In Memorium

MITCHEL SHEN

Mitchel Shen passed away on August 7, 1979 after an illness of several months. The students and faculty at Berkeley will miss an inspirational teacher and dedicated colleague, and the field of polymer science has lost an outstanding young researcher. Our sympathies are extended to his wife Vivian and their family.

Mitchel Shen was born in Tienjin, China on September 1, 1938 and came to the United States for his college education and professional career. He took a B.S. in Chemistry at St. Francis College in 1959, an M.A. in Physical Chemistry at Princeton University in 1962, and a Ph.D. at Princeton (where he studied under A. V. Tobolsky) in 1963. Following graduation, he joined the Chemical Physics staff at the North American Rockwell Science Center in Thousand Oaks, CA. He was invited to join the Chemical Engineering Department of the University of California, Berkeley in 1969, arriving as Associate Professor and advancing to Professor in 1973. While at Berkeley, he held one of the prestigious Dreyfus Scholar awards (1970) and was elected a Fellow of the American Physical Society (1972).

Mitch taught undergraduate and graduate courses on polymers, undergraduate courses on thermodynamics, and graduate seminars on various research topics. The research he conducted was focused on rubber elasticity, rheology of entangled liquids, membrane properties, polymer alloys, and plasma-generated polymers. Since 1976 he served as Vice Chairman of the Chemical Engineering Department, and he had been Acting Chairman for half of 1978. In his capacity as the campus Assistant Dean of Foreign Students in 1972-73, he fulfilled an advisory function officially which he exercised unofficially through his academic career.

He was an assistant editor of *Trans. Soc. Rheol.* (1970-75), co-editor of *Rev. Macromol. Chem.* (1969-), and editor-at-large for *J. Macromol. Sci., Part A* (1971-).

The volume of high-quality work he was able to publish in such a short career was astonishing. In addition to the book "Introduction to Polymer Viscoelasticity" (Interscience, 1972), which he coauthored with J. J. Aklonis and W. J. MacKnight, he edited five other volumes and published 107 research papers (with 24 more in various stages at this time).

A perpetual fund, in his name, has been established in the College of Chemistry at U. C. Berkeley to assist foreign students with financial difficulties, a project Mitch would have endorsed strongly. Donations can be made to the Mitchel Shen Memorial Fund and sent to the Chemical Engineering Department, University of California, Berkeley, CA 94720.

ROBERT E. TREYBAL

Robert E. Treybal was a great chemical engineer dedicated to the chemical engineering profession. He devoted his life to chemical engineering education, chemical engineering research, and the advancement of his profession. He was respected and admired by his students and colleagues.

Born in New York City on March 31, 1915, he received his Bachelor's degree in ChE from New York University, his Master's degree in ChE from New York University and his doctorate from Columbia University. His doctoral subject was "Countercurrent Liquid-Liquid Extraction in a Wetted-Wall Tower."

His distinguished teaching career began at New York University. He rose through the ranks and from time to time served as Chairman of the ChE Department. After the College of Engineering was dissolved at NYU he became Chairman of the ChE Department at the University of Rhode Island.

He has worked for Atlantic Refining Co., the Fire-Control Research Division of Frankford Arsenal in Princeton, and the M. W. Kellogg Co. and has consulted with more than twenty five of the leading Chemical and Process Industry Companies.

Dr. Treybal was keenly interested in mass transfer and mass transfer operations. His book, "Liquid Extraction" was the first comprehensive book on that subject. Two editions were published by McGraw-Hill Book Company, the first in 1951 and the second in 1963. It also was published in Spanish, 1968, and Russian, 1966. In 1955 the first edition of his text "Mass Transfer Operations" was published by McGraw-Hill Book Company. The second edition was published in 1968 and the third edition was in the process of being prepared for publication. "Mass Transfer Operations" has

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2. G. N. Reddy, "Environmental Aspects of Coal Conversion Plant Siting and Cost of Pollution Control", Third Annual International Conference on Coal Gasification and Liquefaction, Pittsburgh, Pa., August, 1976.
3. R. G. Lett, C. E. Schmidt, R. R. De Santis and A. G. Sharkey, Jr., "Screening for Hazardous Elements and Compounds in Process Streams of the 1/2 Ton Per Day Synthoil Process Development Unit", PERC RI 77/12, 1977.
4. B. I. Loran and J. B. O'Hara, "Specific Environmental Aspects of Fischer-Tropsch Coal Conversion Technology", Third Symposium on Environmental Aspects of Fuel Conversion Technology, Hollywood, Florida, Sept. 1977.

PROCESS AND REACTOR DESIGN, MODELS, REACTION CONTROL

1. C. Y. Wen, "Optimization Studies of Various Coal-Conversion Systems", ERDA Reports FE-2274-2, 1976.
2. Y. P. Hsia and T. F. Yen, "Evaluation of Coal Liquefaction Efficiency Based on Various Ranks", Energy Sources, 3(1)39 (1976).
3. C. Y. Wen and K. W. Han, "Kinetics of Coal Liquefaction", ACS, Div. Fuel Chem., 20(11), 216 (1975).
4. P. Wellman and S. Katell, "The Economics of Coal Conversion Systems", SPE Paper 5097 (1974).

TABLE III
Supplementary Course Reading List

ACS, "Coal Science," Advances in Chemistry Series 55, Washington, D C., 1966.
AIChE, "Coal Processing Technology," Chemical Engineering Progress,
AIChE, "Coal Processing Technology, Volume 2," Chemical Engineering Progress,
Ellington, R. T., (ed.), "Liquid Fuels from Coal," Academic Press, San Francisco, 1977.
Elliott, M. A., (ed.), "Chemistry of Coal Utilization, Second Supplementary Volume," Wiley, New York, 1963.
Francis, W., "Coal, Its Formation and Composition," Edward Arnold, London, 1961.
Howard-Smith, I. and G. J. Werner, "Coal Conversion Technology," Noyes Data Corp., Park Ridge, New Jersey, 1976.
IGT, "Clean Energy Fuels from Coal, Symposium II Papers," 1975.
Katzer, J. K. and B. C. Gates, "Catalytic Processing in Fossil Fuel Conversion," AIChE Today Series,
Lowery, H. H., (ed.), "Chemistry of Coal Utilization, Vol. I and II, Wiley, New York, 1945.
Lowery, H. H., (ed.), "Chemistry of Coal Utilization, Supplementary Volume," Wiley, New York, 1963.
Tetra Tech, Inc., "Energy from Coal, a State-of-the-Art Review," U.S. Printing Office, Washington, D.C., 1976.
Van Krevelen, D. W., "Coal, Typology—Chemistry—Physics—Constitution," Elsevier, New York, 1961.
William, D. A. and G. Jones, "Liquid Fuels," Pergamon, Elmsford, N. Y., 1963.

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had a strong influence on chemical engineering in the United States where a majority of departments of chemical engineering use it as a text. It has also been published in Hungarian, 1961, as an International Students Edition in Tokyo in 1962 and 1968, and in Spanish in 1973. He also contributed to Perry's Chemical Engineering Handbook and the Encyclopedia of Engineering and Sciences.

During his career he published more than seventy technical papers primarily dealing with mass transfer and mass transfer operations. His research interests included liquid-liquid extraction, distillation, absorption and mixing in multiphase systems. His most recent research centered on mass transfer in baffled and unbaffled agitated vessels and three phase mixing in agitated full baffled columns and vessels. He was honored for his teaching with the George Westinghouse award for Distinguished Engineering Teaching by the ASEE in 1957. In 1963 he was the recipient of the William H. Walker Award for outstanding contributions to the chemical engineering literature, awarded by AIChE. In 1968 and again in 1970 he received additional teaching awards, first from the NYU Alumni and then from the Manufacturing Chemists Association.

Dr. Treybal was a fellow of the American Institute of Chemical Engineers, the New York Academy of Science and the American Institute of Chemists. He was a long time member of the American Chemical Society and the American Society for Engineering Education. He was a member of Sigma Xi and Tau Beta Pi Honor Societies. He was also a registered professional engineer in both New York and Rhode Island.

His former dean at NYU, John Ragazzini, remembered him as "a superb technical person with enviable human qualities." Part of his human qualities showed through his interest in art and music. He had an intense interest in opera and was a fine artist.

The students and faculty have started a memorial fund in his name at the University of Rhode Island. They hope to honor his name and tradition with an endowed chair at the University of Rhode Island.