, specifically: bioengineering, complex fluids, environmental engineering, process systems engineering, and solid-state materials. Speakers are allotted fifteen-minute time slots for their presentations.

Since maximal industrial participation tends to occur on the first day, priority for time slots on that day is given to students in the final year of their studies. A luncheon is also held on the first day of the symposium and participating students, industrial attendees, and faculty are all invited, providing further opportunities for interaction and conversation. In addition, the poster session held that evening is accompanied by a wine-and-cheese reception where there are further prospects for contact.

SYMPOSIUM AWARDS

The ChEGSA symposium provides a unique means for students to develop the skills they will need for future success. In almost any career, it is essential to be able to present one's work to others and to argue the merits of one's case. It is not easy to deliver a short presentation to an audience with diverse interests, and practice is the best way to become comfortable and confident with making presentations. To this end, a panel of academic professors and industrial attendees adjudicate each student's talk with the intention providing feedback to the students and improving their communication skills. The speaker with the highest evaluation receives the Geoffrey D. Parfitt Memorial Award. This award, established by ChEGSA, honors the memory of Dr. Parfitt, a Professor of Chemical Engineering at Carnegie Mellon who passed away unexpectedly in 1985. There are, in addition, two awards given to the second- and third-highest ranked students, as well as two honorable mentions.

Awarding the students for their performance has proven valuable—it provides a tangible incentive for students to deliver high-quality presentations. Over the years, many who have won awards at the symposium have gone on to pursue very successful careers, *i.e.,* among others, John Walz (1991 and 1992), Yale University; Christodoulos A. Floudas (1983 and 1985), Princeton University; Annette Jacobson (1987), Carnegie Mellon University; Marco Duran (1984), Exxon Corporation; James Cuthrell (1985), Shell; Paul Bowman (1986 and 1987), Arco Chemical. The awards are presented the week following the symposium at a banquet organized by ChEGSA. A list of the award winners of the 1998 symposium is given in Table 2.

The symposium is also crucially important in assisting new first-year graduate students in selecting a thesis advisor. The symposium takes place midway through the first semester and (at Carnegie Mellon) the thesis advisor is usually not selected until late in this semester. By attending talks given by students of various faculty, the symposium provides a valuable means for first-year students to learn more about the specifics of the research they can expect to do if they work with a certain professor.

VALUE OF THE SYMPOSIUM

The continued success of the symposium can be attributed to the many benefits derived from holding such an event. In the first instance, the symposium internally benefits the Chemical Engineering Department. Graduate students are given an opportunity to learn more about the work in which their peers are engaged, and the opportunities for exchanging ideas and other feed-

TABLE 1
Keynote Speakers

1984	Ed Cussler, *University of Minnesota*
1985	Dan Luss, *University of Houston*
1986	George Keller, *Union Carbide*
1987	Alexis Bell, *University of California, Berkeley*
1988	Eduardo Glandt, *University of Pennsylvania*
1989	Robert Anderson, *Monirex Systems, UOP Inc.*
1990	Michael Shuler, *Cornell University*
1991	Michael Doherty, *University of Massachusetts*
1992	John O'Connell, *University of Virginia*
1993	Elizabeth Dussan, *Schlumberger Doll*
1994	Joe Pekny, *Purdue University*
1995	Doug Lauffenberger, *Massachusetts Inst. of Tech.*
1996	Mark Barteau, *University of Delaware*
1997	Alice Gast, *Stanford University*
1998	John D. Perkins, *Imperial College, London*

TABLE 2
1998 ChE Symposium Award Winners

Geoffrey D. Parfitt Award (Overall)

- Scott A. Guelcher: Advisor, John L. Anderson
  Investigating the Mechanism of Aggregation of Colloidal Particles During Electrophoretic Deposition

Symposium Awards

- Celia N. Cruz; Advisor, Spyros N. Pandis
  The Effect of Organic Coatings on the Cloud Condensation Nuclei Activity of Inorganic Aerosol
- Stephen J. Vinay, III: Advisor, Myung S. Jhon
  A Study of Multi-Particle Dynamics in Triboelectrostatic Systems

Honorable Mentions

- Hector Yeomans: Advisor, Ignacio E. Grossmann
  A Disjunctive Programming Method for the Synthesis of Heat Integrated Distillation Sequences
- Timothy D. Power: Advisor, David S. Sholl
  Theoretical Studies of the Adsorption of Chiral Molecules onto Chiral Metal Surfaces

back are substantial. In addition, the department greatly benefits from the opportunity to refresh contacts with industry.

Since it is entirely the responsibility of students, actually organizing the symposium is a valuable experience in and of itself. Its organization is generally the responsibility of just one student, with assistance from fellow ChEGSA officers. There is, of course, a considerable time investment required from the individual concerned. In addition to the logistics of accepting abstracts, allotting time slots for speakers, organizing flights for the keynote speaker, etc., there is also a considerable fund-raising element involved. As a consequence, competence in several areas is needed to successfully coordinate the event, including communication and negotiation abilities, delegating skills, fund raising, and resource allocation. Time-management skills are crucial, since the event needs to be planned while the organizer continues to pursue research, attend classes, and attends to teaching-assistant duties.

Typically, about $8,500 is required just to cover the basic costs of the symposium. Apart from the obvious costs such as the luncheon and travel expenses and honorarium for the keynote speaker, there are additional expenses that include the cost of coffee and refreshments, postage, audio-visual equipment rental, etc. All of the funding to cover these costs is derived from the donations of industrial sponsors (who donate $500 or more) and contributors (who donate $100-499).

That the symposium has been a truly valuable event at Carnegie Mellon is without question. As long as it continues to serve its purpose, it requires and deserves continued strong support from all who participate, including students, faculty, and particularly industrial sponsors and contributors, whose exceptional generosity has been more than appreciated through the years.

ACKNOWLEDGMENTS

Many thanks to my fellow ChEGSA officers for their help in organizing the symposium in 1998. Also, thanks are due to Professor David Sholl, Professor Ignacio Grossmann, and Amanda Utts for their help in writing this paper.

Thanks also must go to the 1998 industrial sponsors: Air Products and Chemicals, Inc., ALCOA, Amoco Chemical Corporation, ARCO Chemical, Aspen Technology, Inc., Bayer, BOC, Dow Chemical, Dow AgroSciences, Dupont, The Goodyear Tire & Rubber Company, Lubrizol, Merck & Company, Mitsubishi Chemical America, Monsanto Company, PPG Industries, and Simulation Sciences Inc. Industrial contributors for 1998 were Coca-Cola Company, International Paper, Johnson & Johnson, McKinsey, Mobil, Schlumberger, Sony Chemical, and Westinghouse. ❐

ChE letter to the editor

To the Editor:

I have just looked through the Fall, 1999, issue of *Chemical Engineering Education*—the well-known graduate education issue. I noticed a number of advertisements in the graduate education section that have photographs of people in laboratories who do not have proper personal protective equipment. In particular, they lack proper safety glasses.

I can assure you that our industrial friends will notice this problem. It is also contrary to a number of articles that have appeared in *CEE* discussing proper safety culture in laboratories.

Several years ago I received an award from the Chemical Manufacturers' Association. The CMA requested photographs with me and my students in the laboratory. The cover letter stated that photos without proper personal protective equipment would not be accepted. I would like to suggest that CEE do the same.

Dan Crowl
Michigan Tech

Editor's Note: We agree with the comments and encourage each advertising university to take note of this breach of laboratory safety procedures when reviewing their advertisements next year.

ChE books received

Tailored Polymeric Materials for Controlled Delivery Systems, edited by Iain McCulloch and Shalaby W. Shalaby; Oxford Uiversity Press, 198 Madison Avenue, New York NY 10016; 322 pages, $15 (1998)

Oxford Dictionary of Biochemistry and Molecular Biology, Oxford Uiversity Press, 198 Madison Avenue, New York NY 10016; 739 pages, $60 (1997)

Design of Devices and Systems, 3rd edition, by William H. Middendorf and Richard H. Engelmann; Marcel Dekker, Inc. 270 Madison Ave., New York, NY 10016-0602; 584 pages, $69.75 (1998)

New Methods in Computational Quantum Mechanics, edited by I. Prigogine and Stuart A. Rice; Wiley, 605 Third Avenue, New York, NY 10158; 813 pages, $54.95 (1997)

Organotin Chemistry, by Alwyn G. Davies; Wiley, 605 Third Avenue, New York, NY 10158; 327 pages, $180 (1997)

Hydrocarbon Resins, by R. Mildenberg, M. Zander, and G. Collin; Wiley, 605 Third Avenue, New York, NY 10158; 180 pages, $140 (1997)

Solvent-Free Polymerizations and Processes: Minimization of Conventional Organic Solvents, edited by Timothy E. Long and Michael O. Hunt; Oxford University Press, 198 Madison Ave., New York, NY 10016; 292 pages, $110 (1999)

Fluid Dynamics and Transport of Droplets and Sprays, by William A. Sirignano; Cambridge University Press, 40 West 20th St., New York, NY 10011-4211; $80 (1999)